Chemical arms control

Destruction of weapons on show

Washington

THE United States this week put on a show of "verifiable" destruction of chemical weapons for members and observers of the 40-nation Committee on Disarmament, in an effort to rally support behind its negotiating position at the Geneva talks on chemical arms control. The demonstration, at the Tooele Army depot near Salt Lake City, in Utah, was designed to convince the parties to the talks that sufficient technical means are available for monitoring and verifying the destruction of chemical weapon stockpiles — provided they are supplemented by the continuous presence of on-site inspectors.

The United States and the Soviet Union have, from the outset of the negotiations, been at loggerheads on the issue of verification. Unlike existing chemical weapons conventions, which in effect ban only the first use of the weapons in war, the treaty under negotiation at Geneva would also outlaw the production or ownership of the weapons. Until last year, the Soviets had rejected all proposals for on-site inspections to verify existing stockpiles and their destruction. The Soviets have since eased their stance, but continue to oppose anything more than a limited number of periodic inspections.

The facility at Tooele Army Depot is an automated "disassembly" line that remotely dismantles a shell, removes the chemical agent and incinerates it. Scales and analytical instruments at various points along the line measure the amount of nerve agent destroyed and verify its chemical identity. The plant is currently being used by the US Army to destroy deteriorating munitions in the US stockpile.

US officials said they hoped to persuade the delegates that although instrumentation can confirm that what is supposedly being destroyed is indeed being destroyed, the instruments themselves are not enough. Robert Mikulak of the Arms Control and Disarmament Agency (ACDA) argued that without a human presence to monitor the destruction, it is impossible to tell if someone is "putting his thumb on the scale" or otherwise tricking the instruments. Instruments also need to be recalibrated regularly and the inevitable false alarms must be investigated. Without permanent on-site inspectors, a false alarm would necessitate shutting down the facility until the inspectors arrived. Under a proposal tabled by the United States at Geneva in July, the inspectors would be an international team, similar to that which carries out the enforcement of nuclear safeguards for the International Atomic Energy Agency.

The Soviet Union declined to attend the demonstration. But Romania, Yugoslavia and the People's Republic of China sent delegates, as did 26 other members and observers of the Committee on Disarmament.

According to former ACDA negotiator Charles Flowerree, the Soviets may have declined the invitation in part to avoid being placed in the position of having to reciprocate and in part to avoid endorsing what they see as a US propaganda stunt. Flowerree added that the Soviets may well have felt that they already know everything they need to know about the plant, which is normally off limits and under tight security.

The attention given this week to the verification of destruction of existing stockpiles seemed to some observers disproportionate to the role that issue is currently playing in the negotiations. The much more difficult issues of verifying the numbers of weapons both sides have to begin with have been neglected. At a briefing for reporters last week, Colonel Hal Brown of ACDA admitted that this will be a "monumental task", and that no ideas for tackling this problem had even been tabled so far.

Meanwhile, the Senate and the House of Representatives are approaching a showdown over whether production of chemical weapons should be resumed after a hiatus of 14 years. The administration has strongly supported a request for funds to begin production of binary chemical weapons, which it claims are needed to replace deteriorating stockpiles of older weapons and to maintain a "credible" deterrent. Last week, the Senate, with a casting vote by Vice-President George Bush, approved funds for the new weapons. The House, however, which has refused to appropriate any funds, is thought to have the edge in the House–Senate conference that will resolve the matter. **Stephen Budiansky**

Thermonuclear fusion

Materials collaboration planned

EUROPE and Japan will join in a $200-million United States experiment to test materials for a fusion reactor, the Fusion Materials Irradiation Test Facility (FMIT), if recommendations by an expert panel of the International Energy Agency (IEA) are accepted. The panel, whose chairman is Sir Alan Cottrell, the British metallurgist, claims in a technical report to IEA that FMIT — or something like it — is necessary to the long-term development of fusion power.

FMIT would produce an intense beam of 14 MeV neutrons by stripping a deuteron beam in a cascade of molten lithium. These neutrons would mimic and even accelerate damage caused by neutrons from a working fusion reactor — which will displace every atom in an exposed material "some tens" of times a year. According to a US Department of Energy spokesman (and the Cottrell panel), existing irradiation facilities are too weak in intensity and thus too slow in causing damage to do the job. FMIT could compress five years of reactor operation into two years, it is claimed. The research is necessary because the materials damage will be greater in a fusion than in a fission reactor, and will involve some transmutation into gaseous elements such as hydrogen and helium, which might enhance embrittlement. In the long run, it might be necessary to design new materials before a fusion reactor could work economically, or at all.

The US Department of Energy (DOE) has already spent $80 million on research and development and design work for FMIT, and is now ready to begin construction — if it can find foreign partners to share the remaining $120 million. DOE sought those partners through IEA in Paris, and IEA sought advice from Sir Alan's panel. Since that advice is positive, the matter now moves into a more political arena: can and should Europe and Japan (the main members of IEA besides the United States) pay? Japan, it is said in Washington, is ready to pay — but not unless Europe joins in. But Europe would probably participate through the Euratom programme, which is managed by the European Commission and embroiled in the apparently irresolvable budgetary conflicts of the whole European Economic Community. Euratom pays a net 45 per cent of the total $290 million annual European fusion research budget (including the Joint European Torus (JET) at Culham), and coordinates all the national programmes; and it is currently planning its new five-year programme (1985–89), for submission to the European Council of Ministers in July.

"If we contribute to FMIT, it should be in this five-year period", said a Euratom spokesman on Monday, "but the 'if' should be in capital letters."

If Europe does not come up with the goods, FMIT would seem to be doomed — but only for the time being. According to DOE, the research and design work could be mothballed, to be called out when necessary. The next generation of reactors — after JET and similar machines — can be designed without the aid of results from FMIT, but the generation after that — something close to a demonstration reactor — would need to feed in FMIT know-how. Design work on such reactors might begin in the late 1980s or early 1990s. FMIT is designed to make studies quickly, but if it proves that new materials will be necessary, as it might, then its data would be needed earlier than if all went smoothly. Such questions are now under consideration in Washington. By contrast, Brussels is "dragging its feet". **Robert Walgate**

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