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TESTIMONY OF

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BEFORE THE

TASK FORCE ON ENERGY AND ENVIRONMENT

OF THE HOUSE BUDGET COMMITTEE

ON

THE REAGAN ADMINISTRATION'S ENERGY BUDGET

March 12, 1981

My name is Thomas B. Cochran. I am a Senior Staff Scientist with the Natural Resources Defense Council, a national nonprofit environmental organization with a membership of approximately 40,000. I hold a Ph.D. in physics from Vanderbilt University and am the author of The Liquid Metal Fast Breeder Reactor: An Environmental and Economic Critique, published in 1974 by Resources for the Future. I am presently a member of DOE's Energy Research Advisory Board.

The immediate question before this Committee is what is an appropriate level of expenditure for energy research and development in light of the urgent need to meet the competing goals of reducing reliance on imported oil and reducing government spending in an effort to bring inflation under control. The purpose of my testimony here today is to demonstrate that:

- The Reagan Administration's breeder reactor R&D budget must be reduced by $400 million to $500 million to make DOE's nuclear fission program consistent with the economic principles established by OMB for other energy R&D programs.
- A shift in energy R&D priorities, including a reallocation of the $400-500 million excess in FY 1982 breeder funds, to other energy programs could result in a significant reduction in both annual energy use and oil imports in the U.S.

between 1985 and 2000 over and above those reductions due to normal market forces.

With regard to the breeder program, there are several important points to consider:

- The primary objective of U.S. national energy policy must be the reduction of our dependence upon imported oil.
- The plutonium breeder is designed primarily to produce electricity. Electricity is not in short supply. We have a liquid fuel problem -- imported oil -- not an electricity supply problem. The plutonium breeder will not reduce American dependence on foreign oil by a single drop.
- An additional purpose of the plutonium breeder is to create an alternate fuel to uranium. Such an alternate fuel is only important insofar as the plutonium breeder reactor system is economical.
- Uranium is cheap and plentiful. The U.S. is not a net importer of uranium. Two of our closest allies, Australia and Canada, have large uranium reserves. Stockpiling uranium is far cheaper than building plutonium breeders. In the event of a hypothetical uranium shortage in 2020, breeders would increase the electricity available by only a percent or so. Thus, breeders don't provide any needed or significant additional <u>nuclear</u> fuel independence.

° The best economic data today makes it abundantly clear that the plutonium breeder will not be economical until well into the 21st century, if ever.

Regarding the inability of the plutonium breeder to compete economically with commercially available uranium-fueled light water reactors for the next fifty years or so, let me just note that this is one point where there is agreement among such diverse interests as:

David Stockman,

the American Enterprise Institute,

the Wall Street Journal,

the New York Times,

NRDC, and

the Carter Administration, including DOE.

There have been numerous economic (cost-benefit) analyses supporting this view.[1]

1/ Cf. Brian G. Chow, "Economic Comparison of Breeders and Light Water Reactors," prepared by PanHeuristics for the U.S. Arms Control and Disarmament Agency, 23 July 1979; "The Nuclear Strategy of the Department of Energy, Office of Energy Research," DOE, Sept. 26, 1978 (editorial revisions: Feb. 15, 1979); David Stockman, "The Market Case Against the Clinch River Breeder Project," Sept. 17, 1977; Brian G. Chow, "The Liquid Metal Fast Breeder Reactor: An Economic Analysis," The American Enterprise Institute, December 1975.

David Stockman's analysis, where he concludes the Clinch River breeder is "totally incompatible with our free-market approach to energy policy," is the best evidence that the Reagan Administration's plutonium breeder program budget is totally incompatible also with the economic principles established by OMB (Stockman) for guiding reductions in energy R&D program budgets.[2]

Given these realities, what is an appropriate level of funding for the fission R&D program? Where should the cuts be made?

First, it should be noted that one commercial-size breeder discharges annually a nuclear weapons material inventory equivalent to that of the U.S. or the U.S.S.R. in the early 1950s. One Barnwell-size breeder fuel reprocessing plant, handling some 50 breeders, will have a 5-year throughput exceeding the entire U.S. nuclear weapons material inventory invested in some 26,000 nuclear warheads! This is not energy security; it is a program for disaster. With vast quantities of directly usable nuclear weapons material flowing through its fuel cycle, the plutonium breeder carries the greatest risk of nuclear proliferation. Given this fact and the poor economic prospects

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2/ The OMB principles set out in the infamous "Black Book" are:

- Government support should be focused on longer-term, high-risk R&D with potential for high payoff.
- Government involvement could continue only through "proof of concept" at the process development unit scale.
- Nearer term technical support for processes would be limited to cases where the government has a unique technical resource or facility.
- Industry would be responsible for supporting demonstrations and commercializing the technologies as they become economic.

for the plutonium breeder, this R&D program should be terminated.

Even if some R&D were considered desirable, however, the LMFBR could remain a healthy research and development -- as opposed to a research, development, and demonstration -- program at the $200 million per year level. Such an R&D program would center around the existing 400 Mw_t Fast Flux Test Facility (FFTF), a fuels and materials test facility just starting up at Hanford. This funding level would still permit research leading to possible commitments to two breeder demonstration plants -- a plant the size of CRBR or the "bigger, better" breeder and a commercial-size plant -- well before 2030-2050, the earliest expected commercial entry date for the breeder. The $70 million retained for conventional reactor systems, perhaps augmented by an additional $10 million, would provide for development and demonstration efforts to improve their economy of uranium use by up to 30 percent, thereby deferring even further the justification for plutonium fuels -- pushing the date of possible commercialization of the plutonium breeder well into the latter part of the 21st century.

In contrast to this approach, the Reagan Administration's budget for the DOE includes $681 million in FY 1981 and $737 million in FY 1982 budget authority for breeder reactor systems. This includes $58 million for Admiral Rickover's Water Cooled Breeder Program and the remainder for the plutonium breeder -- the Liquid Metal Fast Breeder Reactor (LMFBR). Within the LMFBR program, $254 million in FY 1982 is for the Clinch River

Breeder Reactor (CRBR), and $15 million to continue conceptual design work on a larger, 600-900 Mw_e breeder.

The Light Water Breeder Reactor (LWBR) program should be terminated under the OMB economic principles. There is no utility nor nuclear vendor interest in this program. In fact, there is zero interest in this program outside the walls of Admiral Rickover's inner office. Its name is a fiction. It does not breed, and it cannot compete economically with today's light water reactors (LWRs).

With respect to the LMFBR program, the proposed Reagan DOE breeder budget for FY 1982 not only supports continuation of the CRBR and design of the follow-on plant, but also initiates the fabrication of components for this larger breeder. Part of the $141.8 million Breeder Technology line item in the LMFBR base program budget includes "detail design" and "prototype fabrication" of large 85,000 GPM sodium pumps. These pumps are sized to the large follow-on plant. They are to be tested in the Energy-Engineering Center (ETEC) -- an additional $30 million in capital equipment and construction. In other words, this is the beginning of a large commercial infrastructure (e.g., Byron Jackson, Atomics International, and Westinghouse) that must be subsidized by increasingly large federal subsidies. It simply does not make sense to construct these large hardware items for the "bigger, better" breeder 50 years in advance of commercialization. Similarly, DOE plans to test "improved equipment" in an Integrated Equipment Test (IET) facility.

The IET and the Hot Experimental Facility (HEF), the next hardware step in the fuel reprocessing program, are not needed unless a commitment is being made now to the bigger follow-on breeder plant.

The Carter Administration's FY 1981 request for the LMFBR program was $300 million ($381 million below the Reagan FY 1981 total breeder budget and $433 million below Reagan's FY 1982 figure). Even if a plutonium breeder program were considered desirable, $300 million is high in terms of a reasonable program if the objective of the program is to make the LMFBR available if and when it becomes economically competitive with other electricity-generating technologies in the 2030 to 2050 time-frame. As noted previously, a more reasonable LMFBR budget compatible with its current economic prospects is about $200 million per year -- $481 million below the Reagan FY 1981 breeder budget and $537 million below the FY 1982 figure.

In sum, this Committee's budget recommendation should be based on the assumption that the LWBR program is terminated and the plutonium breeder budget reduced at least to $200-300 million.

Next I wish to say a brief word about how these funds could be better allocated.

There is now widespread agreement that programs designed to improve energy productivity (i.e., energy conservation) are the most cost effective means of saving energy in the near term. Jonathan Lash, President of the Energy Conservation Coalition, in his testimony before you today, has presented evidence that

the DOE conservation programs, if kept intact, would reduce annual energy use by 2.5 quads in 1985 and 13 quads by the year 2000. These programs could be preserved for what is being wasted on the breeder.

We believe the breeder program is technically deficient and will never produce a commercially successful technology. But even if you view the program in the best possible light, even if you assume it will be highly successful, a budget increase now is totally without justification. This is so because, first, many other more promising energy programs, particularly conservation and solar, are being drastically cut and in some cases eliminated. This inconsistency and favoritism toward special interests and parts of the country is exactly what the President promised to avoid. We were told that all would suffer equally, but the budget increases for the breeder represent the worst sort of special interest protection.

Second, the purposes of the breeder program can be met far more successfully by other DOE programs -- again particularly conservation and solar -- even assuming the program is successful. As noted previously, the breeder will not back out a single drop of imported oil. We can save more oil and reduce imports at less cost in considerably less time by emphasizing other programs.