

The authority is now in the process of negotiating with its foreign partners the details of the fast reactor research collaboration agreements that it signed in March. AEA has been given an assurance that the current review will not interfere with that process. UK expenditure on fast reactor development is to settle at £75 million a year for the foreseeable future (1984 prices), considerably less than the expenditure a few years ago and rather less than France and West Germany are putting into fast breeder development.

The government will now be looking for further ways of achieving savings at AEA. There are some fears that short-term financial targets may reduce the supply of nuclear engineers to a level below that necessary to support any expansion of the nuclear power programme next century. Energy strategists perceive a danger that failure to plan for future manpower needs could result in over-rapid expansion of the industry with consequent over-capacity: the French reactor construction industry is cited as an example. **Tim Beardsley**

Biological weapons

Soviet Union accused

Washington

THE US Department of Defense (DoD) said last week that the Soviet Union appears to be trying to apply genetic engineering research to an already broad biological warfare research effort that violates the Biological and Toxin Weapons Convention of 1972. Although the allegation, contained in the department's latest annual assessment of Soviet military power, is not accompanied by any evidence, the DoD pamphlet argues that genetic engineering could open up a large number of biological warfare possibilities. Natural organisms could be modified to carry diseases for which an opponent has no cure, and agents now thought too unstable for storage or biological warfare could be turned into practical weapons.

DoD says the Soviet Union has at least seven biological warfare centres, including one in the city of Sverdlovsk. It was this centre, the United States believes, which was responsible for a major anthrax leak in 1979 that may have infected as many as 3,000 people. The Soviet Union says the anthrax was caused by contaminated meat sold on the black market.

The DoD assessment reports that defence research and development by the Soviet Union is growing at a rate of six to



seven per cent a year and supports a network of 3,200 research institutes. The Soviet scientific enterprise, DoD ruefully points out, enjoys several advantages over that of the United States. Soviet educational institutions graduate five times as many scientists and engineers; and funding for strategically important programmes is not subject to the political uncertainties endemic in the United States.

Buttressing this indigenous effort, DoD

claims, is a coordinated campaign to poach scientific and technological expertise from the West. The Soviet Academy of Sciences and several of its institutes follow Western science and technology and subscribe to the growing number of computerized databases established in the West to disseminate findings. Although it concedes that the bulk of such technology transfer is legal, DoD says much of it is not. It complains that the Soviets acquired crucial information on magnetic bubble memory through a Hungarian scientist working at a US university on a US-funded grant.

The pamphlet says the Soviet Union has made good use of its student exchange programme with the United States. At least three-quarters of the students it sends to the United States are scientists or engineers, whereas their US counterparts tend to be from the social sciences or humanities. Soviet candidates have "nearly always" proposed research involving technology with military applications. **Peter David**

Refusnik freedom?

SOVIET Jewish scientists may have reason to hope that the regime of Mr Konstantin Chernenko will prove less harsh than that of his predecessor. Dr David Goldfarb has now been given permission to emigrate although previously he had been several times informed that, in his former work as a molecular biologist, he had had access to classified data, and therefore could not be allowed to leave the country.

Moreover, Dr Viktor Brailovskii, who has just completed a term of Siberian exile for (in effect) having hosted the Sunday seminars for "refusnik" scientists, has been allowed to return to his Moscow home. Previously prominent activists who had served terms in Siberia were not allowed to return to Moscow or Leningrad.

Even so, pessimists among the refusniks point out that only 51 Jews were allowed to leave the Soviet Union in March, the smallest number since the emigration movement started in 1968. Optimists suggest this figure was an aftermath of the Andropov era. **Vera Rich**

Hungary

Week exposes weak links

THE "Hungary Today" week in Britain (9-13 April), although it included some peripheral cultural events, was intended primarily to promote Hungarian technology. The first such event for twelve years, it included a small technical and trade exhibition in London, and briefing seminars in London and Manchester. Held in the afterglow of the visit of the British Prime Minister, Mrs Margaret Thatcher, to Hungary in February, and a successful "British week" in Budapest, despite diplomatic pleasantries, the week highlighted the many difficulties inherent in East-West cooperation.

In nuclear power, for example, Hungary is committed to a programme based on Soviet VVER light-water reactors and Soviet fuel. Hungary provides the generating equipment and the resulting station is more than a simple matching of the two components, since the Hungarians have introduced a number of improvements of their own. Notably, they have developed a special containment system for the VVER reactor which they have managed to sell back for a Soviet power station. Since it would be unrealistic to envisage British nuclear reactors in Hungarian power stations, the only possibility of major cooperation would be in the joint supply of equipment to a third (preferably neutral or nonaligned) country.

In some sectors, cooperation in knowhow seems more promising than in hardware. The Hungarian modification of the PROLOG programming system, M-PROLOG (the M stands for modular) seems to offer a number of possibilities. In one case, the construction of dry-cooling towers for conventional power stations, Hungary has to some extent stolen a march on Britain; using a principle pioneered at Rugeley in the 1960s and since abandoned in Britain, the Hungarians have secured several valuable construction contracts in arid countries. The Hungarian visitors, incidentally, seemed only too willing for future British partnership in such ventures.

But many obstacles stand in the way of further cooperation. For instance, the Csepel machine tool works can offer high-precision computer controlled machine tools at prices attractive to British entrepreneurs. But if the device breaks down, up to a fortnight of valuable production time could be lost while the maintenance engineer applies for a visa for his service call. Perhaps, in future, events aimed at promoting technological cooperation should include a session in which the technologists and customers could tell the bureaucrats how the latter could best help by removing or ameliorating tiresome non-economic constraints. **Vera Rich**