Star wars

Reagan gets green light

Washington

BARRING a mutiny in Congress — and nothing is impossible during a presidential election year — the United States seems ready to pay next year the first instalment of a multibillion dollar programme to develop a system of space-based defences against ballistic missiles. A senior inter-agency group has told President Reagan that his vision of a futuristic shield against nuclear attack, outlined in his "star wars" speech last March, could be made to work.

The group's report, leaked last week in *Aviation Week and Space Technology*, recommends pressing quickly ahead with research into new technologies so that the feasibility of the idea can be demonstrated by the early 1990s. The aim would be to destroy Soviet missiles during their boost phase immediately after launch or, failing that, while they were mid-course or re-entering the atmosphere.

Interception during the boost phase, before the attacking missiles can deploy multiple warheads, would be the heart of the system. The report identifies a range of technologies that could become capable of destroying missiles — including X-ray lasers, chemical, excimer and free electron lasers, particle beams and kinetic energy

director of a private think-tank, is likely to be more controversial. It claims that development of the system will not, in the short run, conflict with the 1972 Anti-Ballistic Missile Treaty; merely carrying out research for the new system will give the United States a strategic advantage by "confusing" the Soviet Union and forcing it to invest in expensive counter-measures.

A similar view was expressed earlier this month by George Keyworth, the President's science adviser. Acknowledging that it would take up to six years before the United States could choose between the most promising technologies, Keyworth maintained that an early demon-

stration of technical progress — such as a multi-megawatt pulsed laser with a beam corrected for atmospheric distortion — might be enough to persuade the Soviet Union to soften its negotiating position on arms limitation.

At a press conference last week, President Reagan said he had not yet read the interagency report. Administration officials, however, confirmed privately that the details published in *Aviation Week* were accurate. The report calls for early demonstrations of the effectiveness of infrared chemical lasers, ground-based excimer lasers and shorter wavelength chemical lasers. Other demonstrations would focus on the tracking and targeting of ballistic missiles by means of long-wavelength infrared sensors and high-altitude aircraft.

Peter David

High-energy physics

US plans take shape

Washington

THE US Department of Energy (DoE) has officially cancelled the Brookhaven National Laboratory's colliding beam accelerator (CBA, also known as ISABELLE) and is shifting most of the money for it in this year's budget to research and development on the proposed 20 TeV proton-proton collider, as recommended by its High Energy Physics Advisory Panel (HEPAP).

The HEPAP recommendation, made months ago (see *Nature* 304, 105; 1983), marked the *de facto* end of the project, a victim of the success of the European Organization for Nuclear Research (CERN) with its SPS facility and of several years of technical and management problems at Brookhaven. Representative William Carney (Republican, New York), who represents Brookhaven's congressional district, could not resist using DoE's official decision, however, as an opportunity for firing some parting shots.

At a hearing last week, he grilled Dr Jack Sandweiss of Yale University, the chairman of HEPAP, over the panel's "inconsistency" in recommending the cancellation of a project that it had in past years repeatedly endorsed. He also asked Dr Sandweiss how he was going to "explain to the taxpayers" the \$200 million that has already been spent on the Brookhaven project.

Carney presented the committee with a slide presentation on CBA of which high point, the was a LANDSAT photo of Long Island where the only identifiable man-made feature, he said, was the CBA site. Sharp-eyed reporters, however, claimed to be able to see the Long Island Expressway as well.

Dr Alvin Trivelpiece, DoE's director of energy research, said that \$18 million of the \$23 million in operating funds appropriated for CBA in the current budget will be redirected to research and development

on the "superconducting super collider", the 20 TeV machine endorsed by HEPAP. Brookhaven will receive \$10.1 million of that. Brookhaven will also receive some \$4.3 million to cover the costs of closing down CBA and \$700,000 to upgrade its Alternating Gradient Synchrotron (AGS).

DoE expects to obtain approval from the House and Senate Appropriations Committees to redirect these funds. A specific appropriation request for the construction of the super-collider will be necessary, and that will come only when there is a detailed design plan for the machine.

Research and development will follow a four-year plan laid out in September by a HEPAP subcommittee chaired by Dr Wolfgang Panofsky, director of the Stanford Linear Accelerator Center, and the chief aim of the research will be to determine the optimal cost trade-off between tunnel length (which will be at least some tens of miles long) and magnet field strength.

Although Carney is publicly deriding the super-collider as a "dream machine" and lamenting the loss of the taxpayer's investment in CBA, his aides say he has no plans to block the new plan. They say that Carney's major concern now is to persuade DoE to commit itself to finding an alternative use for the CBA tunnel.

One increasingly likely prospect would be to link the Alternating Gradient Synchrotron to the CBA tunnel to create a relativistic heavy-ion collider, a project that Trivelpiece estimates would cost \$7–8 million. The first step, now under consideration by DoE, would use \$5 million appropriated in the current budget for CBA construction to link Brookhaven's tandem van de Graaff accelerator with AGS to create a heavy-ion capability.

Carney's immediate need may be satisfied, but in the long run what will matter more is whether the new plan can keep Brookhaven on its toes.

Stephen Budiansky

devices. Congress would be asked to spend \$27,000 million on research between fiscal years 1985 and 1989. Deploying the first layer of a multi-layered defence system by the year 2000 would cost about \$95,000 million.

The interagency report is based on two separate studies. One, a technical investigation headed by James Fletcher, a former administrator of the National Aeronautics and Space Administration (NASA), contains few surprises. It emphasizes that all the necessary technologies are in an early stage of development and that years of research will be needed to turn them into practical weapons. The other, a strategic policy analysis headed by Fred Hoffman,