The original documents are located in Box 42, folder "Uranium Enrichment - Presidential Decisions (1)" of the John Marsh Files at the Gerald R. Ford Presidential Library.

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FORM OF DOCUMENT	CORRESPONDENTS OR TITLE	DATE	RESTRICTION
1.	Cannon to the President, 5/23/75		
1a. Background	State Department Views on US Uranium Enrichment Policy (2 pp.) Sys. WHM 11/28/00	Undated	A
1b. Summary	Agreement between Brazil and West Germany on nuclear energy (2 pp.)	4/24/75	A

FILE LOCATION

Marsh Files
General Subject File
Uranium Enrichment - Presidential Decisions (1) Box 42

RESTRICTION CODES

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THE WHITE HOUSE

WASHINGTON

DECISION

May 23, 1975

MEMORANDUM FOR THE PRESIDENT

FROM: JIM CANNON

SUBJECT: Expansion of the Production of Enriched Uranium

The importance of enriched uranium to future energy production can be summarized in this way: From the early 1980's to the year 2000, enriched uranium is likely to be as significant to energy production as oil is today.

The U.S. need to expand its capability to enrich uranium presents two issues:

The immediate issue is how Secretary Kissinger can, at the May 27 Ministerial Meeting of the International Energy Agency, demonstrate that the U.S. is committed to maintaining United States leadership as the free world's supplier of enriched uranium and U.S. dominance in nuclear affairs.

The long-term issue is whether enriched uranium, the fuel for the atomic energy utility plants that are expected to be built by the hundreds from now until 2000, will be produced by the United States government, by private enterprise or by a combination of the two.

BACKGROUND

The United States is now enriching uranium in three ERDA-owned plants - at Paducah, Kentucky, Oak Ridge, Tennessee, and Portsmouth, Ohio. These plants, now being expanded, can supply the initial fuel and replacement fuel for 270 nuclear electric plants.

Each of the three enriching plants uses the World War II diffusion process, which is proved in technique, but very costly in electric consumption.

The capacity of all three plants is fully committed - about 2/3 for domestic utilities, 1/3 for foreign. In fact, for almost a year, the United States has not been able to take any more orders for enriching uranium.

The world-wide demand for enriched uranium in the foreseeable future would require, according to best estimates, 20 additional plants of about the size of each of the ERDA plants. To meet U.S. demand and about half of foreign free world demand (the informal U.S. target) will require the construction in the U.S. over the next twenty years of about ten plants, each the size of an existing ERDA plant.

Clearly, we need additional production capacity, both for domestic needs and to compete for foreign markets.

The policy of the previous Administration was to encourage private financing and construction of additional uranium enrichment plants.

Last Fall you approved a study to reevaluate that policy.

The alternatives have now come down to these:

1. Assist private industry, through technical assistance and some Federal guarantees, in building the next diffusion plant, at a cost of about $3 billion of private capital.

2. Have ERDA expand its Ohio diffusion plant (at a cost of about $1.2 billion) while encouraging private industry to build additional plants using a new centrifuge technique. The centrifuge process of enrichment is an experimental success and uses less then one-fifth the electricity of diffusion. But it has not yet been proved commercially. (EXXON, Garrett Corp., and ENI-Atlantic Richfield are among those which have indicated a strong interest in building centrifuge plants.)

3. Have ERDA build all the additional uranium enriching plants the United States needs for domestic and foreign markets.

Current Situation

The eight-month evaluation has not brought about a consensus. Your principal advisers with responsibilities in this field are in disagreement.

1. Secretary Kissinger and Dr. Seamans (Tab I) state that:

   (a) Immediate domestic and international needs for additional

uranium enriching plants require immediate expansion of ERDA's capacity as soon as Congress approves.

(b) The President should decide that, if at all possible, the next enrichment plants built in the U.S. would be private, either centrifuge or gaseous diffusion.

(c) Thus we need not make a judgment now whether or not the one private consortium attempting to build a diffusion plant, Uranium Enrichment Associates, can get the financing, or the Congressional support for Federal guarantees against losses, necessary to build a plant that will cost $3 billion or more. (UEA includes Bechtel, Goodyear, and is expected to include 3-5 other U.S. firms, with capital participation by Iran, Jordan, and other nations.)

(d) We cannot continue to delay expanding production, for we are already losing orders to Russia, (which we believe has one plant and a stockpile of fuel), France, and Germany. We are also losing dominance over the provision of enriching services, which we would like to retain for national security reasons.

2. Jim Lynn and Frank Zarb (Tab II) take this position:

(a) As a matter of principle and policy, we should encourage private industry to enter uranium production as soon as possible.

(b) The substantive decisions as to how we obtain further production -- public or private ownership, diffusion versus centrifuge -- should be made on the basis of an options paper being developed through interagency efforts during the past few months, which can be ready in early July.

(c) In order to properly assess the pros and cons of the UEA option, its proposal needs further definition, including the extent of assistance UEA believes it would need from the Federal Government. This should be worked out by negotiation. Lynn recommends that you direct Frank Zarb and

Dr. Seamans to find out and report to you within thirty days what UEA's minimum requirements for Federal assistance would be. Without such work, the UEA option will not be definitive enough to be an option.

(d) By no later than mid-July, you would be in a position to make the decisions based on the interagency option paper, including the UEA option.

(e) An Administration commitment now to expand ERDA production would discourage UEA from going ahead with its diffusion plant and probably cause its members to dissolve the consortium. If UEA withdraws, then other private firms would be reluctant to try later.

OBJECTIVES

From our discussions with your advisers and study of the attached memoranda, it appears that these are desirable objectives:

1. To provide Secretary Kissinger with specifics that make credible what the United States is doing to expand production, and enable him to make commitments as to future deliveries of enriched uranium.

2. To provide the opportunity for private enterprise to engage in uranium production as soon as possible.

3. To be ready to expand ERDA's production if that is necessary.

OPTIONS

1. Authorize announcement simultaneously here and by Dr. Kissinger in Europe on May 27 that U.S. Government will build the next addition to U.S. uranium enrichment capacity. (Supported by Secretary Kissinger and Dr. Seamans)

_____ Agree _____ Disagree

2. Authorize Dr. Kissinger to announce on May 27 that

(a) U.S. Government will cause to be built, preferably through private ownership, but by the Federal Government if necessary, additional enrichment capacity (along the lines of the speech outline at Tab III.)

(b) direct that negotiations with UEA be conducted promptly, and

(c) direct the final options paper on the substantive issues --government versus private, diffusion versus centrifuge, etc. -- to be delivered to you no later than July 5.

(Supported by Jim Lynn, Frank Zarb, Phil Buchen, Jack Marsh Bob Hartmann, and Alan Greenspan.)

_____ Agree _____ Disagree

MEMORANDUM

THE WHITE HOUSE

3133

WASHINGTON

SECRET ATTACHMENT

ACTION

May 10, 1975

MEMORANDUM FOR: THE PRESIDENT

FROM: HENRY A. KISSINGER

SUBJECT: Uranium Enrichment

Last fall you requested an interagency study (NSSM 209) of the steps the U.S. might take to meet future domestic and foreign demand for uranium enrichment services (the fuel for nuclear reactors). One of the main questions was whether or not there are private companies who would take over this business and relieve the Government of the responsibility. The study is completed and could be forwarded for your decision within two weeks. However, OMB is asking that instead of reaching a decision now, you direct ERDA to pursue negotiations with one company (UEA) for the purpose of trying to reduce the list of Government supports the company requires to get into business. (These Government supports involve a guarantee loan -- up to $3 billion -- if UEA bonds cannot be sold; a guarantee that the plant will work technically; the assumption of cost overruns; a buy out of UEA if the plant cannot operate because of licensing, regulation, or judicial action; taking over the contracts of defaulting customers; buying up to 15% of the plant's output for the first three years; terminating enough of the ERDA contracts with current customers so that UEA can acquire them and be assured of having its product sold out; and allowing UEA to borrow enriched uranium from the U.S. stockpile.)

Bob Seamans (in a letter to you at Tab A) opposes negotiation because he feels that he has adequately assessed the UEA proposal (Tab C). Such negotiations would take a number of months (time we do not have, for reasons outlined below), would highlight the chosen instrument character of UEA and undercut already dubious Congressional support, and are unlikely to produce the major changes in the assistance package necessary to make the company's demands acceptable. Further, it is quite conceivable that even with Government supports UEA will fail a year from now to commit to plant construction. There is little support among U.S. electric utilities for UEA (hence the need for UEA to try to sell 60% of its output to foreign customers) and the company is thinly financed (the organizers are putting up only 6% equity investment).

Seamans believes that it is possible to establish a competitive private enrichment industry using a new technology (centrifuge). This strategy would require that an add-on be built to one of the Government gaseous diffusion facilities to handle orders for enrichment services over the next year or two, while the centrifuge companies are firming up. In Seamans' view, this course would be more preferable than committing to UEA (which would use current technology) and thereby creating a virtually risk-free monopoly propped up with Government supports, which would effectively delay the evolution of a competitive enterprise. (The cost of the Government add-on would be $1.5 billion over eight years, but could be largely offset by revenues from our present plants.)

The State Department (Tab B) is particularly concerned that, whatever decision is reached, the commitment be immediate. The U.S. has been the free world's supplier of nuclear fuel and the dominant leader in nuclear affairs. A year ago, when we stopped accepting fuel orders, our credibility as a reliable supplier sank precipitously. Since then several of our allies have turned to the USSR for this fuel, major investments have been made abroad in enrichment facilities that will compete with the future U.S. enrichment industry, and reactor sales, which are tied to fuel contracts, have gone to foreign companies. (Because of our fuel contract hiatus, Brazil just signed up with Germany for $4 billion in reactors and equipment that would have been expected to go to GE or Westinghouse -- see Tab D.)

In addition to trade and other energy policy considerations, we want to maintain foreign reliance on the U.S. nuclear supply because this permits us to exercise special controls to inhibit the proliferation of nuclear weapon development. Because of the dual character of nuclear technology, we cannot deal with it simply on a commercial level.

It would be very useful in reestablishing our nuclear position if we could announce at the May 27 Ministerial Meeting of the International Energy Agency that a U.S. commitment has been made to build additional enrichment capacity and that we will be accepting fuel contracts as soon as general Congressional approval is obtained. This would necessitate a basic decision on your part before that time.

RECOMMENDATION:

That ERDA not be directed to negotiate further with UEA and that the decision paper on the next U.S. uranium enrichment facility, based on the interagency review of the issue, be forwarded to you within two weeks.

Approve _____ Disapprove _____

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

May 8, 1975

The President
The White House

Dear Mr. President:

Jim Lynn has advised me that he is recommending that you direct ERDA to pursue negotiations with the Uranium Enrichment Associates in an effort to determine what would be the minimum federal assistance necessary to bring this private enrichment venture into being. He feels this added information is required to enable you to make a decision between the several alternatives for obtaining uranium enrichment capacity.

ERDA has already conducted an extensive review of the UEA proposal and has reviewed its findings in detail with the OMB and other members of your staff. It is my view that we have sufficient information today to decide on a viable course of action -- a course which I believe best serves our objective of introducing private industry into this sector of the nuclear power business and meets the critical consideration of timing. An immediate decision is essential to our own economy and to our balance of trade. Our inability for the past year to take orders has added uncertainty to our domestic utility industry and to our foreign position on the sale of uranium fuel and nuclear power reactors.

In light of these considerations, I have in recent weeks presented my views to Jim Lynn, recommending:

-- Rejection of the UEA proposal;

-- Commitment to add enrichment capacity to an existing government facility in order to take immediate orders, both domestic and foreign;

-- Initiation of private enriching capacity on a <u>competitive basis</u> using centrifuge rather than gaseous diffusion separation methods. This advanced technology has much greater energy efficiency, and is more flexible in terms of meeting shifting demand.

GERALD R. FO

The UEA approach is not the best alternative available to the government.

-- As it now stands, the UEA proposal represents both a sole source procurement and such a high federal liability and low private risk that it would set an undesirable precedent for future commercial ventures. For this reason, Congressional support will be most difficult to achieve and, even if such authorization is achieved, 9-12 months will have passed without an assured program for meeting demand for enriched uranium.

-- Negotiations with UEA would require a number of months and -- even if their position proved more acceptable -- would still not of itself speed the re-opening of the "order book" nor establish private enrichment on a competitive basis.

In our plan, we would immediately seek Congressional authorization for added government capacity and for industrial cooperation for privately financed centrifuge facilities. We would then initiate the design and procure the long lead items for the expansion of government facilities. We would tailor the size of the add-on government plant to the minimum needed to give private industry time to get established. I believe that this approach constitutes better policy and is a more defensible proposal because it:

-- Applies government guarantees more appropriately in support of the establishment of a competitve enrichment industry rather than a single, sole-source supplier, such as UEA, and buys a better result. Attractive proposals utilizing centrifuge techniques have already been presented to ERDA by EXXON, Garrett Corporation and ENI-Atlantic Richfield.

-- Reopens the "order book" sooner as a result of building the add-on plant.

On the basis of current estimates, our proposed add-on plant is expected to have a net budget impact of not more than $100 million <u>total</u> before the higher enrichment charges already planned will off-set new plant costs beginning in 1980.

ERDA has the responsibility to produce and sell enriched uranium, to develop new and improved enrichment processes, and to utilize industrial capability to the maximum extent consistent with other national interests. We recognize, in this regard, that our objectives cannot be isolated from broader considerations of energy policy and, therefore, will continue to consult with the Energy Resources Council and its individual members as we discharge our responsibilities.

We have attempted to consider all important issues in arriving at our recommendations. However, you may have further questions and we will be most happy to discuss such matters with you or anyone you may designate.

Respectfully yours,

R. C. Seamans

Robert C. Seamans, Jr.
Administrator

STATE DEPARTMENT VIEWS ON
US URANIUM ENRICHMENT POLICY

US enrichment uranium supply policy is an important factor in our overall political relations with major countries and specifically affects our non-proliferation and energy cooperation efforts as well as our balance of payments position. These interests have suffered during the past year due to the uncertainty over whether, when, and how new enrichment capacity would be built in the United States. Particularly acute damage has been caused by the "contracting gap" which began last summer when the then AEC was unable to satisfy foreign demand for enrichment contracts, having reached the capacity of the existing US plants. The inability of the US to satisfy this demand has continued and it is exacerbating our foreign policy problems.

Under the existing policy of private entry, our foreign policy interests have suffered a series of setbacks due to the inability of the Uranium Enrichment Associates (UEA) organization to develop a credible proposal for private sector construction of a fourth gaseous diffusion plant. As the enrichment contracting gap has widened, foreign customers have become disillusioned with our inability to establish a firm timetable for the construction of new enrichment capacity adequate to meet the fuel needs of foreign and domestic customers as we have done in the past. This situation has cause major prospective foreign customers (including Japan, Brazil, a number of Western European countries, and Iran) to turn to other fuel suppliers, the French and the Soviet Union in particular. In addition to harming overall relations with these and other nations, our current enrichment approach has:

-- inhibited our ability to take important initiatives in the field of international nuclear energy cooperation among consumers;

-- reduced our ability to impose US non-proliferation safeguards standards using the leverage of fuel supply contracts, and

-- diminished significantly future US economic benefits flowing from sales of US-type reactors as well

~~CONFIDENTIAL~~

as associated fuel and to attract foreign investments in US enrichment facilities.

As we see it, the UEA project is in serious trouble. We understand that ERDA estimates that it could take one year to negotiate a final agreement with UEA, and that there is no guarantee that such negotiations could be successfully concluded, given the wide scope and complexity of the government assistance package requested, the financial arrangements to be consumated, and the need for legislation. Furthermore, not only are domestic utilities reluctant to fully support the UEA effort, but it does not appear that foreign participation at the 60% level UEA projects as necessary to the success of its venture, could be achieved. While Iran remains favorably disposed to invest in UEA, Japan has adopted an increasingly cool attitude toward this project and few, if any, other foreign investors have been identified.

The ERDA plan, on the other hand, would meet our foreign policy concerns by setting in motion promptly a credible program to establish additional enrichment capacity in the United States which would serve foreign and domestic customers on an equitable basis. The proposed government construction of an increment of gaseous diffusion capacity and strong support of the construction of private centrifuge plants combines existing and new technology into a powerful joint venture between the public and private sectors. We believe this blended approach will be extremely well received abroad. We also believe that prospects for attracting foreign investment for this program can prove to be considerably better than for the UEA scheme. We believe that the Japanese as well as the Iranians will probably be willing to participate through equity and/or debt financing.

Of crucial importance to Secretary Kissinger and others is the need to resolve urgently our uncertain enrichment policy. The forthcoming ministerial meeting on May 27th of the International Energy Agency offers a unique opportunity for the Secretary to set out clearly the general thrust of our enrichment program. Such an announcement would be of major value not only to our cooperation with other consuming nations in the IEA but also in our non-proliferation efforts. I would urge that a Presidential determination be sought to the extent practicable on this issue to permit such a decision to be made before the end of this month.

~~CONFIDENTIAL~~

SUMMARY REPORT

UEA REQUEST FOR GOVERNMENT ASSISTANCE

I. Introduction

Uranium Enrichment Associates (UEA) for nearly two years has actively sought to establish a project for a large gaseous diffusion uranium enrichment plant. It has made substantial progress in establishing the technical basis for the project and has conducted extensive marketing activities with prospective domestic and foreign customers. A project financing structure (Figure 1) has been developed conceptually and employed as a basis for the UEA marketing efforts. It has been determined by UEA and its financial advisors (Salomon Brothers) that, due to the unique nature of the project (secret process, no commercial history, very large capital requirements), it cannot be financed and operated commercially without certain forms of Government assistance and assurance.

The Project Board - Private Uranium Enrichment, through extensive discussions with UEA and others, has evaluated the types of assistance requested and the likely (and maximum theoretical) obligation that could result to the Government. It is accepted by UEA that costs incurred by the Government in providing the requested assistance would be repaid by UEA, except in one case in which the Government might acquire a salable asset. This brief summary provides highlights of the Board's evaluation of each requested area of assistance. UEA has stated that there may be alternative ways in which the objective of commercial project financing can be achieved and that its positions, as expressed to the Board, are open to further discussion. The Board, however, has been obliged to evaluate UEA's expressed positions as to the Government assistance required to insure project viability.

In addition to evaluation of the assistance requested from the Government, the Board considered other key aspects of the project including: prospects for domestic equity partners, anti-trust review considerations, other regulatory considerations, market prospects both domestic and foreign, project financial structure and the conceptual financing plan which is based upon the assumed type of Government assistance, alternative ways of resolving some of the problems which are raised, project power supply, project completion schedule and time schedule for obtaining the necessary legislative authority. Board review and discussion of these items is contained in its final draft report.

FIGURE 1

CONCEPTUAL FINANCIAL STRUCTURE
(ASSUMES $5 BILLION PROJECT COST)

DOMESTIC 40 PERCENT

- TOTAL SHARE - $2 BILLION
- 15 PERCENT EQUITY - $0.3 BILLION
  - 4-8 U.S. COMPANIES
  - SWU PRICE STIPULATES MINIMUM 15 PERCENT NET RETURN
- 85 PERCENT DEBT - $1.7 BILLION
  - DEBT SECURITY
    - LONG-TERM CONTRACTS
    - GOVERNMENT ASSISTANCE PACKAGE
  - SWU PRICE REFLECTS COST OF DEBT, EQUITY AND GOVERNMENT ASSISTANCE

FOREIGN 60 PERCENT

- TOTAL SHARE - $3 BILLION
- 85 PERCENT DEBT, 15 PERCENT EQUITY
- THREE OR MORE FOREIGN PARTICIPANTS
- INDIVIDUAL CAPITAL PROVIDED:
  - FROM FOREIGN SOURCES
  - PROPORTIONAL TO OFFTAKE
  - THROUGH IRREVOCABLE "LETTER OF CREDIT" HELD IN U.S.
- SWU PRICE REFLECTS INDIVIDUAL SERVICING OF CAPITAL
- TOTAL FOREIGN VOTING RIGHTS
  - LIMITED TO 45 PERCENT
  - BALANCE OF EQUITY - "PREFERRED STOCK"

II. Requested Government Assistance

A. Performance Assurance

UEA seeks an adequate supply of specialized materials and components (e.g., barrier) now manufactured by ERDA plus Government technical expertise and assistance to assure that the technical basis of the project is sound and that obstacles can be overcome most effectively in order that the project will perform technically. Recognizing that this approach would, in effect, make the Government a technical partner in the undertaking, UEA is willing to accept whatever Government overview, including "veto power", is necessary to protect the Government's interest during design, construction and startup. The Board's best judgment of the cost of needed Government functions is $150-$200 million; this includes costs of a 100-man Government review team. It is assumed that Government costs would be reimbursed on a current basis during construction.

Problems of risks involve potential early authorization of additional Government barrier production capacity, ERDA scarce manpower allocations between CIP/CUP and the UEA project, Government liabilities under warranties for its products and the practical problems which could be created by dual project controls (increases in cost, schedule delays).

B. Completion Guarantee

1. Contingent Government Loan Guarantee

UEA seeks an arrangement which will assure its ability to borrow funds for the project. According to its concept, the chief condition to invoking the contingent loan guarantee would be an inability of UEA to market securities at an interest rate equivalent to an "A" bond rating or above. At that point the Government would back subsequent UEA securities through a loan guarantee during the construction period to assure their marketability. This would apply only to the domestic debt portion (85% of 40%) up to a project cost limit. This limit would be based upon a joint UEA/ERDA estimate of ultimate project cost, escalated in an agreed manner and with application of a contingency factor appropriate to the quality of the estimate, plus an additional overrun allowance. The loan guarantee would not apply to purely commercial debt already secured and all debts would be of equal stature. According to UEA, this feature is necessary to the financability of the project since it will assure UEA's ability to obtain sufficient funds to complete the plant (and thereby assure customers, PUC's and lenders of an operable plant). In concept it would also minimize the amount or duration of Government involvement in project financing. While there would be no direct cost to the Government (except in the event of default),

the loan guarantee feature may increase Government debt and might possibly impact the Federal debt ceiling.

Problems or risks involve the following:

- The plan is preliminary and has not been reviewed by Salomon Brothers marketing staff or tested in the marketplace.

- The contingent loan guarantee may adversely influence (Treasury initial reaction) or imporve (Salomon Brothers view) the availability of purely commercial debt. If the former, the Government runs the risk of guaranteeing most, if not all, domestic debt.

- Domestic utility rejection of UEA contracts, especially "hell or high water" provision, would erode basis for securing and servicing long-term debt. This could lead to Government guarantee of all domestic debt for the full 25 year term, if the project proceeded at all. (There is evidence that some may accept, others may reject, this provision.)

- The uncertainty of foreign participation up to the 60 percent target, and the potential inability of UEA to compensate with increased domestic capital, raises the potential Government liability, if the project proceeds.

2. Overrun Funding

UEA requests assurance of funding overruns, in the event the project cost limit is exceeded, by further Government guaranteed loans, or direct loans to be repaid by UEA, possibly after payment of private debt. UEA would undertake to match such funding with 15 percent equity funds on a "best efforts" basis. According to UEA, the overrun feature would assure its ability to obtain the large amounts of debt and equity capital required for the project which otherwise would be impossible since it will be necessary to employ a project cost estimate based only upon conceptual design. The costs of such assurance are probably zero if, as is likely, Government guaranteed loans would be involved, since in the absence of a condition of "economic frustration" (see below), one can safely assume that successful completion of the project is technically feasible. However, there is a potential budgetary impact of up to $2 billion which represents a 40 percent overrun.

With respect to problems or risks, there is great doubt that open ended assumption of funding overruns by the Government probably would be approved by Congress. Even if overrun funding were tied to a limit, it would tend to reduce credibility of project estimate

limit to the Congress and endanger approval. UEA's lack of firm commitment to provide additional equity in the event of overruns to maintain 85 percent debt/15 percent equity ratio may be unacceptable to Congress and it eliminates a risk incentive to UEA for efficient management and control of costs. There is some verbal evidence that UEA may be willing to make a stronger commitment in this area than it has so far made to the Board.

3. Economic Frustration

UEA requests Government assurance against risk of "economic frustration" of the project, i.e., unacceptable postponement of return on, or recovery of, equity due to (1) completion of plant delayed beyond some agreed relatively late date, (2) prohibition or indefinite suspension of consturction or operation by judicial or administrative action or (3) other causes which effectively prevent economic realization of the project, such as inability to obtain power. In such event, the Government would assume U.S. debt and provide "fair compensation" to U.S. equity investors and would assume control of the project in order to bring it to a successful conclusion. According to UEA, they might not be able to obtain necessary debt-equity capital in the face of such risk without this assurance. The costs to the Government could range up to all domestic capital, i.e., 40 percent of the project costs.

With respect to problems or risks, in the event of "economic frustration" due only to unacceptable delay in completion of the project, U.S. could then become an equity partner with other foreign equity partners, thereby possibly presenting political problems in the administration of the project. There exists a potential Government liability for all domestic capital with a risk of not having an operable plant, although with Government's participation in key phases of the project such risk appears remote. The concept may present difficulty in negotiation of mutually acceptable criteria for "economic frustration" and "fair compensation". Non-assumption by equity capital of the risk of economic frustration would imperil Congressional approval, remove a risk incentive to UEA for efficient management and create a significant precedent regarding Government assistance.

C. Stockpile Backup and Load Leveling

UEA requests access to the Government SWU stockpile, on a lease or purchase basis, for up to two million SWU's over the first four years after startup, and nine million SWU's at the outset and decreasing to zero five years after the plant achieves "successful" operation.

Additionally, ERDA is requested to agree to purchase up to a total of six million SWU's (UEA estimates four million most likely) during the first five-year operational phase of the plant. The amount would be agreed five years in advance of the proposed first delivery. Prior to firm-up, UEA would attempt to sell the excess to others. These features will permit UEA customer contract needs to be met in the event of startup delays or interruptions and will levelize the commitments on the plant due to irregular early customer demand prior to achieving a steady-state operation. If the ERDA purchase obligation were four million SWU's, and on a time schedule presently viewed as most likely, cost to the Government could be $300-$500 million. In a time frame that would require Government feed purchases, this could rise to $600-$1400 million. This asset should, however, be resalable.

Problems and risks in this area concern the expected adequacy of the Government SWU stockpile in relation to all anticipated needs and the probable need, in the late 1970's, to seek appropriations for purchase of SWU's and any needed feed. On the other hand, use of surplus Government feed in the UEA plant, if possible timewise, represents an opportunity to nearly double the amount of enriched uranium produced.

D. Termination of ERDA Contracts

UEA requests that ERDA terminate a sufficient number of its long-term enrichment services contracts with utilities to assure that the UEA plant would be effectively sold out - on the assumption that terminated customers would then sign with UEA. The Government has already agreed that it would honor voluntary requests for termination. Involuntary termination requires that certain criteria be met. However, on the assumption that the criteria to allow the necessary terminations would be met, there would be no cost to the Government since operating conditions in Government plants would be adjusted to compensate.

Problems and risks relate to domestic requests for voluntary termination being tied to the imposition of an ERDA commercial SWU price, to doubts as to whether involuntarily terminated customers would sign with UEA, and to possible need to make a formal "reasonableness" finding concerning UEA contract terms and conditions. Further, termination of ERDA contracts beyond a certain point would result in uneconomic costs to remaining ERDA customers.

E. Defaulting Utility Protection

UEA requests that, in the event of a default by a domestic utility and inability of UEA to sell the services to others, the Government assume the obligations of the defaulting utility up to a limit of 50 percent of the domestic utility share of plant output. ERDA's

obligation would terminate when a substitute customer is found or their long-term debt retired, whichever is earlier. Any amounts recovered from defaulted utilities would accrue to ERDA. UEA's objective is to protect the debt and equity investors by assuring revenues to cover operating costs, debt requirements, and a 15 percent net return on equity. Assumption of obligations by ERDA overcomes the utilities' refusal, because of legal and financial reasons, to accept increases in costs caused by a utility defaulting its obligations (cross-guarantee of another utility). The potential cost to ERDA (assuming $100/SWU plus feed) for each large reactor of a defaulting utility could be in the order of $20 million a year or $500 million over the maximum 25-year period. Maximum exposure for 50 percent of the domestic utility share of the project would be about $360 million a year or $ 9 billion over the 25-year period. Also, ERDA would be required to maintain a contingency stockpile of feed material as insurance even if no utilities default.

With respect to problems and risks, it is not apparent that a "cross-guarantee" by ERDA is necessary because the potential risk, although large, is not likely to materialize as (1) the utility industry is not apt to crumble, (2) the reactor would likely still need fuel (even if the utility were bankrupt), and (3) there is a growing demand for power which would suggest that enriching services could be marketed elsewhere. It would appear that assumption of the obligations of defaulting utilities places risks on ERDA which could and should be assumed by the UEA equity investors and/or UEA customers, especially in view of the low probability of there being a problem in this area.

III. Government Assistance Budget Impact

The summary shown in Figure 2 is the Board's collective judgment regarding the likely impact of those elements of Government assistance which UEA feels are necessary to insure project viability.

FIGURE 2

GOVERNMENT ASSISTANCE BUDGET IMPACT
($ Millions).

		Most Likely	Potential Maximum	
A.	Performance Assurance	150-200	150-400	Reimbursable, generally current basis
B.	Completion Guarantee	0	0-2000	Probably recoverable, econom frustration remote
C.	Stockpile Backup - Load Leveling	300-500 (no feed)	600-1400	Purchased SWU's represent a resalable asset
D.	Termination of ERDA Contracts	0	0	Operating conditions adjuste
E.	Defaulting Utility Protection	0-40 (1 contract for 2 years)	0-9000	Potential maximum obligation if ½ of all domestic custome default for full 25-year peri

MARKET ASSESSMENT

DOMESTIC

- Demand is consistent with the 40 percent of plant output target assumed by UEA.

- Four "Letters of Intent to contract" have been received from domestic utilities; three-four more expected shortly, with all "intent" letters expected to total about 1.2 million SWU's/year.

- Remaining utility commitments probably dependant upon utility views of UEA contract (presently not positive).

- However, if Government support to the project is given, domestic customers are likely to follow.

FOREIGN

- Iran - Commitment likely for up to 30 percent of plant output or such less percent as U.S. Government policy may allow.

- Japan - Commitment of 22 percent of plant output probable if there is strong U.S. utility or Government support to the project.

- France - Commitment of 11 percent spoken of, but may well be contingent upon technology sharing and reciporcal ownership arrangement with EURODIF, thus highly questionable.

- West Germany - Commitment of 10 percent spoken of, but no solid information to assess probability.

- Others - Taiwan, Spain, Brazil, Australia possible; capital financing or other problems may be impediment.

- Conclusion - Given uncertainty of U.S. policy on allowable foreign participation, other foreign conditions, the timely firm achievement of the 60 percent target is doubtful thus jeopardizing timely achievement of "Go" decision (requires commitment to 75 percent of plant output).

GERALD R. FORD LIBRARY

This form marks the file location of item number 16

listed on the pink Withdrawal Sheet found at the front of this folder.

BUREAU OF OCEANS AND INTERNATIONAL
ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

January 17, 1974

MEMORANDUM OF TELEPHONE CONVERSATION

PARTICIPANTS: Christopher Makins
First Secretary, Embassy of Great Britain

Nelson F. Sievering, Jr.
Program Coordinator, OES/SCI

SUBJECT: UK Purchase of Soviet Uranium Enrichment Services Vice U.S.

Chris Makins telephoned late this afternoon to advise that the UK's Central Electric Generating Board (CEGB) has contracted with the USSR for enriching services for the supply of enriched uranium contemplated in the two conditional supply contracts offered by the USAEC last summer.[1] I said I didn't understand his emphasis on the conditional aspect of the contracts because President Nixon has assured all contract holders, conditional or otherwise, that their needs would be met; and, while a country who did not understand the complexity of the uranium enrichment business might seek to cover its conditional contracts I really didn't understand the UK motivation. Chris Makins responded that it is really just "dirty commercial business". The Soviets were offering firm contracts at attractive prices, something the U.S. was not now doing. I asked whether the contracts were long-term. He said it was his understanding that they covered the same quantities of fuel involved in the conditional contracts, but that he had no further details. The contract details would be furnished to COCOM.

He asked that this information, which he was conveying to a number of interested agencies, be held in confidence; that its announcement would probably be made on the occasion of the Prime Minister's visit to Moscow around mid-February.

---

[1] These two conditional enriching service contracts would have covered the long-term supply of enriched uranium for two 400-600 MW megawatt nuclear power plants and were open for signature by the CEGB until March 1975.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

MAY 6 1975

Signature

MEMORANDUM FOR THE PRESIDENT

FROM: JIM LYNN

SUBJECT: Further development of an alternative for provision of additional uranium enrichment capacity

The Administration must decide soon how additional national capacity for enriching uranium to fuel foreign and domestic nuclear power plants will be provided, in order to meet domestic needs and to retain our foreign markets.

In 1971, the Executive Branch established a policy of having private industry, rather than the Federal Government, provide additional uranium enrichment capacity when needed. Last September, the Secretary of State became concerned that this policy might not provide capacity in time to serve both domestic and foreign policy interests. You approved a study of the issue which will be completed within the next few weeks.

This memo is to (a) report on the status of the three alternatives being explored, and (b) request your decision as to whether further work should now be undertaken which is essential to determine the viability of one of these alternatives.

The need for additional capacity

Three Energy Research and Development Administration-owned uranium enrichment plants have provided the basis for the United States' virtual free world monopoly on uranium enrichment services. ERDA's plant capacity is now fully committed. Western European interests are now moving to build two large plants, but this need not prevent the U.S. from capturing a substantial share of the foreign market, provided we can move ahead this fall with the detailed planning necessary to have additional capacity on line in the mid-eighties.

Meeting future demand, both foreign and domestic, is expected to require about ten U.S. plants equivalent in capacity to any one of the three existing plants. These new plants would cost about $3 billion each in 1975 dollars.

Alternatives being evaluated

Studies - under ERDA and NSC auspices - have largely been directed toward the evaluation of three alternatives:

1. To enable private industry to move immediately to build additional capacity, and subsequent plants as necessary.

2. To have ERDA build the next increment of additional capacity at a cost of about $3 billion (in 1975 dollars), while continuing to pursue the private entry objective for subsequent plants, beginning about 1979, using new technology now under development by ERDA.

3. To abandon the private entry objective forthwith and have ERDA build additional plants as necessary.

Status of 1971 policy and the response to it

Under the first alternative, a consortium (UEA) composed of Bechtel and Goodyear has already developed plans, with foreign financial participation, to build a $3 billion plant. But UEA is finding it necessary to seek some degree of Government backing or recoverable assistance to secure private financing and to accommodate its domestic utility customers. Private financiers want rigorous conditions of sale to justify a high percentage of debt financing, but such rigorous conditions are difficult for the electric utilities because of their current financial condition.

Dr. Seamans' evaluation of the UEA proposal is that the UEA plan can be made to work if it has adequate Government support; but ERDA is concerned about how much Government assistance would be reasonable, how acceptable that assistance would be to the Congress, and how long it would take to consummate arrangements. (However, detailed negotiations with UEA have not yet begun.) ...Dr. Seamans would prefer Alternative 2, but in a version (yet to be fully developed) which would split the next increment of capacity between (a) Government construction and (b) later, private construction using a new enrichment technology still under development by ERDA.

Having met personally with the top people at Bechtel and Goodyear, I am impressed with their aggressiveness and tenacity, despite

formidable obstacles. However, UEA has already invested nearly $9 million, and its willingness to persevere is beginning to wear thin. Moreover, it is inherently important for the Nation that the issue be resolved soon one way or another, so that the U.S. can meet its own needs and also convince other countries that we will continue to be a reliable supplier of enrichment services. Absent some signal from the Administration and some degree of progress on the legislative front, I believe that the UEA consortium may expire by mid-summer.

I recognize that congressional approval of an assistance package will not be easy to achieve, even though the alternative is early appropriation of several billion dollars for another Government plant. Nevertheless, private entry has strong attractions, as follows:

- uranium enrichment is the kind of activity which need not remain in the public sector;
- UEA is ready and willing to move, given strong encouragement and some limited assistance;
- success of the UEA venture would, I believe, serve to "break trail" for subsequent private ventures, three of which are already in the planning stages; and
- additional Government construction now might discourage future private involvement.

The immediate problems

Full evaluation of the UEA venture (in effect, Alternative 1) depends upon finding out through expedited, serious negotiations, what UEA's minimum requirement for Federal assistance would actually be. Unless this is done, time will run out without Alternative 1 being in shape for decision.

A related problem is that of who will conduct such UEA negotiations. ERDA is the logical agency to do this, but Dr. Seamans appears not comfortable about having the responsibility for the major effort that would be required to bring about private industry's construction of the next plant, because of his doubts about the UEA venture. A decision to proceed with negotiations should be accompanied by a directive to establish a negotiating team that is fully committed to a major effort to elevate the UEA venture to a real option.

Since I believe that there is no substitute for ERDA's mainline involvement, I believe the best solution would be to give co-responsibility to Dr. Seamans and Frank Zarb, who was extensively involved in the private entry objective when he was in OMB.

In my judgment, such negotiations will not proceed in the expedited, serious way required unless you signal that it has an important priority. Accordingly, I recommend you sign the attached memorandum to Dr. Seamans and Frank Zarb.

Attachments

THE WHITE HOUSE

WASHINGTON

MEMORANDUM FOR FRANK ZARB

FROM: THE PRESIDENT

SUBJECT: Negotiations with Private Consortium for Uranium Enrichment Venture

I am advised that one of the three policy alternatives being explored to provide the needed additional national capacity for enriching uranium is that of immediate private entry. I also understand that one consortium, Uranium Enrichment Associates (UEA), is now prepared to proceed with a private venture, provided that reasonable Government assistance is offered. In order that this alternative may be properly developed for my consideration, as against other alternatives, I believe that negotiations should now be initiated with UEA directed toward determining the minimum level of Government assistance needed to realize the venture--if that alternative were to be chosen. Since time is of the essence in moving forward with this problem, such negotiations should proceed immediately and effectively.

Because you have already had extensive prior experience in dealing with UEA on the subject of private uranium enrichment and in view of FEA's responsibilities for developing national energy resources, it is appropriate that you work with Dr. Seamans in completing the necessary negotiations. I would expect ERDA to continue to provide the necessary staff assistance to ensure expeditious handling of these negotiations.

cc: Robert Seamans

THE WHITE HOUSE

WASHINGTON

MEMORANDUM FOR ROBERT SEAMANS

FROM: THE PRESIDENT

SUBJECT: Negotiations with Private Consortium for Uranium Enrichment Venture

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Because Frank Zarb has already had extensive prior experience in dealing with UEA on the subject of private uranium enrichment and in view of FEA's responsibilities for developing national energy resources, it is appropriate that you work with him in completing the necessary negotiations. I would expect ERDA to continue to provide the necessary staff assistance to ensure expeditious handling of these negotiations.

cc: Frank Zarb

Uranium Enrichment

1. The U.S. recognizes the important role nuclear power plays in reducing the world's reliance on oil and other fossil fuels and the growing demand for nuclear power in many nations. With respect to the provision of uranium enrichment services for nuclear power plants, I wish to emphasize that the United States will continue to be the major and most reliable supplier of such services.

2. Our existing capacity, including expansion already underway, is now fully committed to foreign and U.S. domestic customers. This condition has clearly been anticipated, and ever since 1971 activity has been underway to plan for the very large expansion of U.S. capacity which must occur over the next two decades.

3. Several private ventures are active in the U.S., using either gaseous diffusion or gas centrifuge technology. And, as a matter of public policy, we want to provide for uranium enrichment by private industry as soon as possible. Concurrently, the U.S. Government is pursuing the development of advanced uranium enrichment processes. (covered below)

4. The increased use of nuclear power is a central element in my country's plan for meeting its energy needs. For this reason alone, a major expansion of our uranium enrichment capacity will be necessary.

5. We know that nuclear power is equally central to the energy strategies of numerous other nations, and we believe that we can be very useful in helping those nations to meet their needs for uranium enrichment services. The U.S. recognizes its responsibility to continue the provision of such services under long-term orders. Moreover, the sale of uranium enrichment services is for us an important export business. For these reasons, I can assure you that the U.S. as a nation is firmly committed to a substantial, timely and continuing expansion of its enrichment capacity.

6. The President presently has under consideration several alternative specific means of accomplishing expansion of U.S. uranium enrichment services. As soon as a choice is made, he will make appropriate recommendations to the Congress, and we expect that by mid-July a clear path will have been defined. In any event, the United States Government will take steps to assure that the U.S. will remain in the role of the major, reliable supplier of world-wide needs for enrichment services. We expect that negotiations on firm contracts between

producer and consumer will be initiated well before the end of this year.

7. The President would welcome the cooperation of foreign entities in these developmental ventures in accord with principles agreed on by the International Energy Agency.

May 24, 1975

MEMORANDUM TO: MAX FRIEDERSDORF

FROM: JACK MARSH

As a result of the Uranium Enrichment meeting, it is of highest priority that we quietly conduct a survey of Hill leaders in the nuclear energy field as to Congressional response on various nuclear energy proposals, which in an oversimplified way might be turned:

1) Private sector approach

2) Federal Government approach

3) Quasi-Federal-Private approach

This relates precisely to the field of uranium enrichment, and a proposal now under consideration in Domestic Council, OMB, ERDA. We should be prepared to respond at a meeting on the subject, chaired by the President, a day or so after he returns from Europe.

1) In order to make this survey, I would suggest that you obtain from either Cannon, Lynn, Zarb, Connor or Seamans a summary fact sheet that states the question and proposes the options.

2) In addition to members of the Joint Committee on Atomic Energy, I would suggest the leadership of the House and Senate, the leadership of Interior Committees. Also I would suggest some soundings with other opinion leaders in the House and Senate to include those identified with environmental groups. However, because of the sensitivity of the subject, I urge discretion in these soundings, which would be more informal and in less detail than those directed to the leadership. In all efforts before any inquiry is made to anyone, we should meet and discuss very carefully who is to be approached and how.

3) Because of their background, I would suggest a call to Craig Hosmer and Chet Holifield.

4) It is my view that it would be important to touch base with several key staffers, who have an expertise in this subject.

5) In conducting this survey, and to cross check your responses, you may wish to draw on John Kyl at Interior; Holly Cantus, ERDA; Paul Cyr, FEA; Jim Sparling, Commerce.

Considering the nature of the subject, most persons contacted should be requested to treat the inquiry on a confidential basis. Because of the recess, I suspect that a number of these contacts will have to be made by phone.

A final word of caution - this is an immbasely complex subject, therefore, it is essential that in discussions with the Hill, the facts be objectively stated in sufficient detail to get a meaningful response.

cc: DRumsfeld
JOM:cb

May 24, 1975

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cc: DRumsfeld
JOM:cb

THE WHITE HOUSE

WASHINGTON

MR. MARSH:

Max dropped off the attached - it's an early draft decision memo on Uranium Enrichment.

Put back to reading file.

M

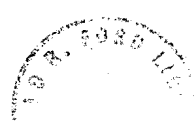
Decision Memo Draft

5/29

Attached is a very rough draft of a potential decision memorandum. It is based on only preliminary information and discussions with the task group. It is far from complete and, as it stands:

- does not necessarily reflect anyone's views.
- has noone's approval
- contains unnecessary information and omits other information that will have to be added.

Therefore, at this point, it is furnished only as a rough outline to get senior advisers' views as to whether the right issue, alternatives, considerations and facts are being assembled.



DRAFT #2 5/29/75

DECISION

MEMORANDUM FOR:

FROM:

SUBJECT: PROVIDING ADDITIONAL U.S. URANIUM ENRICHMENT CAPACITY

The Issue

The issue for your decision is whether to propose legislation which contemplates construction of the next increment of U.S. uranium enrichment capacity (a) by the Uranium Enrichmen Associaties(UEA) in a privately owned plant backed up by the potential for Federal by-out prior to completion, or (b) by a Government owned plant.

Both alternatives contemplet that construction of succeeding enrichment plants would be by private industry, probably with the initial plants subject to the same kind of conditions now proposed for UEA.

None of your advisers believe that you should consider proposing that all future enrichment capacity be in plants owned by the Government or a Government corporation. However, this alternative needs to be kept in mind because (a) it undoubtedly will be considered by the Congress, and (b) such an alternative provides a useful baseline for evaluating the the two alternatives presented for your decision.

Developments since your May 23 Meeting.

Since your last meeting with senior advisers on this subject:

- Negotiations have been conducted with UEA officials and their financial advisers -- which have resulted in a substantially different proposal from that previously discussed by UEA and ERDA. It is discussed under Alt. #1, below.

- The alternatives have been refined further and evaluated.

- More data have been assembled to respond to questions you have raised, including:
  - A comparison of the relative status of diffusion and centrifuge technology. (Tab A)
  - Projected world supply of enriched uranium (Tab B)
  - Projected world demand for enriched uranium(Tab C)
  - Extent of private industry interest in proceeding with centrifuge demonstration plants(Tab D) (To be supplied by ERDA).
- The Congressional Relations staff has assessed the attitudes of Congressional leaders(Tab E - to be supplied by Congressional Relations staff). Potential Congressional acceptance is one of the considerations discussed below in evaluating the alternatives.

The Alternatives

The principal features of the two alternatives are as follows:

- Alt. #1. UEA construction of a free standing 6.5 to 9 million unit diffusion plant. This would be followed by industry construction of succeeding plants (using either diffusion or centrifuge technology, as determined by industry. The arrangement would work as follows:

  - UEA and future enrichment firms would:
    . provide the organization, management, financing, plant site, power, customers.
    . Design,build and operate the plant.

  - ERDA:
    . transfers information on diffusion technology to the enrichers and receives a royalty payment (no new authority needed).
    . supplies and gives warranty for those materials for plant which are available only from the government. Enricher pays for these.
    . reviews and approves design of plant.
    . oversees construction and management, much as it would now if ERDA were going to own the plant.
  - New legislation would be needed to authorize the transfer of ownership of assets and liabilities of the enrichment firm to the Federal Government at any time prior to completion of the plant, with:
    -- either the enrichment firm or the Government able to request the transfer.
    -- with amount of payment depending upon the circumstances -- varying from essentially full repayment of U.S. equity investors funds to no repayment(total loss of equity).
    -- ownership then resting with the Federal government just as it would if the enterprise began with the intent of Federal ownership.

This alternative is described in more detail at Tab E, to which is appended the specific wording of the UEA proposal. (To be supplied by ERDA)

- Alt. #2. ERDA would contruct an add-on diffusion plant of up to 5 million units adjacent to its existing 9 million unit plant at Portsmouth, Ohio. This would be followed by private industry construction of centrifuge plants, starting with competitive proposals from firms that would be prepared to build 1 million unit demonstration plants which are capable of being expanded to 3 million units. Depending upon the speed with which these plants could be built and production begun, it may be possible to reduce the size of the add-on ERDA-owned diffusion plant--perhaps even to zero. This approach would work as follows:
  - Legislation and appropriations would be requested to permit ERDA to proceed with design, long-lead time procurement, and if necessary, construction of the add-on plant.
  - For the centrifuge followon plants, the overall approach would be much the same as that outlined for private enrichers under alternative #1.
  - Legislation would be needed to authorize the transfer of ownership.

This alternative is discussed in more detail at Tab G (to be supplied by ERDA).

Considerations bearing upon your Decision

A number of considerations are essentially equal with respect to either alternative and need not be considered further here. These include:

- The date when the next increment of capacity must be on line (now estimated at 1983).
- Nuclear materials safeguards(non-proliferation) in terms of both the physical security of the plant and Federal control over exports.
- Impact on the Government's stockpile of enriched uranium.
- Customers for the next increment of capacity which are expected to be predominantly foreign.
- Risk of not having the next increment of capacity on line when needed.
- Opposition from nuclear power opponents -- who may try to prevent any new increment of capacity as another way of slowing nuclear power(but who will be vulnerable to the answer that failure to build means dependence on foreign sources of enriched uranium).

Other considerations are important and the relationship to each alternative is discussed below:

1. Date when the U.S. will be perceived by potential foreign customers as a reliable supplier of uranium enrichment services. An early date is important to the nation's ability to obtain a large share(target 50%) of the foreign market. There are some differences between the two proposals for the next increment--in terms of when all arrangements will be firm. In the case of alternative #1, the foreign perception would depend heavily on how it was explained. The steps necessary and probable completion dates for the two alternatives are as follows:

	Alt #1 UEA	Alt #2 ERDA
. Propose legislation	6/30	6/30
. Congressional authorization		
. UEA obtain equity partners		na
. UEA obtain foreign equity and customers		na
. Obtain committment for electrical power		
. UEA obtain domestic orders		
. Plant design completed		
. NRC construction license		na
. Construction begins		
. NRC operating license		na
. Production begins		

In summary,
. Under alternative 1,.....

. Under alternative 2,....

2. Impact on the ability to achieve(and the timing) the objective of having indsutry build and operate succeeding increments of enrichment capacity.

Under alternative 1,....

Under alternative 2,....

3. Federal Budgetary impact(Budget authority and outlays). Tab H (to be supplied by OMB and ERDA) contrasts the budgetary impact of the two proposals over the next ____years. Briefly,

Under alternative 1,....

Under alternative 2,.....

4. Chances of Congressional acceptance of the proposal, and the probable impact of the timing of approval.

Under alternative 1,....

Under alternative 2,....

5. Ability to accommodate committments to foreign nations to permit non-discriminatory participation in the financing of enrichment capacity.

Under alternative 1,....

Under alternative 2,....

6. The risks and how they are shared from the viewpoint of:
- Domestic utility customers...
- Foreign customers...
- Domestic equity partners...
- Potential financiers for debt...
- Potential enrichers....

(These considerations may be worked in at other points in the memo)

7. Other Foreign Policy Considerations(if any -- to be identified by NSC staff by 5/29)

Other Actions Affecting Uranium Enrichment that must be taken by the Administration

. Submission of Commercial charge legislation...

. Decision on "open season" and conditions for escaping from enrichment contracts with ERDA.

Recommendations

_____, _____, _____and _____recommend Alternative 1 because.....

_____, _____, _____and _____recommend Alternative 2 because.....

Decision

_____Alt #1. _____Alt #2.

TABS

A - Comparison of status of technology centrifuge and diffusion	(attached)
B - Projected world supply of enriched uranium	(attached)
C - Projected world demand for enriched uranium	(attached)
D - Extent of private industry interest in proceeding with centrifuge demonstration plants now	(to be supplied by ERDA)
E - Assessment of Congressional situation	(to be supplied by Max Friedersdorf
F - Description of Alternative #1 - UEA builds next increment, private industry succeeding units.	(to be supplied by ERDA)
Addendum to "F" - UEA's specific proposal	
G - Description of Alternative #2 - ERDA builds next increment, private industry succeding units.	(to be supplied by ERDA)
H. Federal Budgetary Impact	(to be supplied by OMB and ERDA)

TABA

1. Question

Compare the status of gas centrifuge technology to gaseous diffusion insofar as its present commercialization potential is concerned.

Answer

With over 30 years of large-scale operating experience and development, the gaseous diffusion process has proved to be a highly reliable and economical method of enriching uranium. The gas centrifuge process which has been under development for 15 years and is now approaching production capability appears to be economically competitive and has been shown to have certain advantages in commercialization potential.

Plant Size

Gas centrifuge plants can be economically built in smaller capacities than gaseous diffusion. This results from a higher degree of separation inherent in individual gas centrifuge equipment and the ability to more readily scale the plant to desired size. Gaseous diffusion, on the other hand, requires many stages to achieve enrichment and is dependent on large equipment to achieve economy. The scaling of gas centrifuge plant size permits consideration of many smaller regional gas centrifuge enrichment plants providing greater flexibility. Provided that a sound centrifuge sub-supplier industry has been established, construction of small increments of capacity may permit "tracking" the enriching service demand.

Power Requirements

The gas centrifuge process is shown to use about 10 percent of the electric power consumed by the same capacity gaseous diffusion enrichment plants. This results from the fact that the gas centrifuge process is inherently more energy efficient. The lower electric power requirement allows locating gas centrifuge enrichment plants without major dependence on large electric power systems and sources. Projections of operating costs indicate that gas centrifuge plant operating costs will be largely under the control of the operator. Because of high power consumption, a large portion of gaseous diffusion plant operating cost will be dependent on utility control.

Technology Potential

The capacity and performance of gas centrifuge equipment is currently limited by materials, fabrication techniques and the understanding of gas centrifuge theory. Further developments are expected to increase the capacity and performance of individual centrifuges. These improvements could be incorporated in operating enrichment plants during normal replacement of centrifuges. Gaseous diffusion technology, although not exhausted, is more mature and by its nature is more difficult and expensive to incorporate into operating plants.

Patent and Proprietary Incentive

Since the gas centrifuge process is new and has large potential for improvements, patent and proprietary opportunities are great. These opportunities are part of the reasons that industry participants are considering gas centrifuge for uranium enriching and serve to encourage further industrial entry into the field of gas centrifuge fabrication. In the gaseous diffusion process, the Government has developed to a highly sophisticated level and is the sole fabricator of key elements of the process. Therefore, the patent and proprietary opportunities in gaseous diffusion enriching are limited.

Reliability and Demonstrated Performance

Adequate reliability and performance of production type gas centrifuges has been demonstrated in test facilities. These tests will continue with current and advanced centrifuges in support of new enrichment plants. The gaseous diffusion process with 30 years of operating experience has demonstrated high reliability and performance. A significant part of the operating cost of gas centrifuge enriching plants is the replacement and repair of the high speed centrifuges, thus the cost of enrichment in these plants is sensitive to the centrifuge operating life. Operation of gas centrifuge enriching plants would assure a manufacturing market for centrifuge component suppliers. The projected gas centrifuge enriching plant economics are based on short operating life centrifuges. If the plant operator can increase the life by reasonable operating changes or improved centrifuges, the economics would improve.

Risk

The overall risks associated with new enrichment plants are higher with the gas centrifuge process since industry has never been called upon to supply large quantities of equipment and materials used in manufacturing gas centrifuges. On-going ERDA programs are providing industry with the technology that has been developed and assisting in promoting the expansion of necessary supporting industries until the market is established. The gas centrifuge process cost projections assume conservative operating life for centrifuges tending to minimize the risk of higher operating costs. More ERDA effort is currently directed toward gas centrifuge manufacture consistent with the development program. For a new, large gaseous diffusion enrichment plant, ERDA assistance would be provided to minimize the risk.

General

Considering the major advantages, it appears that the gas centrifuge process provides a more likely ability to achieve a competitive industry by permitting more entrants, more regional participation, more industrial involvement (including more labor), with reduced electric power constraints. The "spin-off" of new technologies such as high speed rotating components, balancing procedures and special fabrication techniques associated with the gas centrifuge can be of significant benefit to industry. The availability of this technology can serve to encourage industrial entry as a supplier. The use of the technology without compromizing security can serve to upgrade the Nation's overall industrial capability.

2. Question

What is ERDA's current estimate of the foreign and domestic enrichment services market?

Answer

Based on the April 1975 IEA forecast of world-wide demand, the requirements for enrichment services in millions of SWU with plutonium recycle and a 0.25% tails assay are given below. The U.S. requirements and the foreign market currently under ERDA enrichment services contracts are also shown, resulting in a net foreign requirement.

Requirements	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
World-wide	10	12	14	19	25	28	31	34	38	41	47	52	58	64
U.S.	5	7	7	9	11	12	13	16	19	21	24	26	29	34
Foreign Supplied by ERDA	4	4	4	6	8	9	11	10	10	11	11	10	10	10
Net Foreign	1	1	3	4	6	7	7	8	9	9	12	16	19	20

The U.S. requirements for enrichment services from new domestic enrichment capacity in millions of SWU with plutonium recycle and a 0.30% tails assay is given below.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
U.S. Requirements	--	--	--	--	--	--	--	0.2	0.7	3.2	5.0	8.3	11.6	15.6

TAB-B

3. Question

What is the present status of foreign enrichment supply? What information do we have on foreign customer preferring U.S. versus foreign supply sources?

Answer

Based on the April 1975 IEA forecast, the projected enrichment services from foreign plants in millions of SWU are given below. The U.S.S.R. capacity under contract is also included in the totals. The net foreign requirements from Question 2 are deducted from the total foreign capacity, resulting in a projected excess capacity. Additional foreign capacity is then included, resulting in a total projected excess capacity.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
U.K.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
URENCO	--	--	0.2	0.5	0.8	1.2	1.8	2.7	4.5	7.0	10.0	10.0	10.0	10.0
Eurodif-I	--	--	--	--	3.1	6.5	8.4	10.8	10.8	10.8	10.8	10.8	10.8	10.8
U.S.S.R.	0.5	2.2	2.6	3.1	4.1	4.1	3.1	3.1	3.1	2.1	2.1	2.1	2.1	2.1
Subtotal	0.9	2.6	3.2	4.0	8.4	12.2	13.7	17.0	18.8	20.3	23.3	23.3	23.3	23.3
Net Foreign Requirements	1	1	3	4	6	7	7	8	9	9	12	16	19	20
Excess Capacity	--	--	--	--	2	5	7	9	10	11	11	7	4	3
Additional Foreign Capacity														
Eurodif-II	--	--	--	--	--	--	--	--	3.0	6.5	8.5	10.0	10.0	10.0
South Africa	--	--	--	--	--	--	--	--	--	--	--	5.0	5.0	5.0
Japan	--	--	--	--	--	--	--	--	--	--	5.0	5.0	5.0	5.0
Total Excess Capacity	--	--	--	--	2	5	7	9	13	17	24	27	24	23

The foreign demand for enrichment services could increase due to lack of plutonium recycle, a reduced enrichment plant tails assay or a growth in the foreign demand for nuclear power. Moreover, working inventories and stockplies of enriched uranium to backup the operation of the foreign enrichment plants are unknown; these inventories and stockpiles could add to foreign requirements.

TMSC

A domestic private enricher must compete with foreign suppliers by offering more competitive contract terms and assured reliable supply of enrichment services. Since the U.S. technology, particularly for the gaseous diffusion process, is well advanced and proven, it should have a tendency for lower costs, other factors being equal. The U.S. has also been nondiscriminatory in the treatment of all customers, which has assisted in promoting sales of U.S. enrichment services throughout the world. A similar policy for domestic private enrichers may be assumed for the future.

Only about 2.7 million SWU of the capacity of the URENCO plant is committed. An attractive feature claimed by the owners of the plant is that only five years are needed to expand the capacity, so that demand may be closely tracked. The Eurodif-I plant is fully committed. The Eurodif-II plant has not begun to be committed; it is beginning to go through the French political process. A domestic private enricher could affect this plant more than the URENCO or Eurodif-I plants. The South African plant is tied to the South African supply of feed. Since feed may be in short supply on the world market, the South African plant may penetrate the enriched uranium market. It is unknown what further market penetration the U.S.S.R. will make.

Addendum to TAB F

5/28/75

A "transfer of ownership" involves assumption by the USG of the assets and liabilities of UEA and the controlling rights of UEA's domestic equity holders. This event may be triggered by the request of either UEA or the USG at any time prior to the enrichment plant achieving commercial operation. In the event of a "transfer of ownership," the following basis shall be employed to determine the appropriate degree of payment for USG assumption of such domestic UEA equity rights:

Fair compensation (as later defined) shall be paid by the USG for such rights in the event, as determined by the USG, that the proximate cause of the request for transfer of ownership was

1. failure of warranted USG technology to operate so as to permit the plant to achieve commercial operation within the agreed-upon time period and costs despite the best efforts of both UEA and the USG.

2. failure of necessary governmental licenses to be obtained in a timely manner so as to permit the plant to achieve commercial operation within the agreed-upon time period and costs despite the best efforts of both UEA and the USG.

3. interposition by the USG for national security reasons in the matter of contractual relationships between UEA and previously approved customers so

as to prevent the service of such customers to a degree which significantly threatens the economic viability of the project.

4. a matter of similar character as determined by the USG.

No compensation shall be paid by the USG for such rights in the event, as determined by the USG, that the proximate cause of the request for transfer of ownership was

1. gross mismanagement, or arbitrary and capricious action by UEA which significantly threatens the economic viability of the project or the reasonable reliability or assurance of supply to the customers, and following failure to correct the situation upon request by the USG.

2. a matter of similar character as determined by the USG.

In all other cases, the USG shall determine the appropriate degree of compensation for such rights recognizing the degree or lack thereof of UEA to reasonably foresee or deal with the particular situation.

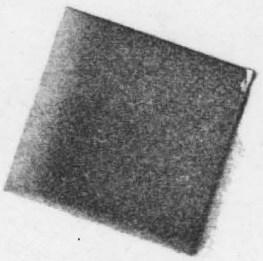
In any event, the preliminary determination (for fair, modified or no compensation) shall be made by ERDA and the basis thereof reviewed with UEA. Before becoming final, the determination shall be submitted by ERDA to the JCAE for a 90-day period during which Congress is in session.

The determination shall then become final unless, during such period, the JCAE shall dissent from such preliminary determination by recommending an alternative basis for such settlements to the Congress in the form of a joint resolution shall be affirmatively acted upon by the Congress during the then current session of the Congress.

THE WHITE HOUSE

WASHINGTON

May 31, 1975



MEMORANDUM FOR: PHIL BUCHEN
JIM CONNOR
MAX FRIEDERSDORF
ALAN GREENSPAN
BOB HARTMANN
HENRY KISSINGER
JIM LYNN
~~JACK~~ MARSH
BRENT SCOWCROFT
BOB SEAMANS
BILL SEIDMAN
FRANK ZARB

FROM: JIM CANNON

SUBJECT: DRAFT DECISION MEMORANDUM ON URANIUM ENRICHMENT

Enclosed at Tab I is the draft of a decision memorandum on the uranium enrichment issue. We are committed to have the memorandum ready for the President upon his return on Tuesday. Accordingly, would you please provide your comments, suggested changes, and position on the alternatives by 12 noon, Monday, June 2 so that we may make necessary revisions and prepare the final version.

Enclosed at Tab II are background papers which provide information that may be useful to you in reviewing the draft. These provide information on:

. The market for enriched uranium
. Status of centrifuge technology
. Private industry interest in building centrifuge plants

cc: Donald Rumsfeld

hand carried
6-2
11:20 am

DRAFT #6 5/31/75
12 noon

DECISION

MEMORANDUM FOR:

FROM:

SUBJECT: PROVIDING ADDITIONAL U.S. URANIUM ENRICHMENT CAPACITY

The Issue

The issue for your decision is whether to propose that the plant to provide the next increment of U.S. uranium enrichment capacity be:

1. A privately-owned plant financed, built and operated by the Uranium Enrichment Associates (UEA), backed up by a Federal committment to take over the plant, if necessary and under stated conditions, prior to its commerical operation; or

2. A government-owned plant financed by ERDA.

The next increment must use diffusion technology. Future increments are expected to use centrifuge technology.

Developments Since Your May 23rd Meeting

During your May 23rd meeting, you directed that discussions be held immediately with the UEA and that alternatives for a firm Administration committment by June 30 for the next increment of enrichment capacity be presented to you for decision by June 3. This memorandum completes those actions. Since May 23:

- UEA has submitted a substantially modified proposal for back-up Government support for their venture which appears to provide an acceptable basis for a legislative proposal covering future increments of capacity. This proposal (outlined below as Alternative #1) goes a long way toward meeting the major objectives on which Zarb, Seamans, Connor, and your other advisers all agree:

  - An early committment to build additional capacity so that the U.S. will be perceived as a reliable supplier of uranium enrichment services -- so that the Nation can obtain a large share of the world market and retain leadership in the nuclear field.

- Early private commercial involvement in the expanding market for uranium enrichment services -- ending the current Government monopoly.

- Minimized Federal budgetary impact, short and long term.

- Adequate Federal control over the export of uranium enrichment services to satisfy national security and international energy policy objectives.

There are risks connected with the new UEA proposal, involving principally:

- The question of Congressional acceptability.
- Some uncertainty that UEA can complete the necessary arrangements.
- Some delay, compared to a government plant.

However, the UEA proposal itself and additional steps developed by ERDA are designed to minimize these risks.

In view of the risks, there is also presented for your consideration the Alternative (#2, below) of a Government add-on diffusion plant -- which reduces the risks but which also reduces the chances of early private enrichment or minimum Federal budget impact.

Your advisers have also agreed that:

- the Administration should not consider proposing that all future enrichment capacity be in plants owned by the Government or a Government corporation, but this alternative needs to be kept in mind because it undoubtedly will be considered by the Congress, and it provides a useful baseline for evaluating the two alternatives presented for your decision.

- the legislative proposal covering the next increment of capacity should also provide for follow-on increments built by industry, probably with Federal backup arrangements similar to those proposed for UEA.

- the program to establish a competitive industry should be intensified to assure that several firms will be ready to build subsequent plants using centrifuge, and should also be announced on June 30.

- the legislative proposal should also authorize increasing the price of ERDA's government subsidized enrichment services to a level more nearly comparable to a commercial rate (from current $53 per unit to approximately $75)

Considerations Bearing Upon Your Decision

A number of considerations are essentially equal with respect to either alternative and need not be considered further

here. These include:

- The date when the next increment of capacity must be on line (now estimated at 1983).

- Nuclear materials safeguards (non-proliferation) in terms of both the physical security of the plant and continued Federal control over exports.

- Impact on the government's stockpile of enriched uranium.

- Customers for the next increment of capacity which are expected to be predominately foreign.

- Risk of not having the next increment of capacity on line when needed.

- Opposition from nuclear power opponents -- who may try to prevent any new increment of capacity as another way of slowing nuclear power (but who will be vulnerable to the counter argument that failure to build means dependence on foreign sources of uranium enriched services.

- The committment to permit foreign investment in an enrichment plant on a non-discriminatory basis.

Alternatives

The principal features of the two alternatives are:

. Alt. #1. UEA would construct a free-standing 7 to 10 million unit (measured in separative work units - SWU's - per year) diffusion plant in Alabama. Both this alternative and Alt #2 would be followed by industry construction of succeeding plants, using centrifuge technology, and with backup Government arrangements similar to those now proposed by UEA. Details of the alternative, including the new UEA proposal are at Tab A.

Briefly:

- UEA intends to build the plant at a cost of $2.75 billion (1974 dollars) with full operation attained in 1983; sell 40% of the output to domestic utilities and 60% to foreign organizations on long term contracts; and finance the venture on an 85%-15% debt-equity ratio. Investment will be 40% domestic and 60% foreign but U.S. owners will have, under law, 55% of the voting rights.

- The Government would sell to UEA essential components which are produced exclusively by the Government;

supply diffusion technology and warrant its operation; and provide access to the Government stockpile of enriched uranium to balance against potential start-up problems. The Government would be paid at cost for components and technical assistance and receive a royalty for the technology.

- UEA proposes that, prior to commercial operation, there be available authority for the Government to buy out UEA if the venture threatened to fail -- at the call of UEA or the Government, and with compensation to UEA ranging from full reimbursement to total loss of its equity interest, depending upon circumstances leading to the potential failure.

- If it became necessary to buy out UEA, control of this multinational corporation would then rest with the Federal government, much as it would if the enterprise had been launched as a Federal project.

To minimize the risks of delays in UEA's completion of its organizational, financial and design steps, and inadequate national committment to new capacity in the eyes of foreign customers (because Congress may be slow to approve such a novel approach), ERDA proposes:

- A letter agreement with UEA, under existing authority, to permit UEA to proceed about July 1 with preliminary design and with financial and other arrangments.
- Assurances (perhaps a Presidential statement) to domestic and foreign customers that orders placed with U.S. suppliers would result in assured U.S. supply -- either through a successful UEA project or through the U.S. Government.
- These steps be implemented only after consultation and ERDA exchange of letters with the Joint Committee on Atomic Energy.

ERDA will look for additional steps that might be announced on June 30 to help assure industry an adequate market, so that the private centrifuge program moves ahead quickly.

Alt. #2. ERDA would construct a $1.2 billion diffusion plant with a capacity of up to 5 million units as an add-on to its existing 9 million unit plant at Portsmouth, Ohio. This would be followed by private industry construction of centrifuge plants, starting with competitive proposals from 3 or 4 firms. This alternative would involve a request to Congress for:

- authorization and appropriations (beginning in FY 76) for construction of the add-on diffusion plant.

- authorization for Federal Government back-up arrangments for centrifuge plants like those proposed by UEA for the diffusion plant. (This facet would parrallel the succeeding centrifuge plant aspects of Alternative #1.)

This alternative is presented in more detail at Tab B.

Arguments

. Alternative #1: (Immediate privatization)

- For
  . Maintains momentum built up over the past 3 years under an Executive Branch policy committed to having industry build the next increments of capacity.
  . Takes the major step necessary toward achieving the objective of a private, competitive enrichment industry; in effect "breaks trail" for subsequent private plants.
  . Minimizes the Federal busget impact in the next few years by avoiding a Government plant -- assuming buy-out alternatives are summarized at Tab C.
  . Provides an adequate signal to foreign customers of U.S. committment to be a reliable supplier, and adequate control over exports to meet national security and international energy goals.
  . Constitutes a bold step, demonstrating innovative leadership.

- Against
  . If UEA fails, the Government would end up with a useful free-standing enrichment plant whereas without the privatization attempt we would have built a smaller add-on plant.
  . If buy-out were required because UEA cannot obtain necessary licenses (e.g., because of environmental or safety) -- an event which is considered unlikely -- it is conceivable that the Government would choose not to override the objections and not to proceed to operate the plant.
  . Congressional approval will be more difficult to obtain than for a government-owned plant, and will take longer (probably by 2 to 3 months).
  . We will not know for another 7 months whether UEA will be successful in putting its deal together (getting foreign and domestic equity partners, deft financing and customers).
  . It may be viewed as favored treatment for one firm.

. Alternative #2 (Government Plant)

- For
  . Better chance of early Congressional approval.
  . Better chance of being perceived as a firm U.S. committment to be a reliable supplier, and at an earlier date.
  . Smaller diffusion plant will reduce the likelihood of taking up some of the market that could otherwise be available for early starts on centrifuge plants.

. Somewhat easier to assure export controls necessary to achieve safeguards and international energy strategies.

- Against
  . The major step that must be taken to achieve commercialization would be deferred and the policy of the past three years reversed, leaves doubts in industry as to whether any future attempts would be considered credible.
  . Loss of momentum (UEA would fold). The present opportunity for private entry would be lost.
  . Most obstacles and objections now being raised may reappear when the next opportunity emerges. Further, at that time, private entry will be even more difficult because of the need to use new technology (centrifuge).
  . There is no assurance that a 5 million unit diffusion plant would be adequate to get us to the stage of centrifuge demonstration plants, thus requiring a larger government diffusion plant add-on.
  . Domestic electric utilities have profited from the existing Government monopoly and would prefer to have it continue. Committment now to another Government plant would strengthen their hopes that the present Government monopoly can be perpetuated.
  . Federal budget impact, particularly through 1981 (Details at Tab C).

Assessment of Congressional Outlook

Tab D (to be provided Monday by the Congressional Relations Staff) summarizes the assessment of the Congressional Relations staff of the outlook for the alternatives. We expect it to show that Congressional leaders in the nuclear areas are prepared to support expansion of the nation's uranium enrichment capacity. Whether they will support a private approach as contrasted with a government approach is thus far unclear. What is clear is that the major disagreement will be between the nuclear versus the non-nuclear forces rather than the public versus private issue.

Recommendations and Decision

_____ Alt #1. UEA proposal.

_____ Alt #2. Government plant.