

US explores tritium options

Washington

THE unintentional moratorium on tritium production in the United States is now expected to last until at least next year, when Department of Energy (DoE) officials hope one of the reactors at the Savannah River Plant in South Carolina can be restarted. The hiatus has bolstered arguments that Congress must support DoE plans for two new tritium production reactors to replace the aging Savannah River facilities. But an *ad hoc* group of scientists and arms control negotiators see the moratorium in a different light, and last week they told a Congressional committee that whether intentional or not, a moratorium could facilitate moves towards strategic arms control without seriously damaging the present US nuclear arsenal.

Tritium is used to boost the yield and lower the weight of nuclear weapons. Because tritium decays in 12.5 years, maintaining a nuclear stockpile inevitably means recharging weapons from time to time. But without the production reactors at Savannah River — all three of which are now shut down for safety reasons — the United States has no indigenous capacity for supplying new tritium for military purposes. Government officials say there is already a "crisis" for the US nuclear arsenal, and unless something is done at once the crisis will only deepen.

But George Rathjens, professor of political science at the Massachusetts Institute of Technology and Carson Mark, a consultant physicist at the Los Alamos National Laboratory where nuclear weapons are designed, say talk of a crisis is just so much smoke. Testifying last Tuesday before the House of Representatives Armed Services Committee panel on DoE defence nuclear facilities last week Rathjens pointed out weapons are initially supplied with more tritium than necessary to give them a "shelf life". Such an over-supply could be spread among the arsenal, postponing the time when a new supply would be essential. Additional surplus could come from tritium removed from weapons scheduled for decommissioning, or due to be dismantled by treaty.

Rathjens and Mark are among the authors of a tritium policy paper produced in collaboration with the Nuclear Control Institute in Washington. They argued that by making a commitment to new production reactors, the United States was sending the wrong signal on arms control. Why not, they argued, seize the initiative, using the *de facto* tritium moratorium as a lever to encourage serious movement on strategic arms talks. They urged Congress to continue preliminary design on new reactors, but to postpone construction decisions until serious arms control talks had been pursued.

Last year, DoE proposed to build a new heavy water reactor at the Savannah River Plant to supply 100 per cent of US tritium needs, and a second, backup facility in Idaho using a modular high-temperature gas reactor (MHTGR) design capable of supplying 50 per cent of estimated need (see *Nature* 334, 558; 1988). The two reactors were to be built over the next decade, at a cost of \$6,800 million. The Bush administration has requested \$300 million for the project in the 1990 budget.

But Mark scoffed at DoE estimates that a new reactor would take ten years to build, pointing out that some of the existing Savannah River plants were designed, built and began operating in less than three years. Mark argues that the Savannah River plants could be restarted and kept running long enough to prevent any critical depletion of the stockpile.

But Robert Barker, assistant to the Secretary of Defense for atomic energy, insisted there was a crisis, and that failure to begin work on new production reactors was tantamount to unilateral disarmament. Barker said that Pentagon officials were well aware that careful husbanding could stretch the life of existing weapons, although he declined to provide specific numbers in an open hearing.

At a second hearing the following day, DoE officials received criticism for their tritium production plans from another direction. According to J. Dexter Peach, assistant comptroller of the General Accounting Office (GAO), "the need for a new production reactor is more acute than it was [last August] when DoE made its recommendation to Congress". Peach says DoE seriously underestimated the delays it would face in restarting existing Savannah River facilities. GAO's analysis also suggests that it will be closer to 12.5 years before a new heavy water reactor can begin producing tritium, and at least as long for the MHTGR. **Joseph Palca**

ANTARCTIC TREATY

Australia says no

Sydney

THE Australian government will not sign a convention supplementing the Antarctic Treaty that would lay down rules for the exploitation of Antarctic mineral resources. Instead, Australia will push for the continent to be protected as a wilderness park. The convention will now lapse as its ratification requires all seven Antarctic claimant nations to sign the treaty.

The government's action is being seen by many as a move to woo the environmentalist vote which is becoming an increasingly powerful force in state elections. Until recently the Minister for Foreign Affairs, Senator Gareth Evans, and the Minister for the Environment, Senator Graham Richardson, had favoured the convention, claiming a mining treaty would be the most practical way to avoid unregulated and potentially disastrous attempts to exploit Antarctica. The Cabinet decision was also influenced by comments from the French Prime Minister, M. Rocard, that his Government would veto the convention for environmental reasons.

Australia will now try to convince other nations of the value of a wilderness park covering the whole of Antarctica and its surrounding oceans. This would be negotiated within the existing Antarctic Treaty which stipulates that Antarctica be used for scientific and peaceful purposes only.

The Prime Minister, Bob Hawke, will be meeting with Rocard in June and is expected to raise the Antarctic issue there and again at the next Antarctic Consultative Meeting in Paris in October.

Tania Ewing

Ambitious institute

Sydney

THE lack of suitable facilities necessary for advanced research into high-energy physics has prompted Australian physicists to form the Australian Institute of High Energy Physics (AUSHEP). This will link Australian scientists to the international consortium of leading particle-physics research centres.

The institute, a cooperative venture between the universities of Adelaide, Melbourne and Sydney, the Royal Melbourne Institute of Technology and the Australian Nuclear Scientific and Technology Organisation, aims to improve the level of graduate training and public awareness in high-energy physics as well as providing access to accelerators and associated detection systems overseas.

The universities of Sydney and Melbourne will be developing joint detector development laboratories and designing and testing modular microvertex detectors for the next generation of collider and fixed target experiments in particle physics. Australia already has a connection with the CERN UA2 detector project.

Detector development work will be contracted out to Australian industry. "The advantage to Australian industry is that it will be able to cooperate in the development and construction of high-level technology," says Professor Bruce McKellar, from the physics department at Melbourne. This, it is hoped, will also generate additional income for the firms involved.

The institute is hoping to receive additional financial support from the Federal Government's Australian Research Council up to A\$500,000 a year. **Tania Ewing**