

DoE rallies to save US fusion research programme

■ Congressional cuts half restored

■ Watkins softening on tokamaks

Washington

SQUEEZED by congressional budget cuts and an erosion of political support, the US fusion research programme is being cut back to include only the most essential projects and those that have international support. Among other things, these developments could result in the layoff of hundreds of scientists and the abandonment of a potentially promising alternative source of energy.

The cuts have left a cloud over a programme that many still consider the best long-term alternative to fossil-fuel energy dependence and its troubles, from oil wars to global warming. But the pressure has also jolted federal officials into action to save the programme. When the need for a strong alternative-energy programme has never been more plain, Energy Secretary James Watkins has rallied to the defence of the fusion programme — a shift that promises that there may be brighter days ahead for thermonuclear fusion research in the United States.

Earlier this month, Watkins submitted a proposal to Congress to shift funds within the Department of Energy (DoE) to make up half of the \$50 million cut from the programme this year. In a letter to the chairman of the Senate Energy Committee, Watkins proposed an accounting device that would restore \$25 million to the budgets of several US fusion facilities. His objective is to maintain the level of support for mainstream tokamak reactors. Congress is expected to approve the request.

Although this rearrangement of funds would restore support for the core of the fusion programme to about last year's level, other projects will nevertheless have to be sacrificed, Watkins says. Among the five experimental projects DoE plans to phase out are two new projects — the Confinement Physics Research Facility at the Los Alamos National Laboratory and the Advanced Toroidal Facility at the Oak Ridge National Laboratory — designed to investigate the basic physics of plasma confinement.

Even with \$25 million restored, Watkins told Congress, "work on [the five] alternate concepts and advanced tokamak concepts . . . will still be stopped, prematurely narrowing the program to conventional tokamaks only".

As a consequence, Los Alamos announced last week that 65 employees of its fusion programme will lose their jobs. Oak Ridge is also expected to make substantial layoffs. The original \$50 million

cut would have cost between 600 and 750 jobs, only some of which can be saved by the proposed reaccounting, Watkins warned.

By streamlining the existing fusion programme, Watkins said he was trying to keep alive his plans for a new major fusion initiative. Last year he commissioned a panel known as the Fusion Policy Advisory Committee (FPAC) to recommend the future direction for DoE's fusion effort, much criticized by politicians as its optimistic promise seems always to be a constant 30 years from fulfilment.

FPAC panel recommended last year that DoE should proceed as soon as possible to the next big step in fusion research: a "burning plasma experiment". That is meant to be Princeton's planned Compact Ignition Tokamak (CIT), which would be the first machine to sustain a reaction that generates more energy than it consumes.

Once he has approval to restore the funds, Watkins is expected to endorse construction of CIT as part of a new "National Energy Strategy", itself an answer to critics who noted that the United States had been without a national energy plan for nearly two decades.

Watkins also intends to commit the United States to participation in the second phase of the International Thermonuclear Experimental Reactor (ITER), perhaps this week. In anticipation of the decision, DoE last week picked a consortium based around the University of California, San Diego, as its candidate for the ITER design headquarters. Japan and Germany (where ITER is currently

being designed) also have candidate sites for the second phase, a five-to-six year process that will produce an engineering design for the \$6,000-million international tokamak project. The four ITER partners (including the Soviet Union, which has not proposed a site) will meet next month in Vienna to begin the selection process.

Advocates of fusion see Watkins' moves as an encouraging signal in an otherwise sobered field. After two years in office, Watkins has yet to take a firm position on the DoE programme. As something of a fusion sceptic, he often recalls the rosy promises of cheap energy he heard in the 1950s when he was a young naval officer at Oak Ridge. Yet, when pressed by fusion advocates and environmentalists concerned over the decline in alternative energy research, Watkins assembled the FPAC and gave it free rein to recommend change (see *Nature* 347, 114; 1990). His letter to Congress appears to support the FPAC's ambitious recommendations. Before Congress slashed the programme's funds, Watkins said he had been prepared to issue a new fusion policy "based on the FPAC review and work by Department staff".

For the forthcoming 1992 budget, Watkins is said to have asked for \$360 million, an increase of more than \$30 million over DoE's request for this year. Although the White House, as part of a general austerity campaign, is expected to reduce that to about \$336 million when it releases the final budget request early next month, fusion advocates are encouraged by Watkins' apparent support. "We're hoping this shows that he strongly supports the program", says Steven Dean, head of industry association Fusion Power Associates. Just how much Watkins is prepared to do for the programme will soon become plain. As war rages over oil in the Middle East, the White House has asked DoE to release the new National Energy Strategy within weeks.

Christopher Anderson

ITALIAN RESEARCH

Three year plan to double science spending

London

THE Italian National Council for Science and Technology is due to meet research minister Antonio Ruberti this week to put flesh on the bones of a plan that aims to double in three years the proportion of Italy's wealth spent on civil research.

Ruberti's Ministry for Research, Universities and Technology and the advisory National Council for Science and Technology were both set up last year to focus Italian science policy and improve the country's research record. In 1988, Italy spent about 1.2 per cent of its gross domestic product (GDP) on civil research and development, compared with more

than 1.8 per cent in Britain and France and 2.7 per cent in West Germany.

Agostino LaBella, chairman of the Italian National Research Council's technology committee and a member of the National Council for Science and Technology, says doubling research spending in three years may be "wishful thinking", but four to five years is realistic — private sector spending is already set to meet this target, he says.

A full version of the plan will go to the Italian parliament later this year. LaBella expects research into telecommunications and transport to feature strongly.

Peter Aldhous