Anti-satellite weapons

Reagan backs tests in space

Washington

PRESIDENT Reagan has decided against renewing talks with the Soviet Union on a treaty to ban weapons for destroying satellites in space. In a report to Congress last week, he said he could not foresee a new arms control treaty for space that would serve the interests of the United States and its allies. And he made it plain that the administration wants to press ahead with tests in space of a controversial new anti-satellite (ASAT) weapon to deter the Soviet Union from using its own more primitive system.

But the president announced last week that the United States would submit to the UN Committee on Disarmament a draft treaty to ban the production, possession and use of chemical weapons.

The president issued the report on satellite weapons in order to release \$19 million for procurement of the weapon, a homing interceptor launched from beneath the wing of an F-15 fighter (see below). Congress voted the money last year, but put it aside pending a report on plans for negotiating a treaty with the Soviet Union to ban or limit existing and future ASAT systems. Weapons of mass destruction in space are prohibited by the outer space treaty of 1967, which does not, however, constrain the development of weapons designed to destroy satellites.

Technically, publication of the report leaves the administration free to spend the money, even though it has decided against formal negotiations for the time being. The US Air Force has already tested the new weapon within the atmosphere, but tests against targets in space are prohibited by the terms of a Senate stipulation last year that the president must first certify that he is trying "in good faith" to negotiate a ban and that tests are vital to national security.

Last week's report is nevertheless full of arguments against a comprehensive ASAT ban. It says it would be hard precisely to define anti-satellite weapons and virtually impossible to prevent cheating. It says the United States may need an ASAT system in war to shoot down Soviet ocean reconnaissance satellites, and that it would be "destabilizing" to leave the Soviet Union in possession of the only operational ASAT; should the Soviet Union shoot down a US satellite during a crisis, the United States, unable to respond in kind, might be forced to escalate instead.

The report has disappointed many in Congress who fear that deployment of the US ASAT will pose such severe verification problems that a future ban on such weapons will be impossible to negotiate.

In 1981 and 1983, the Soviet Union submitted draft treaties to the United Nations banning the use of force in space, and has announced a unilateral moratorium on the launching of any kind of ASAT weapon.

These initiatives are dismissed by the administration as an effort to prevent development of the US weapon. The report claims that Soviet ASAT capabilities include an operational orbital interceptor system, ground-based test lasers with "probable" ASAT potential, the ability to disrupt satellite transmissions electronically and, possibly, to destroy satellites using nuclear armed Galosh anti-ballistic missile interceptors.

Recognizing the strength of congressional sentiment against an arms race in space, the report says the United States is prepared to discuss "a broad range" of space arms control issues in the Committee on Disarmament in Geneva. The administration might also consider negotiating something less comprehensive, such as a ban on weapons that could reach the high altitude satellites that provide early warning of nuclear attack. That may not be enough for Congress, however. Senator Paul Tsongas (Democrat, Massachusetts) is to force an early debate of a resolution calling for a general ban on weapons in space and on weapons designed to destroy objects in space.

Peter David

Soviet and US approaches to ASAT

THE Soviet ASAT weapon is an explosive satellite placed in a low-Earth orbit by a modified version of the SS-9 intercontinental ballistic missile. When the satellite approaches its target a small explosive device is detonated, destroying the target with shrapnel.

The US weapon, not yet tested against a target in space, consists of a non-explosive miniature homing vehicle (MHV) designed to destroy its target by impact. The MHV is launched by a small two-stage rocket fired from beneath the wing of a modified F-15 aircraft. An inertial guidance system guides the device to the appropriate location in space, after which the MHV separates from the rocket and closes on the target by means of infrared sensors.

Critics of the US programme complain that, unlike its unwieldy Soviet counterpart, the compact weapon would confound attempts to verify a treaty banning ASATs. The Soviet weapon, by contrast, would have to be launched from a limited number of launch-pads by large and easily-identified boosters. The Soviet system is believed to have been tested 20 times, most recently in 1982. Six tests of a later version of the weapon, designed to home in on heat emitted by its target, are all believed to have failed.

The Reagan Administration argues that the Soviet weapon poses verification problems of its own. Although the SS-9 is large, the satellite interceptor is small. A covert supply could be maintained even if the

Research secrecy

Universities in scrap with DoD

Washington

RELATIONS between US research universities and the Department of Defense (DoD) are continuing to deteriorate. Cornell University has turned down a \$450,000 electrical engineering research contract from the US Air Force because it would have imposed an unacceptable degree of secrecy. Meanwhile, the presidents of Massachusetts Institute of Technology, the California Institute of Technology and Stanford University have confirmed that they have written to DoD and to the White House science office saying they cannot accept the publication restrictions proposed in a new DoD directive, DODD 2040.2 (see *Nature* 29 March, p.389).

Cornell's decision came after months of negotiation with the project sponsor, the Wright Patterson Air Force Base in Ohio. Dr Robert Barker, the university's vice-president for research, said the Air Force withdrew the contract when Cornell refused to promise to seek prior permission from the Air Force before any technical

Soviet Union claimed that it had dismantled existing weapons. And it would not take long for the Soviet Union to divert missiles from other tasks to launch the interceptors into orbit. Another problem is that many space technologies not specifically designed to destroy satellites could do so.

"Gee, Constantin—why didn't we think of this before?"

There is no shortage of targets for ASAT weapons. The Soviet Union launches more than 100 civil and military satellites a year, about five times as many as the United States. But US satellites last about five times as long, leaving each side with about 100 active military or military-related satellites in orbit at any time. But the most critical satellites, those that would be used for early warning and control in a nuclear war, tend to be in geosynchronous orbit beyond the reach of the present generation of ASATs. The maximum altitude of both the US and Soviet ASATs is believed to be less than 1,500 miles.

Peter David