US plans help for nuclear industry

Civil power to link with weapons?

Washington

The Reagan Administration has offered the US nuclear industry all of the moral — and some of the economic — support that it wants. But even this may not be enough to restore the industry to health according to the parting words of the Nuclear Safety Oversight Commission (NSOC), an independent advisory body set up by President Carter following the Three Mile Island accident in March 1979.

Three main options face the Administration if it wants to save the civil nuclear industry, according to Governor Bruce Babbit of Arizona, chairman of NSOC. He presented President Reagan with this opinion when transmitting the commission's final report last month. Babbit warned, however, that each of the options would require a high political price.

The first option would be to regionalize the nuclear industry and draw it into the public power grids, a form of semi-nationalization already adopted, for example, by the Tennessee Valley Authority. The second would be to bail out the industry directly through government subsidies, although allowing it to remain largely in private hands.

The third and perhaps most controversial option would be to re-establish links between the commerical uses of nuclear power and the military demands for nuclear weapons, using the expansion of the latter to sustain the former. Some critics argue that the Administration's plan to use plutonium extracted from commercial wastes to provide fuel for weapons is already a step in this direction.

This drastic set of choices reflects the serious problems facing the industry. The most popular scapegoats have been the tough environmental regulations and stringent licence review procedures; but no less important has been the reduction in the rate of growth in power demand from 7 to 3 per cent a year over the past decade, and continued public concern about safety (highlighted by the design mistakes found in the Diablo Canyon reactor under construction in California).

The Administration has already taken several steps to assist the nuclear industry. In an attempt to encourage nuclear exports, for example, it is offering countries such as Mexico cut-price enriched uranium, and scientific collaboration in areas such as waste disposal and reactor safety.

Other measures are being taken to speed up the licensing of new plants. In a policy statement issued last month, Mr Reagan listed the goal of reducing the time needed to license and operate a new nuclear reactor from an average of 12 to 7 years as one of five steps intended to revitalize the nuclear industry (*Nature* 15 October, p.505).

Congress is likely to be sympathetic. Two weeks ago the House of Representatives passed a bill that would allow utility companies to start initial low-level operations of a new nuclear plant even before all local complaints had been fully heard. A similar measure, now before the Senate, is expected to pass with little difficulty.

The economic and safety problems facing the industry are unlikely to be resolved as simply. In the past few months several local utilities have decided to abandon plans for new reactors. In several cases, such as the Pilgrim II plant which was to have been built by Boston Edison Co. on the Massachusetts coast, construction delays and the need to incorporate new safety requirements have increased initial estimates of construction costs by about a factor of ten.

Many industry supporters feel that, in view of growing consumer opposition to the rapidly escalating electricity bills to finance such construction — in some cases increasing by 500 per cent within a few years — the only way for the industry to remain viable is through a massive infusion of federal funds. But this possibility is already coming under fire from both sides

Waiting at Diablo Canyon

Irish veterinarians in dog-house

Brussels

A report by the European Commission on the eradication of cattle diseases has levelled an accusing finger at the Irish veterinary profession. Since 1965 about £90 million has been spent by the state on eradicating bovine tuberculosis in Ireland but, says the Commission, "there has been no change in the bovine tuberculosis situation in Ireland".

"It should not be concluded that this lack of progress is due to any lack of finance (£11 million was spent in 1980) but rather to the fundamental fact that two-thirds of the reactors are being missed at annual round testing" continues the report. The Commission does not accuse anyone of cheating. It does, however, draw a comparison with the results obtained during the early 1970s by about 50 temporary veterinary inspectors employed by the Department of Agriculture to carry out tuberculin tests on a random sample of herds that were normally assigned to local veterinary surgeons for testing. The inspectors tested about 18 per cent of the national herd over several years and found approximately three times as many infected animals and herds as had the vets.

It would, of course, be to the farmers' advantage to avoid having their animals identified as being infected as this would involve high costs. Apart from the restrictions on the movement and sales of the animals and the need for proper handling and isolation facilities, the amount of compensation paid for slaughtered beasts does not match full market value, in contrast with the situation in the United Kingdom.

Faulty testing schemes may be the answer and the European Commission, which is proposing to continue with its accelerated programme to eradicate brucellosis, tuberculosis and leukosis in the EEC, is threatening to cut off disease eradication funds to Ireland unless testing procedures are improved.

The EEC's contribution to the shared costs of accelerating the eradication of these diseases is some 130 million European Currency Units (about £65 million) over the past three years. The Commission confidently reports that by 1983 at the latest, all EEC herds will be under control as far as brucellosis and tuberculosis are concerned. By the end of the current programme, it is estimated that 1.5 million animals will have been destroyed.

Enzootic bovine leukosis will almost certainly be eradicated in Denmark in the near future and the disease is well under control in Germany. France and the United Kingdom have not availed themselves of EEC funds to eradicate leukosis. The Commission also studiously avoids contributing to the debate in the United Kingdom on the badgers and tuberculosis issue except to say that the disease has been practically eradicated there.

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of the political spectrum.

The Administration has already agreed to support a federal contribution of $123 million towards the almost $1,000 million which it is estimated will be needed to clean up the Three Mile Island power plant. Private utilities have agreed to contribute a similar amount through the Edison Electric Institute, and the rest of the money comes from insurance cover and from the states of Pennsylvania and New Jersey.

The extra costs of new plants is not merely a result of licensing delays. As safety questions come under scrutiny, embarrassing facts are beginning to emerge. At the Diablo Canyon plant in California, for example, the wrong blueprint had been used to calculate potential stresses arising from an earthquake. And almost all of the operating nuclear plants across the country are likely to miss the deadline imposed by the Nuclear Regulatory Commission for replacing between 15 and 40 per cent of their electrical equipment which had previously been thought safe, but which was shown to be liable to failure under exposure to steam and radiation that might occur during an accident.

Such design errors have played into the hands of anti-nuclear protesters who claim that nuclear technology must remain under strict control and supervision. The industry claims that it is being strangled by these controls; but, especially at a local level the courts have tended to back up the critics.

These developments appear to foreclose all but the final NSOC option — that of increasing links with the military sector, perhaps through the recreation of the Atomic Energy Commission which shared responsibility for the military and civilian uses of nuclear fission until the early 1970s. Department of Energy officials, for example, are already claiming that their initial proposals to extract plutonium from commercial wastes through laser isotope separation (*Nature* 30 July, p.401) could partially solve the storage problem.

Here again, however, the political problems are likely to be enormous. Critics argue that allowing the military greater leverage over the civilian programme could threaten attempts to control nuclear technology through more democratic means, and that it would conflict with efforts to limit the proliferation of nuclear weapons in developing nations by trying to divorce the civilian and nuclear aspects of nuclear energy.

Nobody in Washington pretends that finding the solution will be easy, President Reagan has asked Energy Secretary James Edwards and the director of the Office of Science and Technology Policy, Dr George (Jay) Keyworth, to consult industry, the utilities and universities, and they have been given almost a year to prepare a report on "obstacles that stand in the way of increased used of nuclear energy and the steps needed to overcome them".

David Dickson

Human growth hormone
Shortage persists

British supplies of human growth hormone are in danger. Over-optimism about the availability of the hormone from genetically engineered bacteria combined with a failure to appreciate that even mortuary workers are human has left the United Kingdom's National Health Service with supplies which are inadequate for the optimal treatment of the 800 British children with growth hormone deficiency.

Until biotechnology raised the prospect of an alternative, the only source of human growth hormone was the pituitary glands of cadavers. Three years ago at least 50,000 pituitary glands were collected from mortuaries in hospitals and processed in Cambridge. Another 20,000 pituitaries were collected from public mortuaries for processing in London. The combined operation, under the auspices of the Medical Research Council, would have produced more than enough growth hormone for British needs so that up to half of the pituitaries from hospital mortuaries were stockpiled. Because of a drastic fall in the collection of pituitaries from hospitals, the stockpile is now depleted. Faced with a huge rise in cost of the hormone, the Department of Health and Social Security (DHSS) has now ordered a reduction in therapeutic dosage during 1982.

Trouble began when DHSS took over the collection and processing of pituitaries. Most of the hospital pituitaries were to be processed in the department's new Centre for Applied Microbiological Research at Porton Down. Material from public mortuaries, on the other hand, was to be handled by the Swedish company Kabi Vitrum, chosen because it has the European rights to manufacture and market human growth hormone from bacteria genetically-engineered by the Californian company Genentech. Bacterial growth hormone was to have been provided by Kabi Vitrum to DHSS at a preferential price as soon as British clinical trials, due to start in January 1981, had been successfully completed.

The first snag with these plans was that DHSS decided to use the changeover as an opportunity to consolidate into the wages of mortuary workers at hospitals, the small sum that had previously been paid to them for each pituitary collected. As many a manager might have told DHSS, consolidation can be a recipe for diminished productivity. The number collected from public mortuaries has fallen to about 13,000 a year despite the reinstatement of the special payments, but was never more than 20,000. The combined annual collection of pituitaries has therefore fallen by 60 per cent and now provides less than half the amount of hormone needed to treat British children.

The shortfall has been exacerbated by a delay in the production of bacterial human growth hormone. The first batch of Genentech's hormone to be given to humans had unacceptable side effects (fever and the lysis of blood monocytes) and full clinical trials had to be postponed. The side effects were almost certainly due to the presence of bacterial toxins in the hormone preparation, and both Genentech and Kabi Vitrum have now developed a more complex purification process. Genentech claims that its cleaner preparation has cleared toxicity tests and says that it is already six weeks into a clinical trial on children. Kabi Vitrum is slightly behind, having just completed a toxicity trial in Sweden.

Some, however, doubt whether the bacterially-derived human growth hormone will pass through its clinical trials successfully. The scepticism is based on the fact that the bacterial hormone is not quite identical with the authentic human hormone. Clever though Genentech's genetic engineers are, they have not been

Two heads for one

The Centre National de la Recherche Scientifique of France now has its complement of two heads, a director-general and a president, just two weeks after the previous incumbents resigned on a matter of principle. First — as reported last week — the mathematician Jean-Jacques Payan has been appointed director-general; and now M. Claude Frejacques, present director of the Délégation Générale à la Recherche Scientifique et Technique (DGRST) has been appointed president.

The appointments may be interim ones, as the Minister of State for Science and Technology, M. Jean-Pierre Chevènement, is said to prefer a single director for CNRS, rather than the dual headship established by the previous administration. But there was no time to change the constitution before the national colloquium, due in January, where major policy issues will be thrashed out in public, and CNRS — as the major supporter of basic research in France — has to have a clear voice by then.

Nevertheless, the appointment of Frejacques, a career civil servant rather than a scientist, has its rationale. DGRST was effectively the administration of the previous — and less powerful — science minister, Pierre Aigrain, and Chevènement has begun to set up almost a rival administration in his new ministry. DGRST may in the end be disbanded in all but name, with its parts becoming wings of the research ministry. Chevènement already has a chef du cabinet, so some role had to be found for Frejacques. CNRS seemed to suit — now leaving the minister free to shuffle DGRST as he wishes.

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