

The Perils of Clinch River

Conservative groups join the old enemies of the breeder reactor in a strike on DOE's budget

Even as the bulldozers began clearing a place for the breeder reactor along the banks of the Clinch River in Tennessee this September, congressional opponents were saying they would kill the project in the final days of the 97th Congress, if only they could get their hands on an appropriations bill.

The bulldozers went to work on 22 September, immediately after an appeals court judge in Atlanta overruled a lower court's order halting construction. Lawyers for an environmental group obtained the order on grounds that an impact statement had not been prepared properly. The Atlanta judge brushed the complaint aside and allowed work to resume.

Meanwhile, a coalition of House members led by Representative Claudine Schneider (R-R.I.) tried to carry on what has become an annual ritual of bashing the breeder. (Last year the Senate came within two votes of canceling it.) Schneider hoped to get a crack at it when funds for energy and water projects came before the House. But in the same week the bulldozers moved, the House put off the appropriations debate until after the election. Members voted to fund all federal projects at their present levels through 15 December by means of a continuing resolution. No amendments were allowed.

Another group is trying to stop the breeder in the Senate, where a vote on the continuing resolution is scheduled to take place as *Science* goes to press. There the antibreeder campaign is being led by conservative Republican Gordon Humphrey (N.H.) and Democrats Dale Bumpers (Ark.), Gary Hart (Colo.), and Paul Tsongas (Mass.). Two proposals are being offered. One would simply kill the breeder. The other would require the nuclear industry to finance half the development costs, as was originally planned in the early 1970's.

If these fail, it is possible that another debate on the breeder will occur in December, when Congress returns for a lame-duck session to vote on money bills the President wants this year. As one House staffer said, "The leadership can put us off once, but on something this controversial, they have to allow a vote eventually."

Advocates of the breeder are on the

defensive this year, perhaps more so than in the past, because of a couple of changes in the political and economic situation. Most important, a group of well-organized conservatives has begun calling for an end to federal subsidies. Over \$1 billion in federal dollars have been spent on the breeder already, with nothing much to show for it. Finishing the project could cost another \$2.6 billion, if the Department of Energy (DOE) is to be believed. Or it may cost as much as \$7.5 billion more, if all the elements of a new estimate issued by the General Accounting Office on 24 September are added. It includes \$3.9 billion of imputed interest to reflect the cost of borrowing money when the budget is in deficit. Other methods of projecting costs produce higher figures. Representative Richard Ottinger (D-N.Y.) believes the true future cost is between \$5 and \$7.7 billion.

The conservative Heritage Foundation has teamed up with the Taxpayer's Union and environmental groups in arguing that the money is being wasted. How did this odd coalition come into being? The story circulating this summer was that conservatives were looking for a way to punish Howard Baker (R-Tenn.), the moderate leader of the Senate. He angered the right wing of his party when he pushed the 1982 tax increase through

Congress. Now the conservatives would like to exact a tax of their own by killing what they regard as a pork-barrel project in Baker's own state. Baker has preserved the breeder against earlier attacks; it remains to be seen whether he can fight off another sally led from within his ranks.

One of the strategists of the anti-breeder campaign in the Senate is Henry Sokolski, formerly a visiting scholar at the Heritage Foundation, now a member of Senator Humphrey's staff. He dismisses the anti-Baker aspect of the quarrel, although he does not deny that it exists. More important, he says, is the fact that the breeder embodies the sort of ill-conceived, expensive, and unnecessary federal extravagance that conservatives abhor. It is coincidental that on this occasion he shares the platform with antinuclear activists. Sokolski, who claims to be helping the industry, argues that if the antinukes were clever, they would try to keep the breeder going a few more years. It has become an albatross, he thinks.

Another change that has damaged the breeder's prospects is the collapsing demand for energy, brought on by the global economic recession. Coal, oil, and uranium are in abundant supply and prices are coming down. The spot market price of a pound of U_3O_8 , for exam-



Making room for the 21st century

Workman clears wilderness site for the Clinch River plutonium breeder reactor.

ple, has dropped from around \$40 in late 1980 to less than \$18 now.

The government began funding the breeder more than 10 years ago on the premise that a boom in the demand for nuclear power would create a shortage of uranium fuel. The breeder would produce more fuel (plutonium-239) than it used, and was envisioned as an alternative energy source to be tapped when uranium prices reached a high level. Like the market in which synfuels are supposed to be competitive with natural oil, the situation in which breeder fuel becomes competitive with uranium has been an elusive and ever-receding vision. Recent studies have estimated that the "breakeven price" for a pound of uranium and breeder viability is between \$120 and \$280 in 1980 dollars. The DOE estimates that the price of uranium fuel will only be \$48 in 1995. And a recent Congressional Research Service review of the technical literature concluded: "Recent analyses would seem to indicate that it is quite unlikely that breeder reactors will be economic before 2020, but there is a reasonable probability that they may become economic within 20 years after that date."* Thus, as fuel prices deflate, the rationale for the breeder deflates with them.

The Administration's policy for funding technical projects, as explained by presidential science adviser George Keyworth, is to reserve support for economically promising, innovative research only. To the extent that cuts must be made, they will be focused on demonstration projects, which are designed to move a concept out of the laboratory into a commercial setting.

The paradox of the breeder is that it is a demonstration project for which no commercial setting exists. The concept has been established and continues to be researched at the DOE's Fast Flux Test Facility in Hanford, Washington. The debate now centers on the issue of when, if ever, there will be a market ready to incorporate the breeder. As now conceived, the reactor will require many ancillary services (plutonium fuel fabrication plants, spent fuel processors, and new safeguards against diversion of supplies to weapons makers), none of which are in existence. Their costs are unknown, although some recent analyses, including Ottinger's, try to incorporate a figure for them.

Thus the breeder appears vulnerable. But President Reagan has made it plain that he intends to invest in a nuclear

electric system for the future, and that he views the breeder as an essential part of the portfolio.

Some astute critics in Congress have tried to show that it is possible to invest in advanced nuclear systems without splurging on this particular demonstration project. The breeder can come later, they say. Representative Ottinger made a survey of some alternative prospects in hearings last October (*Uranium Efficiency Improvements*, House Energy and Commerce Committee, publication 97-94). Among other things, he learned of DOE-funded research indicating that light water reactor cores may be altered slightly to extend the life of uranium fuel. Technology now within reach could reduce spent fuel output by 40 percent and cut uranium demand by 15 percent. As though to confirm this potential saving, Westinghouse announced in July that it has joined with Mitsubishi and five Japanese utilities to design and build an advanced pressurized water reactor using 20 to 25 percent less uranium. The French nuclear program is aiming for similar, but not quite as great efficiencies. Thus Ottinger was surprised to find that the Administration this year requested a cut from \$13 to \$4 million in the DOE's research budget in this area. The cut has been reversed in the House Appropriations Committee, which set the funding level at \$15 million. The issue will come to a vote when the energy and water appropriations bill comes up in December.

As the likelihood of a uranium shortage becomes more remote, the benefits of the breeder seem less attractive, especially in light of the high initial investment costs. Supporters of the breeder these days tend to stress its value as an asset to national security. Other nations are beginning to work on commercial plutonium reactors, and so, it is argued, the United States cannot afford to fall behind. Even this argument is being undermined by changed circumstances. The German consortium for funding the Kalkar breeder has come apart, and the Bundestag must decide soon whether to increase the federal subsidy or let the project die. The French program, often cited as an example of what the United States could do, has run into financial problems. French electric rates are due to rise sharply this year (by about 30 percent), and the backlash is expected to take its toll among the more speculative projects, like the Super-Phenix breeder.

The overall impact of these changes is to make this year's vote the most difficult test yet for the Clinch River breeder.—ELIOT MARSHALL

ICSU Accepts China and Psychology

The International Council of Scientific Unions (ICSU) has finally recognized psychology as a legitimate scientific discipline. It has also found a way to admit the People's Republic of China into its fold without severing ties with Taiwan.

ICSU, which is regarded as the world's premier international scientific organization, took these two steps at its meeting last month in Cambridge, England. Both were preceded by years of negotiation.

Psychologists have been trying to join ICSU for more than a quarter-century, but their organization, the International Union of Psychological Science, has had its application rejected several times.

They got a foot in the door 2 years ago, when ICSU granted the psychology union second-class status as a scientific associate. This year, they tried again for full membership, and finally won approval. But it wasn't easy. The admissions committee spent an hour probing the scientific basis of modern psychology before passing the application along to the general assembly. Neither the committee vote nor the general assembly vote was unanimous, according to Mark Rosenzweig, professor of psychology at the University of California at Berkeley, who represented the psychologists' union at the meeting. In contrast, the International Union of Microbiological Societies was accepted without opposition.

One tangible result of the election is that the International Union of Psychological Science has had to change its acronym to IUPsyS to avoid confusion with the International Union of Physiological Sciences.

As for China's membership, a formula has been sought since 1972 to bring the People's Republic of China into ICSU without abandoning Taiwan, a longtime member. This year, a compromise was finally reached. The Chinese Association of Science and Technology, from Beijing, was elected to membership, while the Taiwan Academy of Science remains a full voting member. One potential result is that Chinese scientific societies will now be accepted more readily as

*"The Economic Competitiveness of Breeder Reactors Compared to Light Water Reactors," by Robert L. Civiak, Congressional Research Service, 13 September 1982.