

Proposed Energy Budget Would Wreck America's Nuclear Future

The Carter Administration's overall budget allotment for Fiscal Year 1979 to nuclear energy development is expected to decrease in absolute terms. With this perspective clearly stated in the budget report, there is no reason for elation over the modest real-dollar increase in research and development funds.

Starting in the mid 1960s, the real dollar amounts of the federal budget and the proportion of the Gross National Product devoted to research and development began a serious decline. It is only in the last year that a modest increase in research and development funds has been allotted. However, the decade of previous deterioration in the nation's capacity to generate new technologies and advances in the frontiers of science can not be made up by small short-term improvements in funding. Furthermore, the shift to emphasis on research into "soft" technologies, like solar and wind energy sources, away from real technological advances accounts, for a significant proportion of the increases in research and development funding.

In general, the new budget emphasizes basic research, with an increase of 10.9 percent (about 5 percent above cost increases) above 1978, while reducing emphasis on development of demonstration projects, increasing only by 6.1 percent (about even in terms of cost increase) over 1978.

The ostensible reason for the deemphasis in development is threefold, the need to avoid overtaking private sector activities, cost-benefit analysis, and the need to avoid duplicating demonstration efforts.

In the case of nuclear energy development, none of these reasons actually are applicable. Private-sector development of advanced sector nuclear technology is at a very low ebb. Major nuclear companies have had virtually no new orders for a significant period, largely due to the government's outright sabotage of nuclear exports and domestic opening up of the courts to environmentalist obstruction. Promising advanced fuel cycles such as the Molten Salt Breeder Reactor, the German-developed Pebble Bed Reactor, or the Plasma Core System have either been canceled in the last couple of years or are languishing on virtually no funding.

Fusion

According to published Department of Energy planning documents the Schlesinger budget for U.S. fusion research is designed such that "a practical fusion power system might never be built."

So far only the fact that the laser fusion research budget has been decreased from \$129 million for fiscal

1978 to \$126 million for 1979 has been publicly released. Informed sources report, however, that even the main U.S. fusion program at Lawrence Livermore Laboratory is receiving only token funding increases, while other labs, including electron beam research, are being cut back. At Livermore, not even enough funds are available for fully operating the new Shiva laser, the largest and most powerful in the world which by itself could demonstrate the feasibility of laser approaches to fusion.

The Schlesinger budget proposed for magnetic fusion research for fiscal 1979 gives a total budget authority of \$334 million, a \$9 million increase over fiscal 1978, an increase which does not even compensate for the effects of inflation. The proposed Schlesinger budget takes the fusion program from LOGIC II level of funding — a "moderately expanding, sequential program" under which "a fusion demonstration reactor might operate in the early 21st century" — to LOGIC I levels of funding — "Research and development are supported at an arbitrary level... If this pace were continued, a practical fusion power system might never be built."

The magnetic fusion program is limited to a handful of large, costly demonstration experiments. The more scientifically productive intermediate experiments such as the Oak Ridge Tokamak, the ORMAK (a device which demonstrated both that plasma could be heated to fusion temperatures and that higher power densities needed for economical power plants could be attained) are completely cut off.

No funds are allocated to follow up promising alternative and advanced concepts, and the internationally renowned Alcator tokamak research team at the Massachusetts Institute of Technology, which unexpectedly two years ago demonstrated the scientific feasibility of the tokamak approach for confinement parameters, has been directed to go back to Shanghaiing students off the streets to meet personnel requirements.

Fission

A potentially important program, improvement of the assessment of domestic uranium enrichment techniques, will be expanded from \$65 million to \$95 million in the new budget. However, this program is being mischanneled into the phony role of determining when advanced nuclear technologies will be required. It should be obvious from a reading of the Administration's perspective on nuclear technology development that they have no intention of carrying out such an implementation of advanced technologies.

Specifically, the Clinch River Breeder Reactor project

will be cut from a 1978 allocation of \$33 million to \$13.4 million for 1979.

The Fast Flux Test Facility will be cut from \$127 million to \$70 million.

Overall breeder technology development will be cut from \$214 million to \$127 million.

The total budget for breeder reactor technology development is reduced from \$517 million to \$367 million.

At the same time, however, a healthy increase in application research for advanced nuclear systems is given, from \$226 million in 1978 to \$279 million in 1979. None of these projects are at the demonstration phase, as the Clinch River Project is, so they can be safely funded as laboratory demonstrations without interfering with plans to eventually phase out all advanced energy technology implementation.

While nuclear fuel reprocessing has been held up, reflected in dramatic cuts from \$104 million to \$58 million in the Nuclear Fuel Cycle Support funds, the budgets for waste management and spent fuel storage have increased from \$181 million to \$190 million.

Finally, light water reactor development facilities have been cut from \$28 million to \$10 million.

"Soft" Technologies

The phony search for "proliferation-proof" advanced nuclear power generating systems will be continued. It must be emphasized that only through large-scale implementation of existing and projected nuclear fission, including fast breeding of fuel, can the U.S. meet the projected energy deficit that would otherwise occur before commercial power generation from fusion reactors comes on line through an accelerated development program.

According to the Office of Management and the Budget Report, "The Department of Energy will continue to develop solar, geothermal, and fossil fuel technologies, with emphasis on using coal in an environmentally acceptable manner.... Overall funding for nuclear research and development will decrease, reflecting the Administration's decision to defer the development of the liquid metal fast breeder reactor. A reduced, but still strong, program of alternative breeder reactor technology development will be maintained." The figures cited above attest to the actual gutting of the breeder program.

The Method Behind Schlesinger's Madness

Exclusive to the Executive Intelligence Review

In the presentation of the Fiscal Year 1979 Department of Energy budget, Secretary Schlesinger clearly emphasized the drastic shift in emphasis of his first energy research and development budget away from "long-term" energy development to one of "immediate commercial application." In congressional testimony last week, Schlesinger told a stunned congressional committee that biomass and the use of "wood chips to produce natural gas" are the forms that have the "earliest pay-off." Congressman Wydler (R-N.Y.) correctly attacked the Schlesinger budget for deemphasis on long-range research and development, especially nuclear (see Executive Intelligence Review, Jan. 31, 1978, Vol. V, No. 4). The Department of Energy budget allocations for fast breeder development and crucial areas of controlled thermonuclear fusion research vitally deemphasize the most far-reaching areas of long-range research and development.

The justification offered by Schlesinger is the "awesome" rationale of "cost effectiveness." Schlesinger, who previously was himself head of the Office of Management and Budget (OMB), worked his current budget out in accord and stated full agreement with the OMB criteria for cost-effectiveness. The following analysis, drawn from a study done by a private consulting firm, ECON, was prepared for the U.S. Energy Research and Development Administration, under contract No. EG-77-C-02-4181. It demonstrates precisely how the built-in parameters presently employed by OMB ensure that no long-range research and development is "cost effective"!

...The research expenditures for long-range energy research and development programs such as fusion

occur in the short term, whereas the direct benefits to be gained from the research begin to occur...years into the future. Thus one is faced with comparing research dollars spent today with returns on investment occurring many years in the future. The economist deals with this problem by "discounting" future cash flows to the present. That is, a person may feel that a dollar to be received one year from today is worth only 91 cents today (assuming no inflation). Thus, it is said that the person has a 10 percent discount rate r , and the 91 cents is referred to as the present value, PV, of the cash flow C , of one dollar received one year, t , from today:

$$PV = \frac{C}{(1+r/100)^t} = \frac{1.00}{(1+10/100)^1} = 0.91$$

(Using this standard statistical "cost-benefit" OMB model, the ECON study shows that for a research project with estimated "commercial payoff" years in the future, the above OMB formula, under standard summation methods adding the present values of such annual cash flows, yields the "present value" for a project into the future — ed.)

In examining the benefits of a research project, the economist would calculate the net present value, NPV, of the project by treating project costs, C_t , as negative cash flows and project benefits, B_t , as positive cash flows...In standard benefit-cost analysis, one determines the NPV by developing a scenario for the research project, assessing the benefits and costs year by year, and then computing the NPV given an appropriate discount rate. The research project is economically justified if the expected NPV is not negative (emphasis added —ed.)

It is seen above that a key parameter in the calculation