Administration Resists Demands for ASAT Ban

Arguments for a ban on antisatellite weapons gain an increasingly sympathetic hearing in Congress, but Reagan's appointees show little enthusiasm

Five years ago, for principally selfish reasons, the United States proposed to sign a treaty with the Soviet Union that would have stymied the development of weapons capable of efficiently destroying satellites in outer space. The general idea was that such a treaty was needed—in light of technological developments then on the horizon—to ensure the continued survival of satellites that form the basis of strategic deterrence and arms control verification. A subsidiary motivation was economic: such an agreement would close off costly and unnecessary competition in a challenging area of weapons design.

Despite the considerable appeal of such a treaty, the United States and the Soviet Union were unable to come to a quick agreement, and the talks petered out in the aftermath of the Soviet invasion of Afghanistan. As a result, the development of efficient satellite killers is now nearly at hand, and no agreement on their abolition is within sight. This autumn, the United States will conduct the first space test of a device that can potentially kill critical early warning and military communications satellites orbited by the Soviet Union (*Science*, 14 October, p. 140). The Soviets, meanwhile, are experimenting with new kill mechanisms on their existing antisatellite weapon, and are threatening to develop an ASAT identical to that now under construction by the United States. Both nations are also working aggressively on more advanced ASAT's, which could in theory use laser beams to destroy orbiting satellites from a great distance. This contest will cost the United States tens of billions of dollars.

A growing number of scientists have become concerned about the size of these expenditures and fearful about where these endeavors will lead. "We believe that the testing or deployment of any weapons in space—in part by threatening vital satellite assets—significantly increases the likelihood of warfare on earth," says a petition circulated last spring by Richard Garwin of IBM and Carl Sagan of Cornell University. "We join in urging the United States, the Soviet Union and other spacefaring nations to negotiate . . . a treaty to ban weapons of any kind from space, and to prohibit damage to or destruction of satellites of any nation." The petition has been signed by 36 scientists and retired military officers, including Lee Dubridge, science adviser to President Nixon; Noel Gayler, former director of the National Security Agency; James Van Allen, president of the American Geophysical Union; Thomas Donahue, chairman of the Space Science Board at the National Academy of Sciences; and Margaret Burbidge, chairman of the board of AAAS.

Senator Larry Pressler

Supports prompt ASAT negotiations.

Congress is also becoming interested in stemming the migration of weapons to outer space. Last July, the Senate Foreign Relations Committee approved a resolution, introduced by Senator Larry Pressler (R–S.D.), urging the Reagan Administration to negotiate a prompt moratorium on ASAT tests, followed by a "mutual and verifiable ban" on ASAT's, and then by a more general prohibition on all space-based or -directed weapons systems. "This is a unique opportunity to halt a major arms race before it gets off the ground," says committee chairman Senator Charles Percy (R–Ill.). "Once started, it may prove nearly impossible to stop." A similar resolution introduced in the House by Representative Joe Moakley (D–Mass.) has garnered 124 cosponsors.

So far, these pleas have gone unheeded by the Reagan Administration, which harbors considerable skepticism that a verifiable ASAT ban is possible, much less desirable. Kenneth Adelman, the director of the Arms Control and Disarmament Agency (ACDA), noted last May, for example, that "there are difficult technical problems, including verification problems, that constitute fundamental obstacles to progress in this area. . . . These daunting problems have not been resolved, and we should not rush into negotiations on these subjects until we are ready with verifiable proposals that will enhance national security." He also noted that an ASAT ban would severely limit the Pentagon's ability to destroy Soviet satellites that are used to direct weapons against U.S. forces. "I am not saying there is an overriding concern but there is a concern. Thus, there is a dilemma as to whether arms control agreements that would restrict our ability to deal with such satellites are in our national interest."

To date, the Administration has refused to conduct either bilateral or multilateral negotiations on ASAT's, despite the repeated urgings of various European allies—led by Italy—whose own satellites would be endangered by a shooting war in space. Until recently, it was opposed even to the establishment of a formal working group on outer space arms control under the auspices of the United Nations Committee on Disarmament in Geneva. "We want to ensure that, if established, it could usefully undertake a full discussion of the relevant issues," Adelman explained last May. This task is of course complicated by the fact that, after studying the matter for several years, the Administration says that it remains unsure what the relevant issues are.

The Soviet Union, in contrast, has recently expressed enthusiasm for space arms control negotiations, and has presented a draft treaty to the United Nations that would require the dismantling of existing ASAT systems and prohibit the development of any future space-based weapons. In August, at a meeting in Moscow with a delegation from the U.S. Senate, Soviet premier Yuri Andropov also promised to suspend tests of the Soviet ASAT so long as the United States refrains from "stationing in outer space antisatellite weapons of any type"—an ambiguous phrase that may

refer to scheduled testing of the new U.S. ASAT stationed on F-15 jet fighters.

Independent analysts such as John Pike of the Federation of American Scientists say that these initiatives go a long way toward satisfying earlier U.S. complaints. During the formal negotiations in 1978 and 1979, for example, U.S. negotiators were angered by the Soviets' refusal to include satellites orbited by third countries (such as China or the members of NATO) within the scope of a treaty. They also were upset by a Soviet claim that any nation could act against satellites engaging in "hostile or pernicious acts"—a phrase that was generally considered dangerously ambiguous. The United States had also objected to language in a previous draft Soviet treaty that could be interpreted as permitting the use of force against space objects unilaterally regarded as out of compliance with the treaty provisions. None of these objectionable ideas survived in the latest Soviet draft, which states clearly that "it is prohibited to resort to the use or threat of force against space objects in orbit around the earth, on celestial bodies or stationed in outer space in any other manner." Apart from any other considerations, Pike says, "the scope of the new proposals seems to suggest a very real Soviet interest in dealing with the major issues posed by the space weapons competition."

Despite the apparent improvements, the Administration responded negatively to the diplomatic initiative at a State Department press conference on 25 August. Spokesman Alan Romberg noted that, although it was being given careful study, "our preliminary examination . . . suggests that inadequate verification is one of its major weaknesses." In particular, he said it would be "nearly impossible to verify through national technical means alone the dismantling and destruction of the Soviet ASAT system" because it sits atop a rocket booster, the SS-9, that is frequently used for other missions. "We do not know how many . . . ASAT interceptors have been manufactured, and it would be relatively easy for the Soviets to maintain a covert supply of interceptors for use in a crisis. Since satellites which serve U.S. and allied national security are very few in number, any Soviet cheating on an ASAT agreement, even on a small scale, could pose a prohibitive risk."

Pike responds by acknowledging that verification of a ban on *possession* of ASAT's would indeed be difficult, if not impossible. "Clearly, they are correct," he says. "Even if all the personnel of the CIA, the FBI, and even the Post Office were loosed upon the Soviet Union to roam the country at will, the task of hiding a handful of satellites no larger than a small car would still be child's play." But this is a bogus issue, he suggests, because there is actually no need to seek a ban on ASAT possession. Verifiable restrictions on use, testing, and deployment would be sufficient to undermine confidence that even hidden ASAT's could be effectively used, he says.

Kurt Gottfried, a physicist at Cornell who recently directed a lengthy study of ASAT's for the Union of Concerned Scientists, makes a similar argument. "A treaty that forbids possession presents knotty problems of verification that would require lengthy negotiations," he told a congressional hearing last May.

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Along with nine other scientists and weapons experts who worked on the UCS report, Gottfried recommends a more modest goal: the United States and the Soviet Union should agree merely to halt all *testing* of "weapons that can destroy, damage, render inoperable, or change the flight trajectory of space objects."

As explained in the report, such an agreement would immediately freeze ASAT technology at current levels. The Soviets would be permanently limited to their existing system, which works only half the time and is incapable of threatening the communications and early warning satellites necessary for nuclear retaliation by the United States. Any attempts to improve the device or to build something sharply different would be seriously if not fatally handicapped by enormous operational uncertainties. "Tests or use of lasers or high-powered transmitters to damage satellite sensors or to burn out satellite receivers would [also] be banned." Verification will be straightforward, according to the UCS report, because the United States has in place or under development a worldwide network of sophisticated cameras, radars, and infrared sensors capable of peering deep into outer space; and also because any illegal ASAT tests would create "a host of telltale signs," including an observable launch; transmissions to and from the test vehicle; and possibly some target debris, heating, or displacement.

One aspect in particular of the UCS proposal sticks in the craw of Reagan Administration weapons officials. As even the UCS acknowledges, a prompt ban on ASAT tests leaves the United States without any data on the success of its fancy new device, while the Soviets would be left with useful results from several years of testing its device. As Adelman noted last spring, "it is an asymmetrical relationship and it becomes a serious obstacle to achieving an equitable space arms control agreement. . . . [We cannot] eliminate the decade of Soviet ASAT experience." UCS panelists respond by noting first that the Soviet tests have hardly been a smashing success, and second that a new and even worse asymmetry will be created if tests of the U.S. ASAT are allowed to proceed, due to its vastly superior capabilities (it is smaller, faster, and capable of hitting more important satellites). Garwin predicts that "the Soviets involved in building their own ASAT's will say . . . 'we have to go one more round' " in order to match the U.S. system, and a new arms race will be under way.

Despite the appeal of this argument to some members of the Senate Foreign Relations Committee and the cosponsors of the House resolution, Congress as a whole has listened harder to repeated Administration statements about the disparity in existing U.S. and Soviet ASAT testing experience. During the summer, for example, the House rejected by a wide margin a proposal to delay the initial U.S. test. It also rejected, by a slightly smaller margin, a proposal to delay the purchase of ASAT parts and testing equipment that require a long time to produce. Due to the concerted efforts of a few ASAT opponents, however, both the Senate and the House were persuaded to accept a provision in the annual defense authorization bill that requires a special presidential certification before the U.S. ASAT can be tested against an object in space. Specifically, President Reagan will be required to certify that the United States is endeavoring in good faith to negotiate an ASAT ban *and* that the initial test is "necessary to avert clear and irrevocable harm to the national security."

Although this is clearly not a high hurdle for Reagan to leap, it has had the effect of forcing his appointees to develop some evidence that negotiations on ASAT's are actually under consideration. Consequently, there has recently been a flurry of activity in quarters where the topic previously excited little interest. ACDA, for example, has begun

to talk up a study of ASAT arms control options being prepared by a group of scholars under the direction of William Durch, a research fellow at Harvard University. Durch says that ACDA acceded to his request for research funding last July and that a copy of his report is due on 1 February, shortly before the date of the second ASAT test, which involves a space-based target. ASAT arms control options are also under consideration by a formal interagency government working group, which is chaired by a Pentagon official. Measures under discussion reportedly include a treaty that bans only the *use* of ASAT's, not their testing or deployment, and a treaty that would limit both countries to systems now in advanced stages of development. Administration critics assert that the former would of course be meaningless in the event of U.S.–Soviet hostilities, and the latter would, for reasons already described, give the United States a substantial strategic advantage.

Hardly anyone who desires an ASAT treaty attaches much significance to the working group activity. General Charles Gabriel, the Air Force chief of staff, and Robert Cooper, the director of the Defense Advanced Research Projects Agency, have both publicly expressed opposition to an ASAT ban. A former ACDA official who has been following the issue closely asserts that virtually any significant treaty would conflict with the President's desire to conduct research on space-based antiballistic missile systems, which use similar technology. "It will require, at a minimum, a change in administrations" to achieve an ASAT ban, he says.

The proponents of such a ban believe that the United States is now at a critical juncture in its weapons invention, because successful tests of the U.S. ASAT will soon shatter any realistic opportunity for space arms control. Kurt Gottfried says there is a parallel between today's competition in ASAT's and the development of multiple independently targeted warheads, or MIRV's, in the 1970's. MIRV's were developed by the United States in order to counter a primitive Soviet antiballistic missile system, and they provided a temporary strategic advantage. But the Soviets soon developed MIRV's of their own, which made U.S. land-based missiles vulnerable to preemptive attack. "Today, at long last, there is general agreement that we would have been far better off had we abstained from introducing MIRV's," Gottfried says. "This lesson applies directly to antisatellite weapons. The Soviets have been both foolish and reckless to spend some 15 years nurturing a clumsy threat against a rather small portion of our satellites. Their major accomplishment has been to provoke us into building a far more sophisticated system. Our ASAT, if deployed, will give us a temporary advantage. But as with ballistic missiles, an ongoing competition in space weaponry will, inexorably, reduce the security of both sides. That should be clear to all by now. Or must we wait . . . a decade hence [to learn] that in 1983 the United States blundered once again by upping the ante in this deadly poker game?"—**R. JEFFREY SMITH**

Need a New Lab? Just Ask Your Senator

Three more universities have teamed up with their senators to short-circuit the cumbersome and uncertain review process that usually precedes the award of federal grants for research facilities. On 4 October, the Senate approved, without debate, amendments to an appropriations bill that would provide $9 million to the University of Pennsylvania for a new dental school, $18.2 million to the University of New Mexico for a new building to house engineering laboratories and lecture rooms, and $20.1 million to Boston University, also for an engineering building. Proposals to build the new facilities have been reviewed neither by the relevant congressional committees nor by the federal departments that would provide the funds.

The money is not yet in the bank. The House version of the appropriations bill does not contain funds for the new facilities, and even the sponsors of the Senate amendments admit they will have a tough time persuading House members to agree to them when the bill goes to a conference committee. (The committee is scheduled to begin its work on 20 October, as *Science* went to press.) Nevertheless, the fact that the Senate approved the funds so readily is a sign of the extent to which pork barrel politics is becoming an established way of parceling out funds for academic facilities.

Pennsylvania, New Mexico, and Boston are not the only universities to short-circuit the review processes. At least five others have already followed the same route this year. Catholic University and Columbia University have been awarded $5 million apiece for initial installments to build materials research centers. (The Department of Energy, which will provide the funds is now awaiting the proposals before it can release the money.) Oregon Health Science University has secured a grant of $20.4 million for a new library and information center. The University of New Hampshire has a $15-million grant for a space and marine science center. And Boston College has been awarded $7.5 million to complete a new library. They were all beneficiaries of amendments first proposed on the floor of the House or Senate (*Science*, 3 June, p. 1024; 1 July, p. 36).

Pennsylvania's new dental school was championed by Senator Arlen Specter (R–Pa.). He offered an amendment to the appropriations bill for the Departments of Labor, Education, and Health and Human Services. The dental school, Spector said, is cutting its enrollment and revamping its courses, and needs to move out of its current large and inefficient quarters. The university itself is planning to put up at least half the total estimated cost of $18 million.

Soon after Specter's amendment was approved, along came Senators Pete Domenici (R–N.M.) and Edward Kennedy (D–Mass.) with a combined amendment to provide funds for the University of New Mexico and Boston University. According to an aide to Domenici, the senator was persuaded that New Mexico's engineering department needs to be strengthened to enable Albuquerque to compete more effectively with other cities in attracting high-technology industry. Domenici teamed up with Kennedy in part to help secure support for the amendment in the House—Speaker Thomas P. O'Neill, Jr. (D–Mass.) has an obvious interest in helping ease passage of the funds for Boston University. They quietly attached an amendment authorizing the funds to a bill last summer, and their amendment appropriating the money sailed through on 4 October without any opposition.—**COLIN NORMAN**