UK report recommends nuclear reprocessing

THE long-awaited 'Windscale report', the result of a 100-day inquiry into a planning application for a nuclear fuel reprocessing plant, was published this week by a subterfuge on the part of the minister responsible, Mr Peter Shore, Secretary of State for the Environment. The report recommends that outline planning permission should be granted "without delay" to British Nuclear Fuels Limited (BNFL) to build a new thermal oxide reprocessing plant (THORP) at Windscale, Cumbria. Mr Shore, legally bound to make a decision on the issue without further consultation, but wishing to involve parliament in the debate, has decided not to grant planning permission, but to seek a 'Special Development Order' through parliament which would reverse his decision and allow the plant to be built. Mr Shore is in favour of the plant; the arcane procedure is the result of the lack of an effective mechanism for reaching democratic technical decisions in the UK—a problem in which the UK is not alone.

BNFL began lobbying MPs some months ago in the expectation that a debate was likely. A substantial and vociferous lobby of MPs is against THORP, but BNFL are "99% sure" that THORP will survive the parliamentary process. Costing £600 million at current prices and designed to reprocess 600 tonnes of British and foreign spent oxide fuel a year by the PUREX process (see below), THORP will take 10 years to build once authorised.

The report, the lonely work of the Inspector, Mr Justice Parker, has been received by BNFL as a "complete vindication" of their proposals, and by Mr Shore as "cogent and persuasive". Friends of the Earth, on the other hand, "found it hard to credit the extent to which he [Mr Justice Parker] has overlooked or misunderstood key aspects of the argument". FOE single out the passages on waste management, energy economics and foreign policy for special attack. "We can only assume that the pressure to produce the report quickly left insufficient time to assimilate the evidence" said FOE.

Mr Parker's support for THORP is based on 12 principal arguments, which are as follows:

1. Stocks of spent fuel from AGRs (advanced gas-cooled reactors) presently existing and under construction will, unless reprocessed, continue to build up and will have to be stored until disposed of in some manner.
2. It is necessary to keep the nuclear industry alive and able to expand should expansion be required.
3. Keeping the industry alive will involve further reactors being constructed and further quantities of spent fuel arising.
4. All the spent fuel stored will contain plutonium. The inventory of plutonium will therefore continue to increase for as long as reprocessing is delayed.
5. Prolonged storage of spent fuel would involve the development of new storage methods, which would be a costly and lengthy process.
6. To store increasing quantities of spent fuel would only be sensible if it was ultimately likely to be decided to dispose of the spent fuel without reprocessing.
7. Such a decision appears to be unlikely and not in our best interests or in those of future generations; it would commit future generations to the risk of escape of more plutonium than is necessary; and the risk would be greater since the spent fuel is likely to be more vulnerable to leaching by water than solidified highly active waste.
8. If reprocessing is going to take place at some time then it is preferable to start without delay, to gain experience of the process and its dangers while amounts of fuel to be reprocessed are small.
9. The risks from the emissions involved in reprocessing are likely to be very small and, if reprocessing is to designed in to THORP if they proved correct.
10. The risks of accident will, if reprocessing is to take place at some take place at some time, will in any event occur at some time. Evidence that current estimates are seriously wrong "did not appear to be convincing" wrote Mr Parker but any new estimates would ultimately have to be time, also have to be incurred, at some time. At the present they are likely to be containable within tolerable levels. If reprocessing were to begin suddenly on a large scale after a delay, risks would be greater.
11. The risks from terrorism are not significant.
12. The risks arising from transport would be no greater than at present.

Robert Walgate

New reprocessing technique promises diversion safeguards

BRITISH and American nuclear scientists have designed a new system for reprocessing spent reactor fuel which, it is claimed, makes the diversion of nuclear fuel for military purposes virtually impossible by ensuring that pure plutonium is not accessible at any part of the cycle.

The new system was announced jointly by scientists from the United Kingdom Atomic Energy Authority (UKAEA) and the Electric Power Research Institute (EPRI) of Palo Alto, California at a conference on energy technology held last week in Washington.

Developed in direct response to President Carter's concern that the worldwide expansion of nuclear power could lead to the increased proliferation of nuclear weapons, it is hoped by the nuclear community that the new process will calm many fears and open up the way for the 'safe' development of fast breeder reactors.

In contrast to conventional reprocessing techniques, whose prime aim is to separate pure plutonium and pure uranium from spent reactor fuel, the new system retains the plutonium mixed with both uranium and fission products making it lethally radioactive. In addition, the technology of the reprocessing process has been designed in such a way that even if a large force took over the plant, it would be unable, without making major and time-consuming modifications, to divert the process into producing pure plutonium that could be easily handled.

Speaking in Washington on Monday, Dr Walter Marshall, Deputy Chairman of the UKAEA and until recently chief scientist at the UK's Department of Energy, said that the UKAEA and the EPRI shared a belief that once a fast breeder reactor cycle had been developed, then it could be made proliferation proof. "You can make it so difficult to steal the plutonium from the cycle that you can virtually forget about it" Dr Marshall said.

In a paper to the conference prepared jointly with Dr Marshall, Dr Chauncy Starr, President of EPRI, said that recent concern over, for example, the possible theft of plutonium by terrorist groups made it important for the future guarantee of world energy supplies to develop a joint reactor and reprocessing system that was diversion-proof, in the sense that the difficulty

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