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 occuring 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:

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

(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, *Ct*, as negative cash flows and project benefits, *Bt*, 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 of the expected *NPV* for developing a new energy technology is the social rate of discount. At the moment, the Office of Management and Budget imposes the use of a 10 percent rate of discount for the evaluation of federal expenditures. *Such a discount rate strongly favors programs with short-term benefits* (emphasis added —ed.). This is apparent if one computes the discount factor at *r* equals 10 percent for a time interval *t* equals 20 years. The value of a dollar of benefit achieved 20 years in the future is only 15 cents when discounted to the present, and a dollar benefit achieved 40 years into the future has a present value of only two cents. *It is little wonder that the 10 percent discount rate has caused some concern among people who believe that the future of this nation lies in the development of long-term, renewable or inexhaustible energy sources, and who feel intuitively that the development of these sources should be economically justified* (emphasis added —ed.).

...The problem using standard benefit-cost analysis to analyze long-range energy research and development such as fusion research is that, for any particular research program...standard benefit-cost analysis is quite likely to result in a negative net present value, particularly at a 10 percent social rate of discount. In fact, it is generally true that a standard benefit-cost analysis yields *pessimistic* results when used to analyze advanced research programs for the development of major new technologies. This is primarily due to the fact that this methodology does not allow for decisions to be made in the future under a state-of-knowledge that is better than that which exists today.

And this benefit-cost basis is what Schlesinger has presented to Congress as a "scientific" justification for his sabotage of the nation's most vital long-range energy research and development programs.

Cinci Mechanical Engineers Back USLP On Nuclear Energy

The nine-member executive board of the Cincinnati chapter of the American Society of Mechanical Engineers endorsed the nuclear energy policy of the U.S. Labor Party on Jan. 24. The statement, reprinted below, will now be submitted to the national executive board of the ASME.

I. Introduction.

An economically viable global energy policy demands

A. nuclear fusion power

B. nuclear fission-based technologies

C. fission-fuel breeders leading to fission-fusion breeders as the critical intermediate-term energy technologies

II. The Cases of Brazil and the Mideast.

A. Brazil is cited as an example of a nation which has committed itself to developing a cadre of nuclear scientists and engineers, nuclear support technologies, and nuclear power plants as a national policy — up to eight 1200 MW (megawatts—ed.) plants and $15 billion over 15 years. It would cost roughly the same as the oil equivalent of 10 GW of nuclear power annually, graduating 9000 nuclear technicians and engineers, 150 geologists, and 300 physicists. West German banks and nuclear industry have provided support for this program. By contrast, U.S. policy has lost us an early nuclear foothold in Brazil.

B. The Mideast development plan should be:

1) By 1985 a nuclear electric grid should be under development

2) The required capital could be generated by increased oil and gas production

3) The Mideast has been one of the fastest-growing producers and consumers of electricity. Even so, industry in Iran, for example, cannot exceed 60 percent of capacity.

4) Mass production of nuclear plants is required to provide an increase of from 95 to 345 GW (gigawatt), with about 200 additional GW nuclear between 1981 and 1985. This is worth about $200 billion in nuclear industry sales.

The ultimate payback would be in Gross National Product capita of the advanced nations.

III. The Scientific Principles of Energy Policy.

Rates of profit and capital formation must have a tendency to exponential increases in a healthy economy. The quality of any energy-generating technology is generally determined by:

A. the thermodynamic efficiency of the entire fuel cycle

B. the flux density (energy-unit area-time) is the most basic figure of merit

Because nuclear energy is denser than other historical sources, it is more efficient and cheaper overall. Fusion power and its accompanying technologies, such as laser technologies will create a new industrial, scientific, and economic revolution.

There are no limits to economic growth. The only issue is whether the fruits of growth are invested to insure future prosperity and profitability.

IV. The Transitional Energy Program.

The long-range solution is fusion energy and its self-reproductive effects within a fusion-based economy. To get from here to there, however, an entire spectrum of fission and fusion-fission power systems must be developed and built. But even at the current dismally low projected nuclear power growth rates, U-235 will run low in about 20 years. The Liquid Metal Fast Breeder Reactor (LMFBR) program must be accelerated and a program for developing the fission-fusion reactor must be implemented to increase the fissile fuel supply by nearly 200 times.