

MOVING BEYOND AN ASAT TESTING BAN

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In 2022, Vice President Kamala Harris announced a voluntary commitment to a destructive anti-satellite (ASAT) test ban. Since then, the United States has not pursued additional space arms control measures, which would reinforce the test ban's international success in demonstrating the US commitment to responsible behavior in space. This article explores the possibility of a high-altitude test ban as a next step in space arms control, using lessons learned from Cold-War debates as a guide to how a future ban could be implemented. Technological developments mean that it is no longer feasible nor reasonable to accept a unilateral test ban, but it is possible to accept a high-altitude ASAT ban.

In April 2022, Vice President Kamala Harris announced that the United States “commits not to conduct destructive direct-ascent anti-satellite (DA-ASAT) missile testing,” opening a window for meaningful discussion on space arms control.¹ Since that announcement, a growing number of nations have signed on to the US-led ban. Yet none of the three foreign nations that have a proven DA-ASAT capability—India, Russia, and China—have expressed interest in such a ban. In December 2022, the UN adopted a resolution which called upon states “not to conduct destructive direct-ascent anti-satellite missile tests,” which Russia and China voted against while India abstained.² The United States, in addition, has not made any effort to follow up on the ban to advance additional space arms control measures.

While such a response may seem prudent given the lack of interest from the three nations with proven counterspace capability, the United States surrenders another opportunity to continue to delegitimize certain categories of space weapons—which it has yet to accomplish despite decades of its intermittent efforts. Nevertheless, looking back at such previous space arms control proposals—particularly the failed endeavor under President Jimmy Carter—can inform future work and help avoid the mistakes of the past.

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1. “FACT SHEET: Vice President Harris Advances National Security Norms in Space,” The White House, 18 April 2022, <https://bidenwhitehouse.archives.gov/>.

2. G.A. Res. 77 (41), Destructive Direct-Ascent Anti-Satellite Missile Testing, A/RES/77/41, Agenda Item 97 (7 December 2022), <https://documents.un.org/>.

This article argues that the United States should build upon the momentum started by its 2022 announcement of a unilateral destructive DA-ASAT test ban by calling for a ban on the development and use of all DA-ASAT weapons with caveats to preserve national ballistic missile defense systems. Essentially, the United States should implement a ban on the development and use of high-altitude DA-ASATs.

As the leading space power and the dominant military and economic power for the foreseeable future, the United States has enormous influence in legitimizing or delegitimizing behavior in international relations. Russia's invasion of Ukraine has shown that when the United States appears weak and indecisive on the world stage, as it did in the wake of the withdrawal from Afghanistan and apparent weakened domestic commitments to established alliance structures, revisionist states will take advantage of any such perceived vulnerability to try and reshape the international order. At the same time, the US commitment to the defense of Ukraine post-invasion has demonstrated that the United States still has enormous power to rally the international community and isolate revisionist states. While its commitment is showing signs of weakening, it has confirmed that US leadership is essential in creating and enforcing norms of behavior and generating effective global coalitions. With the growing threat of an unconstrained arms race in space, US leadership in establishing norms in space is more necessary now than ever.

Background

After World War II, the United States shaped an international order that it has upheld along with its Allies, with some hiccups, which has greatly benefited humanity as a whole for 80 years. Where the United States has faltered in establishing a rules-based order that benefits humanity and preserves economic and scientific opportunity in space, arguably because it has not needed to since the fall of the Soviet Union.

Nearly a decade of negotiation led to the signing of the 1967 Outer Space Treaty, which forms the foundation of space law and regulation today. A handful of treaties followed quickly on the heels of the momentum established by its signing: the Rescue Agreement in 1968, which deals with the recovery of astronauts in distress; the space Liability Convention in 1972, which concerns itself with damage caused by objects in space to Earth or to other space objects; the Anti-Ballistic Missile (ABM) Treaty of 1972, an arms control agreement between the United States and USSR; and the Registration Convention in 1975, which involves the identification of space objects. After this spate of treaties, rising tensions between the United States and USSR led to backsliding on treaties as the provisions of the ABM Treaty were stretched through the Reagan-era Strategic Defense Initiative. With the fall of the Soviet Union, the need for negotiated agreements in the space domain disappeared, and the United States started to back away from the constraints of Cold War agreements, finally formally withdrawing from the ABM Treaty in 2002.

During this time, the United States and USSR nearly signed a treaty banning ASATs late in the Carter administration—an event that is often forgotten or overlooked today. Yet the negotiations were derailed by the Soviet invasion of Afghanistan

in December 1979 and the general souring of relations between the two blocs. Serious debate concerning the ban continued through the Reagan administration. Despite those failed efforts to achieve any binding agreement more than 40 years ago, the logic that went into shaping the various positions within the Carter cabinet, Reagan administration, and Congress is worth exploring as it informs the modern challenges of reaching a domestic and international consensus on an ASAT ban.

Lessons from the Cold War

At the tail end of the Ford administration, Soviet activities in the space domain were becoming increasingly concerning after a period of relative calm highlighted by the signing of the Strategic Arms Limitation Treaty (SALT I) and the Anti-Ballistic Missile Treaty in 1972. Both treaties recognized the necessity of national technical means (NTM) of verification—the means to confirm adherence to the treaties’ measures—and each party to the treaty agreed to not “interfere with the NTM means of verification of the other party.”³ While the treaty did not explicitly associate reconnaissance satellites with NTM, both parties understood this implication.

The reason for this obfuscation was the ongoing US policy of not publicly acknowledging the existence of reconnaissance satellites, which fit nicely with Soviet sensitivities. When SALT II negotiations stalled a few years later, the Soviets once again resumed ASAT development in 1975, which raised concerns in the Ford administration. These concerns centered on the growing US space national security apparatus’ vulnerability to attack, an issue that remains today. In 1976, a national security decision highlighted this vulnerability, especially as US space assets were trending toward a “smaller number of larger, more sophisticated satellites.”⁴ A National Security Council panel “concluded that space assets are now playing a key role in determining the effectiveness and capabilities of important elements of the military forces of both the US and the Soviets.”⁵ The panel further recommended that the United States “should not allow the Soviets an exclusive sanctuary in space” and recommended the development of a US anti-satellite capability.⁶ The previous ASAT capability was a limited nuclear system based on the central Pacific

3. Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms (SALT 1), US–USSR, 26 May 1972, 23 UST 3462, <https://treaties.un.org/>; and Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems, 26 May 1972, 11 ILM 784, sec. Article 12, <https://2009-2017.state.gov/>.

4. Brent Scowcroft, national security adviser, to secretary of defense and director of Central Intelligence, National Security Decision Memorandum 333, subject: Enhanced Survivability of Critical US Military and Intelligence Space Systems, 7 July 1976, 1, Box 1, National Security Adviser Study Memoranda and Decision Memoranda, Gerald R. Ford Presidential Library, Ann Arbor, MI, <https://www.fordlibrary-museum.gov/>.

5. Brent Scowcroft to the president, memorandum, subject: US Anti-Satellite Capability, 24 July 1976, 1, Box C45, 7/24/1976, Presidential Handwriting File, Ford Presidential Library, <https://www.fordlibrary-museum.gov/>.

6. Scowcroft, 1.

Johnson Atoll's Program 437—which had been largely dismantled in 1970—and what little remaining capability it possessed was decommissioned in 1975.⁷

The reasoning behind the United States letting its ASAT capabilities lapse was threefold. First, it perceived that the Soviet efforts to develop ASAT systems had largely stopped and only a residual program remained. Second, the United States also understood that any ASAT development would be contrary to the “spirit if not the letter” of SALT terms.⁸ Finally, there was concern that development of an ASAT capability would encourage the Soviets to resume their space weapons programs. Given the greater US dependence on space, preserving the status quo was certainly in the United States' favor.

Soviet resumption of ASAT testing changed the calculus behind adopting a passive posture in space, and President Gerald Ford signed a directive days before leaving office in January 1977, ordering the development of a non-nuclear ASAT capability and a means of “electronic nullification” to be held at a higher classification level than the ASAT capability.⁹ The directive also assigned the director of the Arms Control and Disarmament Agency responsibility for pursuing arms control initiatives designed to restrict the future development of ASAT capabilities.

Like with most policy directives signed shortly before administration changes, it was up to the next administration to review Ford's decision and determine whether to implement or ignore it. Carter was eager to negotiate arms control, and soon after taking office, he proposed opening a dialogue on a space weapons limit agreement to the Soviets.¹⁰ Meanwhile, the new administration also undertook a review of potential options and allowed the various stakeholders to weigh in. A few weeks after the August 1977 meeting to discuss these options and the acquisition of an actual ASAT capability, the cabinet-level participants adopted nuanced positions for and against a full or partial ASAT ban and outlined how the US acquisition of its own ASAT capability would play into negotiations, all of which was codified in a memorandum to the president.¹¹

In particular, the chairman of the Joint Chiefs of Staff, Air Force General George Brown, was opposed to any type of ASAT ban. He reasoned that the Soviets already had an operational system, and in the event of a ban, they possessed the knowledge to

7. Wayne R. Austerman, *Program 437: The Air Force's First Antisatellite System* (Air Force Space Command, 1991).

8. Scowcroft to the president, memorandum, 2.

9. Brent Scowcroft to secretary of state, secretary of defense, and director, Arms Control and Disarmament Agency, National Security Decision Memorandum 345, subject: US Anti-Satellite Capabilities, 18 January 1977, Box 1, National Security Adviser Study Memoranda and Decision Memoranda, Ford Presidential Library, <https://www.fordlibrarymuseum.gov/>.

10. “Issues Paper Prepared by the PRM-23 Inter-Agency Group: Arms Control for Anti-Satellite Systems Issue Paper,” 9 August 1977, in *Foreign Relations of the United States, 1977–1980*, vol. XXVI, Arms Control and Non-Proliferation [FRUS], ed. Chris Tudda (US Government Printing Office, 2015), 1, <https://history.state.gov/>.

11. “Memorandum from Secretary of Defense Brown to President Carter,” subject: Arms Control for Antisatellite Systems, 19 August 1977, in *FRUS*, <https://history.state.gov/>.

quickly develop a breakout capability, especially given the challenges of verification when even secretly possessing a handful of ASAT missiles provided significant military advantage.¹² A ban would therefore put the Soviets in a position of advantage to the United States, which had no operational capability or meaningful experience with ASATs. Brown determined that the United States should drop the idea of a ban and develop its own capability as a deterrent.

At a 1977 national space policy review meeting among various federal agencies including the Departments of Defense and State and the National Aeronautics and Space Administration (NASA), Assistant to the President for National Security Affairs Zbigniew Brzezinski took an opposing position and supported a comprehensive ban because it would serve US “security interests [and] reinforce stability and support [US] SALT efforts.”¹³ Brzezinski did not support the US acquisition of an ASAT capability and thought that a ban would prevent further Soviet ASAT development. The other participants at the meeting adopted some variation of these two opposing positions. The domestic policy battle lines were drawn.

With the positions of the various agencies established, relevant perspectives from two other groups came into play: an interagency group studying the ASAT issue and an Office of Science and Technology Policy Space Advisory Group. The advisory group supported the acquisition of a destructive ASAT focused on low altitudes as well as an electronic warfare capability.¹⁴ It also emphasized the difficulties of negotiating a ban when only the Soviets possessed a capability. Especially important were the difficulties of verification when only a handful of systems were necessary to cause a measurable impact on US space capabilities. This same verification argument has persisted through the modern era as the key point of resistance whenever the idea of some form of ASAT ban is subsequently raised.

With these difficulties in mind the interagency study group proposed four options. Option 1 offered no agreement other than the existing one under SALT to not interfere with the national technical means of verification. Option 2 would not limit any ASAT capabilities and avoid specifically designating any satellites as NTM assets. Option 3 would prohibit future capability development beyond what already existed—low-altitude interceptors. This option allowed for the development of a limited US anti-satellite capability. Option 4 proposed a comprehensive ASAT ban including testing and deployment, though it would allow for electronic warfare and research and development into ASAT systems. Under this option, the Soviets would have to dismantle their existing capabilities.

12. “Memorandum from the Chairman of the Joint Chiefs of Staff (Brown) to Secretary of Defense Brown,” subject: Antisatellites, 29 July 1977, in *FRUS*, <https://history.state.gov/>.

13. “Summary of Significant Discussion and Conclusions of a Policy Review Committee Meeting: PRM/NSC-23 Coherent Space Policy,” 4 August 1977, in *FRUS*, <https://history.state.gov/>.

14. “Issue Paper.”

In September 1977, Carter approved option 4 as laid out by the interagency study group.¹⁵ Carter proposed pursuing negotiations with the Soviets while also continuing US development of its own capability as a hedge though stopping short of actual testing. The president emphasized a need to develop adequate means of verification.

The first step in the negotiation process was to propose a moratorium on testing of the Soviet system as the US Arms Control and Disarmament Agency proposed a month prior. Following this decision, preliminary discussions with the Soviets began with Carter communicating directly with Soviet General Secretary Leonid Brezhnev in November. Carter made his desire to pursue an agreement on ASATs known and pointed out that Soviet ASAT testing and development were interfering with further SALT negotiations.¹⁶ Brezhnev replied that he was supportive of discussions but wanted to expand negotiations to include the US Space Shuttle. This added a new complication to the ASAT ban as the Soviets were concerned about the dual-use potential of the Space Shuttle. Their concerns were not baseless as, at that time, the US Air Force planned to acquire dedicated space shuttles for placing military satellites in orbit.

It quickly became clear that even after the president's direction of a way forward on ASAT development and negotiations, there were still many challenges to developing a workable agreement. Initial optimism for a speedy interagency consensus on the agreement details to present to the Soviets in line with presidential guidance quickly faded as "unforeseen complexities" kept arising in developing a detailed proposal.¹⁷ Once again the challenges associated with verification of compliance were especially concerning, since even a small ASAT capability that went undetected could provide significant military advantage. The potential variety of ASAT weapons beyond straightforward direct-ascent missile systems also created difficulties. The possibility of the Soviets developing high-energy laser weapons that could damage satellites caused enough concern in the administration that, as Brzezinski stated, it might "shatter our sense of technical superiority as badly as it was when the first Sputnik was orbited."¹⁸

15. "Memorandum from the President's Assistant for National Security Affairs (Brzezinski) to Secretary of State Vance, Secretary of Defense Brown, the Director of the Office of Management and Budget (McIntyre), the Director of the Arms Control and Disarmament Agency (Warnke), the Chairman of the Joint Chiefs of Staff (Brown), the Director of Central Intelligence (Turner), the Administrator of the National Aeronautics and Space Administration (Frosch), and the Special Advisor to the President for Science and Technology (Press)," subject: Arms Control for Antisatellite (ASAT) Systems, 23 September 1977, National Security Council, Institutional Files, Box 41, Folder 3, PRM-23 [3], Jimmy Carter Presidential Library, Atlanta, GA, in *FRUS*, <https://history.state.gov/>.

16. "Editorial Note" (Jimmy Carter to Soviet General Secretary Leonid Brezhnev, letter, 4 November 1977; and Brezhnev to Carter, letter, 15 November 1977), in *FRUS*, <https://history.state.gov/>.

17. "Information Memorandum from the Principal Deputy Assistant Secretary of Defense for International Security Affairs to Secretary of Defense Brown," subject: Antisatellite (ASAT) Arms Control Negotiations—Information Memorandum, 16 December 1977, in *FRUS*, <https://history.state.gov/>.

18. "Memorandum from the President's Assistant for National Security Affairs to President Carter: Soviet and US High-Energy Laser Weapon Programs," 28 November 1977, in *FRUS*, <https://history.state.gov/>.

Even though the dangers and complexities of an effective ASAT agreement continued to cause concern, a cabinet-level special coordinating committee agreed to the outline of a position on ASAT negotiations in February 1978. The negotiating position reached during this meeting went far beyond the original concept of a ban on simply ground-to-space ASAT missiles, amounting to a more comprehensive agreement on space weapons control.¹⁹

Formal negotiations with the Soviets commenced in June 1978, and while the discussions were generally well received, significant issues continued to arise. Both sides differed on defining what constituted a hostile act in space, and while the United States wanted to pursue an immediate moratorium on ASAT testing, the Soviets remained noncommittal.²⁰

Following the first round of negotiations the special committee met again, agreeing to decisively move away from using the term *hostile act*, because the term references the legal equivalent of an act of war and any violation of a treaty using this term might obligate the harmed party to initiate armed conflict.²¹ Instead, future discussion would focus on prohibitions against certain acts.

Discussion on an interim ban on ASAT testing continued along the same lines as in the past where a differentiation existed between low- and high-altitude tests. The Office of the Secretary of Defense and the Joint Staff remained concerned that a total ban would prevent the development of an effective US anti-satellite capability and preserve the Soviet advantage. Instead, a high-altitude test ban, with the exact definition of *high* to be left to the Soviets, would allow the United States to conduct some low-altitude tests to develop a viable capability and preserve congressional interest in funding ongoing development.

After a second round of negotiations with the Soviets concluded, substantial progress had been made, and both sides appeared willing to agree to an interim ASAT agreement. The agreement would initially be bilateral, protecting the satellites of both signatories as proposed by the Soviets. The US cabinet-level special committee agreed to this proposal but wanted to open the treaty to future multilateral participation under which the satellites of subsequent signatories would also be protected. It also wanted to expand the protection to third-party satellites if a signatory claimed an interest in the object.²²

Carter rejected this position and decided to push for protection for all satellites regardless of the launching nation's signatory status. The Soviets also continued to want freedom to act against illegal space objects performing functions that the Soviets might disapprove of; the cabinet side refused to entertain this concept since it created too many loopholes. By this time, the various cabinet members had also agreed

19. "Summary of Conclusions of a Special Coordination Committee Meeting," subject: ASAT Treaty, 15 February 1978, in *FRUS*, <https://history.state.gov/>.

20. "Telegram from the Embassy in Finland to the Department of State," 20 June 1978, in *FRUS*, <https://history.state.gov/>.

21. "Summary of Conclusions," <https://history.state.gov/>.

22. "Summary of Conclusions of a Special Coordination Meeting," subject: Antisatellite Treaty, 12 March 1979, <https://history.state.gov/>.

to a one-year blanket moratorium on testing with no caveats. With these issues settled, the United States hoped to finalize an initial ASAT agreement before the June 1979 US-Soviet SALT summit.

A third round of negotiations commenced in May 1979. The Soviet delegates insisted on a hostile acts exclusion for attacking threatening satellites. They felt strongly that there would be situations in the future where they might be forced to act against a satellite out of necessity. In addition, they rejected any idea of the agreement protecting all space objects regardless of ownership as they did not want the protection to extend to China's satellites.²³ The Soviet delegation also wished to expand the ASAT test moratorium to cover anything which might damage, destroy, or change a satellite's trajectory. This would cover laser weapons and electronic warfare and might potentially impact shuttle operations. Despite these significant sticking points, the two sides started work on a draft treaty with the goal of having an agreement ready by the upcoming US-Soviet SALT summit.

By the end of May the negotiations were at a critical point, and the earlier points of contention were near resolution. A key breakthrough was an agreement on how to handle hostile acts; the language of compromise offered the "declaration that we will not attack, destroy or displace each other's satellites so long as they are operated in accordance with international law."²⁴ Despite this language, the Soviets continued to quibble over adding more specific language on what constituted behavior not in accordance with international law.

A new challenge was the Soviet insistence that the moratorium on ASAT testing include a halt to space shuttle testing, something the United States was completely unwilling to accept. The Soviets also insisted that the testing moratorium include other forms of ASAT technology beyond satellite interceptors, such as lasers and electronic warfare. That was something the United States was willing to compromise on. Finally, the issue of third-party satellites that a signatory had an interest in continued to be a sticking point. Despite these issues, both sides felt they were close to an agreement in early June 1979. A draft treaty existed with an agreed-upon preamble, and both sides were haggling over a mutually acceptable title.

When Carter and Brezhnev met later in June to sign SALT II the issues above remained unresolved. Carter expressed his desire to sign a partial agreement with the Soviets on an ASAT ban and quickly resolve the issue, but the future of the Space Shuttle in particular remained a sticking point. Soviet reaction was pessimistic as they were unwilling to compromise on their points. With the ASAT treaty left unresolved, the presidential summit ended, though further negotiations were not off the table.

No further formal discussions occurred during Carter's presidency as a number of crises engulfed his administration, despite continued Soviet interest in further negotia-

23. "Telegram from the Embassy in Austria to Telegram the Department of State," 7 May 1979, in *FRUS*, <https://history.state.gov/>.

24. "Memorandum from the President's Deputy Assistant for National Security Affairs (Aaron) to the President's Assistant for National Security Affairs (Brzezinski)," subject: ASAT Negotiations, 30 May 1979, in *FRUS*, <https://history.state.gov/>.

tions. With the Iran hostage crisis, the Soviet invasion of Afghanistan, and the resignation of various cabinet officials, the focus of the waning political capital of the Carter administration was no longer on arms control. Carter asked the Senate to delay consideration of SALT II in January 1980 after the Soviet invasion of Afghanistan, which amounted to withdrawing it from consideration. ASAT talks still made it on the agenda for a cabinet-level discussion in June 1980, but there was no time left for the administration to conclude a meaningful agreement given the obstacles that remained.

After President Ronald Reagan took office, the United States rejected a Soviet proposal to discuss a space weapons treaty presented to the UN General Assembly in August 1981.²⁵ This marked the effective death of the draft treaty on ASAT arms control, though Congress would continue to pressure the Reagan administration especially as part of the debate over the Strategic Defense Initiative and US anti-satellite development.

A key component of Reagan's 1982 *National Space Policy* that met significant congressional opposition was his commitment to proceed with the development of an operational ASAT capability. Also, included in the 1982 space policy was a commitment to consider "verifiable and equitable arms control measures . . . should those measures be compatible with US national security," language that remains meaningfully unchanged in the current 2020 *National Space Policy*.²⁶ Congressional concern over the administration's ASAT development and plans for the Strategic Defense Initiative were strong enough that it demanded in the 1984 National Defense Authorization Act (NDAA) that the administration certify to Congress that it was "endeavoring, in good faith, to negotiate with the Soviet Union a mutual and verifiable ban on antisatellite weapons," before any ASAT test could occur—language that was further reinforced in the 1985 NDAA.²⁷ The administration predictably returned that no new agreements were found to be acceptable and that "difficulties of verification" were a significant obstacle.²⁸

A further report prepared by the Office of Technology Assessment at the request of the House Armed Services Committee explored ASAT technology and various approaches to arms control in great detail. One of the seven core proposals in this report was a form of a high-altitude ASAT ban where space would remain a sanctuary above a designated altitude—5,600 kilometers (km)—within which testing or deployment of ASATs would be prohibited.²⁹ These reports were also accompanied by congressional hearings that challenged the veracity of the administration's position that verification of any type of ASAT ban was too difficult or risky. In a 1984 hearing before the

25. Paul B. Stares, *The Militarization of Space: U.S. Policy, 1945–1984* (Cornell University Press, 1985), 217.

26. Ronald Reagan, National Security Decision Directive Number 42, *National Space Policy* (White House, 4 July 1982), <https://nsarchive.gwu.edu/>; and Donald J. Trump, *National Space Policy of the United States of America* (White House, 9 December 2020), <https://www.space.commerce.gov/>.

27. Department of Defense Authorization Act, 1984, Pub. L. No. 98–94, S. 675, 98th Cong. (1983), sec. 1235.

28. US Congress, Office of Technology Assessment (OTA), *Anti-Satellite Weapons, Countermeasures, and Arms Control* (US Government Printing Office, 1 September 1985), 100, <https://aerospace.csis.org/>.

29. OTA, 138.

Senate foreign relations committee one senator challenged that “the contention that an ASAT ban is unverifiable rests on an unrealistic standard of verification.”³⁰ They pointed out that by the administration’s standards of verification no treaty would ever be signed, and that even though a total ban might be difficult, a partial ban “that only prohibited high altitude, antisatellite weapons” would be an acceptable alternative.³¹

The administration defended itself by arguing that concerns about verification were not simply a pretext for avoiding arms control. From its perspective there were legitimate concerns about verifiability and that even “a small covert supply of ASAT interceptors would be enough to do a disproportionate amount of damage to our space assets.”³² While true at that time this position is becoming less defensible today as the US national security space architecture moves toward a more proliferated resilient structure.

Despite congressional resistance the United States tested an ASAT in September 1985, which was the first and only test of the platform, as Congress effectively halted testing in December that year. Congressional resistance manifested in an ASAT testing moratorium in each subsequent NDAA unless the Soviet Union tested an ASAT weapon.³³ Reagan resented this congressional limitation and argued against it but eventually surrendered to the inevitable, and the Air Force cancelled the program in 1988.³⁴ This marked the end of the US direct-ascent ASAT program. Although the Russian Republic proposed discussing a new ASAT ban in the early 1990s, the United States would continue to remain uninterested in space arms control due largely to the perceived challenges of verification.

Lessons from Carter and Reagan

It is possible that the Carter administration could have overcome the remaining points of contention with the Soviets and reached at least a partial agreement. Three issues remained unresolved: which space objects would be covered by the agreement, what the test suspension involved, and whether space objects that engage in hostile or illegal actions could be excluded. It is likely that a compromise could have been reached on which objects were covered and the details of the test suspension. An exception for hostile acts by satellites would be far more challenging. Adding this provision largely defeated the United States’ original motivation for the treaty—dismantling the Soviet ASAT program. Rather than a comprehensive ASAT ban, the treaty would have instead amounted to an ASAT test ban that limited the development of this category of space weapons going forward. While a laudable goal, it would have placed the United States

30. *Strategic Defense and ASAT Weapons: Hearing Before the Committee on Foreign Relations, US Senate*, 98th Cong. (1984), 1.

31. *Strategic Defense*, 5.

32. *Strategic Defense*, 28.

33. National Defense Authorization Act for Fiscal Year 1987, Pub. L. No. 99–661 (1986), sec. 231.

34. Ronald Reagan, “The U.S. Anti-Satellite (ASAT) Program: A Key Element in the National Strategy of Deterrence,” n.d., Green Collection, Files 1985–1988, Box 3, 1, Ronald Reagan Presidential Library, Simi Valley, CA, <https://www.reaganlibrary.gov/>.

at a distinct disadvantage since the Soviets were far ahead of the United States in testing an operational capability. Any US anti-satellite capability, however limited, would remain untested in comparison to the Soviet program. Even so, it would have limited the possibility of an arms race in space for the foreseeable future.

Several lessons that are applicable to future negotiations can be learned from the Carter administration's efforts to limit ASAT capabilities and the subsequent resistance to Reagan's efforts to develop an ASAT system. First, some aspects of verification that were a significant issue throughout the ASAT negotiations and subsequent discussions may not be as much of a concern today while others are even more so. During the Carter negotiations and later in the Reagan era there was a fear that even a handful of residual undetected ASAT systems could have a substantial impact on military capabilities. With the rise of satellite constellations of hundreds or thousands of satellites, a small undetected capability would no longer have any strategic or tactical significance. When combined with the much improved and more distributed methods of national and commercial space-based intelligence, surveillance, and reconnaissance as well as space situational awareness available today, it would be difficult for an adversary to conceal any significant undeclared capability or conduct unmonitored tests.

Yet the abrogation of the ABM Treaty and the rapid increase in the number of ABM systems mean that it is possible that many of these systems in existence today could be dual-use ASAT weapons, at least for lower-altitude satellites. This means that it is essentially impossible to differentiate between anti-ballistic missile systems and low-altitude ASAT systems. The number of satellites that will make up future constellations still likely renders these weapons less meaningful as it will cost more to build and launch an ASAT to target an individual satellite than the value of the satellite.

The worry over laser ASAT capabilities is also probably a much more significant issue today than during the Carter years, given the inevitable progress of laser technology since the 1970s, though these would suffer from even greater challenges of concealment than a direct-ascent system, as a laser installation capable of reaching into space and damaging satellites is likely to be large. Combined, these factors suggest that a total ban on DA-ASAT systems is not reasonable today; however, the existing test ban by the United States is still viable.

A High-Altitude Ban?

While a comprehensive ban on possessing and developing low-altitude ASATs is not feasible given the potential dual-use nature of ABM systems, a more narrowly focused high-altitude ban is. Echoing the Carter debate over limiting high-altitude ASAT testing while allowing lower-altitude testing, several factors make a high-altitude ASAT ban a possibility. Confusion over dual-use ABM systems would be less of an issue as the mission and capabilities of these systems could not readily be extended above low Earth orbit (LEO). The high energy lasers that troubled the Carter negotiation team would also be less of a concern as distance is an ever-present limiting factor with the transmission of energy. The use of destructive ASAT capabilities in higher orbits would also produce debris that would take generations to reenter the Earth's atmosphere, if ever. The prob-

lem of verification is therefore easier to solve, and the potential downsides of use are higher, which make a high-altitude ASAT ban more pressing and more reasonable.

This of course raises the challenge of defining what constitutes high-altitude. Debris persistence is significant in any orbit, but especially above 600 km. This would then be the lower bound of any high-altitude ban. To ensure there is no confusion over ABM systems functioning as dual-use ASAT systems, the lower bound would need to be still higher—how much higher is uncertain. NASA defines LEO as extending up to 2,000 km, an altitude that is already above the majority of satellites operating in LEO. The upper bound of LEO then is possibly also the upper bound of where a high-altitude ASAT ban could begin.

A high-altitude DA-ASAT ban starting between 600 and 2,000 km combined with an overall test ban at all altitudes could be a real possibility. An agreement along these lines during the Carter administration would have allowed the Soviets to still meet some of their goals of countering potentially threatening or hostile satellites that might be a danger to the land mass of the USSR if they experienced an uncontrolled deorbit. Whether this would have fully placated the Soviets is unknowable, but it certainly would have addressed the concerns within the Department of Defense about the lack of US anti-satellite capability to handle LEO threats while protecting valuable high-altitude systems from active ASAT threats. Of course, to develop a hypothetical LEO anti-satellite system, the United States would have had to pause the moratorium on ASAT testing that the Soviets supported. Whether compromises along these lines would have resolved the Carter impasse over ASAT negotiations is difficult to judge, but those negotiations could serve as the bare outline of an agreement covering terrestrial and direct-ascent systems today.

The existing US pledge to refrain from destructive ASAT testing with a proposal for a ban on the development of DA-ASAT systems capable of reaching above 600 to 2,000 km together present the initial framework for a realizable arms control agreement in space. An agreement along these lines would only be a start as it would not address a myriad of other potential space weapons, but it would address the most common and historically most debris-generating space weapon, further delegitimizing this weapon and discouraging its continued development and proliferation. Space warfare advocates concerned about crippling their own ability to deter attacks by threatening adversary space systems would still be able to attack satellites in LEO using direct-ascent systems or some form of directed energy while also building co-orbital systems for use above a potential 600 to 2,000 km ASAT ban limit.

A high-altitude DA-ASAT ban is far from a panacea for preventing war in space, but it is a feasible and verifiable small step on the path to ensuring future conflict in space is limited in such a way that it preserves the space environment for continued exploration and exploitation by humanity. Æ

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