Reagan Announces a New ASAT Test

The Administration claims that ASATs are needed to deter attacks and destroy key Soviet satellites, but many others disagree

President Reagan's decision on 20 August to authorize a key new antisatellite (ASAT) weapons test has rekindled a sharp debate over space arms control. Critics of the decision, including some members of Congress, believe that the test could set in motion a vigorous, essentially irreversible ASAT arms race. But its proponents within the Administration claim that it actually enhances the prospects for an arms agreement with the Soviets, by giving the United States additional leverage to bargain for favorable terms.

Reagan, in a letter to Congress released from his ranch in California, specifically asserts that the test is "necessary to avert clear and irrevocable harm to national security," which stems from the fact that the Soviets have an ASAT now, while the United States does not. In addition, he says that the test is consistent with existing arms treaties, and that it will not "gravely impair prospects for negotiations on antisatellite weapons." The problem to date, he says, is that no useful and verifiable ASAT limitations have been identified.

Congress demanded these certifications in last year's defense bill as a precondition to further ASAT tests. But some of the sponsors of the requirement remain unmoved by Reagan's claims. "The announcement is unjustified by any current circumstances related to national security," says Representative George Brown (D–Calif.), a member of the House Intelligence Committee and a major ASAT opponent. "The only conceivable rationales for doing this now are that Congress is out of session and the President wants to posture in advance of the upcoming summit with Mikhail Gorbachev."

The ASAT test, which is apparently planned for early September, is considered important by experts on both sides because it is the first in which the ASAT will be aimed at a space-based target. Although a total of ten such tests are planned over the next several years, General Robert Herres, the head of the Air Force Space Command, last year told a technical conference that even two successful attempts would give the United States "a pretty credible deterrent."

No one is sanguine about fulfilling this goal right away. The program has long been plagued by technical difficulties, and an internal Air Force panel recently estimated the likelihood of success in the upcoming test as less than 50 percent (*Science*, 26 July, p. 361). Many of the problems have been traced to the complexity of the ASAT's design. It uses cryogenically cooled infrared sensors, which peer through tiny telescopes and pass instructions to solid-fuel rocket motors, arranged in a circle on the vehicle's perimeter. Launched aboard a rocket from beneath an F-15 jet fighter, the ASAT separates from the booster and immediately starts spinning; then the motors fire in a precise sequence to manuever it into a direct collision with the target.

An F-15 fighter carrying an ASAT rocket

A new test, aimed at an obsolete satellite, has aroused controversy.

This is how it is supposed to operate. During the last test, in which the ASAT was aimed at a bright star, the cables used to cool its infrared sensors failed to separate before the ASAT began to spin, and the resulting tangle prevented it from tracking its target. Additional defects have cropped up in the sensors and the guidance system, and two of the motors exploded during ground tests. "The program is still in the development and test phase and we anticipate modifications to the basic design," the Air Force told a closed hearing of the House Appropriations Committee in March.

In particular, the Pentagon is looking for motors that weigh less, and generate more power, while at the same time creating less exhaust. The challenge, which even the Air Force considers daunting, is to keep the ASAT from contaminating its own infrared sensors while chasing new, more maneuverable Soviet satellites. As Air Force Secretary Verne Orr acknowledged at the same hearing, getting the ASAT to work properly "is one of the most complex problems we have tackled."

As charted by Brookings research associate Paul Stares in a new book, *The Militarization of Space: U.S. Policy, 1945–1984*, the official rationale for an ASAT has shifted considerably since research was begun in the 1950's. A deep concern about orbiting Soviet bombs predominated at first; when this threat faded, it was replaced by a desire to block certain Soviet reconnaissance and eavesdropping operations from space. Later, it was justified as a counterpart to the Soviet ASAT, and finally it became a bargaining tool in ASAT arms talks. Until 1981, virtually no one saw it as a deterrent, because the U.S. relies more heavily on satellites than the Soviets, and would therefore lose in any tit-for-tat exchange.

Under the Reagan Administration, however, deterrence has become the primary rationale for the program. In a recent press conference, for example, presidential spokesman Larry Speakes

emphasized that the present Soviet ASAT—which employs a conventional explosive—can destroy important U.S. satellites in low-earth orbit, that existing Soviet ground-based lasers may have some ASAT capability, and that eventually the Soviets may launch a space-based laser ASAT. "In view of these Soviet activities we think it is disingenuous for the Soviet Union to accuse the United States of militarizing space," he said. "The purpose of the U.S. system and the reason we're testing is to help maintain a deterrence in space and to deter threats to U.S. and allied systems."

But others are skeptical about the significance of the Soviet program. Last year, for example, the Boeing Aircraft Corporation, which makes the U.S. ASAT, told Congress that only nine of 21 Soviet ASAT tests had been successful. The Soviets "are having substantial problems" with a new ASAT sensor system, "and in fact may be considering scrapping it," they said. Brown believes that "virtually the entire intelligence community sees this as a tempest in a teapot. They have already spent several billion dollars dealing with this problem." Security restrictions prevent him from explaining how, but others say that the United States is developing the capability to replace satellites in low-earth orbit quickly, and that new satellites are being deployed with considerable manuevering capability, as well as protection against nuclear effects such as electromagnetic pulse. According to Robert Cooper, director of the Defense Advanced Research Projects Agency, the United States has also developed a fairly lightweight graphite material capable of shielding against "exceedingly capable laser systems."

As to the future, Michael May, an associate director of Lawrence Livermore National Laboratory, says that although it cannot be ruled out, he knows of "no evidence that the Soviet Union is working on a space-based laser ASAT." May, who directed a 1980 study on satellite survivability for the Defense Science Board, believes that "the necessary and appropriate response to Soviet ASAT threats, whatever technology the Soviet Union uses, is to make sure that our systems survive, or at least that a very large-scale, very visible attack would be needed to disable them. Developing an ASAT of our own is not an appropriate response." He disagrees with the Administration's position that compliance with ASAT limitations is impossible to verify, as do such experts as Sidney Drell, Raymond Garthoff, Richard Garwin, and Carl Kaysen (*Science*, 18 May 1984, p. 693).

Significantly, Reagan listed an additional new rationale for the program in his letter to Congress: a "growing threat posed by present and prospective Soviet satellites, which, while not weapons themselves, are designed to support directly the USSR's terrestial forces in the event of conflict." Previously, the U.S. ASAT was intended primarily to threaten satellites that conduct reconnaissance and eavesdroppping over the oceans; now, its target set explicitly includes "satellites which provide targeting data and other information useful in supporting Soviet land forces."

Lurking in the background is still another rationale: the need to use the program as a test-bed for the President's Strategic Defense Initiative, or "Star Wars" program. As the Air Force acknowledged last March, the program "has begun to establish a technical base for rocket propelled interceptor motors, sensors, control systems, and operational implementation"—all of which will play a role in ballistic missile defense (BMD). Donald Kerr, the director of the Los Alamos National Laboratory, has noted that due to the substantial intermingling of the technologies, "the negotiation of a restrictive ASAT treaty . . . might pose insurmountable obstacles to the development of many of the most promising BMD technologies." Many suspect that this is the most important motivation for the President's announcement.

In any event, Speakes acknowledges that the U.S. test will probably cause the Soviets to begin more research and testing of their own. "But it also sets into motion an incentive for them to negotiate, and that's what we're seeking," he says. Brown believes that it is Reagan who needs an incentive, and he hopes to supply it later this year, by inserting an ASAT test ban in the 1986 defense appropriations bill.—**R. JEFFREY SMITH**

NIH to Award 2200 New Grants

The check, as they say, is in the mail. The budget for the National Institutes of Health has finally been settled for fiscal year 1985, which ends on 30 September, and as soon as the Office of Management and Budget (OMB) actually deposits the check, NIH will award 2200 new grants to researchers who have been waiting for a resolution to the impasse that has had NIH on hold since January.

In an unusually intense budget fight this year, the Reagan Administration maneuvered to reduce NIH grants to 5000 from a congressionally authorized figure of approximately 6500 (*Science*, 1 February, p. 498). By ordering NIH to forward fund some grants for 3 years, OMB tried to cut a generous congressioinal budget by 1500 grants. In an ensuing political and legal battle, which included a decision by the U.S. Comptroller General that the OMB's forward funding directive was illegal, NIH finally prevailed, thanks in large part to the persistent efforts of Senator Lowell P. Weicker, Jr. (R–Conn.), who led the fight to preserve increased funding (*Science*, 24 May, p. 970). In the House, strong NIH funding was backed by appropriations subcommittee chairman William Natcher (D–Ky.), among others.

The final bill provides funds for 6200 new and competing research grants, as well as for 533 research centers, which was the original figure that OMB tried to take down to only 500. In addition, the bill provides funds for the Alcohol, Drug Abuse and Mental Health Administration sufficient for at least 550 new and competing awards.

NIH officials have been preparing for months for the resolution of the budget battle, so each of the 11 institutes is ready to go with lists of approved grants to be paid by the end of the month. In years past, the grant target has always been approximate but this year they expect to fund 6200 grants on the nose. As NIH director James B. Wyngaarden observed, "Congress has told us to award no fewer than 6200 and OMB has instructed us to award no more." Although there will be some variation among institutes, it is anticipated that the priority score payline will be in the 160 to 170 range.

With the budget for fiscal year 1985 finally fixed, the challenge for fiscal year 1986 begins. Expectations are that NIH again will be in a position to fund 6200 grants, especially given Congress's clear commitment to a real increase in the research budget.—**BARBARA J. CULLITON**