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[Views on the Nation's Commitment to the Development of Liquid Metal Fast Breeder Technology]. EMD-77-56; B-164105. August 2, 1977. 4 pp.

Report to Rep. Clement J. Zablocki, Chairman, House Committee on International Relations; by Elmer B. Staats, Comptroller General.

Issue Area: Energy: Making Nuclear Fission a Substantial Energy Source (1608).

Contact: Energy and Minerals Div.

Budget Function: Natural Resources, Environment, and Energy: Energy (305).

Organization Concerned: Energy Research and Development Administration.

Congressional Relevance: House Committee on International Relations.

GAO's views on the U.S. commitment to the development of the Liquid Metal Fast Breeder Reactor (LMFBR) technology were solicited, specifically as to whether the President's decision to abandon the Clinch River Breeder Reactor (CRBR) project meant abandonment of the whole LMFBR program. Findings/Conclusions: The abandonment of the CRBR, coupled with the major cutbacks in breeder research and development, will not enhance this Nation's understanding of the various nuclear alternatives. Termination would drastically alter emphasis on LMFBR development, and restarting the program later might be so costly and difficult as to outweigh the benefits. Estimates by the Energy Research and Development Administration for stopping in mid-1977 and resuming 4 months later range from \$346 million to \$1.3 billion, with a schedule delay from 2 to 5-plus years. The most logical course is to pursue the program as a research and development effort, with a final decision as to full implementation being made some 7 to 10 years away. By its action, the administration hopes to control nuclear proliferation, but given foreign development efforts, the decision will have little impact. Moreover, this Nation's future ability to influence safety and other features of breeders worldwide may be diluted. The relative proliferation potential of alternative nuclear systems is currently being studied. (DJM)



COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

B-164105

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The Honorable Clement J. Zablocki
Chairman, Committee on International
Relations
House of Representatives

Dear Mr. Chairman:

Your June 24, 1977, letter asked for information on the views we expressed in a June 14, 1977, report to the Chairman, House Committee on Science and Technology, on this Nation's commitment to the development of Liquid Metal Fast Breeder Reactor (LMFBR) technology. Specifically, you asked whether we intended to imply that the President's proposal regarding the Clinch River Breeder Reactor (CRBR) project constituted an abandonment of the LMFBR program. You pointed out that LMFBR research and development is scheduled to receive funding in excess of \$500 million in fiscal year 1978.

Because development of LMFBR technology is an important and controversial topic, we have issued numerous reports and have testified before several committees on various aspects of the LMFBR program. We concluded in several of these reports that there were many uncertainties regarding whether and when LMFBR commercialization was needed.

The essential view expressed in our June 14 report to the Chairman, House Science and Technology Committee, was that abandonment of the CRBR and major cutbacks in breeder research and development will not enhance the Nation's ability to understand the pros and cons of the various nuclear alternatives. Termination of CRBR would clearly be a drastic change in the emphasis placed on LMFBR development. Some have indicated that CRBR termination would effectively kill the LMFBR program.

In this regard, information obtained by us indicates that, if terminated, restarting CRBR at a later date might be so difficult and costly as to outweigh the benefits. In letters to Senators Henry M. Jackson and Howard H. Baker, Jr. dated June 23, 1977, (copy of report to Senator Jackson

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enclosed) we reported that ERDA officials estimated the additional costs that would be incurred if ERDA terminated the project, on or about July 26, 1977, and then resumed work on December 1, 1977--some 4 months later. We chose a December 1, 1977, date because it allows the Congress an opportunity to consider fully whether to go ahead with CRBR efforts.

ERDA provided us the following cost and schedule information using three assumptions:

1. Assuming the licensing process could begin where it was stopped, project costs would increase by about \$346 million and plant operation would be delayed about 2 years.
2. Assuming the licensing process would have to begin with a new application, project costs would increase by about \$546 million and plant operation would be delayed over 3 years. Neither this assumption nor the first accounts for the possibility that ERDA may be required by the Nuclear Regulatory Commission (NRC) to locate the plant at a different site if projected plant operation is delayed, a distinct possibility according to NRC officials. In fact, the Deputy Director, Division of Site Safety and Environmental Analysis, NRC, told us that if CRBR were delayed for 2 years or more, it would be very difficult, if not impossible, for NRC staff, in its analysis to conclude that it is cost beneficial to locate the demonstration reactor at the Clinch River site.
3. Assuming the plant would have to be relocated, project costs would increase by about \$1.1 to \$1.3 billion and plant operation would be delayed 5 to 6 years.

Although we did not have the opportunity to evaluate ERDA's estimates in detail, we believe they provide a reasonable indication of the magnitude of the costs and extent of schedule slippages that might occur if the project were terminated on July 26, 1977, and the Congress decided to restart it at a later date.

The view expressed in our June 14 report was not new but rather was based on work done for several earlier reports in which we concluded that because of the many uncertainties regarding whether and when the LMFBR is needed, the most logical course of action is to pursue the LMFBR program on a

schedule which recognizes that the program is in a research and development stage. We view CRBR as a logical extension of the research and development effort. Not until some point in the future, perhaps 7 to 10 years from now, need a firm decision be made as to whether the Nation should commit itself to the LMFBR as a basic central station energy source. At that time, many of the uncertainties of today should be reduced or eliminated, particularly if priority efforts are made to resolve as many as possible between now and then.

Although the Administration budgeted over \$500 million for LMFBR research and development in fiscal year 1978, a substantial portion would not be spent on LMFBR research and development. For example, \$142 million would be used solely to terminate the CRBR project. In addition, a large amount of the remaining funds would be spent on researching alternative fuels and reactor concepts. In a May 19, 1977, letter to the Vice Chairman, Joint Committee on Atomic Energy, the ERDA Acting Administrator said that the LMFBR program for fiscal year 1978 would be redirected toward, among other things, initiating research and development work on fuels which may offer proliferation advantages over the use of plutonium and toward a comprehensive reevaluation of alternate breeder concepts and advanced converters leading ultimately to a redirection of nuclear power development goals.

The Administration's proposal to terminate CRBR is based on the concern that increased plutonium availability will encourage nuclear proliferation. The Administration hopes that its decision to terminate the Clinch River project and otherwise reduce and redirect LMFBR research and development funds will encourage other nations to defer their plutonium breeder programs and seek alternative methods of meeting their future energy needs.

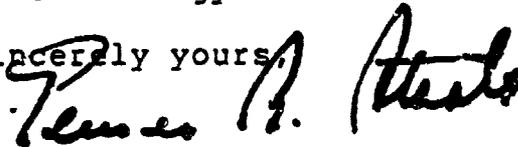
From a nonproliferation standpoint, it is uncertain whether the Administration's decision will have much impact. Britain, France, West Germany (in cooperation with Belgium and the Netherlands), the Soviet Union, and Japan have been conducting extensive fast breeder reactor research and development programs for years. With the possible exception of the Soviet Union and Britain, which have relatively large amounts of natural energy resources, these countries see an urgent need for LMFBRs. Their programs are independent of the U.S. effort and appear likely to continue regardless of what this Nation decides to do about its LMFBR program. We believe that significant delays in our LMFBR program at this time may dilute our Nation's future ability to influence safety and other features of breeders worldwide.

Although we support the Administration's goal of stopping the international proliferation of nuclear weapons capability, the success of this unilateral action in reducing international nuclear weapons proliferation will depend on the response by other countries. We recognize that such response should be greatly influenced by U.S. diplomatic initiatives and possibly by economic considerations.

Your letter also asked that we study the relative proliferation potential of alternative nuclear systems and that we keep you fully aware of our work in nuclear energy-related matters. We have recently initiated such a review at the request of the Vice Chairman, Joint Economic Committee. The issues involved are numerous, complex, and controversial. Nuclear proliferation goals are important but other factors must also be considered in reaching a decision on the best course of action. Technical, economic, environmental, timing, and other factors must also be determined and thoroughly analyzed before decisions can be made on the relative advantages and disadvantages of the various alternatives.

My staff will gladly meet with you or your staff on a continuing basis to keep you advised of the progress of this review and our other work in nuclear energy-related matters.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Thomas P. Atkins". The signature is written in a cursive style and is positioned to the right of the typed name.

Comptroller General
of the United States

Enclosure