The original documents are located in Box 18, folder "Nuclear Fuel Assurance Act: American Nuclear Energy Council Newsletters and Mailings" of the Loen and Leppert Files at the Gerald R. Ford Presidential Library.

Report to the Congress

American Nuclear Energy Council
1750 K Street, N.W.
Suite 300
Washington, D.C. 20006
202/296-4520

CRAIG HOSMER
PRESIDENT

No. 3

February 1, 1976

NEW URANIUM ENRICHMENT CAPACITY

Prompt Congressional Action Urgently Needed

"Because these enrichment facilities require long lead-times of 7-8 years to construct and reach operational capability, a decision must be made now on how to add the next increment of capacity if that facility is to be in service by 1983-84."

Dr. Robert C. Seamans, Jr., Administrator,
Energy Research and Development Agency
December 2, 1975

Penalties for Failure by Congress to Act Promptly

- Surrender of U. S. nuclear power option
- Increasing dependence on costly foreign oil imports
- More costly fuel bills
- Weakened national posture vis-a-vis oil exporting countries
- Possible energy shortages and electricity recession
- Abdication of American nuclear stewardship
- Loss of influence for safeguards and against proliferation
- Loss of $ billions in balance of payments earnings

→ ONLY WITH NUCLEAR FUEL CAN THERE BE NUCLEAR ELECTRICITY

(Details inside)

C O N T E N T S

▶ O N L Y W I T H N U C L E A R F U E L C A N

T H E R E B E N U C L E A R E L E C T R I C I T Y

O V E R V I E W

All available energy sources, coal, oil, gas, and uranium, are needed to meet the nation's future energy requirements; it is not a matter of choice between them. Commercial solar energy, fusion, geothermal and similar new energy sources are alternatives of the 21st Century. They are not commercially available during the decades immediately ahead.

Therefore, more enriched uranium - the fuel for nuclear power plants - will be needed in the early 1980s. The U.S. will not be able to provide it unless we start installing additional uranium enriching capacity now.

Up to now enriching uranium has been a government monopoly. Only Congress can determine the future of the uranium enriching industry.

Congressional action is urgent. Inaction by Congress would threaten a serious shortfall in nuclear-generated electricity, sap the U. S. economy, compound energy dependence, and involve other adverse consequences.

Inaction by Congress would also lead to abdication of American nuclear leadership, and severely weaken our ability to impose nuclear safeguards, suppress nuclear proliferation and enhance our balance of payments position by exporting safeguarded nuclear equipment and services.

The Joint Committee on Atomic Energy is expected to report a uranium enrichment bill early this session.

Pending before JCAE is the Administration's Nuclear Fuel Assurance Act (H.R. 8401, S. 2035) authorizing cooperative arrangements with private firms desiring to build and operate new enriching plants or the addition of an initial increment of new government capacity if such arrangements are not timely made.

The options for the future structure of the uranium enriching industry include financing and operation by private industry, by government, or under some type of joint government-private ownership arrangement.

To forestall a nuclear fuel gap and other adverse consequences of inaction, it is urgent that Congress act without delay to inform itself and resolve this enrichment issue.

Materials herein are offered to aid Congress in its understanding of uranium enriching and its responsibility to move promptly and decisively to provide for new uranium enrichment capacity in a timely manner.

Additional data will be provided in future studies by the American Nuclear Energy Council or upon request.

(more)

SUMMARY OF THE SITUATION

Existing Enrichment Capacity

The government's three large uranium enriching facilities were completed during early years of the Cold War to supply the need for fully enriched uranium to make A-bombs. At that time the United States was urgently accumulating a nuclear weapons stockpile. These plants use the gaseous diffusion process to enrich uranium in the fissionable isotope U^{235}. Demonstration of the hydrogen fusion bomb in 1952 began a gradual substitution of H-bombs for A-bombs. Thus the need for fully enriched uranium drastically diminished. Operation of the enriching plants was reduced to a fraction of their full capacity. But, as the civilian nuclear power program progressed in this country and abroad, a demand was created for slightly enriched uranium for use as nuclear fuel. The government encouraged U. S. and friendly foreign nuclear utilities to contract for their enriching needs from its excess capacity. As an incentive for the development of civilian nuclear power (as called for by the Atomic Energy Act of 1954 and the Eisenhower Atoms-for-Peace Doctrine) the government priced its enriching service to nuclear utilities on a cost recovery basis. Notwithstanding, approximately $2 billion in revenues already has been received under these contracts with nuclear utilities, almost repaying the government's investment in the fraction of its original enrichment facilities allocable to nuclear fuel productions. A program was later initiated to improve and uprate the government enriching plants to an eventual capacity of 27.5 million separative work units (swu) per year by 1980.

New Enriching Capacity Needed

Some of the government's contracts with utilities for enriching services cover nuclear power stations already in operation and utilizing nuclear fuel;

others cover stations still being built. In the aggregate the contracts call for delivery of enough enriched fuel to load and reload more than 200 U. S. and 120 foreign nuclear power stations of major size over their 30-year lifetimes. By 1983 or 1984 the separative work service which must be delivered to fuel these 320 or more nuclear power stations will total the full 27.5 million swu capacity of the government's enriching complex. Contracting for enriching services was cut off in mid-1974 when this planned capacity limit was reached. Since then it has been clear that new enriching capacity will have to be built and brought on line by the 1983-1984 deadline. Otherwise any new reactors will lack assumed nuclear fuel supply -- reactors that would normally be ordered in 1976! Absent the timely installation of new enriching capacity, the nuclear electricity option for future expansion will be barred in the U. S.

Decision Needed NOW to Add New Capacity

At hearings of the Joint Committee on Atomic Energy on December 2, 1975, Dr. Robert C. Seamans, Jr., Administrator of the Energy Research and Development Agency, stated that a commitment to new enriching capacity cannot be delayed any longer without inviting a nuclear fuel gap in the early 1980's. He declared:

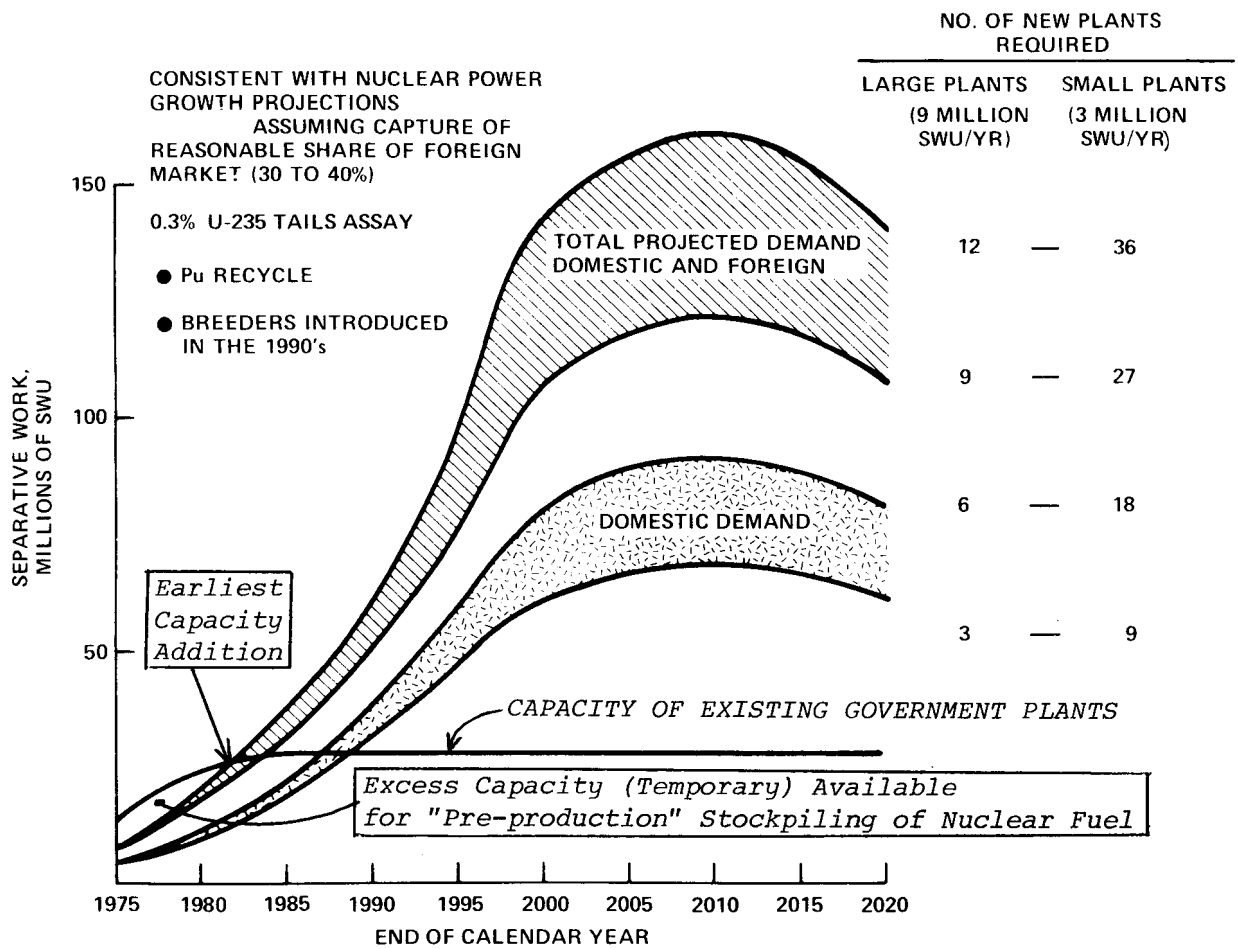
> "Because these enrichment facilities require long lead-times of 7-8 years to construct and reach operational capability, a decision must be made now on how to add the next increment of capacity if that facility is to be in service by 1983-84."

It is the Congress which must make the prompt decision on how new enriching capacity is to be added - whether by private industry or by government or through some structure of cooperation between the two.

Decision Also Needed on Enriched Uranium Stockpile

Concurrently with the decision to add new enriching capacity ERDA should define its still hazy commitment to stockpile nuclear fuel against the contingency that new capacity might be delayed getting on line. A thousand snags could temporarily delay such a plant. But neither can nuclear utilities be left without fuel, nor multi-billion dollar enriching facilities be left with a revenue gap because of delays in getting into service. ERDA has stated an intent to use temporarily excess enriching capacity in its current facilities to amass the standby stockpile for stop-gap use in such contingencies. But it has yet to define the size of the stockpile or specify the campaign by which it is to be accu-

ANNUAL DEMAND FOR U. S. SEPARATIVE WORK



Source: ERDA-85

mulated. Potential investors in enrichment plants and nuclear generating stations may wish to satisfy themselves concerning the reasonableness of such details before advancing construction money. Thus there is a need for ERDA to furnish them at an early date.

The accompanying table indicates the temporarily unused capacity which is available for preproduction. However, its principal function is to chart the enormity of projected demands for U. S. separative work.

New Capacity Needs Are Large & Costly

During the December JCAE Enrichment Hearings, government witnesses estimated that nuclear fuel needs by the end of this century will require installation of new uranium enriching capacity equal to 3 to 4 times the 27.5 million swu capacity of the expanded government enriching complex. If these additions are not made in timely increments our domestic needs for nuclear fuel will go unmet - and our ability will be impaired to obtain a fair share of the rewarding international market for nuclear fuel enriching services. The witnesses projected that capital investments of $30 to $40 to $50 billion will be needed between now and the year 2000 to achieve the desired quantity of new enriching capacity. Due to burgeoning energy demands the necessary annual investment rate after 1985 will probably exceed $2 billion annually.

Critical Need to Retain Overseas Enrichment Market

Already several countries which have traditionally bought their nuclear fuel from us under formal Agreements for Cooperation which safeguard the material and discourage nuclear proliferation have started to turn to competing, less demanding, foreign enrichers to satisfy their enrichment service needs. Uranium enrichment technology is no longer a monopoly of the United States, nor even of the nuclear weapons powers. Two international consortia offer enriching services in the international market: URENCO, a tripartite

consortium of the Netherlands, West Germany and the United Kingdom, which operates a gas centrifuge plant in Holland; and EURODIF, a multinational consortium, which operates gaseous diffusion facilities in France. The Soviet Union now offers enriching services in this market. The basic theories on enrichment are unclassified and versions of the gas centrifuge process and a jet-nozzle process are available under license from foreign developers. It is imperative that the United States re-enter this international market immediately for both business and safeguards reasons. To do so requires an immediate expansion of U. S. enriching capacities.

Adverse Consequenses of Inaction

Congressional failure to quickly deal with the need for necessary legislation enabling additional enriching capacity could be tantamount to a decision to abandon nuclear power as a United States energy option and a decision to forego energy independence as a national goal. This would be an extremely costly blow to domestic energy availability, employment and economic health, export revenues from nuclear goods and services, and this nation's international credibility for fostering nuclear safeguards and discouraging nuclear weapons proliferation. A U. S. retreat of this magnitude from its international position of leadership in civilian nuclear power would mean abandonment to uncertain hands of America's stewardship over the world's atomic destiny.

In summary, the lack of timely additions to U. S. enrichment capacity could produce these harrowing consequences:

Reluctance of domestic utilities to elect the nuclear option, causing:

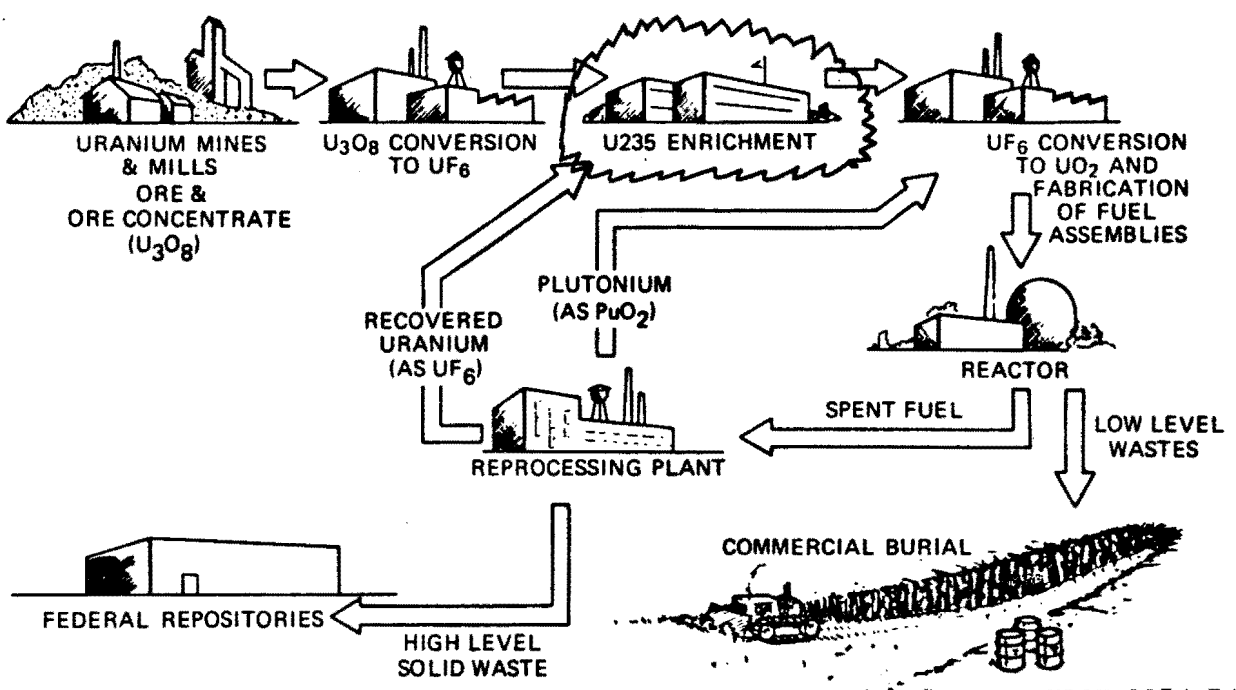
a) increased reliance on fossil fuels, including imported oil;
b) deleterious effect on energy independence and the balance of payments;
c) higher electric bills to consumers because of lost savings from nuclear generation;
d) weakened national posture vis-a-vis oil exporting countries.

A loss of foreign markets resulting in:

a) abdication of U. S. world leadership and competitive advantages in enrichment technology and production;
b) installation of competing enrichment capacity in many nations;
c) diminution of U. S. leverage over safeguards on foreign nuclear programs and the proliferation of nuclear weapons;
d) loss of foreign financial participation in U. S. enriching that could ease strain on U. S. capital market;
e) loss of positive inflow to balance of payments from sale of enriching services to foreign buyers;
f) further decline in U. S. economic and world trade position in vital energy and natural resource areas.

TECHNOLOGY OF URANIUM ENRICHMENT

Where Uranium Enrichment Lies in the Nuclear Fuel Cycle



Source: WASH 1174-74

What is Enrichment?

U^{235} is the isotope of uranium that fissions in a conventional nuclear reactor, transforming matter to energy which is used to make electricity. Most uranium consists of the difficult-to-fission U^{238} isotope. Only about .7% of it is highly fissionable U^{235}. Enriching uranium means to increase the amount of U^{235} relative to U^{238} in a quantity of this heavy element.

Why Enrich Uranium?

Boosting uranium from its natural content to 2% to 4% in U^{235} content permits nuclear reactors to be constructed from ordinary material and to be made smaller and more efficient. The "slightly enriched" material makes better nuclear fuel, but it is unuseable for making nuclear weapons. Therefore, slightly enriched uranium is a superior nuclear fuel, it cannot be made into A-bombs and poses no direct weapons proliferation threat, and reactors "burning" it cannot explode.

How Uranium is Enriched - Gaseous Diffusion

The atoms of U^{235} and U^{238} are chemically identical. The only measureable difference between them is a slight difference in weight. The U^{235} atom has three fewer sub-atomic particles (neutrons) in its core than the U^{238} atom. This miniscule weight difference is exploited to separate the two isotopes in the governments big uranium enriching plants at Oak Ridge (Tenn.), Paducah (Ky.), and Portsmouth (Ohio). Uranium is combined with flourine to make the gas uranium hexafloride (UF_6). This gas is then forced through thousands of molecular sieves, or barriers, a process called "cascading". The UF_6 molecules composed of the slightly lighter U^{235} atoms get through the barriers just a little easier. Eventually one stream of the gas becomes enriched in U^{235}. This enriching method is known as the gaseous diffusion process.

Other Enriching Methods - Centrifuge and Laser

A large industrial and government effort is under way to apply principles of centrifuge to a new method for enriching uranium. Just as lighter cream is separated from milk in a spinning bowl, so will centrifuges spinning UF_6 at super speeds separate U^{235} from U^{238}. Pilot plant operations have indicated a significant potential for centrifuges and this program has progressed to the point that demonstration projects are needed as the bridge to full commercial usefullness.

Scientists also are in the early stages of exploring the use of lasers to enrich uranium. This method would use a laser beam to inject energy into U^{235} but not U^{238}. The chemistry of the temporarily "excited" U^{235} might be altered for a short time. This would permit separation to be done by simple chemical means rather than by the more tedious physical means employed in the diffusion and centrifuge technologies. Like the centrifuges, lasers have a potential for substantially reducing power costs and increasing enrichment efficiency.

Separative Work Units

The separation of uranium isotopes by whatever method requires electricity to power the machinery, pumps, compressors, or other machinery and devices in enrichment plants. The amount of isotope separation capacity of an enrichment plant is measured in arbitrary terms of "separative work units" (swu). Natural uranium introduced into the separation process takes less "work" to produce a given concentration of U^{235} than material diminished in U^{235} content. Therefore it is cheaper and easier to enrich uranium from fresh feed material than it is from material already somewhat reduced in U^{235} content.

Tails & Tails Assay

After isotopic separation the enriched portion of the uranium is released from the UF_6 mixture and converted to uranium oxide. The uranium oxide, which is a powdery substance, is next compressed into pellets and placed inside metal tubing to make nuclear fuel elements. The material which has been depleted in U^{235} is known as "tails". This material can be set aside and stored for possible further reduction in U^{235} content at some later time if there arises a need for it. If the natural U^{235} content of .7% is reduced in the tails to .2%, for instance, the tails assay will be .2%, thus the term "depleted tails".

Optimum Tails Assay

All U^{235} and U^{238} could be separated if enough work were applied in the enriching process. Theoretically, the assay of the tails stream could be reduced to .0%. But that would be wasteful because proportionately so much effort and capacity would be required for the final stages of separation. So, it makes sense to remove the partially depleted tails and introduce fresh feed material at some point before it becomes fully depleted. The tails assay at which this should be done is the "optimum tails assay." It is a balance between the relative cost of the electricity doing the work and the value of the uranium feed material being worked on. Other things being equal, cheap electricity and expensive feed encourage low tails assays, while expensive electricity and low-cost feed encourage higher tails assays. The optimum tails assay shifts as the ratio changes between electricity costs and feed prices. When both values were moderate, the optimum tails assay was calculated to be around .2%. Present projections of tight uranium supply and higher futures prices might favor operating at a tails assay less than .2%.

Operating Tails Assay

Circumstances have seldom permitted the enriching plants to operate at their optimum tails assay. Shortages of uranium in the early years made it mandatory to operate at low tails assay in order to maximize production. Later, after the government's stockpile of uranium became large, and electricity was both plentiful and cheap, a high tails assay was adopted. When temporary power shortages have occurred, it has been a practice to release some of the government's enriching electricity to ease the public's need for power. During such periods, raising the tails assay in order to net the same amount of separative work has been a possibility. ERDA's current need to stockpile nuclear fuel for stop-gap use should new capacity be delayed coming on line points toward higher tails assay operations. These and other variables will continue to influence decisions concerning the tails assay at which the plants will actually be operated. By adoption of an "optional tails assay" approach recently suggested by ERDA it might be possible for utilities to meet average demands for nuclear fuel over a given period of time while gaining some overall reduction in nuclear fuel cost. Under this approach, utilities would "opt" to take enrichment service from the government at high tails assay early in the game and from private enrichers at low tails assay during later periods. Properly managed, some savings might be netted by some overall reduction in uranium purchases. The scheme might also enable ERDA to accumulate its stockpile of preproduced nuclear fuel more easily.

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ONLY WITH NUCLEAR FUEL CAN

THERE BE NUCLEAR ELECTRICITY

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Report to the Congress

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CRAIG HOSMER
PRESIDENT

REPORT NO. 8

MAY 25, 1976

NUCLEAR FUEL ASSURANCE ACT

H.R.8401; S.2035

Enriched uranium is the fuel for nuclear power stations. ERDA facilities perform uranium enriching services for U.S. and some foreign utilities, earning revenues and balance-of-payment credits. The growth of nuclear power already demands more enriched uranium than ERDA can supply. New enriching capacity must be added to avoid a nuclear fuel gap. To have it in operation by the early 1980s (when the fuel is needed) construction of new capacity must start now.

Depending on size, new enriching plants will cost $1 to $3 billion each. Aggregate investment in them by the year 2000 will reach many billions of dollars.

> *Operations of this magnitude solely to supply commercial fuel put into question whether the future structure of the enriching business in the U.S. should continue to be taxpayer supported or ought to be privatized.*

Passage of the *NUCLEAR FUEL ASSURANCE ACT* (H.R.8401; S.2035) makes possible the needed start on building new enriching capacity.

NFAA leaves open the future structure of the industry. It authorizes a new government enriching plant and offers government cooperation and assurances (*SUBJECT TO CONGRESSIONAL REVIEW AND APPROVAL*) to encourage development of a competitive private uranium enriching industry.

The concepts written into NFAA serve a useful public purpose, fairly protect the government, and provide a framework in which the future structure of the uranium enriching industry in the U.S. can beneficially evolve. *ENACTMENT IS RECOMMENDED.*

(Details Inside)

C O N T E N T S

PRINCIPAL PROVISIONS OF NUCLEAR FUEL ASSURANCE ACT

- Authorizes and directs ERDA "to initiate construction planning and design, construction and operation activities for expansion of an existing uranium enriching facility". Authorizes appropriation of $255 million for this purpose.

- Subject in each case to Congressional review and approval, ERDA is authorized to enter into "cooperative arrangements" with prospective private uranium enriching entities providing "such Government cooperation and assurances" as "appropriate and necessary to encourage the development of a competitive private uranium enrichment industry". These may include:

    - o *Furnishing Government technology and equipment on a cost or royalty basis;*

    - o *Warranties on Government furnished material and equipment;*

    - o *Purchases and sales of enriching services between ERDA and private enrichment firms;*

    - o *ERDA authority to take over, modify, complete, operate or dispose of a private enrichment plant if its backers are unable to complete or bring the technology into commercial operation. In doing so ERDA may undertake only to acquire equity of U.S. investors or pay off debt of U.S. lenders; where a failure is due to mismanagement, ERDA will not compensate and equity of the private investors would be lost.*

  An authorization of $8 billion is provided to back up the cooperative arrangement contracts entered into. The real purposes for having the authorization outstanding are to assure the private enriching entities that the technology for which they are paying a royalty will work, to assure utilities that the required enriching capacity will be available, and to assure the credit worthiness of private enriching entities seeking to raise capital from the private money markets.

NEED FOR PROMPT ACTION

Natural uranium must be enriched before it can be used to make fuel for nuclear-fueled electric power generating plants. Present U.S. enrichment capacity, provided by three plants owned by ERDA and operated by private contractors has been fully committed under long-term contracts since mid-1974. Since that date, the Government has been unable to accept contracts for additional enrichment services. *IF THIS SITUATION IS ALLOWED TO CONTINUE, IT WILL SEVERELY INHIBIT THE GROWTH OF GENERATION OF ELECTRICITY WITH NUCLEAR FUEL IN THE U.S.*

NFAA Optimizes Resource Utilization

If additional enrichment capacity is not built, a significant amount of fossil fuels will be needed to replace nuclear generation or the country will suffer severe economic adjustments. Since domestic oil production is declining, it is

apparent that oil necessary to meet a nuclear shortfall would have to be imported, thereby increasing our dependence on foreign sources and adversely affecting the United States' balance of payments. Substantial increases in coal demand are already projected even if additional nuclear plants are built.

Impact on U.S. Trade

Expansion of domestic enrichment capacity will have a positive impact on U.S. trade. U.S. foreign exchange revenues from the sale of enriched uranium and enrichment services have reached $1.1 billion. Moreover, substantial additional revenues have been earned by U.S. companies from tie-in sales of nuclear reactors overseas because of the availability of U.S. enrichment services to provide their fuel. The dollar amount of these sales can be expected to grow if domestic enrichment capacity is made available to supply such services. Current uncertainties concerning the construction of new U.S. capacity already have significantly impaired foreign sales of U.S. nuclear reactors and enrichment services. *TO THE EXTENT THAT NUCLEAR FUEL IS NOT AVAILABLE FROM AMERICA, THE PROLIFERATION OF ENRICHMENT FACILITIES IN FOREIGN NATIONS IS ENCOURAGED.*

Impact on Proliferation

The ability of the United States to be an effective force in guarding against the proliferation of nuclear weapons will diminish should its share of the world enrichment market decrease. The ability to supply enrichment services provides an opportunity to influence the manner in which enriched nuclear fuel is used and safeguarded against unauthorized uses. Failure to expand U.S. enrichment capacity will turn foreign users to other sources, thereby curtailing U.S. influence upon nonproliferation objectives and efforts.

NFAA PROVIDES A FLEXIBLE APPROACH

Hearings before the Joint Committee on Atomic Energy revealed concern over several features of the NFAA as originally proposed; three in particular: (1) whether private industry could finance and provide the required plants on a timely basis; (2) the scope of assurances which might be offered to private enriching enterprises; (3) whether Congress would be given sufficient opportunity to review and approve contracts which ERDA might enter into with private industry. The bill, as reported by the Joint Committee, addresses these issues and is responsive to the concerns expressed during Committee hearings, *AS REFLECTED BY THE 15-0 VOTE BY WHICH THE COMMITTEE REPORTED THE BILL.*

The Issue of Plant Ownership

The NFAA as amended by the Joint Committee is sensitive to the need for timely action in an exceptional degree. It assures prompt addition of the first increment of needed new enriching capacity by directing ERDA to start now on a new government-owned plant. NFAA also authorizes ERDA to encourage private enterprise to enter in the enrichment market, which could diminish the need to spend substantial public monies to assure the uninterrupted supply of nuclear fuel. A White House Domestic Council study indicates that investment in new uranium enriching capacity outlays needed to match projected growth in demand

for nuclear fuel could reach a cumulative outflow of $14 billion by 1988, and that not until 1999 will costs be recovered and a return on investment start to show. This indicates the magnitude of federal budget expenditures that might be sidestepped if government responsibility for enriching can be lifted.

Why are Government Cooperation and Assurances Needed at all?

Ordinarily private industry automatically moves ahead to supply a need for any fuel. But in this case, there is no private industry to expand upon. Government owns the three existing plants. It has all the technical and economic enrichment know-how. NFAA is needed to authorize transfer of the needed knowledge to potential enrichers on a cost or royalty basis.

And, for the very reason that this technology has been the exclusive monopoly of Government, assurances that the technology actually will work are essential to allow pioneering private enrichers to obtain debt financing from the money market. The back-up assurances which ERDA would offer in any cooperative arrangement with private enrichers are contingent liabilities of Government, but very remote ones. Government technology, which must work right if the plants are to function properly, will be the heart of single plant investments of $1 to $3 billion. Because this technology has been the exclusive property of the Government, a guarantee to potential private enrichers that it will work is essential to secure debt financing. In view of the long experience of Government with enriching technology and the supervision which ERDA will provide, there is every reason to believe that the plants will succeed and that lenders will move in to expedite the entry of private enrichment.

REASONABLE ROYALTIES WILL BE PAID TO THE GOVERNMENT FOR THE USE OF ITS TECHNOLOGY AND FULL COST PAID FOR ANY EQUIPMENT IT MAY SUPPLY. Effective safeguards and physical security of the technology and the products will be imposed. Should there be foreign participation in any private enriching facility, *NEITHER THE GOVERNMENT ASSURANCES NOR ANY ACCESS TO TECHNOLOGY WILL EXTEND TO THE FOREIGN PARTICIPANTS.* Only U.S. citizens will be compensated.

Once established, there is little reason to expect NFAA's back-ups will even be called upon.

Opportunity for Congressional Review and Approval

NFAA assures Congressional review and approval of any proposed contract for a cooperative arrangement for private participation in uranium enrichment. *UNDER THE PROCEDURES SET OUT IN THE BILL, ANY PROPOSED CONTRACT FOR A PRIVATE ENRICHING FACILITY MUST BE SUBMITTED TO CONGRESS FOR REVIEW AND APPROVAL.* The Joint Committee is given 30 legislative days to recommend a concurrent resolution stating that Congress does or does not favor the arrangement. Within 25 days thereafter the resolution would become the pending business of the House and Senate. A vote would be taken within another five days. *ERDA COULD NOT EXECUTE A CONTRACT UNTIL BOTH HOUSES APPROVED* and would be bound by the limits of the Congressional joint resolution. Thus, complete Congressional review, oversight and approval is assured.

IMPACT ON BUDGET

The bill authorizes $255,000,000 to initiate expansion of an existing uranium enrichment facility, the so-called "hedge plan". This funding is already included in the proposed ERDA authorization for FY 1977. The $8 billion contingent liability authorized by the bill would have no effect on this budget, since it could never be called up before a private enriching plant is started and, somehow, falters. Should that contingency occur, there still will be no cost to the Government as a result of these assurances without the actual appropriation of government funds. The expectation is that no funds would ever be expended.

FAVORABLE ACTION ON H.R.8401 and S.2035 AT AN EARLY DATE IS RECOMMENDED.

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Note: American Nuclear Energy Council Report No. 3 "*NEW URANIUM ENRICHMENT CAPACITY*" (February 1, 1976) summarizes the national situation on enrichment and discusses its technology. Copies were furnished all members of the House and Senate. Limited copies are available for further distribution.

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    - o *Purchases and sales of enriching services between ERDA and private enrichment firms;*

    - o *ERDA authority to take over, modify, complete, operate or dispose of a private enrichment plant if its backers are unable to complete or bring the technology into commercial operation. In doing so ERDA may undertake only to acquire equity of U.S. investors or pay off debt of U.S. lenders; where a failure is due to mismanagement, ERDA will not compensate and equity of the private investors would be lost.*

  An authorization of $8 billion is provided to back up the cooperative arrangement contracts entered into. The real purposes for having the authorization outstanding are to assure the private enriching entities that the technology for which they are paying a royalty will work, to assure utilities that the required enriching capacity will be available, and to assure the credit worthiness of private enriching entities seeking to raise capital from the private money markets.

NEED FOR PROMPT ACTION

Natural uranium must be enriched before it can be used to make fuel for nuclear-fueled electric power generating plants. Present U.S. enrichment capacity, provided by three plants owned by ERDA and operated by private contractors has been fully committed under long-term contracts since mid-1974. Since that date, the Government has been unable to accept contracts for additional enrichment services. *IF THIS SITUATION IS ALLOWED TO CONTINUE, IT WILL SEVERELY INHIBIT THE GROWTH OF GENERATION OF ELECTRICITY WITH NUCLEAR FUEL IN THE U.S.*

NFAA Optimizes Resource Utilization

If additional enrichment capacity is not built, a significant amount of fossil fuels will be needed to replace nuclear generation or the country will suffer severe economic adjustments. Since domestic oil production is declining, it is

apparent that oil necessary to meet a nuclear shortfall would have to be imported, thereby increasing our dependence on foreign sources and adversely affecting the United States' balance of payments. Substantial increases in coal demand are already projected even if additional nuclear plants are built.

Impact on U.S. Trade

Expansion of domestic enrichment capacity will have a positive impact on U.S. trade. U.S. foreign exchange revenues from the sale of enriched uranium and enrichment services have reached $1.1 billion. Moreover, substantial additional revenues have been earned by U.S. companies from tie-in sales of nuclear reactors overseas because of the availability of U.S. enrichment services to provide their fuel. The dollar amount of these sales can be expected to grow if domestic enrichment capacity is made available to supply such services. Current uncertainties concerning the construction of new U.S. capacity already have significantly impaired foreign sales of U.S. nuclear reactors and enrichment services. *TO THE EXTENT THAT NUCLEAR FUEL IS NOT AVAILABLE FROM AMERICA, THE PROLIFERATION OF ENRICHMENT FACILITIES IN FOREIGN NATIONS IS ENCOURAGED.*

Impact on Proliferation

The ability of the United States to be an effective force in guarding against the proliferation of nuclear weapons will diminish should its share of the world enrichment market decrease. The ability to supply enrichment services provides an opportunity to influence the manner in which enriched nuclear fuel is used and safeguarded against unauthorized uses. Failure to expand U.S. enrichment capacity will turn foreign users to other sources, thereby curtailing U.S. influence upon nonproliferation objectives and efforts.

NFAA PROVIDES A FLEXIBLE APPROACH

Hearings before the Joint Committee on Atomic Energy revealed concern over several features of the NFAA as originally proposed; three in particular: (1) whether private industry could finance and provide the required plants on a timely basis; (2) the scope of assurances which might be offered to private enriching enterprises; (3) whether Congress would be given sufficient opportunity to review and approve contracts which ERDA might enter into with private industry. The bill, as reported by the Joint Committee, addresses these issues and is responsive to the concerns expressed during Committee hearings, *AS REFLECTED BY THE 15-0 VOTE BY WHICH THE COMMITTEE REPORTED THE BILL.*

The Issue of Plant Ownership

The NFAA as amended by the Joint Committee is sensitive to the need for timely action in an exceptional degree. It assures prompt addition of the first increment of needed new enriching capacity by directing ERDA to start now on a new government-owned plant. NFAA also authorizes ERDA to encourage private enterprise to enter in the enrichment market, which could diminish the need to spend substantial public monies to assure the uninterrupted supply of nuclear fuel. A White House Domestic Council study indicates that investment in new uranium enriching capacity outlays needed to match projected growth in demand

for nuclear fuel could reach a cumulative outflow of $14 billion by 1988, and that not until 1999 will costs be recovered and a return on investment start to show. This indicates the magnitude of federal budget expenditures that might be sidestepped if government responsibility for enriching can be lifted.

Why are Government Cooperation and Assurances Needed at all?

Ordinarily private industry automatically moves ahead to supply a need for any fuel. But in this case, there is no private industry to expand upon. Government owns the three existing plants. It has all the technical and economic enrichment know-how. NFAA is needed to authorize transfer of the needed knowledge to potential enrichers on a cost or royalty basis.

And, for the very reason that this technology has been the exclusive monopoly of Government, assurances that the technology actually will work are essential to allow pioneering private enrichers to obtain debt financing from the money market. The back-up assurances which ERDA would offer in any cooperative arrangement with private enrichers are contingent liabilities of Government, but very remote ones. Government technology, which must work right if the plants are to function properly, will be the heart of single plant investments of $1 to $3 billion. Because this technology has been the exclusive property of the Government, a guarantee to potential private enrichers that it will work is essential to secure debt financing. In view of the long experience of Government with enriching technology and the supervision which ERDA will provide, there is every reason to believe that the plants will succeed and that lenders will move in to expedite the entry of private enrichment.

REASONABLE ROYALTIES WILL BE PAID TO THE GOVERNMENT FOR THE USE OF ITS TECHNOLOGY AND FULL COST PAID FOR ANY EQUIPMENT IT MAY SUPPLY. Effective safeguards and physical security of the technology and the products will be imposed. Should there be foreign participation in any private enriching facility, *NEITHER THE GOVERNMENT ASSURANCES NOR ANY ACCESS TO TECHNOLOGY WILL EXTEND TO THE FOREIGN PARTICIPANTS.* Only U.S. citizens will be compensated.

Once established, there is little reason to expect NFAA's back-ups will even be called upon.

Opportunity for Congressional Review and Approval

NFAA assures Congressional review and approval of any proposed contract for a cooperative arrangement for private participation in uranium enrichment. *UNDER THE PROCEDURES SET OUT IN THE BILL, ANY PROPOSED CONTRACT FOR A PRIVATE ENRICHING FACILITY MUST BE SUBMITTED TO CONGRESS FOR REVIEW AND APPROVAL.* The Joint Committee is given 30 legislative days to recommend a concurrent resolution stating that Congress does or does not favor the arrangement. Within 25 days thereafter the resolution would become the pending business of the House and Senate. A vote would be taken within another five days. *ERDA COULD NOT EXECUTE A CONTRACT UNTIL BOTH HOUSES APPROVED* and would be bound by the limits of the Congressional joint resolution. Thus, complete Congressional review, oversight and approval is assured.

IMPACT ON BUDGET

The bill authorizes $255,000,000 to initiate expansion of an existing uranium enrichment facility, the so-called "hedge plan". This funding is already included in the proposed ERDA authorization for FY 1977. The $8 billion contingent liability authorized by the bill would have no effect on this budget, since it could never be called up before a private enriching plant is started and, somehow, falters. Should that contingency occur, there still will be no cost to the Government as a result of these assurances without the actual appropriation of government funds. The expectation is that no funds would ever be expended.

FAVORABLE ACTION ON H.R.8401 and S.2035 AT AN EARLY DATE IS RECOMMENDED.

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Note: American Nuclear Energy Council Report No. 3 "*NEW URANIUM ENRICHMENT CAPACITY*" (February 1, 1976) summarizes the national situation on enrichment and discusses its technology. Copies were furnished all members of the House and Senate. Limited copies are available for further distribution.

NOTE

The American Nuclear Energy Council was organized July 1, 1975 in response to the need for a focal point in Washington from which to project the common energy interests of the American people and the American nuclear community. It is a non-profit industry trade association and has registered pursuant to the lobbying law. Former Congressman Craig Hosmer is its president.

The Council supports development of solar, fusion and other longer range energy resources but holds that nuclear power is essential if this nation is to have adequate and dependable energy supplies during the next half-century. It believes that energy independence can be achieved only by vigorous utilization of domestic U.S. coal and nuclear energy resources.

The Council stands for the proposition that the risks of nuclear power are minimal in relation to its public benefits and far more acceptable than massive power shortages or continued dependence on fragile foreign willingness to supply a vital fraction of the energy needed adequately to fuel the American economy and provide jobs for millions of American workers.

AMERICAN NUCLEAR ENERGY COUNCIL

CRAIG HOSMER
PRESIDENT

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PLEASE HOLD FOR USE ON AND AFTER

MAY 26, 1976

About 1200 words

by

Craig Hosmer

What motivates the anti-nuclear movement? Is it just concern with nuclear power? Or, is it something beyond?

Straightforward anxiety over safety and nuclear proliferation obviously underlies some nuclear apprehension. But to understand the extent of nuclear dissent in America today, it is necessary to postulate the existence of a quite separate category of energy opponents consisting of people disillusioned with some aspects of the American society, possibly distrustful of its institutions and seeking for the country a lifestyle quite different than today's. To such people, nuclear power may symbolize life's frustrations and its elimination be seen as a bridge to broad societal changes they wish to see.

One must understand that those holding such views are hardly subversives or bomb-throwing radicals. They are likely to be idealistic and highly motivated to better the world. Or, they may be dissatisfied with lives of empty affluence. For example, the Creative Initiative Foundation is a band of upper and middle income Californians whose zealous opposition to nuclear power is part of an overall philosophy of simplifying lifestyles and cutting back on technology.

Similarly, the parochial focus of formidable environmental and kindred groups assures that a nuclear power ban will be high on their list of goals without consideration at all of the adverse consequences of overdependence on limited

energy sources. Recently, even the National Council of Churches was persuaded to condemn element number 94 (plutonium) on supposed moral grounds.

In short, to gauge the anti-nuclear movement it is necessary to understand that numerous of its components may be less anti-nuclear than they are "pro" or "anti" something else, that others may join it seeking sometimes nebulous goals only peripherally related to the nuclear power equation and that end objectives may be obscured and ill defined at this point. Thus, the movement's immediate focus on nuclear power may be only the way station to a farther destination.

In an interview in Rolling Stone Magazine*, Ralph Nader, titular head of the U.S. anti-nuclear movement, talked hardly at all of nuclear concerns, but broadly of basic changes in the American society: Bigness in the economic system will be broken down into small parts. Extremes in income and wealth shall be narrowed. Producer cooperatives and consumer cooperatives are to be financed by government and supplant large corporations. Decentralization is to replace centralization and small, self-contained communities will re-emerge and large cities disappear. Energy consumption is to be more than halved.

The resulting low-energy society compared to the one it replaces is supposed to be simpler, fairer, cleaner, less complicated, more responsible to peoples' needs and more satisfying to their souls. What it might really be like is something else whether you approve of some, none or all of these goals.

As a strategy to achieve these ends, Nader recalls that his fight against Detroit's corporate giants was not won by frontal attack. It focused public alarm upon shortcomings of the Coravair first, and only thereafter upon his real target, the corporate system which produced it. So far as it is visible, the

* November 20, 1975

strategy of the disparate forces under the anti-nuclear banner who might boldly restructure American lifestyle seems to follow a similar pattern. They would:

-- forge together and give leadership to a wide range of social activitists, idealists, dissidents, consumer groups, environmental organizations and other protesters;

-- take advantage of the wave of distrust in institutions which has been heightened by the Vietnam and Watergate tragedies, Congress failing to deal with problems, leaders who do not lead, public scandals, and the "little man's" disillusionment with big government, big business, big anything;

-- focus upon a suitable target, in this case nuclear power, which symbolizes both bigness and business, has its ancestry in the explosive tragedy of Hiroshima, and whose semi-metaphysical nature and awkward licensing procedures give endless opportunity for repeated challenges in full sight of sensation prone media.

Carrying forward an anti-nuclear strategy so conceived could make construction of nuclear power stations increasingly difficult. But, the strategy also has a conventional side. Coal and petroleum could be stifled by tougher environmental laws, regulations, taxes and other means. This is not an unassuming strategy just to conserve energy and increase efficiency within a growth society. These restraints on energy supply would come during a dozen or so years of United States history in which demographic factors already in place are calculated to double the demand for energy. Ultimately, these factors could combine to reduce its supply below the level needed to power the country's energy intensive socio-economic system and precipitate major societal changes.

Could this transition to a no-growth, low energy society be made without upheaval? Do people really need or want it?

Abrupt and drastic change can bring with it severe unemployment and the powerful disturbances resulting whenever one societal structure is torn down to substitute another. Moreover, even the architects of change seem vague about what is to come. It is to be simple, clean and fair. But what will make it so? How will the new low-energy situation differ from the one of a century ago that Americans ever since have worked to put behind them? In 1876 stars were bright; air was clean; life was simple. But also life was short, disease endemic, wages low, illiteracy high, child labor widespread and comfort limited. To return to a low-energy society Americans might have to suffer much, give up much and change much. And, there is no assurance that most of the bad of the good old days would not be brought right back with it.

Under the democratic process, decisions making radical changes in a nation's lifestyle deserve to be made openly. They should not be disguised and brought in through a side door, as in California where an initiative proposition camouflages a nuclear moratorium as a safety measure under the beguiling sponsorship of an ambiguous "Project Survival". Whenever the low-energy idea has been put to the peoples' representatives, such as by proposals to slash R&D funds or end nuclear indemnity laws, it has been rejected decisively. Indeed, if the change were ever put squarely to the people, it would be rejected out of hand. This underlines the pragmatism of the movement's strategy to precipitate it indirectly, by means of energy famine, steering away from an open plebiscite and publicizing ultimate goals only to a trusted few.

To draw a conclusion from the foregoing, I call attention to the many roadblocks to getting things done in our country erected by court decisions and, in recent years, written into law by Congress itself. Often these seem to contribute less to desirable environmental, public health and safety, and aesthetic goals than they do to protracted delay in access to energy and the similar re-

sources needed for man's support, his economic wellbeing and his satisfactions.

To the extent that obstacles such as these cripple the economy, they force changes upon the free-enterprise socio-economic system. It is obvious that changes brought about in this manner are not the result of voluntary actions democratically taken by an aware people. Rather, they are the silent products of inaction and delay seeping from obscure recesses of procedurally snarled courts, boards, regulatory bodies and commissions.

Permitted to continue, that kind of paralysis inevitably can kill off the American growth society and substitute a no-growth pattern, accomplishing the basic goal of the counter-culture. In the process, the people's heritage of a free, productive economy and choice of lifestyles will be denied them and a disciplined, spartan, yet-to-be-defined regimen imposed upon them.

My point is, that even if such a fate were necessary or inevitable -- and I do not for a moment grant that it is -- the proposition should be put squarely to an aware people for their free choice and consent. It should not be substituted surreptitiously and by indirection for what we enjoy now.

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Note: The author served as a Member of Congress from California (1953-1975) and as a member of the Senate-House Joint Committee on Atomic Energy (1958-1975).

MAIL ROOM: URGENT MESSAGE -- ROUTE TO RESPONSIBLE EXECUTIVE IMMEDIATELY BY MESSENGE

U R G E N T U R G E N T U R G E N T U R G E N T U R G E N T

30 JULY 1976

TO: ALL MEMBERS OF AMERICAN NUCLEAR ENERGY COUNCIL

NUCLEAR FUEL ASSURANCE ACT (H.R. 8401) TEMPORARILY SHOT DOWN AT 1:45 P.M. TODAY BY BINGHAM AMENDMENT LIMITING AUTHORIZATION FOR NEW ENRICHING CAPACITY STRICTLY TO ONE GOVERNMENT ADD-ON PLANT AT PORTSMOUTH, OHIO. PRIVATELY OWNED FACILITIES OUT. VOTE WAS VERY CLOSE 170 TO 168. NINETY-SEVEN MEMBERS OUT OF TOWN ON A FRIDAY AFTERNOON AND NOT VOTING.

THERE IS A CHANCE TO REVERSE THIS OUTCOME. VOTE WAS TAKEN WHILE THE HOUSE OF REPRESENTATIVES WAS SITTING AS "THE COMMITTEE OF THE WHOLE HOUSE ON THE STATE OF THE UNION." PARLIAMENTARY SITUATION IS THAT THE BINGHAM AMENDMENT CAN BE BROUGHT TO VOTE AGAIN BY ACTION OF THE HOUSE OF REPRESENTATIVES WHILE SITTING AS THE PRIMARY BODY IF ITS LEADERSHIP WILL SCHEDULE H.R. 8401 FOR ADDITIONAL CONSIDERATION NEXT WEEK.

I DO NOT NECESSARILY EXPECT YOU TO UNDERSTAND THE PARLIAMENTARY TECHNICALITIES. JUST UNDERSTAND THAT THE SITUATION IS NOT YET LOST. FURTHER UNDERSTAND THAT IT WILL BE UNLESS THE ENTIRE NUCLEAR COMMUNITY CONVERGES UPON EVERY MEMBER OF THE HOUSE OF REPRESENTATIVES IN STATES IN WHICH IT DOES BUSINESS AND OTHER CONGRESSMEN WITH WHICH IT HAS CONTACTS. PLEASE COMPLY WITH THIS REQUEST FOR ACTION. DO NOT DELAY. ACT IMMEDIATELY. MAKE PERSONAL CONTACT ACT FROM HIGHEST COMPANY LEVEL. USE TELEPHONE OR STRAIGHTWIRE TELEGRAM.

YOU SHOULD REQUEST THE FOLLOWING ACTION BY CONGRESSMEN: (1) THAT NFAA BE SCHEDULED FOR CONSIDERATION AGAIN; (2) THAT A SEPARATE VOTE ON BINGHAM AMENDMENT BE DEMANDED; (3) THAT BINGHAM AMENDMENT ON FRIDAY BE RESERVED AND BINGHAM AMENDMENT DEFEATED; AND, THEREUPON, (4) THAT H.R. 8401 BE ENACTED.

THIS IS LIKELY TO BE OUR LAST CHANCE FOR ENRICHMENT LEGISLATION THIS YEAR. PLEASE DO NOT FAIL TO RESPOND TO THIS URGENT REQUEST FOR ACTION. THIS IS A CRUCIAL VOTE. ADDRESSEES IN OTHER THAN EASTERN DAYLIGHT TIME ZONES PLEASE NOTE DIFFERENCE FROM WASHINGTON, D.C. TIME IN MAKING TELEPHONE CALLS.

SEND US RECAPS OF SUBSTANCE OF YOUR TELEPHONE CONVERSATIONS. MAIL TO 1750 K STREET N.W. D.C. ZIP 20006. IF QUESTIONS PHONE US AT (202) 296-4520.

SEE ATTACHED DATA FOR ISSUE AMPLIFICATION.

CRAIG HOSMER, PRESIDENT, AMERICAN NUCLEAR ENERGY COUNCIL