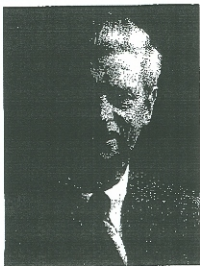


ANTI-SATELLITE SYSTEMS AND ARMS CONTROL: LESSONS FROM THE PAST

HENRY F. COOPER



THE AUTHOR: Dr. Cooper has been Chief U.S. Negotiator for Defense and Space at the Nuclear and Space Talks since January 1988. An authority on nuclear weapons effects and strategic systems, his previous U.S. Government service includes the positions of Assistant Director of the Arms Control and Disarmament Agency (1983-1985), Deputy to the Assistant Secretary of the Air Force for Research, Development and Logistics (1980-1982) and Scientific Advisor to the Civil Engineering Division of the Air Force Weapons Laboratory (1964-1972). The article is adapted from an address to the Annual AAAS Colloquium on Science, Arms Control and National Security in October 1988.

IN BRIEF

After a decade of research, development and testing, costing over \$1.5 billion, the U.S. F-15 ASAT program was cancelled in 1988, and a new ASAT program has been included in the FY 1990 Department of Defense budget. The failure of the F-15 program can be traced to incoherence in program advocacy and related arms control initiatives by several Administrations, and to later Congressional restrictions intended to enforce an ASAT ban over the objections of the Reagan Administration. The history illustrates the disastrous consequences of not achieving bipartisan support for important defense programs where technology and national security policy are in a high state of flux — especially when Soviet propaganda and sweeping arms control proposals can significantly influence the political milieu. It is to be hoped that the new ASAT program will profit from the lessons of the past.

In the mid-1970s, the United States dismantled its direct-ascent nuclear-armed anti-satellite, or ASAT, system at Johnston Island, originally deployed in the 1960s.¹ Then, pursuant to one of the preceding Ford Administration's final initiatives, the Carter Administration, in 1977, launched the development program for the F-15 miniature vehicle, or MV, ASAT system.² After spending more than \$1.5 billion on the F-15 ASAT program

over the past decade — and after five test firings, including the successful intercept of an aging satellite on September 13, 1985 — the United States has now cancelled this program at the demonstration stage and started a new ASAT development program.³

Why has the United States gone back to the drawing board? The F-15 ASAT program was cancelled not because of technical problems, or because of an incorrect view of military require-

ments, or because of an inappropriate military response to those requirements. As the case history below will illustrate, there were at least three related causes behind the demise of the F-15 ASAT program.

First, at the outset, there was a lack of coherent thinking regarding the importance of ASAT systems in evolving U.S. national security requirements. As a consequence, the national security requirement for an ASAT was not generally understood in either the Executive or the Legislative branch of the U.S. Government.

Second, it took time and considerable effort to reverse the initial U.S. view that an unverifiable, comprehensive ASAT ban could further our national security interests. Thus, the course of the F-15 ASAT program was buffeted by numerous political winds of the arms control process.

Third, an effective Soviet propaganda campaign exploited the lack of bipartisan consensus regarding U.S. ASAT policy during several years when the U.S. Congress was increasingly seeking to influence U.S. arms control policy. Several sequential years of unilateral arms control restraints imposed by Congress finally frustrated development of the F-15 ASAT system.

The Legacy of a Bad Beginning

At the outset of the F-15 ASAT program, U.S. national security policy, including arms control policy, strongly reflected the notion that ASAT systems were unnecessary and should be banned. Certainly, public actions by the U.S. Government seemed to suggest that the United States should not maintain such capabilities and should seek an agreement with the Soviets whereby they would abandon theirs as well.

In the mid-1970s, the United States unilaterally dismantled its Johnston Island ASAT system, and, in an unrelated action, its ABM system in North Dakota, which had an inherent ASAT capability. The Johnston Island ASAT, after being operational since 1963, was deactivated in 1975 — at a time when ASAT emphasis shifted from nuclear to nonnuclear systems because a nuclear warhead ASAT was seen as useful only in the event of a general nuclear war. The Safeguard ABM system, deployed at Grand Forks, North Dakota in

1976, was operational for less than a year before it was dismantled.

The U.S. cancellations were undertaken notwithstanding the fact that the Soviet Union was maintaining an operational ASAT, as well as its Moscow ABM system with its inherent ASAT capability. Then, within two years of these well-publicized U.S. unilateral actions, the United States sought through negotiations to get the Soviets to dismantle their operational ASAT. This sequence of events — in which the United States first unilaterally scrapped its own operational ASAT capabilities and then sought agreement for the Soviets to follow suit, was less than brilliant U.S. negotiating strategy — even if it had been sound national security policy, which it was not.

In any case, Secretary of State Vance proposed ASAT negotiations in the package of arms control initiatives which he presented to the Soviet Union during his Moscow visit in 1977. Consequently, there were three rounds of ASAT talks — in Helsinki in June 1978, in Bern in January 1979, and in Vienna in the spring of that year. Initially in those talks the United States proposed to negotiate a comprehensive ASAT ban and an associated moratorium on testing while the negotiations continued.⁴

Fortunately, the Soviets showed no interest in these U.S. proposals, perhaps because they saw greater advantage in testing their operational ASAT system than in stopping the embryonic U.S. F-15 ASAT program — all the more so in the wake of U.S. unilateral abandonment of its operational ASAT and ABM systems. However, in the ASAT talks, the Soviets presented correct technical arguments as to why a comprehensive ASAT ban was not feasible, given the many ways in which satellites could be attacked, why such a ban could not be verified, and how it could easily be circumvented.⁵

The United States and the Soviet Union did eventually begin serious talks on less ambitious and more realistic objectives dealing with the conduct of military activities in space. These discussions centered around terms such as "noninterference," "no-use," "no-hostile-acts," and "rules of the road."⁶ But following the 1979 Soviet invasion of Afghanistan, which coincided with a recess in those negotiations, the Carter Administration never resumed the talks.

During its early years, the F-15 ASAT program was commonly perceived throughout the U.S. national security bureaucracy as an arms control "bargaining chip." Indeed, the program was kept alive as a result of direction from the Office of the Secretary of Defense and the White House.⁷ It was perceived as a politically motivated, "top-down-driven" program, and military arguments to support a serious acquisition strategy did not carry much weight in the Department of Defense budget process.

The principal military justification for the F-15 ASAT was to defend against targeting satellites that could locate and direct fire toward surface naval ships responsible for maintaining sea lanes of communication to support and reinforce U.S. theater forces. However, the U.S. Navy would not acknowledge a requirement for the F-15 ASAT (which, during those years, seemed destined to be bargained away in negotiations), and the U.S. Air Force preferred not to spend its money on a bargaining chip. Thus the Joint Chiefs of Staff did not strongly support a military requirement for the F-15 ASAT program.

On the other hand, the Defense Science Board and Air Force Scientific Advisory Board reviewed the ASAT program, advised that the technical basis for continuing the F-15 effort was sound, and lent their support to advocacy of a militarily significant space defense mission. And, over time, there was a growing appreciation that the United States should not permit a sanctuary in space for various potential, if not already existing, Soviet space systems that could pose significant threats to terrestrial U.S. military assets.

This changed perception of the threat was conspicuous in the U.S. Navy. During the late 1970s, the U.S. Navy expressed confidence that it could protect the fleet without a destructive ASAT capability. By the early 1980s, however, the U.S. Navy's growing perception of the threat inherent in Soviet terrestrial surveillance satellites prompted naval leaders to lend strong support to a U.S. ASAT capability to counter such Soviet satellites during hostilities. In a June 6, 1984, letter to this author, Vice Admiral G.R. Nagler, Director of Naval Warfare, contradicted reports that he

and the Navy did not support the requirement for an ASAT:

I would like to clarify my stand on ASAT; I fully support the President's program to develop an antisatellite capability to defeat Soviet satellite surveillance systems during hostilities. I reject the use of my name indicating that the Navy does not see development of an ASAT as necessary to thwart a seriously growing Soviet threat. I have no objection to your use of this letter in any way to clarify my and the Navy's position on ASAT.⁸

After October 1985, when the U.S. Space Command was formed, this point of view gained more general stature in the Pentagon. General Herres, the first Space Command Commander-in-Chief and now Vice-Chairman of the Joint Chiefs of Staff, became a forceful advocate of the development of an effective ASAT capability. General John L. Piotrowski, the present Space Command Commander-in-Chief, has intensified this advocacy, and the Joint Chiefs of Staff have now validated a requirement to provide a satellite-negation capability at all of the altitudes where hostile space systems operate.⁹

Yet, these changes, which hopefully will facilitate the next ASAT development effort, came too late to help the F-15 ASAT program. Misinformed public debate in the early 1980s, as well as an ever-increasing activism on the part of the U.S. Congress in legislating unilateral restraints on the development — and particularly on the testing — of the F-15 ASAT led to programmatic delays, to increased costs and, ultimately, to what the Pentagon deemed an inadequate program from a military and acquisition-policy point of view.¹⁰

Legacy of Legislated Arms Control

In the early to mid-1980s, the Congress held the development of the F-15 ASAT system hostage to demands that the United States negotiate with the Soviets to ban ASAT systems. This Congressional position, while consistent with the original proposals of the Carter Administration, was increasingly out-of-step with a growing awareness of the military requirements for a U.S. ASAT system — along with the recognition that the Soviets, during the 1978–1979 ASAT negotiations, had

been correct in their arguments regarding the verification difficulties of such bans then proposed by the United States.

But by the early 1980s the Soviets obviously recognized the merits of feeding the growing Congressional appetite for imposing arms control restraints on the United States through the legislative process. The Soviets began a steady worldwide propaganda drumbeat for the need to agree not to "militarize space." Contrary to their position in the 1978-1979 ASAT talks, they now introduced proposals in the United Nations for a comprehensive ASAT ban.

Thus, in August 1981, in the 36th United Nations General Assembly (UNGA), the Soviets proposed a draft treaty that would prohibit stationing of weapons of any kind in outer space. The Soviets then pressed for an Outer Space Working Group in the U.N.-sponsored Conference on Disarmament. In August 1983 the U.S. Government agreed to a nonnegotiating mandate for such a group. On August 18, 1983, General Secretary Andropov advised visiting U.S. Senators that, in order to prevent the militarization of space, there should be a complete ban on the testing and deployment of space-based weapons that could strike targets in space, in the atmosphere and on earth; existing ASATs should be eliminated, and the testing and deployment of new ASATs should be banned. He added that the Soviets would begin a unilateral moratorium on ASAT tests. Foreign Minister Gromyko submitted these proposals as a draft treaty for the 38th Session of the General Assembly on August 23, 1983. On June 29, 1984, in anticipation of a conference in Vienna, the Soviets argued for "the need to take urgent measures to prevent militarization of outer space" and proposed "to impose on a reciprocal basis a moratorium on the tests and deployment" of ASAT systems and "attack space systems."

The Soviets pressed such proposals in other fora as well. In March 1985, the Geneva Defense and Space Talks (DST) became the focal arena for Soviet proposals to ban so-called "space-strike arms," with accompanying Soviet public diplomacy themes related to their alleged concerns about the "militarization of space." The Soviet category of "space-strike arms" included space-based ABM systems, space-to-earth weapons and ASATs of any principle of action. As the talks progressed, the Soviets proposed, as so-called "partial

measures," bans for each of the three categories of "space-strike arms." Later, particularly after the U.S. Congress legislated no further ASAT tests in FY 1986, the Soviets evidenced little interest in their previously proposed ASAT ban, although it remained on the table.

Soviet propaganda regarding banning the "militarization of space" was nonsense, of course, because both nations had been irreversibly involved since the 1950s in a whole variety of military activities in space. Since the first Soviet satellite (Sputnik) in 1957, the United States and the Soviet Union have placed into orbit thousands of satellites that have important military applications, including navigation, reconnaissance, communications, surveillance, intelligence gathering on electronic and communication emissions, geodesy, cartography, missile-launch detection and trajectory-monitoring, potential attack assessment, tactical battle management data and meteorology. Notwithstanding Soviet arguments to the contrary, about 90 per cent of the 150 Soviet satellites currently in space have military or military-related functions.¹¹

Moreover, as the Soviets had demonstrated via their own arguments in the 1978-1979 ASAT negotiations, they well understood the faults of a comprehensive ASAT ban. But the U.S. Congress appeared not to understand these issues — and the Congress was clearly a primary target of the Soviet propaganda. When, in 1983, the Soviets "raised the ante" in the public debate by declaring a "moratorium" on ASAT testing, Congress took the bait and began to insist that the United States seek to negotiate a comprehensive ASAT ban as a precondition for continuing the F-15 ASAT program.

The "Tsongas Amendment" (after Senator Paul Tsongas, Democrat from Massachusetts) was proposed and approved, with little notice or debate, by the Senate on July 18, 1983. It became Section 1235 of the FY 1984 Department of Defense Authorization Act, which prohibited the use of funds "to test any explosive or inert antisatellite warheads against objects in space" unless the President certified two facts: that the United States was endeavoring in good faith to negotiate an ASAT ban with the Soviet Union; and that, pending such an agreement, ASAT testing was "necessary to avert clear and irrevocable harm to the national security."

President Reagan's March 31, 1984, report to the Congress marked the definitive statement of U.S. policy in the ASAT area.¹² In particular, it contained the finding that the comprehensive ASAT ban, which had been the initial U.S. negotiating objective in the 1978-1979 ASAT Talks and which the Soviets and the U.S. Congress then proposed in 1984, was not verifiable, could easily be circumvented and was not in the security interests of the United States. The report also indicated that the United States would continue to study space arms control issues with the objective of seeking equitable, verifiable agreements consistent with our national security interests. This continued to be the U.S. objective in the Defense and Space Talks throughout the remainder of the Reagan Administration.¹³

The President's March 31, 1984, report, along with testimony by Administration spokesmen relevant to the report, was successful in persuading the Congress to drop from the 1985 Defense Bill its demands that the United States seek to negotiate with the Soviets a comprehensive ASAT ban. Still the Congress insisted that the President certify that ASAT testing was essential to U.S. national security interests before the F-15 ASAT could be tested against target satellites.¹⁴ The President did so certify, and a successful ASAT test against a target satellite was conducted in late summer of 1985.¹⁵

Not to be denied in its quest for ASAT arms control, however, the Congress, led by the House of Representatives, then ignored the President's certification and legislated, for the next three years in succession, unilateral restraints on further testing of the maturing F-15 ASAT system.¹⁶ The Congressional line of argument was that if the Soviets conducted no tests of their ASAT, which was operational, the U.S. Air Force should not test the U.S. ASAT, which was still in the development stage.

This Congressional line of argument was steeped in at least three false premises. First, it assumed that, unless the Soviets conducted fully integrated, "end-to-end" tests, they could not maintain confidence in their system, which the United States judges to have been operational for well over a decade. To the contrary, and as reported by Secretary of Defense Frank C. Carlucci,¹⁷ the U.S. intelligence community

has conclusive evidence that the Soviets have maintained to this day their co-orbital ASAT capability in a constant state of readiness, even though they have not performed an integrated "end-to-end" test since 1982.¹⁸ The fact is that the Soviets have demonstrated in the past the capability to maintain an acceptable end-to-end system reliability after a testing hiatus of several years.¹⁹

The second false premise in Congressional assumptions was that if the Soviet co-orbital ASAT were dismantled, the security of U.S. satellites would thereby be significantly improved. But, as U.S. intelligence community spokesmen and others have publicly reported, the Soviets can resort to other ways to counter U.S. military satellite systems — e.g., through the use of ground-based lasers, direct-ascent ABM interceptors, other ballistic missiles and electronic warfare capabilities.²⁰

The third, and perhaps most important, false premise in the Congressional approach was that the United States has no requirement for an ASAT other than as a counter to Soviet ASATs. It should be noted that there is merit in the argument that the United States needs a dedicated ASAT to counterbalance similar Soviet capabilities. Without the ability to respond in kind, should the Soviets attack important U.S. military satellites, the only choice for the United States would then be to do nothing or to escalate the conflict to a higher and more dangerous level. Doing nothing could have extremely serious military consequences. Escalating the engagement in space would, in some scenarios, send the wrong signal to Soviet military and political leadership, and lead to a widening of the conflict beyond the desires of either side.²¹ Thus, an ASAT asymmetry could contribute to crisis instability.

Still, there would be a valid requirement for a U.S. ASAT against threatening Soviet satellites even if the Soviets had no ASAT capability. In his Congressional testimony on March 30, 1988, General Piotrowski observed that U.S. naval and ground forces are potentially vulnerable to localization by existing and improved future space reconnaissance satellites and targeting by long-range stand-off weapons.²² Since it is clearly contrary to U.S. interests to extend sanctuary to such threatening satellites, General Piotrowski emphasized that the JCS had validated a requirement for a U.S. ASAT capability to counter them.

It should be understood — although often it is not — that the military requirement for such an effective ASAT capability is not restricted to concerns relevant to strategic or nuclear deterrence. Indeed, such a capability could be critically important in assuring the integrity of sea lanes of communication necessary to support and reinforce U.S. conventional forces in any theater conflict and in enabling them to operate effectively. According to General Piotrowski, current Soviet satellites could identify and locate for targeting purposes U.S. and allied ship movements. In the event of a conflict in Europe, Soviet submarines, naval aircraft and surface units would thereby be given much greater effectiveness in interdicting the U.S. reinforcements that are integral to a viable NATO conventional defense. Moreover, technological advances in the next several years are expected to enhance more generally the current capability to provide significant real-time, targeting information to the tactical battlefield. A U.S. ASAT capability would hold such Soviet satellites at risk in the event of a crisis that could escalate into conventional conflict.²³

Such compelling arguments, which effectively bare the falsity of the premises with which Congress has imposed unilateral restraints on U.S. ASAT testing in the past, apparently have had their impact. For the first time in five years, the FY 1989 Defense Bill contained no legislated restraints or arms control conditions on the testing of a U.S. ASAT system.

That is the good news. The bad news is that the F-15 ASAT program had been so starved in previous years, and its scope so reduced, that the Defense Department decided in 1988 to cancel the program and start anew. Therefore, this was an empty victory as far as the F-15 ASAT program was concerned, and it remains to be seen whether the Congress will be more supportive of its successor.

Illumination for the Future

The U.S. Army will be responsible for overall management of the new ASAT program, which is reported to include: (1) \$94.6 million for the Navy and Army to work on the interceptor, which will use technology derived from an experimental missile developed in the SDI program by the Army to shoot down nuclear warheads; (2) \$35 million for the Army to study

the ASAT potential of a beam weapon, called the free-electron laser, that SDI also is using for antimissile tasks; and (3) \$54.6 million for the Air Force, including \$38.6 million to study other beam weapons that could be developed if the free-electron laser proves to be a poor ASAT weapon.²⁴

The new ASAT program should have smoother sailing than its unfortunate predecessor. In the first place, the history recounted above has left the U.S. national security community better informed and, hopefully, wiser regarding, on the one hand, the requirements for a U.S. ASAT capability and, on the other, the difficulties of achieving equitable, verifiable ASAT arms control agreements that serve U.S. security interests. With the advent of the U.S. Space Command, there is now a much more effective advocate of U.S. military requirements in space, including ASAT capabilities. Moreover, given the debate of the past five years, there is now a wider appreciation of the deceptive nature of grandiose Soviet arms control proposals, including those trumpeting alleged concern about the "militarization of space."

More significant, perhaps, are the broader lessons that can be drawn from the ASAT history and applied to the formulation of future national security policy, including on arms control. Four such lessons stand out.

First, a good channel of communication and a degree of mutual trust between the Executive and Legislative branches are essential to the health of development activities in areas where national security policy is in a high state of flux — and especially where Soviet propaganda and sweeping arms control proposals could significantly influence the political context.²⁵

Second, arms control should be given a supporting, not a leading, role in establishing U.S. national security policies and requirements. Arms control for arms control's sake is likely to be counterproductive, especially if negotiations are undertaken without an understanding of how they support overarching national security policy objectives, including prominently the vital requirements of our defense.

Third, given the complexities of still embryonic military activities in space, the United States should take care in keeping its associated arms control initiatives modest in scope while sorting out its national security objectives.

Finally, it portends to be extremely difficult, if not impossible, to design viable and effective verification regimes for agreements to limit activities in space. This hard prospect, along with the documented record of Soviet noncompliance with negotiated agreements, argues for extra caution in formulating U.S. arms control proposals for space-related activities.²⁶ Given

these hard obstacles and pitfalls in negotiated arms control arrangements, it may well be that confidence-building measures for providing greater reciprocal visibility and predictability of the space activities by both sides offer a more promising path toward meaningful agreements. Indeed, the Defense and Space Talks in Geneva have begun to focus on such measures.²⁷

NOTES

1. The Johnston Island ASAT, which was operational from 1963 to 1975, used a nuclear warhead to ensure a high probability of kill in spite of its relatively inaccurate guidance subsystem.

2. The F-15 MV ASAT program was conceived early in the Carter Administration as an evolutionary extrapolation of the U.S. Army's hit-to-kill ABM interceptor technology. The Air Force was directed to begin a vigorous ASAT development program in January 1978, and the initial plan called for 30 F-15s deployed at two operating bases, to serve as ASAT launch platforms.

3. See U.S. Congress, Senate, Armed Services Committee, *Hearings on Department of Defense Authorization for Appropriations for FY 1988-1989*, Part 4, "Strategic Forces and Nuclear Deterrence" (Washington, DC: U.S. Government Printing Office, January 1988), p. 2294 (hereinafter cited as *Hearings*), Brig. Gen. R.R. Rankine, Jr., testified on March 26, 1987, that \$1.5883 billion had been expended on the MV ASAT program. Dr. J.H. Hammond, Director for Directed Energy, SDIO, described in these same hearings the motivation and initial scope of the new ERIS ASAT development program. *Ibid.*, pp. 2265-2272, 2279. Also see "Pentagon Board Names Army to Lead Revamped ASAT Program," *Aviation Week*, January 16, 1989, p. 31, for discussion of the plans to develop a new U.S. ASAT.

4. These talks are generally described by Paul B. Stares, *The Militarization of Space: U.S. Policy, 1945-1984* (Ithaca, NY: Cornell University Press, 1985), pp. 196-199.

5. As pointed out in the President's *Report to the Congress on U.S. Policy on ASAT Arms Control*, March 31, 1984, and reflected in an OTA report, U.S. Congress, Office of Technology Assessment, *Arms Control in Space: Workshop Proceedings*, OTA-BP-ICS-28, May 1984, a comprehensive ASAT test ban would pose serious verification problems. A dedicated ASAT interceptor vehicle can be relatively small, about the size of a strategic cruise missile and can be covertly produced and stored. Also, such a ban would be easy to circumvent because of the intrinsic ASAT capabilities of ABM systems, ICBMs, SLBMs and space boosters for civil and military missions. Normal docking activities in space would provide the means to covertly test critical maneuvers for co-orbital ASAT systems, such as the operational Soviet ASAT. Other ASAT capabilities can be provided by ground-based and space-based directed energy weapons and electronic countermeasures.

6. See Stares, *op. cit.*, pp. 194-199.

7. From late 1979 to mid-1981, the author served as Deputy to the Assistant Secretary of the Air Force for Research, Development and Logistics and had oversight responsibility for the F-15 ASAT program.

8. This Navy position was more recently reaffirmed in a May 9, 1987, letter to the Speaker of the House of Representatives, the Honorable James C. Wright, from the Director, Naval Warfare, Vice Adm. James R. Hogg: "I would like to unequivocally state that the U.S. Navy firmly supports development and deployment of a U.S. ASAT at the earliest practical opportunity."

9. See Gen. John L. Piotrowski's statement of March 26, 1987, in *Hearings*, *op. cit.*, p. 2248; and Gen. Piotrowski's testimony before the Senate Select Committee on Intelligence, March 30, 1988, p. 28. The JCS have validated a Multi-Command Required Operational Capability (MROC), SM 77-88 for a satellite negation system. *Ibid.*, p. 24.

10. The FY 1986-1987 ASAT testing moratorium imposed by the Congress caused at least two years of delay, and the estimated \$200 million in added costs associated with these delays undermined the program's scope and structure. Also, because of overlap with SDI technologies, the delays led to IOC's comparable with possible developments/deployments under SDI - consequently the program was re-examined, and subsequently restructured. However, the continuation of these legislative restraints finally forced the cancellation of the air-launched miniature vehicle ASAT program. See Gen. Piotrowski's March 30, 1988, testimony, *ibid.*, p. 17.

11. That even "commercial satellites" can be used by any number of nations to support military "warlike" purposes was illustrated by a recent article by Eliot Marshall, "Space Cameras and Security Risks," *Science*, Vol. 243, January 27, 1989, pp. 472-473.

12. During 1983-1985, the author was the Assistant Director of the Arms Control and Disarmament Agency for Strategic Programs and chaired the Interagency Group (at the Assistant Secretary level) responsible for developing the Reagan Administration's ASAT arms control policy.

13. Although there were extensive discussions with the Soviets regarding possible ASAT arms control agreements, none were identified which met the U.S. criteria that such an agreement be equitable, verifiable, not easily circumvented and in the U.S. national security interest. The Soviets were initially insistent that ASATs be

NOTES (Continued)

limited as part of a Defense and Space agreement linked to START, but they later sought only a commitment to future negotiations, and eventually they dropped their demand for an explicit reference to ASATs in a Defense and Space Treaty.

14. In the conference on the FY 1985 DoD Authorization Bill, the Senate first rejected the "Brown-Coughlin Amendment" which would have banned ASAT testing against an object in space until the President certified that the Soviets had conducted a test of a "dedicated" ASAT weapon. Then, agreement was reached on Section 205, which prohibited the use of funds "to test against an object in space the miniature homing vehicle (MHV) antisatellite warhead launched from an F-15 aircraft" absent a Presidential certification of four conditions: (1) that the U.S. was endeavoring to negotiate an ASAT ban with the Soviet Union; (2) that, pending such an agreement, ASAT testing was necessary to avert clear and irrevocable harm to national security; (3) that testing would not gravely impair prospects for negotiation; and (4) that testing would be consistent with the ABM Treaty. Section 205 provided that the ban would expire 15 days after the Presidential certification and allowed no more than two "successful" ASAT tests during FY 1985. Section 8100 of the FY 1985 DoD Appropriation Act largely tracked the language of the FY 1985 Authorization Bill. The only significant difference was that, whereas the Authorization had allowed "two successful tests," the Appropriation Act allowed only "three tests," regardless of their success.

15. The Presidential Determination, No. 85-19, was issued by President Reagan on August 20, 1985, to provide the mandated certification, and a successful MV ASAT test was conducted on September 13, 1985. A direct hit was achieved against an aging on-orbit satellite - Air Force Space Test Program Satellite 78-1, launched in February 1979 to gather scientific data. The target satellite had exceeded its design life and completed its experiments.

16. FY 1986-1988 Congressional actions continued to limit ASAT testing. In the FY 1986 DoD Authorization debate the House once again adopted the Brown-Coughlin Amendment (no U.S. testing so long as the Soviets conducted no additional tests) and the Senate again rejected it. Section 208 of the final Act was similar to the FY 1985 Appropriation provision: no further testing without Presidential certification of the four conditions in Note 14 above; and no more than three tests before October 1, 1986. In the FY 1986 Appropriations Bill, the House again adopted a Brown-Coughlin Amendment, and this time, in conference, the Senate accepted it. Section 8097, as adopted, states: "None of the funds appropriated by this Act or any other Act may be obligated or expended to carry out a test of the Space Defense System (antisatellite weapon) against an object in space until the President certifies to Congress that the Soviet Union has conducted, after October 1, 1985, a test against an object in space of a dedicated antisatellite weapon." The FY 1986 DoD Appropriations Bill was part of a Continuing Resolution, which was initially rejected by the House on December 16, 1985, but was ultimately enacted on December 19 as Public Law No. 99-184.

17. See Secretary of Defense Frank C. Carlucci, *Annual Report to Congress: Fiscal Year 1990*, January 17, 1989, (Washington, DC: U.S. Government Printing Office, 1989), p. 19. The retired inventory of SS-9 ICBMs provides a stockpile of unknown size of Soviet SL-11 booster rockets. The SL-11 is the common launch vehicle for the Soviet operational ASAT and other satellites, including Soviet targeting satellites. Frequent launches of such non-ASAT payloads ensure periodic testing of the booster without the ASAT interceptor payload. The entire prelaunch sequence could be tested to further ensure operational status without actual launch of the ASAT. And, as noted above, critical aspects of the end-game encounter of this co-orbital ASAT system could be covertly tested as part of the numerous docking activities in the very active Soviet manned space program.

18. The 1982 ASAT test was part of a major command post exercise which demonstrated that the Soviets see an ASAT role in a spectrum of possible conflicts. See the statement of Brig. Gen. R.R. Rankine, Jr., in *Hearings*, op. cit., pp. 2254-2255.

19. The Soviets refrained from testing their ASAT for several years during the late 1970s. When testing was resumed, it was for an upgraded co-orbital ASAT and there were several failures associated with the new system. However these failures should not be construed as a loss of reliability of the operational ASAT system.

20. See, for example, Department of Defense, *The Soviet Space Challenge* (Washington, DC: U.S. Government Printing Office, November 1987).

21. Brig. Gen. R.R. Rankine, Jr., in his testimony during the FY 1988-1989 Authorization Bill hearings, observed that JCS command post exercises had illustrated the "terrible dilemma" posed by the lack of an ability to respond in kind. *Hearings*, op. cit., p. 2255.

22. See Gen. John L. Piotrowski's Statement on Space Control (March 30, 1988). In his testimony the previous year, Gen. Piotrowski said the combination of Soviet EOR-SAT and RORSAT and cruise missiles today "gives them a tremendous over-the-horizon undetected capability" against our surface ships at sea. *Hearings*, op. cit., p. 2247.

23. As discussed in Piotrowski's March 26, 1987, testimony in *Hearings*, op. cit., pp. 2247, 2254 and 2255.

24. See "Pentagon Board Names Army to Lead Revamped ASAT Program," *Aviation Week*, January 16, 1989, p. 31; and Warren Strobel, "Army to Manage the Development of Satellite-Killer," *Washington Times*, January 13, 1989. The FY 1990 DoD budget hearings will test whether Congress will again impose unilateral testing restraints or refuse to appropriate sufficient funds to realize a U.S. ASAT capability.

25. In an October 6, 1988, letter to the presidential candidates, Senators Boren (D-OK), Boschwitz (R-MN), Bradley (D-NJ), Danforth (R-MO), Kassebaum (R-KS) and Nunn (D-GA) strongly recommended that the President take steps to reestablish a bipartisan foreign policy through periodic meetings of the leadership of the new Administration and the Congress, including those members concerned with the committees on Foreign Policy, Armed Services and Intelligence. Bush Administration spokesmen have indicated that achieving bipartisan support will receive their high priority.

NOTES (Continued)

26. The record of Soviet noncompliance with established arms control agreements has been chronicled in the President's annual reports to the Congress under Public Law 99-145. See *Soviet Noncompliance with Arms Control Agreements*, attached to letters from President Reagan to the President of the Senate and Speaker of the House, December 2, 1988.

27. The Defense and Space Talks in Geneva have led to agreement in principle on an approach to a Predict-

ability Measures Protocol that would improve the transparency of U.S. and Soviet ABM research, development and testing activities. These include the scheduling of annual data exchanges followed by meetings of experts. The experts' meetings would recommend to governments a program of mutual exchanges of visits to facilities and the observation of tests for the ensuing year. All of these exchanges would stress reciprocity and comparability.

