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**ARMS CONTROL IMPLICATIONS FOR
MILITARY OPERATIONS IN SPACE**

by

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Preface

The following essay is the result of research conducted over the course of a year at the USAF Institute for National Security Studies (INSS) located at the United States Air Force Academy. I was assigned to INSS as a National Defense Fellow for the purpose of fulfilling my professional military education requirement for Senior Service School, in lieu of attending one of the United States' Military War Colleges. The concepts presented in this paper grew from personal experience in arms control and space operations. As this new millennium gets underway, the United States is faced with choices on how to proceed with a number of military space projects. Adherence to international treaties and agreements governing activities in space and the nature of future agreements will influence those choices and ultimately affect our nation's military capability. Hopefully, the information presented can be used to foster an understanding of the limitations imposed by international agreements on activities in space, as well as to provide supporting data for policy makers to use during future discussions with other nations who wish to further constrain United States military operations in space.

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Abstract

International treaties and agreements frequently have a limiting effect on U.S. military flexibility. The constraints imposed by arms control agreements are often misunderstood and subject to interpretation, particularly in connection with military operations in space. There is a prevailing misconception, even within the defense community, that existing agreements and international law prohibit the U.S. from fully exercising its ability to control and exploit the space medium. Current and future limitations on U.S. military operations in space are of particular concern because the capability to defend national interests, deter aggression, and shape the behavior of state and non-state actors will increasingly be dependent upon this country's preeminent position as a global space power.

The purpose of this paper is twofold: first, to identify specific U.S. obligations and opportunities for military operations in space, within the framework of international law and current arms control agreements; second, to propose rationale supporting maximum flexibility for military operations in space, to be considered by U.S. policy makers before engaging in any new space arms control negotiations. The research includes relevant background information on the nature of arms control, space law and policy, military activities in space, the geopolitical environment, and the status of space arms control discussions in the United Nations.

The U.S. is far more dependent on its capabilities in space than any other country and therefore, has the most to lose from international restrictions on space activities. Generally, there are few existing arms control or other legal prohibitions on military operations in space. However, challenges to U.S. military dominance in space will continue to grow from states and organizations seeking to "level the playing field." To counteract those efforts, the U.S. must be prepared to actively shape the space legal and regulatory environment.

Introduction

The lack of progress in developing true military space capabilities is not due to technology limitations for the most part. Several decades of over-enthusiasm for solving America's national security problems by international agreement and treaty has hampered severely the development of military space systems.

General (Retired) Bernard Schriever¹

General Schriever is widely recognized as a forefather of America's intercontinental ballistic missile program and the Air Force's initial space program.² His sentiments reflect those of many in the defense community who view arms control agreements as inhibitors to the full realization of U.S. military potential in space. At the same time, both General Schriever and those who follow in his footsteps recognize the need for an internationally accepted body of rules governing space operations, and acknowledge at least some of the common benefits for U.S. national security and global stability resulting from existing space arms agreements. Such is the dilemma of arms control from a military perspective. On one hand, arms control agreements constrain weapons and forces, thus limiting the range of potential military responses to conflict. On the other hand, those agreements, when properly formulated and adhered to, can foster international cooperation and ultimately reduce the scale of conflict or the likelihood that conflict will occur.

U.S. dependence on space as a conduit for information sharing has never been greater than it is today. Commercial, military, and civil reliance on satellites for capabilities such as voice and data communications, navigation and timing, reconnaissance and imagery, missile warning, earth observation, and weather continues to swell--so much so, that the ability to access and utilize space is now considered a vital national interest because many of the activities conducted there are critical to U.S. national security and economic well-being.³ Along with the other instruments of national power, protection and defense of U.S. national interests is a

primary responsibility of the armed forces, not only in space but wherever those interests are threatened. A key component of the military charter to deter and, if necessary, defeat aggression against U.S. interests is the ability to operate in space. Development, deployment, and execution of military operations in space are shaped by a multitude of influences including national policy, military strategy, budget and requirements, supporting infrastructure, threats or potential threats to national security, international relations, technology, political will, and international law.

This paper focuses on the significance of arms control treaties and agreements in relation to the current and future scope of U.S. military operations in space. Part one of this paper identifies specific constraints and opportunities for military operations in space, within the framework of international law and existing arms control agreements. As the military use of space increases by both the U.S. and other countries, additions to the body of space law become all the more important. U.S. military dominance and potential in space could be threatened if more restrictive agreements are enacted in the future. Part two proposes rationale supporting maximum flexibility for military operations in space; to be considered by U.S. policy makers before engaging in any new space arms control negotiations.

The evolving post-Cold War world continues to spawn new challenges. America's overwhelming military and economic power is both envied and feared by other states seeking ways to enhance their own influence and security. Lacking the means to compete with the U.S. directly, they may pursue less obvious methods to constrain U.S. dominance. Renewed calls for an international ban on the placement of weapons in outer space are just one example. A clear understanding of the treaty limits on military space operations and a proactive approach to shaping the international arms control environment are vital to protect the rights of states to defend their interests in and from space.

Part I - Understanding the Present

The U.S. should review existing arms control obligations in light of a growing need to extend deterrent capabilities to space. These agreements were not meant to restrict lawful space activity outside the scope of each treaty.

Report of the Commission to Assess United States
National Security Space Management and Organization
January 11, 2001⁴

Arms Control Purpose and Process

Before engaging in a discussion on arms control implications for military operations in space, it is important to have an appreciation for the general nature of arms control. Historically, states have participated in arms control and disarmament efforts for a variety of reasons. In some instances, they have sought economic relief from the high costs associated with maintaining and modernizing a military force. In other cases, they have believed that a cooperative effort to limit or reduce weapons and forces would result in a corresponding reduction in the likelihood, scope, or inhumanity of conflict. A state might attempt to use an arms agreement to solidify its own military or technological advantage, as a means to neutralize a potential adversary's perceived advantage, or to obtain intelligence about another state's military capabilities. Perhaps by becoming a party to such an agreement, a state could gain international acceptance, prestige or an enhanced competitive edge. Ultimately, however, a state will only agree to constrain its military capabilities if it believes it is in its best interest to do so. Those interests may be military, political, and economic in nature, and typically support the state's overall security objectives. Arms control is one of a number of approaches a state has available for assuring its national security. Broadly defined, arms control is a process involving specific, declared steps taken by a state to enhance security through cooperation with other states.⁵ Typically, those steps are in the form of treaties or agreements to limit, reduce, or

regulate arms or military activities. The Vienna Convention on the Law of Treaties defines a treaty as “an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation”⁶ whether it’s called a treaty, agreement, convention, protocol, declaration, exchange of notes, or something else. Other terms often used in conjunction with “arms control” are nonproliferation (preventing weapons acquisition by new states), disarmament (elimination or prohibition of particular classes of weapons), cooperative threat reduction (economic subsidies for weapon dismantlement and defense conversion) and confidence-building measures (enhanced communication between states and demonstrations of good faith used to make military activities and weapons capabilities more transparent and less threatening).⁷

Documented examples of attempts to reduce armaments or restrict weapons employment before the 19th century are few in number. In France during the late 10th century, the Catholic Church sought to lessen the negative effects of feudal warfare by forbidding attacks on churches, clergy and other specified noncombatants. Fighting was also prohibited on specified days that held religious significance. Non-compliance resulted in excommunication, as well as various physical punishments, including death. There is also some evidence the Church attempted to ban the use of the crossbow and longbow against Christians during the Middle Ages.⁸ Development of more advanced weapons during the 19th century led to declarations against certain elements of war that were seen as being particularly inhumane including expanding bullets, chemical agents, and air bombardment (from balloons). These declarations were ratified by 25 nations at the First and Second Hague Conferences of 1899 and 1907. In general, however, few nations desired

limitations on armaments believing that unencumbered military strength was a more effective deterrent and provided the best opportunity for national survival should deterrence fail.

The ferocity and staggering cost of World War I provided new impetus for international disarmament. Again, however, the comprehensive disarmament efforts of the League of Nations, as well as the more specific attempts to limit numbers and types of weapons under the auspices of various disarmament conferences during the inter-war years, resulted in relatively few substantial agreements. Two notable exceptions were the 1922 Washington Naval Treaty on numerical limitations for certain types/classes of naval vessels by Great Britain, the United States, Japan, France and Italy, and the 1925 Geneva Protocol on Chemical and Biological Warfare, signed by 29 countries, which prohibited the wartime use of chemical and bacteriological agents.⁹

Arms control became an imperative after World War II following the development of nuclear weapons by the United States and Soviet Union. Political tension and mutual distrust between the two superpowers, coupled with each nation's need to assure its own security, fueled a nuclear arms competition. The size and posture of the resulting nuclear forces made the likelihood of war precipitated by a preemptive strike, accidental or unauthorized launch, or escalation of a conventional or small-scale nuclear conflict, an immediate concern. The consequences of such a conflict were intolerable to both nations. Arms control was seen as an acceptable means to manage or reduce the threat of confrontation by providing a middle ground between the unilateral military responses that made up the concept of "mutually assured destruction" and the utopian desire for total nuclear disarmament.¹⁰ Modern arms control theory developed in the late-1950s and early-1960s. It described arms control as an extension of military strategy involving all forms of military cooperation between potential adversaries in the

interest of avoiding war, limiting the political and economic costs of being prepared for it, and reducing war's scope and violence should it occur.¹¹ Cooperation in controlling armaments included not only the amount and kind of weapons and forces, but also the development, deployment and utilization of those forces, with the goal to reduce the risk to national security by a factor greater than the risk introduced by the control measures themselves.¹²

The United States is a party to a number of bilateral and multilateral arms agreements negotiated and implemented during the Cold War. The majority of those agreements are aimed at controlling nuclear weapons and other weapons of mass destruction, and encompass such issues as enhancing communication between the nuclear powers, establishing limits on nuclear testing, restricting the type/quantity/location/deployment of weapons of mass destruction, restricting strategic defenses, eliminating specific classes of nuclear weapons, and preventing nuclear proliferation. Several spin-off treaties were also completed during this period to protect regions where, at the time, there was little strategic interest. Examples include the Antarctic Treaty, the Outer Space Treaty, and the Seabed Treaty. The same formal process used to establish major arms control agreements during the Cold War is still in use today. The process can be divided into the following sequential stages: negotiation, ratification, implementation, verification, and compliance.¹³

Before a formal arms control negotiation begins and while it proceeds, executive agencies within the U.S. government, up to and including the President, agree internally on the U.S. position and the acceptable boundaries of the negotiation. The agencies involved normally include but are not limited to the Department of State, the DoD, the Joint Chiefs of Staff, the Intelligence Community, and the White House. The resulting guidance is provided to an interagency negotiating delegation, led by the Department of State, who meets with

representatives from other interested countries in a neutral location in order to craft an agreement that is consistent with their mutual security interests. If an agreement is reached, it is signed by the leaders or designated representatives of the participating nations.

Once signed, the agreement must go through a process of ratification during which it is incorporated into the laws and practices of each of the signatories. In the United States, treaty ratification requires the advice and consent of the Senate. The Senate has the option of approving the treaty as presented, approving it with conditions which may or may not require renegotiation, rejecting the treaty, or delaying approval. Even if a treaty is not ratified immediately, the parties to the treaty are politically obligated not to undercut its intent until such time as they indicate that they do not intend to ratify it. If the Senate ratifies a treaty without conditions requiring renegotiation, the ratification documents will be signed by the President and deposited or exchanged with the other parties to the treaty.¹⁴ Once all or a previously agreed to number of countries complete the ratification process, the treaty enters into force and implementation begins. The parties to the treaty are then bound by both international law and their own internal laws to conform to the conditions of the agreement, usually according to procedures and schedules described in the treaty text or protocols.¹⁵

Arms control accords often contain verification provisions so that each party has confidence that the requirements of the agreement are being complied with by all. Verification may take several forms including data sharing or exchange, demonstrations, on-site inspections, continuous on-site monitoring, and remote detection/observation via national technical means (NTM). NTM primarily consists of extensive networks of satellites, seismographs, radiation monitors, radars and electronic surveillance platforms located on land, at sea, in the air, and in space. Taken together, the various means of verification can serve as a deterrent to treaty

violations, while permitting the legitimate military activities of states to be monitored by other states to prevent mistaken perceptions of threat.¹⁶

Compliance with arms control agreements entails fulfilling the terms of the agreement, as well as maintenance of the agreement itself. When an agreement is negotiated, the parties go to great lengths to ensure the specific language in the agreement accurately reflects the intent and understanding of each of the parties. Even so, problems of interpretation, compliance, unexpected political or economic developments, unforeseen military requirements and new technology implications often arise. Most treaties recognize the likelihood that such issues will occur and provide for consultative bodies or other mechanisms to resolve them. In the U.S., the DoD is the executive agency responsible for carrying out arms control obligations. The Office of the Under Secretary of Defense for Acquisition, Technology and Logistics administers DoD implementation and compliance. This office also establishes a Compliance Review Group to decide questions of compliance and to certify whether on-going or planned defense activities are treaty compliant.¹⁷

The nuclear imperative that once fueled the arms control process during the Cold War has receded, and with it, arms control's primacy as a means to enhance national security. Today, the focus of arms control is moving away from bilateral (U.S. and Russia) concerns to multilateral and global issues. In addition, the difficulty in attaining consensus in a multilateral environment is driving the implementation of less formal negotiated and non-negotiated measures. Examples include declaratory statements, unilateral and reciprocal acts, controls on exports and technology transfer, confidence and security-building measures and cooperative threat reduction. Unilateral actions are attractive because timely political, economic, and military benefits can be realized without the complication of internationally controlled implementation procedures or verification.

However, the lack of verification associated with unilateral arms control often requires an offsetting increase in transparency through confidence and security-building measures in order to reduce uncertainty on the part of the international community. Regardless of the methods used to apply it, arms control will continue to be an important foreign policy tool for dealing with regional instability, economic and environmental security, and advanced weapons proliferation, including the potential for an arms race in outer space.

International Legal Considerations

Arms control treaties and agreements are considered pillars of international law. In its annual report, *Adherence To and Compliance With Arms Control Agreements*, the U.S. Department of State pronounces:

Effective arms control requires parties to comply fully with arms control obligations and commitments they have undertaken. Compliance with agreements freely negotiated by parties is a fundamental cornerstone of international law. The U.S. approach to compliance is deeply rooted in our own legal system and fundamental principles and values. To that end, the United States is committed to adhering to the same high standard of compliance that it requires of others.¹⁸

International law provides a commonly accepted framework of rules and guidelines for nations to use in dealing with one another. Thus, it is in the interests of nations to support a system of policies and regulations governing mutual concerns such as sovereignty, territory, commerce, travel, health, resources, environment, diplomatic relations, crime, and military operations. Recognized sources of international law include treaties and conventions in force, international custom based on accepted practices, and general principles of law. Precedent established in previous international court decisions, as well as scholarly legal publications are also considered as sources.¹⁹

Unlike domestic law, which has clearly defined enforcement mechanisms and specific penalties for noncompliance, observance and enforcement of international law is often determined by the willingness of nations to cooperate. International cooperation can be encouraged in many ways. The Charter of the United Nations identifies the primary tools available to the international community.

These may include complete or partial interruption of economic relations and of rail, sea, air, postal, telegraphic, radio, and other means of communication, and the severance of diplomatic relations. Should the Security Council consider that measures provided for...would be inadequate or have proved to be inadequate, it may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security. Such action may include demonstrations, blockade, and other operations by air, sea, or land forces of Members of the United Nations.²⁰

Unfortunately, states that knowingly violate international law often keep such violations hidden from public view. Illegal weapons programs are one example. Violations of this sort are in the minority. Most international disputes are not the result of flagrant criminal behavior, but are more often disagreements over alleged rights generated by the self-interest of the states involved. In either case, the coercive tools described above are rarely employed except in the most extreme instances. Typically, resolution of international disputes is achieved through negotiation, mediation or arbitration. Nevertheless, the benefits of cooperation are generally sufficient encouragement for states to follow international norms of behavior. Decisions to violate those norms depend upon the stakes involved and the likely consequences of the violation.

The principles and sources of international law also apply to space law. The development of a specific body of rules governing international activity in space is a relatively recent occurrence that has coincided with human efforts to exploit the space medium. Fundamentals of space law share corollaries in both maritime law and aeronautical law;

examples include determining nationality and registration, assessment of liability, and operational and personnel safety. Of course, not all international rules governing the air and sea are directly applicable to space. The unique aspects of the space environment preclude the use of any one set of analogous legal proscriptions to accommodate the multitude of potential problems there. However, the problems are often similar enough that principles of air and sea law can be helpful in formulating acceptable rules for the space environment.²¹

Just as freedom of the high seas is considered a tenet of maritime law, the Soviet Union's launch of Sputnik 1 on October 4, 1957 established the precedent of free passage through space for orbiting satellites. Since there was no objection to overflight by Sputnik or subsequent satellites, it became legal custom whereby nations accepted the proposition that they did not retain sovereignty of the outer space above their territories. The United States, then under the Eisenhower Administration, strongly supported the "freedom of space" precedent because it provided a legal basis for the use of intelligence-gathering and other military satellites, while simultaneously discouraging attempts to destroy or disrupt the use of those platforms.²² Precisely where a nation's sovereignty over its airspace ends and where outer space begins has never been determined or agreed upon. A fixed demarcation has thus far not been needed to resolve the variety of outer space legal disputes that have occurred since the beginning of the space age. Based on custom and practice, it is generally acknowledged that any object in orbit is in space. However, future advances in space technology and space operations may necessitate an accepted legal definition of outer space to account for objects, vehicles, or systems that operate in both air and space.

The United Nations moved quickly following the first Sputnik launch to establish itself as the focal point for the development of international space law. In 1958, the UN General

Assembly passed a resolution that outer space should be used for peaceful purposes only. At the same time, it activated the Committee on the Peaceful Uses of Outer Space to study “the area of international co-operation and programmes...which could be appropriately undertaken under United Nations auspices” and “the nature of legal problems which may arise in the carrying out of programmes to explore outer space.”²³ There continues to be considerable controversy over the phrase “peaceful purposes” so often used in UN documents associated with outer space. There are two schools of thought on the matter. One school interprets “peaceful” to mean non-military, while the other interprets it to mean non-aggressive.

Based on the discussions held during the 13th session of the UN General Assembly, the UN’s initial pronouncements on the appropriate use of space were clearly intended to attempt to limit space operations to non-military activities. However, from the outset, the intent and actual practices of the world’s first space powers, the Soviet Union and the United States, involved deployment of satellites to support military objectives.²⁴ U.S. space policy, at the time embodied in the 1958 National Aeronautics and Space Act, acknowledged “that activities in space should be devoted to peaceful purposes for the benefit of all mankind,” but also specified that the DoD would be responsible for directing space activities “peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States).”²⁵ During the past four decades other spacefaring nations have adopted similar policies and practices. Further complicating the “non-military” argument is the fact that commercial and civil space systems are increasingly used to support military purposes. Also, since air law and sea law permit military operations in international waters and international airspace, it follows that similar military operations would also be permitted in outer space (other

than those specifically prohibited by treaty). Thus, while some continue to cling to a dream of space as a pristine and harmonious environment, free of military influence, international practice and custom has established the permissibility, if not the legality, of “non-aggressive” military activities in space.

Left open is the question of whether military weapons or capabilities (other than passive systems) in space can be considered non-aggressive. The right of self-defense is an inherent right under international law, reiterated in the UN Charter, Article 51, which specifies: “Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs”.²⁶ Defending against armed attack is not the only allowable defense. Customary international law allows states to prepare defenses in anticipation of potential or imminent threats to national security. A decision to employ military forces in response to an unacceptable threat instead of pursuing a peaceful solution is a determination that can only be made by the threatened state. Furthermore, if a state chooses to employ military forces, it is incumbent upon the threatened state to respond proportionally to the aggression, or potential aggression, it faces in accordance with the Law of Armed Conflict.

Armed hostilities are governed by a separate set of international rules generally distinct from those imposed by arms control agreements. The Law of Armed Conflict is based on customs of war, as well as formally codified treaties such as the Hague and Geneva Conventions, which address the application of armed force and the protection of combatants and noncombatants. Should a conflict involving space systems occur, a state’s right of self-defense would take precedence over fulfillment of its obligations under existing space or arms control agreements. However, the effect of hostilities on arms control treaties may vary depending on the terms of the agreement, whether the agreement inhibits the state’s ability to prosecute the

conflict to a successful conclusion, and the importance of that treaty to the state's national interests. If national interests dictate, a state may choose to withdraw from a treaty entirely or suspend certain treaty obligations if it determines that extraordinary events, related to the subject matter of the treaty, have jeopardized its supreme interests.²⁷ Most arms control agreements contain explicit or implicit provisions for such action.

Space Policy and Military Missions in Space

The President's 1996 National Space Policy spells out the U.S. position on the most significant and contentious international space law issues stating:

Peaceful purposes allow defense and intelligence related activities in pursuit of national security and other goals. The United States rejects any claims to sovereignty by any nation over outer space or celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right of sovereign nations to acquire data from space. The United States considers the space systems of any nation to be national property with the right of passage through and operations in space without interference. Purposeful interference with space systems shall be viewed as an infringement on sovereign rights.²⁸

The policy also gives the DoD a significant role in support of U.S. national security space objectives. Some of DoD's key tasks are to assure free access to space, counter space systems used for hostile purposes, enhance operations of U.S. and allied forces, and deter, warn, and if necessary, defend against enemy attack. United States Space Command (USSPACECOM), through its Service component commands in the Army, Navy, and Air Force, oversees and operates virtually all DoD space forces. The Air Force is, by far, the most influential of the space component commands, controlling 85 percent of space-related budget activity within the DoD.²⁹ USSPACECOM also coordinates with national agencies, civilian corporations and international consortiums for utilization of their space systems/capabilities in support of joint military operations. To meet the national security space responsibilities outlined in the National

Space Policy, DoD has been directed to execute four basic mission areas: space support, force enhancement, space control, and force application. Each mission area is discussed below.

Space support operations provide the critical infrastructure, capabilities and technologies that enable the force enhancement, space control and force application mission areas to be performed effectively. Space support entails deploying, augmenting, sustaining and replenishing space forces. Two specific functions of the space support mission area are spacelift and satellite operations. Spacelift is the ability to deliver satellites, payloads, and material into or through space and includes launch vehicles, ranges and infrastructure (e.g. space launch complexes, launch vehicle and payload processing facilities, etc.) for placing objects in their required orbits. In the future, spacelift may also involve missions such as on-orbit servicing, recovery, and repositioning. Key spacelift modernization projects include the Evolved Expendable Launch Vehicle (EELV) for medium and heavy lift requirements, as well as a reusable Space Operations Vehicle (formerly known as the Military Space Plane) that is envisioned to carry a variety of payloads to orbit and to perform on-orbit missions. Satellite operations are conducted using a worldwide network of tracking and control facilities. Following launch, operations personnel command initial satellite configuration and then track, maintain, repair, and maneuver satellites as needed to ensure vehicle health and proper orbit. Operations personnel also accomplish data retrieval, dispose of non-operational vehicles, and activate on-orbit spares.³⁰

The force enhancement mission area consists of operations conducted from satellites that enable or support military forces on land, at sea, in the air and in space. Examples of force enhancement capabilities include space-based navigation and timing, communications, reconnaissance and surveillance, ballistic missile warning, and environmental sensing. Together, these capabilities provide the U.S. military with a means of quickly gathering and disseminating

highly accurate information to provide military forces with situational awareness, effective command and control, and maximum force effectiveness. Space-based navigation and timing signals allow users to precisely calculate time, location, and velocity, thereby providing targeting and geolocation information critical to coordinated and accurate force application. DoD communications satellites, utilizing a variety of frequency bands and augmented with commercial satellite communications services, provide military forces with global, high-capacity, secure and non-secure voice, data, and video communications links necessary for command and control during any military operation. Reconnaissance and surveillance platforms are the “eyes and ears” of the armed forces. Among other things, they provide operational intelligence and situational awareness, they help reveal location, disposition, and intention of potential adversaries, they provide feedback on the success or failure of military operations, and they assist in monitoring compliance with arms control and non-proliferation agreements. These capabilities can also be augmented through the use of commercial satellite imagery systems. Space-based infrared sensors, used to detect heat sources such as missile and booster plumes, are another type of surveillance platform. These sensors provide attack assessment and warning to command authorities and deployed forces. Finally, environmental monitoring, comprised of a combination of DoD, civil, and international satellite systems, provides meteorological, oceanographic, and space environmental data supporting military planning and employment across all types of engagements and in all four operational media. Examples include mission planning and target forecasts, tropical storm locations, and forecasting for reconnaissance and surveillance systems. Modernization programs are ongoing or planned for all the previously described force enhancement elements. Of particular interest is the follow-on surveillance and threat-warning satellite program called Space Based Infrared System (SBIRS). SBIRS will

replace the current Defense Satellite Program constellation and will provide improved missile warning, missile tracking and characterization in support of missile defense, and tracking for other infrared-intense events.³¹

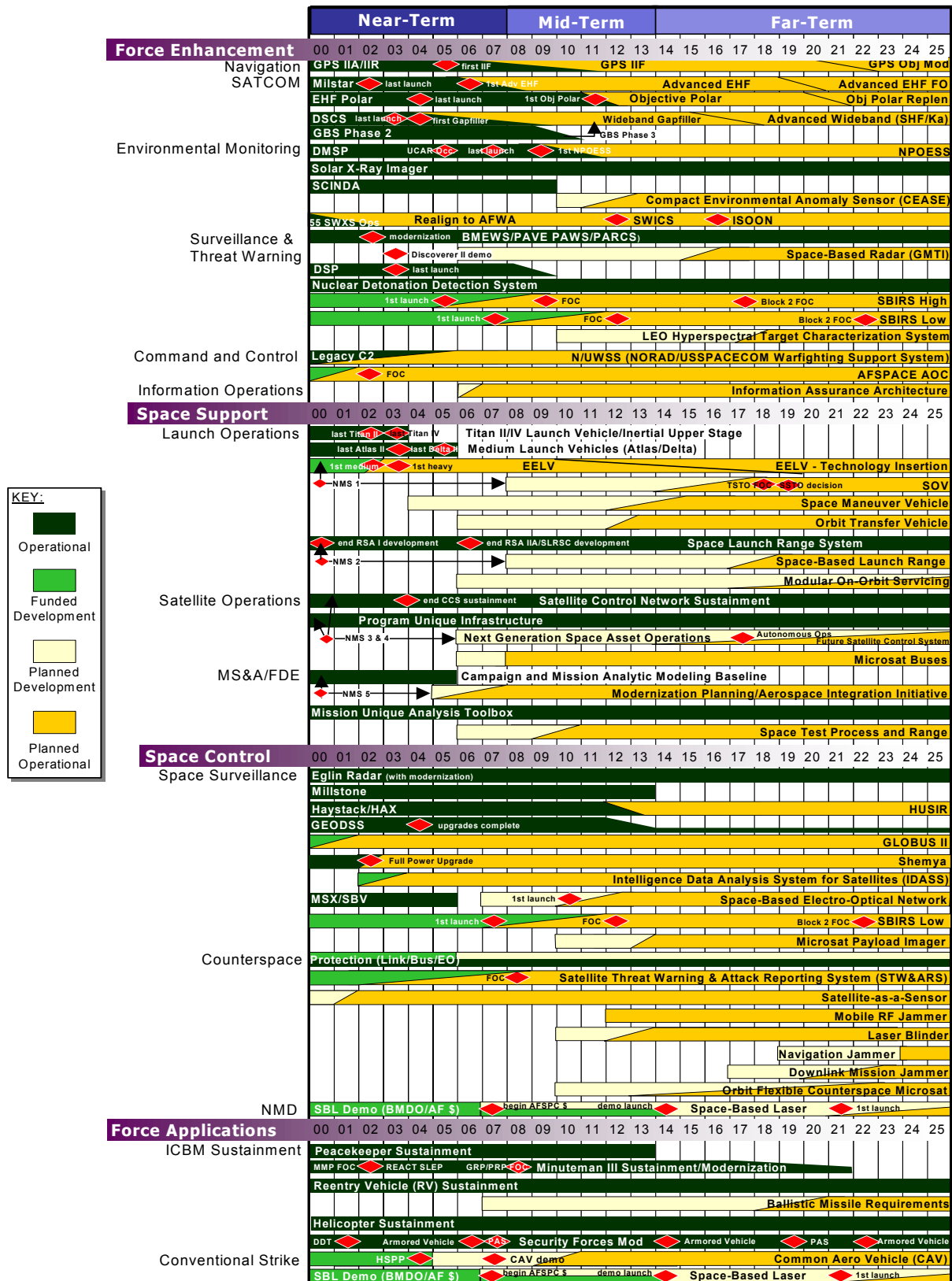
The space control mission area involves activities conducted by land, sea, air, and space forces to gain and maintain space superiority in order to assure U.S. freedom of operations in space while denying its use to the enemy. To accomplish this, U.S. forces must survey space, protect their own space systems, prevent adversaries from exploiting friendly space systems, and negate the ability of adversaries to take advantage of their own space forces. Space surveillance provides space situational awareness to military forces through a combination of ground-based radars, passive radio-frequency tracking sites and optical sensors. These surveillance systems can detect, track, characterize, classify, catalog, monitor, and disseminate information about man-made space objects, including activities of enemy space systems and threats to friendly space systems. Counterspace is the mission carried out to achieve space control. Defensive counterspace involves the protection of U.S. and allied space assets from attack or exploitation. Its operations consist of both active and passive measures such as maneuvering spacecraft to avoid threats, encryption, frequency hopping, hardening and redundancy. Offensive counterspace involves negating an adversary's ability to use space systems and assets. Its operations are designed to deny, disrupt, deceive, degrade, or destroy an adversary's space systems through attack on the space, ground, or link segments of those systems. Currently, the principle means of conducting offensive counterspace operations is through the use of terrestrial-based forces such as air attacks against space system ground nodes or supporting infrastructure. Future systems such as the Space-Based Laser, the Space Operations Vehicle, and other

terrestrial and space-based directed energy or kinetic energy systems, may enhance today's limited capabilities in the area of offensive counterspace.³²

DoD space policy defines force application as: "Combat operations in, through, and from space to influence the course and outcome of conflict."³³ This definition differs somewhat from U.S. Air Force doctrine and plans that state: "The application of force would consist of attacks against terrestrial-based targets carried out by military weapon systems operating in space."³⁴ In addition, DoD space policy identifies space-based ballistic missile defense systems as force application weapons. The Air Force identifies this mission as space control since such a weapon would not be attacking a target on the earth. Regardless, the purpose of the force application mission area is to deter aggression by holding targets at risk with a precise, prompt strike capability. Currently, there are no force application assets operating in space. Such systems would only be developed and deployed when required by national policy and when they are considered the best means to achieve the desired military objective.³⁵ Again, directed energy systems such as the Space-Based Laser, or transatmospheric vehicles such as the Space Operations Vehicle could support future force application missions in space.

The military use of space has become increasingly important to the protection and enhancement of U.S. national security. This is due in part to the integration of evolving technology applications in space, and in part to growing demands on military forces to be faster, more aware, more accurate, and more flexible. The preceding mission area descriptions demonstrate that the U.S. is strongest in the areas of force enhancement and space support, and weakest in the areas of space control and force application. The following table, reprinted from Air Force Space Command's Strategic Master Plan, summarizes many of the current and planned military space programs integrated across the mission areas.

Table 1: USAF 25-Year Modernization Roadmap Integrated With Mission Areas ³⁶



Treaty Provisions and Constraints

Bilateral and multilateral arms control treaties are the primary source of law governing U.S. military activities in space. There are, however, a number of other agreements governing general international conduct in space that potentially impact military operations as well. In reviewing the provisions of the applicable treaties it is important to recognize four basic premises: first, arms control treaties bind only those who agree to them;³⁷ second, activities not expressly prohibited by treaty or agreement are permitted;³⁸ third, treaty provisions are often subject to interpretation according to the needs of the states that are constrained by them;³⁹ and finally, a state may withdraw from a treaty in accordance with the treaty's provisions for doing so or as necessary to defend itself during hostilities, unless the treaty specifically requires otherwise.⁴⁰ A brief summary of the relevant agreements constraining U.S. military activities in space follows.

The first arms control treaty to specifically address outer space was the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, more commonly known as the Limited Test Ban Treaty. The Limited Test Ban Treaty prohibits any nuclear weapon test explosion, or any other nuclear explosion, including so-called peaceful explosions, in the atmosphere, under water, or in outer space, or in any other environment (i.e. underground) if the explosion would cause radioactive debris to be present outside the borders of the state conducting the explosion. The United States, Soviet Union, and United Kingdom are the original parties to the treaty; however, any state may sign/accede to it. The treaty does not contain a verification regime. It was accepted that a nuclear explosion in one of the constrained environments could be detected with existing national and international monitoring capabilities.⁴¹

Undoubtedly, the most influential arms control agreement affecting current and future military operations in space is the 1967 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, also called the Outer Space Treaty. The Outer Space Treaty was modeled on the 1959 Antarctic Treaty that prohibited the military exploitation of Antarctica based on the premise that to exclude armaments is easier than to eliminate or control them once they have been introduced. However, unlike the Antarctic Treaty, which prohibits “any measures of a military nature,”⁴² the Outer Space Treaty does not ban all military activity. Both the U.S. and the Soviet Union already had military space programs underway, as well as strategic nuclear missiles designed to traverse space, by the time the Outer Space Treaty was negotiated. Any international attempt to ban all military activity in space would have been rejected by the world’s most powerful nations.

The Outer Space Treaty codifies the “rules of the road” governing general international activity in space. Among other things, the treaty specifies that outer space, including the moon and other celestial bodies, is free for exploration and use by all states and not subject to national appropriation; that activities in outer space will be conducted in accordance with international law, including the Charter of the United Nations; that objects carrying nuclear weapons or any other kinds of weapons of mass destruction (i.e. chemical or biological) may not be placed in orbit around the Earth or stationed in outer space in any manner; and it limits the use of the moon and other celestial bodies exclusively to peaceful purposes, expressly prohibiting establishment of military bases, weapons testing, and military maneuvers. The Outer Space Treaty makes it clear that states bear international responsibility for the conduct of their own governmental and private space activities, as well as the activities of any international organization they may be part of; and that they are liable for any damage caused by space objects they launch.

Furthermore, the treaty requires states to conduct international consultations before undertaking activities that could potentially interfere with the activities of other states in outer space, and that activities must be carried out in such a way as to avoid harmful contamination of outer space and celestial bodies, as well as to avoid the introduction of extraterrestrial matter that could adversely affect the Earth's environment. As with the Limited Test Ban Treaty, the Outer Space Treaty does not contain verification provisions, with the exception that stations, installations, equipment and vehicles on the moon and other celestial bodies are open to inspection by other states on a reciprocal basis.⁴³ The United States, Soviet Union, and United Kingdom are the original parties to this treaty. To date, 96 countries have ratified or acceded to the treaty and 27 others have signed it.

The Outer Space Treaty linked the provisions of international law and the Charter of the United Nations to activity in space. Articles 2 and 51 of the UN Charter are the most significant in terms of military operations in space. Article 2 states: "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations."⁴⁴ This stipulation does not preclude a state's inherent right of self-defense provided for by customary international law and Article 51 of the UN Charter.

Some of the basic principles set forth in the Outer Space Treaty were further elaborated in four subsequent space agreements: the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the Rescue Agreement); the 1972 Convention on International Liability for Damage Caused by Space Objects (the Liability Convention); the 1975 Convention on Registration of Objects Launched into Outer Space (the Registration Convention); and the 1979 Agreement Governing the

Activities of States on the Moon and Other Celestial Bodies (the Moon Agreement). The Rescue Agreement directs states to take all possible steps to rescue and assist astronauts in distress and promptly return them to the launching state, and that states shall, upon request, provide assistance to launching states in recovering space objects that return to Earth outside the territory of the launching state.⁴⁵ The Liability Convention provides that a launching state is absolutely liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft, and liable for damage due to its faults in space. The Convention also provides for procedures for the settlement of claims for damages.⁴⁶ The Registration Convention requires launching states to register their launched objects in an appropriate national register and also requires them to furnish information concerning each space object to the United Nations, including the name of the launching state, the object's designator or registration number, date and location of launch, basic orbital parameters, and general function of the object.⁴⁷ The Moon Agreement is the only space treaty not to be signed or ratified by the major spacefaring nations. While it reaffirms many of the provisions of the Outer Space Treaty as applied to the Moon and other celestial bodies, many states, including the U.S., were unwilling to accept an added provision that the Moon and its natural resources are the common heritage of mankind and that an international regime should be established to govern the exploitation of such resources when such exploitation is about to become feasible.⁴⁸

The Outer Space Treaty proviso against the placement of weapons of mass destruction in orbit around the Earth, on celestial bodies, or in outer space in any other manner is overlapped by a number of other arms control agreements, in addition to the previously discussed Limited Test Ban Treaty. For example, the 1925 Geneva Protocol bans the use of poisonous gases and bacteriological weapons/agents during war. The Protocol entered into force in 1928 but was not

ratified by the U.S. until 1975 with the reservation that the Protocol would “cease to be binding as regards use of chemical agents with respect to any enemy State whose armed forces or allies do not observe provisions.”⁴⁹ A second example is the 1972 Biological Weapons Convention. It outlaws the development, production, stockpiling, or acquisition of biological agents or toxins “of types and in quantities that have no justification for prophylactic, protective, and other peaceful purposes,” as well as associated weapons and means of delivery.⁵⁰ A third example is the Chemical Weapons Convention. It prohibits development, production, acquisition, possession, stockpiling and proliferation of chemical weapons. The Convention also requires parties to destroy any chemical weapons in their possession, to destroy any of their own chemical weapons abandoned on the territory of another state, and to destroy their chemical weapons production facilities.⁵¹ Another example is the Comprehensive Nuclear Test Ban Treaty. As the name implies, the Treaty directs states not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any nuclear explosion in areas under its jurisdiction or control. Furthermore, each party must refrain from causing, encouraging, or in any way participating in any nuclear weapon test explosion or any other nuclear explosion.⁵² The Treaty has not entered into force, and the U.S., Russia, and the Peoples Republic of China have not ratified it, although all three states have voluntarily ceased nuclear testing.

The 1991 Strategic Arms Reduction Treaty I (START I)⁵³ also overlaps the Outer Space Treaty’s prohibition on the placement of weapons of mass destruction in outer space. START I is a bilateral treaty between the United States and Soviet Union to reduce the number of deployed strategic offensive arms (warheads and delivery vehicles) maintained by each. Article V, Paragraph 18 of the Treaty prohibits each party from producing, testing, or deploying systems, including missiles, for placing nuclear weapons or any other kinds of weapons of mass

destruction into Earth orbit or a fraction of an Earth orbit.⁵⁴ This provision effectively banned fractional orbital bombardment systems such as the one successfully tested by the Soviet Union from 1965 to 1971.⁵⁵ START I has other potential implications for military space operations as well. There are several restrictions on the use of Intercontinental Ballistic Missiles (ICBMs) or Submarine Launched Ballistic Missiles (SLBMs) as space launch boosters. For example, the Treaty places restrictions on the number, type and location of ICBMs and SLBMs used to boost objects into the upper atmosphere or space, and limits the number and location of space launch facilities used to support such launches.⁵⁶ Objects launched by ICBMs or SLBMs into the upper atmosphere or space are also subject to the Treaty's telemetry requirements. During any peacetime launch of an ICBM or SLBM, the party conducting the launch must make on-board technical measurements, broadcast all telemetric information obtained from such measurements in a way that allows full access to the information, and then provide a recording and analysis of that data to the other party. For objects delivered by ICBMs or SLBMs into the upper atmosphere or space, the telemetry provisions only apply until the object(s) being delivered either are in orbit or have achieved escape velocity.⁵⁷ Furthermore, advance launch notification must be made to the other treaty party whenever an ICBM or SLBM is used as a booster for delivering objects into the upper atmosphere or space. Such notification is provided in accordance with the provisions of START I and the Ballistic Missile Launch Notification Agreement.⁵⁸ START I could also impact on-going space control and force application initiatives. As an example, if the Space Operations Vehicle were designed with a conventional strike capability, it might be held accountable under START I limitations on heavy bombers equipped for nuclear armaments other than long-range nuclear air launched cruise missiles. No exhibition would be required but the vehicle's distinguishing features would be listed in the

START Memorandum of Understanding. In addition, the facility where the vehicle is based would have to be declared as a heavy bomber base but would not be inspectable unless it contained a weapons storage area. A determination of treaty applicability, if any, would be subject to discussion between the parties.⁵⁹ START I also contains provisions to protect the use of NTM for the purpose of assuring treaty compliance. Interference with NTM or the use of deliberate concealment measures, which impede verification by NTM, is prohibited. This means, for example, that a party cannot destroy, blind, jam, or otherwise interfere with the national technical means of verification of the other party that are used in a manner consistent with generally recognized principles of international law.⁶⁰

The 1993 Strategic Arms Reduction Treaty II (START II) between the United States and Russia further reduces the number of deployed strategic offensive arms mandated by START I. All of the provisions of START I applicable to outer space described above also apply to START II. This treaty is not yet in force, nor is it likely to become effective in the near term.⁶¹

In addition to the notifications required by the START Treaties and the Ballistic Missile Launch Notification Agreement, the U.S. and Russia have recently completed two new agreements expanding launch notifications to include all space launch vehicles. On June 4, 2000 at the Moscow Summit, President Clinton and Russian President Putin signed a memorandum of agreement to establish a joint data exchange center (JDEC) in Moscow to share early warning information on missile and space launches.⁶² Once the JDEC is completed and commences operations, the two countries will exchange information obtained from their respective ground and space-based early warning systems on U.S. and Russian space launches (with rare exceptions) including time of launch, generic missile class, geographic area of the launch, and launch azimuth. Eventually this exchange of data will also include data sharing on detected

space launches of other states. On December 16, 2000 U.S. Secretary of State Albright and Russian Foreign Minister Ivanov signed a memorandum of understanding establishing a Pre- and Post-Launch Notification System (PLNS) for launches of ballistic missiles and, with rare exceptions, space launch vehicles, identifying launch window, time of launch, generic missile class, geographic area of the launch, and launch azimuth.⁶³ The PLNS Information Center will be an Internet-based system operated as part of the JDEC. Both agreements provide for the voluntary notification of satellites forced from orbit and certain space experiments that could adversely affect the operation of early warning radars, and both agreements leave open the possibility of negotiations on future data sharing on missiles that intercept objects not located on the Earth's surface. This provision could have implications for anti-satellite systems.

Another arms control treaty with potential implications for future military operations in and from space is the 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (Environmental Modification Convention). The Convention prohibits states from engaging in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other state. The Convention defines "environmental modification techniques" as "any technique for changing -- through the deliberate manipulation of natural processes -- the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space."⁶⁴ Effects that might possibly be caused by the use of environmental modification techniques include earthquakes, tsunamis, an upset in the ecological balance of a region, changes in weather or climate patterns, changes in ocean currents, and changes in the ozone layer or the ionosphere.

The most controversial and far reaching arms control agreement affecting planned military space operations is the 1972 Anti-Ballistic Missile (ABM) Treaty.⁶⁵ The ABM Treaty is a bilateral agreement between the U.S. and the Soviet Union (now the successor states to the Soviet Union) strictly limiting each side's anti-ballistic missile systems. The basic philosophy behind the Treaty was that a system capable of protecting one side from the strategic nuclear arsenal of the other side was inherently destabilizing. Not only would such a system encourage a preemptive attack, but it would also foster an additional buildup of offensive countermeasures. By leaving the penetration capability of their respective retaliatory missile forces unchallenged, the U.S. and the Soviet Union were mutually deterred from executing a preemptive nuclear strike. The Treaty prohibits the deployment of an ABM system (or the basis for such a system) for territorial defense, and specifically prohibits the development, testing, or deployment of sea-based, air-based, land-mobile, or space-based ABM systems and their components. ABM systems are defined as systems to "counter strategic ballistic missiles or their elements in flight trajectory." ABM components are defined as components either "constructed and deployed for an ABM role" or "tested in an ABM mode."⁶⁶ The framers of the ABM Treaty also recognized that the availability of new technology could result in the creation of ABM systems/components other than those envisioned at the time the Treaty was negotiated. As a result, the following provision was included in the Treaty as an Agreed Statement:

In order to insure fulfillment of the obligation not to deploy ABM systems and their components except as provided in Article III of the Treaty, the Parties agree that in the event ABM systems based on other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers, or ABM radars are created in the future, specific limitations on such systems and their components would be subject to discussion in accordance with Article XIII and agreement in accordance with Article XIV of the Treaty.⁶⁷

The Treaty does not prohibit research of exotic technologies that could be used to support a territorial ABM system, nor was it intended to prohibit deployment of effective missile warning or theater missile defense (TMD) systems. Unfortunately, the line separating robust theater missile defense from national missile defense (NMD) has become increasingly blurred. In 1997, the sides agreed to demarcation criteria for TMD and NMD systems. In addition, they made the following agreement regarding space-based systems:

Each Party, in order to preclude the possibility of ambiguous situations or misunderstandings related to compliance with the provisions of the Treaty, undertakes not to develop, test, or deploy space-based interceptor missiles to counter ballistic missiles other than strategic ballistic missiles, or space-based components based on other physical principles, whether or not part of a system, that are capable of substituting for such interceptor missiles.⁶⁸

In practical terms, the ABM Treaty and its associated documents effectively prohibits development, testing, and deployment of space-based ABM systems and their components, including space-based interceptor missiles to counter both theater and strategic ballistic missiles, as well as all directed energy systems (such as a space-based laser) that could be used to counter theater or strategic ballistic missiles. In addition, space-based sensors such as SBIRS must not be capable of substituting for an ABM radar, cannot be tested in an ABM mode, and cannot give non-ABM systems (i.e. TMD systems) ABM capability. Finally, like START, the ABM Treaty also contains provisions prohibiting interference with NTM used for the purpose of assuring treaty compliance.

In addition to the arms control agreements previously described, there is a growing body of international and domestic space law that will increasingly influence the operational use of space by the U.S. military. Evolving regulations on commercial space activities may be particularly significant in light of the military's leasing of commercial space assets to meet surge requirements and augment shortfalls in areas like communications and imagery.⁶⁹ Examples of

these types of agreements/laws include: the International Telecommunications Convention, which provides for equitable access to frequencies and geostationary orbit, and prohibits space objects with radio telecommunications capabilities from causing harmful interference to the radio services or communications of others;⁷⁰ and the Commercial Space Launch Act, which provides commercial access to government space launch and range facilities.⁷¹

This review should demonstrate that there are generally few specific arms control treaty restrictions or other international legal limits on military activities in space. It is clear that weapons of mass destruction and missile defense systems/components are prohibited in space, as is the use of the Moon or other celestial bodies for military purposes. The ABM Treaty's constraints on systems based on "other physical principles" may well pose a barrier to progress on deployment of technologically advanced systems such as the space-based laser or other space-based directed energy weapons. Existing military support activities such as satellite communications, navigation, imagery, surveillance, reconnaissance, and weather are unaffected by arms control agreements. By the same token, future defensive systems such as a military space station, military spacecraft, anti-satellite weapons, and conventional weapons employed in, to, and from space are also not prohibited. It is important to note that the lack of extensive prohibitions on military operations in space applies equally to potential U.S. adversaries, making the pursuit of superior U.S. defensive capabilities in space all the more vital. The following table summarizes key arms control constraints on current U.S. military operations in space and their implications.

Table 2 ⁷²

Impact of Arms Control and Other International Agreements on United States Military Operations in Space		
<i>Prohibited/Constrained Activity</i>	<i>Source of Prohibition</i>	<i>Comments</i>
Nuclear testing and nuclear explosions in space	Limited Test Ban Treaty	Nuclear weapons exploded in space by an adversary could be highly effective in disrupting U.S. space systems
Appropriation of space or celestial bodies by claims of sovereignty	Outer Space Treaty	No prohibition against space mining; establishment of permanent “keep out zones” probably not acceptable
Deploying weapons of mass destruction in space	Outer Space Treaty; Geneva Protocol; Biological/Chemical Weapons Conventions; START I	Nuclear, chemical, and biological weapons banned; Deployment, and support of nuclear-powered space objects, conventional weapons and passive systems not constrained
Building military bases on celestial bodies	Outer Space Treaty	No prohibition against military space stations in orbit
Testing weapons of any kind on celestial bodies	Outer Space Treaty	No prohibition against testing of conventional weapons in free space
Conducting military maneuvers on celestial bodies	Outer Space Treaty	Conducting military maneuvers in free space permitted
Interfering with other states’ space-related activities without prior consultations	Outer Space Treaty	No jamming, blinding or otherwise disrupting unless required for self-defense or during hostilities
Causing harmful contamination of the Moon or other celestial bodies	Outer Space Treaty; Environmental Modification Convention	
Threatening use of force against another state’s territorial integrity	United Nations Charter; Outer Space Treaty	Necessary and proportional self-defense is permitted
Hindering the rescue and return of astronauts and space objects	Astronaut Rescue Agreement	Inspection of space objects before return to launching party (in order to assess capability) not prohibited
Avoid paying compensation for damage caused by space objects on surface of Earth or to aircraft in flight	Convention for International Liability for Damage Caused by Space Objects	Political risk in admitting causation
Launching space objects without notifying the UN	Convention on the Registration of Space Objects	Operational security issue for covert activity

Table 2 (continued)

Impact of Arms Control and Other International Agreements on United States Military Operations in Space		
<i>Prohibited/Constrained Activity</i>	<i>Source of Prohibition</i>	<i>Comments</i>
Causing damage “elsewhere” (i.e., space)	Convention for International Liability for Damage Caused by Space Objects	Liability depends on determination of fault
Numerical and locational restrictions on ICBMs and SLBMs used to launch objects into space, as well as the launchers and space launch facilities used to support them	START I	Currently minor impact to space launch flexibility; ICBM and SLBM boosters are not normally used to support military space launches
Broadcast, record, and provide unencrypted telemetry on ICBM or SLBM used for delivering objects into the upper atmosphere or space	START I	For objects delivered by ICBMs or SLBMs into the upper atmosphere or space, the telemetry provisions only apply until the object(s) being delivered either are in orbit or have achieved escape velocity
Advance notification requirement for any launch of an ICBM or SLBM (including space launches)	START I; Ballistic Missile Launch Notification Agreement	May influence testing and operations for space weapons concepts using ballistic missiles
Airplanes that meet the definition of a heavy bomber are subject to START I provisions and restrictions	START I	As currently envisioned and unless otherwise agreed, the U.S. Air Force’s proposed Space Operations Vehicle could be captured as a heavy bomber under START I due to its expected range of greater than 8000 km
Prohibition against interference with NTM or use of deliberate concealment measures	START I; ABM Treaty	NTM assets used to support aggression may be considered legitimate space control targets
Pre and post-launch notification and exchange of early warning data for space launches	JDEC MOA; PLNS MOU	Not currently in effect; will commence once Joint Data Exchange Center is completed; agreements allow for “exceptions”
Using environmental modification techniques on Earth or in space	Environmental Modification Convention	Creation of orbital debris or enhanced radiation belts illegal; changes to Earth’s weather or atmosphere also prohibited

Table 2 (continued)

Impact of Arms Control and Other International Agreements on United States Military Operations in Space		
<i>Prohibited/Constrained Activity</i>	<i>Source of Prohibition</i>	<i>Comments</i>
Developing, testing, or deploying air or space-based ABM systems or components	ABM Treaty	SBIRS, Space-Based Laser, Space Operations Vehicle, and space-based radar potentially impacted; Exotic technology systems and components subject to discussion
Developing, testing, or deploying space-based interceptor missiles to counter theater ballistic missiles, or space-based components based on other physical principles, that are capable of substituting for such interceptor missiles	Standing Consultative Commission Second Agreed Statement Relating to the ABM Treaty	Space-Based Laser, and Space Operations Vehicle potentially impacted; there is some debate over whether these modifications are substantial enough to warrant submission to the Senate for their advice and consent
Interfering with communication systems of other states without prior consultation	International Telecommunication Convention	Jamming or disruption only legitimate in self-defense or war

Part II – Protecting the Future

The United States will consider and, as appropriate, formulate policy positions on arms control and related measures governing activities in space, and will conclude agreements on such measures only if they are equitable, effectively verifiable, and enhance the security of the United States and our allies.

National Space Policy
September 19, 1996⁷³

The Security Environment

Within the last five years a number of reports have been published identifying trends in the international security environment for the 21st century and suggesting how the U.S. might best shape and respond to that environment in order to enhance its own security and economic well-being. In reviewing the reports, the common and seemingly obvious conclusion that the world will continue to change rapidly is supported with evidence of drivers for change. Some of these drivers are demographics, availability of natural resources, the information revolution, globalization, the spread of technology, proliferation of weapons of mass destruction, the continued dominance of the U.S., and the rising influence of non-governmental organizations. Many of the reports also recognized space-based capabilities as being key factors in determining future power balances by enabling economic growth and enhancing military strength. The importance of arms control as a contributor to international security was also cited, with the caveat that previous momentum in the arms control process can no longer be expected to continue.⁷⁴ How the international community, particularly the U.S., influences the interplay of these and other trends will largely determine what form and what direction the resultant international system will take.

Perhaps the single most important driver of change in the 21st century security environment will be the information revolution and the spread of the technology that fostered it. The information technology revolution is recognized by many to represent the most significant global transformation since the Industrial Revolution began in the mid-eighteenth century.⁷⁵ The rapid and largely unrestricted flow of information through computer networks and global telecommunications systems has encouraged the globalization of technology, cultural values, political ideology, finances, and commerce. The fusion of information technology with other areas of science and technology such as biotechnology, materials science, and nanotechnology, is predicted to generate a dramatic increase in technology investment, which will further stimulate innovation within the more advanced countries.⁷⁶ However, the interconnectivity and interdependence of a globalized world has both positive and negative elements. The information technology revolution will likely act as an engine for accelerated global economic expansion and improved standards of living. Sound economies and an increasing recognition of common global problems will present opportunities for political stability, regional integration, and international cooperation on transnational issues.⁷⁷ On the other hand, states will have less control over the flow of information, technology, and financial transactions across their borders, and will increasingly be influenced by non-state actors such as international business conglomerates and non-profit organizations. Furthermore, states that attempt to remain insulated from globalization or are unable to keep pace with rapid change may become culturally alienated and experience economic stagnation resulting in political friction, possibly leading to internal or regional conflict. Increased reliance on knowledge-based technology for producing goods and providing services will create new vulnerabilities. Rogue states, terrorists, proliferators, and organized criminals will attempt to take advantage of new technologies and high-speed information

systems in unique ways in order to further their illegal activities. In addition, globalization will increase the prospects that advanced weapons, including weapons of mass destruction and the means to deliver them, will become more widely spread among states and non-state actors.⁷⁸ The coercive and deterrent value of such weapons in the hands of an adversary could significantly limit the flexibility of U.S. and international security policies and practices.⁷⁹

One of the principal contributors to the information technology revolution has been the propagation of space systems. There are currently about 750 active military, commercial and civilian satellites in orbit worldwide. The U.S. alone has more than 300 active satellites. Of those, approximately 60 percent are commercial, 20 percent are military and 20 percent belong to civilian government agencies. It is expected that 1,500 new satellites will be launched during the next decade, most of which will be internationally owned or operated by various consortia.⁸⁰ Space-based capabilities are already intertwined with every level of U.S. society, to the extent that continued access to space is considered a vital national interest. The military uses of space have already been discussed. However, many of the same space capabilities adapted for military use also have commercial and civil applications. Communications satellites provide television broadcasts, phone and radio service, as well as Internet access and data transfer. The interconnectivity they afford has become indispensable for news, business, and personal affairs. Global Positioning System (GPS) satellites provide navigation, tracking, and are a critical timing source for financial institutions. Delivery companies like UPS and FEDEX use GPS to monitor their fleets in order to meet delivery schedules, construction contractors use it to streamline complex surveying projects, consumers use GPS location and direction finding features for navigation in unfamiliar areas, and civil organizations use GPS to provide emergency response assistance. Earth-sensing satellites are also widely used in the commercial and civil sectors. The

high-resolution imagery they provide is used for environmental monitoring, real-time weather forecasting, and mapping. Farming, land management, urban planning, disaster preparedness and hydrology are just a few of the possible applications.⁸¹ As the 21st century progresses, many more countries will become dependent on the advantages of space capabilities to sustain their quality of life, economic prosperity, and military effectiveness. Recognizing the criticality of space assets and their inherent vulnerabilities, states with conflicting security interests, businesses contending for market dominance, and groups seeking to further their own agendas could eventually attempt to deny or disrupt the space-based capabilities of their adversaries. The real possibility and potentially disastrous consequences of attacks on space systems will drive the need for states to protect and defend those systems. The resulting implications were summed up in the *Report of the Commission to Assess United States National Security Space Management and Organization*, which stated: “We know from history that every medium—air, land and sea—has seen conflict. Reality indicates that space will be no different.”⁸²

Arms control initiatives will continue to be an essential tool for inhibiting the size and/or nature of military threats and will help provide the security assurance necessary to strengthen cooperative relationships in an increasingly interdependent world. However, in order for arms control to be effective in the new security environment, its focus must shift away from the U.S.-Russia strategic relationship to address growing regional and multilateral concerns. Assuming such a shift occurs, bilateral arms control between the U.S. and Russia will slow considerably and increasing emphasis will be placed on developing multilateral regimes containing less intrusive verification measures. Existing agreements may be strengthened incrementally through extensions, modifications or adaptations, but the real challenge will be employing them to constrain mounting proliferation dynamics in specific regions.⁸³

During the next two decades, potential opponents of the U.S. are likely to adopt an asymmetric strategy to counter America's continuing economic, military, political and cultural power. Such a strategy may include the possession or employment of weapons of mass destruction, development or acquisition of ballistic and cruise missile delivery means, as well as attacks on information systems, including computer networks and space capabilities.⁸⁴ A major objective of arms control will be to frustrate this strategy, particularly with regard to slowing the proliferation of weapons of mass destruction, the means of delivering them, and the materials necessary to construct them. The *Report of the Commission to Assess the Ballistic Missile Threat to the United States* described elements of the asymmetric strategy as follows:

A number of countries with regional ambitions do not welcome the U.S. role as a stabilizing power in their regions and have not accepted it passively. Because of their ambitions, they want to place restraints on the U.S. capability to project power or influence into their regions. They see the acquisition of missile and WMD technology as a way of doing so. Since the end of the Cold War, the geopolitical environment and the roles of ballistic missiles and weapons of mass destruction have both evolved. Ballistic missiles provide a cost-effective delivery system that can be used for both conventional and non-conventional weapons. For those seeking to thwart the projection of U.S. power, the capability to combine ballistic missiles with weapons of mass destruction provides a strategic counter to U.S. conventional and information-based military superiority. With such weapons, these nations can pose a serious threat to the United States, to its forward-based forces and their staging areas and to U.S. friends and allies. Whether short or long range, a successfully launched ballistic missile has a high probability of delivering its payload to its target compared to other means of delivery. Emerging powers therefore see ballistic missiles as highly effective deterrent weapons and as an effective means of coercing or intimidating adversaries, including the United States.⁸⁵

The Cold War and immediate post-Cold War period was marked with significant arms control progress and success; however, more recent events suggest troubling prospects for the future of formal arms control. For example, the U.S. Senate rejected the Comprehensive Test Ban Treaty in order not to preclude future reliability testing of the U.S. nuclear stockpile and because others might violate the Treaty undetected. START II may not ever enter into force due

to an impasse between the U.S. and Russia over added provisions. Russia has refused to entertain overtures by the U.S. to modify the ABM Treaty, prompting some in the U.S. to call for U.S. withdrawal from that agreement. A number of states unfriendly to the U.S. are known to be in violation of the chemical and biological weapons conventions without suffering any apparent consequences. In addition, compliance with the Missile Technology Control Regime by some U.S. allies is questionable.⁸⁶

New strategic priorities will require changes in arms control policy in order for it to remain a viable diplomatic tool. Traditionally, arms control has focused on negotiating legally binding treaties that enshrined strategic stability, numerical parity, and stringent verification. This approach to arms control has advantages because legally binding obligations are more difficult to rescind than political commitments and because specific verification measures reduce uncertainties regarding compliance. However, there are also disadvantages. Formal negotiations and the process of treaty implementation can often last for years and may yield little or nothing in the way of a substantive agreement. In addition, formal treaties can limit U.S. operational and programmatic freedom in undesirable ways. The flexibility of a unilateral or parallel unilateral approach to arms control, coupled with robust transparency measures, may be preferable in what promises to be an uncertain strategic environment.⁸⁷

Domestic Context

Domestic policy is the result of a complex interaction between players and process. The expectation that the U.S. will continue to be a principal shaper of international security for the next quarter century gives added significance to the effects domestic forces have on U.S. arms control and military space policies. Two trends are apparent. First, the domestic political importance of formal arms control and disarmament agreements has steadily faded since the

Cold War's end.⁸⁸ Secondly, interest in space capabilities and recognition of the critical link they provide between the political, military, economic and informational instruments of national power is on the rise. How these trends will affect future U.S. involvement in space arms control negotiations remains to be seen.

The President's pivotal role as the nation's chief diplomat, commander in chief of the armed forces, and chief administrator of the federal bureaucracy enables him to establish the domestic agenda for arms control and military space policy. With the support of his Cabinet and national security advisors, the President initiates the policymaking process, defines policy issues, and, in conjunction with Congress, provides structure in the form of budget, personnel, material, and organization to those policies so they can be implemented. Defense and foreign policy issues compete for executive branch attention with a host of other domestic concerns such as education, taxes, social security, health care, the environment, energy, trade, immigration, crime and welfare. However, military and diplomatic issues are often treated as the greater among domestic equals due to their influence on and by the international security environment, as well as their direct correlation to national security. During his candidacy, President George W. Bush outlined his priorities for defense and foreign policy. His statements provide clues to the overall approach that his administration will take on arms control and military space issues.

Science is evolving. Laser technology is evolving...I see a treaty that makes it hard for us to fully explore the options available, the options available to keep the peace. And there needs to be an administration with a firm commitment to exploring all options and all opportunities. Be able to understand, you know, whether a space-based system can work, like some hope it can.⁸⁹

I will offer Russia the necessary amendments to the ABM Treaty so as to make our deployments of effective missile defenses consistent with the treaty. Both sides know that we live in a different world from 1972, when the treaty was signed. If Russia refuses the changes we propose, I will give prompt notice, under the provisions of the treaty, that the United States can no longer be a party to it.⁹⁰

Changes to our forces should not require years and years of detailed arms control negotiations. There is a precedent that proves the power of leadership. In 1991, the United States invited the Soviet Union to join it in removing tactical nuclear weapons from the arsenal. Huge reductions were achieved in a matter of months, making the world much safer more quickly.⁹¹

In the hard work of halting proliferation, the Comprehensive Test Ban Treaty is not the answer. The CTBT does not stop proliferation, especially to renegade regimes. It is not verifiable. It is not enforceable. And it would stop us from ensuring the safety and reliability of our nation's deterrent, should the need arise. On these crucial matters, it offers only words and false hopes and high intentions—with no guarantees whatever. We can fight the spread of nuclear weapons, but we cannot wish them away with unwise treaties.⁹²

We will modernize some existing weapons and equipment, necessary for current tasks. But our relative peace allows us to do this selectively. The real goal is to move beyond marginal improvements – to replace existing programs with new technologies and strategies. To use this window of opportunity to skip a generation of technology.⁹³

In space, we must be able to protect our network of satellites, essential to the flow of our commerce and the defense of our country.⁹⁴

In the defense of our nation, a president must be a clear-eyed realist. There are limits to the smiles and scowls of diplomacy. Armies and missiles are not stopped by stiff notes of condemnation. They are held in check by strength and purpose and the promise of swift punishment.⁹⁵

Successful policymaking requires consensus building and compromise. Although the executive branch has substantial control over strategic policy planning, the design and implementation of solutions to policy problems is influenced by a host of governmental agencies and non-governmental interest groups. Within the executive branch, the Department of State, the DoD, the Intelligence Community, and the National Security Council are key participants in the interagency arms control policy formulation process. The same participants, with the exception of the Department of State, are key to the formulation of military space policy. Outside the executive branch the most influential group is the Congress.

Congress participates in the policymaking process by shaping public opinion, ratifying treaties, regulating commerce (export controls and sanctions), appropriating funds, and

legislating changes in the organization of executive branch departments or their statutory authorities.⁹⁶ The amount of congressional pressure applied to the executive branch on a specific issue is often proportional to the level of media and public interest, the potential impact on congressional districts, and the lobbying efforts of economic and ideological interest groups. Interest groups attempt to exploit congressional roles for their own purposes, overcoming a lack of executive influence by motivating congressional representatives to support or block executive decisions. For example, a proposed arms control agreement to ban weapons in space could have far reaching economic and security implications. Conservative groups might wish to stifle negotiations on the grounds that the agreement would limit U.S. military flexibility. The aerospace industry and the military-industrial base might strongly object because of the lost opportunity for profit from the development and deployment of space-based weapons systems. At the same time, arms control advocates might loudly endorse such a proposal as a positive step toward international peace and security. The scientific community, academic institutions, and liberal space groups might also favor the agreement as a means to preserve space for exclusively peaceful uses. In addition to applying direct pressure on Congress, all of these groups, in varying degrees, would attempt to sway media coverage and public opinion in their favor as an additional means to prompt congressional action. Members of Congress would respond based on the intensity and direction of interest in the issue, presumably keeping in mind the need to balance political survival, support for constituents, and budgetary considerations with the greater goal of protecting national security.

Many other forces could combine to affect interest and/or action on a space arms control initiative. International relations, world or domestic events, security threats, the state of the economy, and confidence in government leadership and institutions are all examples of forces

that could overshadow or spur domestic policy action. With regard to arms control, U.S. public fear of nuclear war has subsided. In its place is a broad recognition and belief in the political, economic, military, technological and cultural predominance of the United States and a desire to sustain that dominance. Economic prosperity and preserving freedom of action have overtaken internationalism in the public mind, making formal arms control a much tougher sell. In contrast, public appreciation and understanding of the importance of space-based systems is expanding. The point was driven home to many in 1998 when the Galaxy IV satellite malfunctioned, temporarily shutting down 80 percent of U.S. pagers, as well as video feeds for cable and broadcast transmission, credit card authorization networks and corporate communications systems.⁹⁷ Similarly, public awareness of military space operations has grown as a result of the ongoing debate over National Missile Defense and offshoot media coverage of the potential weaponization of space. In addition, substantial press coverage was recently given to the findings of three major bipartisan reports: the *Report of the Commission to Assess United States National Security Space Management and Organization*, *The National Commission for the Review of the National Reconnaissance Office*, and the *Report of the Independent Commission on the National Imagery and Mapping Agency*. The commissions were chartered to conduct independent reviews of the organization, operation, exploitation and future outlook for military and national space assets.

During and immediately following the Cold War, arms control enjoyed the consistent attention of senior decision-makers, including the President. Space operations have yet to enjoy similar attention. However, all three of the previously mentioned commissions recommended that the President and his senior advisors give priority attention and direction to national security

space issues. Future goals, budgets and programs supporting national security space will reflect the level of attention our national leadership provides.

The Conference on Disarmament

As early as 1957, discussions concerning the use of outer space and its regulation have taken place on a bilateral basis between the U.S. and the former Soviet Union and on a multilateral basis at the United Nations General Assembly and its subsidiary deliberative/negotiating bodies.⁹⁸ Today and in the future, the increasing number of countries using space assets to enhance their military forces, either by developing their own space capabilities or by purchasing launch and satellite services from others, will require any new formal arms control agreement affecting the military use of space to be negotiated in a multilateral forum. The single global multilateral arms control negotiating forum of the international community is the Conference on Disarmament (CD).

The CD was established in 1979 as an autonomous international body uniquely tied to the United Nations. The CD adopts its own Rules of Procedure and its own agenda; however, its secretary is appointed by the United Nations Secretary-General, it is financed through the United Nations, it takes into account the recommendations of the United Nations General Assembly and the proposals of its members, and it reports to the General Assembly annually, or more frequently, as appropriate. The annual session of the CD takes place in Geneva, Switzerland and is divided into three blocks of approximately two-months each. The CD makes all of its decisions by consensus. In other words, if just one of the CD's 66 member states objects to an action, no action is taken.⁹⁹

The terms of reference for the CD include practically all multilateral arms control and disarmament problems. The CD and its predecessors have negotiated such major multilateral

arms limitation and disarmament agreements as the Non-Proliferation Treaty, the Environmental Modification Convention, the seabed treaties, the Biological Weapons Convention, the Chemical Weapons Convention, and the Comprehensive Nuclear Test Ban Treaty. The CD's permanent agenda includes nuclear disarmament, prevention of nuclear war and all related matters, prevention of an arms race in outer space, effective international arrangements to assure non-nuclear weapon states against the use or threat of use of nuclear weapons; new types of weapons of mass destruction, comprehensive program of disarmament and transparency in armaments.¹⁰⁰

Beginning in 1985, the CD created an ad hoc committee to focus on the prevention of an arms race in outer space. An ad hoc committee is established to debate and discuss a topic in order to explore member's views or it may conduct formal negotiations with the goal of eventually concluding a treaty. The establishment of the committee in 1985 coincided with U.S. research and development of the Strategic Defense Initiative, more commonly known as "Star Wars," and the successful 1985 U.S. test of the miniature homing vehicle anti-satellite weapon. The ad hoc committee was reestablished each year through 1994 to study and discuss how to address security challenges in outer space, including setting limits on space weapons. A debate within the CD over its agenda has resulted in a lack of consensus on reestablishing the committee ever since. If the ad hoc committee is reconvened, discussions could include limits on anti-satellite weapons and use of force in and from outer space, as well as use of space as an anti-ballistic missile location. However, continued U.S. opposition to formal negotiations on this issue would effectively limit the scope of the committee's work to discussion only.¹⁰¹

U.S. plans to construct advanced TMD systems and a limited NMD have reinvigorated debate on the prevention of an arms race in outer space. While a large majority of the CD's member states favor negotiations on space arms control, two of the most vocal supporters have

been China and Russia. Both have linked strict ABM Treaty compliance with the issue of preventing an arms race in outer space. They also have insisted that the CD's program of work include formal space arms control talks "to negotiate and conclude an international legal instrument prohibiting the testing, deployment, and use of weapons, weapon systems and components in outer space so as to prevent the weaponization of, and an arms race in, outer space."¹⁰² That insistence coupled with continuing U.S. opposition to such negotiations has effectively paralyzed the CD. Both China and Russia are concerned that U.S. deployment of an NMD system may encourage the U.S. to believe it can intervene with impunity in areas China and Russia consider important to their respective security spheres. Additionally, the two countries recognize that the U.S. has a substantial lead in technological capabilities related to a wide range of weapons systems.¹⁰³ Since neither country is in a position to compete with U.S. expenditures on advanced space weapons programs, they view space arms control negotiations as an opportunity to shackle U.S. progress. At the same time, their calls for negotiations allow them to take the moral high ground on the international stage.

Many other states also support space arms control negotiations but have not adopted intractable positions on the issue. Some are concerned not just with potential U.S. hegemony, but also with the possibility that any state(s) would be able to use space weapons to inflict their will on states that do not possess such weapons. They believe a window of opportunity is available now to ban weapons in space before they are introduced. For example, during the CD's 1998 session, Canada submitted a working paper outlining its position on what action the CD should take with regard to outer space, which included the following:

There is no current multilateral agreement banning the deployment of weapons other than weapons of mass destruction in outer space. There is thus a need for the international community to address this problem, and to do so multilaterally, particularly in view of the growing number of states with the capacity or near

capacity to place objects into orbit. We acknowledge that there is currently no arms race in outer space. We accept the current military uses of outer space for surveillance, intelligence-gathering and communications. Our focus is on the non-weaponization of outer space, i.e. no positioning of actual weapons in outer space.¹⁰⁴

Still other states favor intermediate steps in the form of confidence-building measures believing that such measures would constitute a constructive move towards the prevention of an arms race in outer space. The process of building confidence between states involves step-by-step reductions in perceptions of threat or conditions of uncertainty. In connection with military operations in space, the purpose of confidence-building measures is to obtain greater transparency and predictability through activities such as notification, verification, and monitoring, in order to reduce suspicion and tension between nations while enhancing international peace and stability. Specific examples of confidence-building proposals in the CD have included: establishment of an international monitoring agency using space assets for verification of arms control agreements and to monitor crisis situations; creation of a small international satellite constellation to identify the function and purpose of other satellites using non-intrusive means; broadening the Registration Convention to include sharing of additional information on orbit changes, satellite maneuvers and drifting; identification of keep-out zones assigned to each satellite to order to prevent accidental collisions, co-orbital tracking and close range passes by other satellites; establishment of an international ballistic missile and space launch notification center; on-site inspection of satellites prior to launch; annual exchanges of data, meetings of experts, briefings, visits to laboratories, and observations of tests; and sharing of imagery and space technology.¹⁰⁵

In an effort to allow the CD to move forward on other issues, the U.S. has subsequently offered to support establishment of an ad hoc committee to discuss (not negotiate) outer space. Only China, Russia and Pakistan have been unwilling to accept the U.S. offer. The continuance

of work within the CD will depend on whether these countries or the U.S. are willing to compromise further. In describing the current condition and way ahead for the CD, UN Undersecretary-General Jayantha Dhanapala said, "During the Cold War there were many years...when the CD was inactive and unable to make progress."¹⁰⁶ He went on to say:

I think it is not surprising, as I said earlier, that given the post-Cold War euphoria and the international consensus that existed then for disarmament, we had a number of disarmament agreements in quick succession, culminating in the CTBT of 1996. We have seen a change in the international situation since then, and the plateau that we are now on as far as disarmament is concerned is, in my opinion, a temporary lull. As soon as the international situation improves and the conditions are ripe for us to move forward, I believe there will once again be a progressive movement as far as disarmament is concerned.¹⁰⁷

Framing a U. S. Position for Space Arms Control Discussions

It is clear that the U.S. perceives its own national interests to be at variance with international interests in space arms control negotiations, at least as represented in the CD. Like other states, the U.S. has shown considerable antipathy toward arms control agreements that significantly restrict current and future military flexibility or limit arenas in which the U.S. has a substantial advantage or a particular interest. For example, in a recent speech given at National Defense University, President Bush described the U.S. position on the ABM Treaty as follows:

We need a new framework that allows us to build missile defenses to counter the different threats of today's world. To do so, we must move beyond the constraints of the 30 year old ABM Treaty. This treaty does not recognize the present, or point us to the future. It enshrines the past. No treaty that prevents us from addressing today's threats, that prohibits us from pursuing promising technology to defend ourselves, our friends and our allies is in our interests or in the interests of world peace.¹⁰⁸

Ambassador Robert T. Grey, Jr., United States Representative to the Conference on Disarmament, has made several statements to the CD to explain the U.S. position and deflect criticism by other states, particularly China, on the issue of preventing an arms race in outer

space. In doing so, Ambassador Grey has made a number of important points. First, the U.S. has an unmatched track record of scientific study, peaceful exploration, human advancement and international cooperation in space. Examples include manned space flights to the moon, robotic exploration of Mars, and operation of spacecraft designed to obtain scientific data from the furthest reaches of the solar system and beyond. Furthermore, the U.S. has provided substantial assistance to other states seeking to develop their own space capabilities, encouraged international participation in space shuttle missions, and most recently, has played a lead role in construction of the International Space Station. Second, the exploration and use of outer space by all nations for peaceful purposes and for the benefit of all humanity allows for activities that support defense and serve national security goals. Improving the ability to support military operations worldwide, monitor and respond to military threats, and monitor arms control and non-proliferation agreements are key U.S. national security space priorities. Lawful military uses of space also enhance international peace and security in significant ways and provide broad benefits to the international community. Examples include communications, global positioning, navigation, environmental monitoring, and the ability to track large groups of refugees and displaced persons. Other examples include helping states to monitor treaty compliance, combat terrorism, and cooperate in enforcing UN Security Council sanctions.¹⁰⁹ Third, there is no arms race in outer space, no foreseeable prospect of an arms race in outer space, and no indication of significant ongoing development by any state with respect to arms in space. Fourth, allegations that actions or plans of the United States attest to a desire for hegemony, or any intent to carry out nuclear blackmail, or any supposed quest for absolute freedom to use force or threaten to use force in international relations have no basis in reality.

Indeed, in today's world "hegemony" is unattainable in any case. The world is too diverse, too complex, too open to new ideas for "hegemony." The era of empires

is over, as is the era of one-party States. Information and ideas cannot be controlled by any Party or by any government. People of all backgrounds have the opportunity, the capability, and the right to make up their own minds. Rote repetition of slogans and clichés that distort reality cannot change this essential fact.¹¹⁰

Fifth, the Charter of the United Nations, existing multilateral treaties relating to outer space, arms control provisions of other multilateral and certain bilateral treaties relating to outer space, together with customary international law and the domestic law of individual nations, interact with and complement each other in such a way that together, they provide an extensive and comprehensive system for limiting the uses of outer space to those that are peaceful, while providing a framework for the legitimate military uses of outer space. Therefore, the U.S. believes new legally binding instruments are unnecessary at this time.¹¹¹ Lastly, Ambassador Grey questioned the logic for immediate negotiations on a space arms control treaty.

Those who call for outer space negotiations are putting the cart before the horse. The next logical step would be for Member States to conduct a thorough discussion of possible measures related to outer space, to identify proposals for further protections -- if there are any -- that may be desirable and feasible. Such discussion would have to take into account the need to enhance international peace and security while simultaneously protecting the security interests of states that have substantial assets in outer space and that carry out important activities there. Unless and until there is a convergence of interests and views on this issue, it is impractical to insist that the Conference must negotiate a treaty.¹¹²

By offering to support an ad hoc committee in the CD to discuss outer space, the U.S. has demonstrated flexibility and a desire to move forward on a broad range of multilateral arms control issues. In doing so, the U.S. has retaken the moral high ground in the CD and thrust the spotlight squarely on the unwillingness of other states to show similar flexibility. Even more importantly, regardless of what action China, Russia, and Pakistan decide to take, the U.S. has protected its present desire to avoid formal negotiations on outer space. At the same time, the U.S. continues to be very deliberate in its approach toward weaponizing space. The National

Space Policy directs the DoD to maintain the capability to execute the mission areas of space control and force application. However, for a variety of reasons, progress in these areas has been purposely restricted to concept development, research and some limited testing. One reason is that space-based weapons will be extremely expensive to field and it is not clear that the military utility they are expected to provide will be greater than that of existing or potential terrestrial-based weapon systems. Other considerations include technology hurdles that have yet to be overcome, the vulnerability of space-based weapons to attack, and the political repercussions of being the first country to field weapons in space.

If currently planned programs such as the Space Operations Vehicle or the Space-Based Laser graduate from purely research and development to full-fledged testing and deployment, the U.S. could again be faced with intense international pressure to participate in formal space arms control negotiations. Certainly, the U.S. could continue to resist negotiations on outer space in the CD, using much of the same reasoning Ambassador Grey has already provided. However, such a position could eventually become politically untenable in the face of a concerted international outcry. Additional rationale and possible U.S. acceptance of selected confidence-building measures might be necessary in order to avoid entanglement in formal negotiations to limit or ban weapons deployment in space.

In an effort to diffuse the perceived threat space weapons pose to the international community, the U.S. could make several new points in statements issued to the CD. First, practically any active satellite has the potential to be used as a weapon to destroy or disrupt other satellites. Satellites are typically built with a limited capacity to maneuver in order to maintain attitude and position throughout their useful life. It would be a relatively simple proposition to maneuver a given satellite into striking or blocking another, especially one already in close

proximity. The point is that a ban on space systems designed as weapons will not necessarily prevent the use of weapons in space. Second, space weapons are like any other weapons in that they are legitimate tools which can be implemented to support a state's inherent right of self-defense. International security and economic well being now depend on free access to and use of space by all. The space systems being deployed by the U.S. are designed to protect free access to space, not just for the U.S., but also for all those in the international community who seek to use space for peaceful purposes. Third, previous discussions in the CD have demonstrated that verifying compliance with any new space arms control agreement will be problematic at best. The U.S. believes that many states would be unwilling to accept international inspections of space payloads prior to launch. Yet without such an inspection or development of a prohibitively expensive international space monitoring system, interested states will have little confidence that any violations of military significance would be detected in time to permit a response if necessary. Even if such measures were put into effect, it would be extremely difficult to determine if a satellite anomaly or failure was the result of an accidental collision, solar radiation, aging equipment, or purposeful interference or attack.

In order to avoid international isolation and to demonstrate good faith, the U.S. could also adopt an incremental strategy in which it attempts to redirect the focus of the CD away from formal negotiations to ban space weapons toward development of less stringent initiatives that contribute to the ability of all spacefaring states and international organizations to exploit the space medium for the benefit of all mankind. Possible initiatives include: the addition of verification procedures for the Outer Space Treaty; establishment of rules for avoiding dangerous military activities or confrontation in space; agreements on rescue operations in or from space; space support to international operations, including peacekeeping; share early-warning and other

data obtained from space sensors with allies and friends; and other confidence-building measures along the lines of those already discussed in the CD. Clearly, any arms control negotiations, even those related to transparency and confidence-building, must be designed in such a way as to reconcile the need to build international trust while maintaining protection of national security interests. The U.S. would have to determine the level of cooperation and intrusiveness it would be willing to tolerate. Various confidence-building options could result in the loss of some U.S. military flexibility. However, by agreeing to participate in some form of international cooperation vis-à-vis space, the U.S. keeps the option of deploying space weapons open and, at the same time, demonstrates its commitment to pursue collective security and greater levels of partnership in international space activities.

While the other members of the CD would undoubtedly applaud U.S. readiness to establish confidence-building measures for outer space, most will ultimately be unsatisfied with any agreement that falls short of outlawing weapons deployment. Knowing that the U.S. is not ready to subscribe to an all-encompassing ban, other members of the CD may recommend a fallback position to adopt a 1988 Soviet Union proposal to establish an International Space Monitoring Agency. The proposal called for placing the results of monitoring by national satellite systems at the disposal of an international organization in order to provide the international community with information relating to arms control compliance and military situations in areas of conflict.¹¹³ The proposal is somewhat reminiscent of early nuclear arms control efforts. In 1946, in an attempt to stop the nuclear arms race before it started, U.S. presidential representative Bernard Baruch presented a proposal at the United Nations to place the development and use of all atomic energy, including nuclear material and technology, under the control of an independent international authority responsible to the UN Security Council.

Under the plan, the U.S. would agree to destroy its atomic weapons after all other nations had turned over their atomic resources to the newly created agency. The Soviet Union was unwilling to agree to the plan as presented and a compromise was never reached.¹¹⁴

Another possibility is that the U.S. will be approached by Russia and/or China, outside the scope of the CD, to negotiate a bilateral or trilateral space arms control agreement. Russia and/or China may believe that the U.S. could be coaxed into negotiating if the agreement were framed as an acceptable alternative or even a replacement for the ABM Treaty. Furthermore, an agreement fashioned from the successful pattern of bi-lateral nuclear arms control agreements would likely be easier to achieve than one negotiated among the 66 members of the CD.

In response, the U.S. should reiterate that the growing importance of space to the global community makes it imperative that any international discussions to limit space weapons be conducted in a multilateral forum and that the proper forum for such discussion is the CD. Secondly, if avoidance of space arms control discussions becomes impossible, the U.S. should stand by the need for the CD to agree on basic confidence-building steps as a necessary precursor to further negotiation on measures to limit space weapons. The U.S. must make it clear that it is more reliant than any other country on space capabilities and that space weapons represent one possible option to deter attacks on those capabilities. Deterrence of aggressors and defense of space capabilities benefits the entire international community. Before the U.S. can foreclose the option of deploying space weapons, its security concerns and the security concerns of other states that desire unrestricted access to space must be addressed in a meaningful way. One way to begin to address those security concerns is through international compliance with basic confidence-building measures.

Conclusion

As interest in and use of space increases, both within the United States and around the world, the U.S. must participate actively in shaping the space legal and regulatory environment. Because of its investment in space and its increasing dependence on space-based capabilities, the U.S. has a large stake in how this environment evolves. To protect the country's interests, the U.S. must promote the peaceful use of space, monitor activities of regulatory bodies, and protect the rights of nations to defend their interests in and from space.

Report of the Commission to Assess United States
National Security Space Management and Organization
January 11, 2001¹¹⁵

Just as the U.S. has been cautious in its approach to weaponizing space, it must also be cautious not to expand the arms control limits on the use of space to the point where options to deploy space weapons in response to threats to national or international security are no longer available. Existing arms control treaties and agreements, international and domestic space laws, and the many regulations governing space activities already form an extensive web to protect the peaceful use of outer space, while providing a framework for legitimate military operations in that medium. In fact, the existing web of agreements is so extensive that several U.S. military space programs geared toward space control and force application face significant obstacles to their eventual testing and deployment. To counter growing U.S. advantages in space, other states have sought new arms control agreements that would further restrict the military use of space. At the moment, the U.S. stands virtually alone in its resistance to space arms control. In order to be successful as a leader and shaper of the 21st century security environment, the U.S. must find a balance between pursuit of its own national security space interests and its commitment to support collective security and greater levels of partnership in international space activities. The degree to which the U.S. can harmonize these two areas will determine the measure of its success.

Notes

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² General Bernard A. Schriever's biography can be found at www.legendsofairpower.com.

³ *Department of Defense Space Policy*, DoD Directive 3100.10, 9 July 1999.

⁴ *Report of the Commission to Assess United States National Security Space Management and Organization*, 11 January 2001, 38.

⁵ Jeffrey A. Larsen and Gregory J. Rattray, eds., *Arms Control Toward the 21st Century* (Boulder: Lynne Rienner Publishers, 1996), 8.

⁶ The Vienna Convention on the Law of Treaties, concluded at Vienna 23 May 1969, entered into force 27 January 1980, UN Doc A/Conf 39/28, UKTS 58 (1980), 8 ILM 679.

⁷ Krass, Allan S. *The United States and Arms Control: The Challenge of Leadership* (Westport, CT: Praeger Publishers, 1997), 3-6.

⁸ Trevor N. Dupuy and Gay M. Hammerman, eds., *A Documentary History of Arms Control and Disarmament* (Dunn Loring, VA: T.N. Dupuy Associates, 1973), 2-4.

⁹ *Ibid.*, 14-15, 54-78.

¹⁰ *Arms Control and National Security: An Introduction* (Washington, DC: The Arms Control Association, 1989), 5-15.

¹¹ Thomas C. Schelling and Morton H. Halperin. *Strategy and Arms Control* (New York: Twentieth Century Fund, 1961), 2.

¹² Donald G. Brennan, "Setting and Goals of Arms Control," in Donald G. Brennan, ed., *Arms Control, Disarmament, and National Security* (New York: George Braziller, 1961), 30, 37.

¹³ Krass, 3-6.

¹⁴ *Arms Control and National Security: An Introduction*, 12-13.

¹⁵ U.S. Constitution. Article VI, cl. 2 states "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land."

¹⁶ Joseph F. Pilat, "Arms Control, Verification, and Transparency," in Jeffrey A. Larsen and Gregory J. Rattray, eds., *Arms Control Toward the 21st Century* (Boulder: Lynne Rienner Publishers, 1996), 80-82.

¹⁷ *Implementation of, and Compliance with, Arms Control Agreements*, DoD Directive 2060.1, 9 January 2001, 3. Found at <http://web7.whs.osd.mil/dodiss/directives/dir2.html>.

¹⁸ *Adherence To and Compliance With Arms Control Agreements*, 1998 Annual Report submitted to the Congress, Washington, DC. Found at <http://www.state.gov/www/global/arms/reports/annual/comp98.html>.

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- ¹⁹ International Court of Justice: General Information – The Court at a Glance. 18 October 2000. Found at <http://www.icj-cij.org/icjwww/igeneralinformation/icjgnnot.html>.
- ²⁰ The Charter of the United Nations, 26 June 1945, 59 Stat. 1031, T.S. No. 993, entered into force 24 October 1945.
- ²¹ Glenn H. Reynolds and Robert P. Merges, *Outer Space: Problems of Law and Policy*, Second edition (Boulder: Westview Press, 1997), 27-43.
- ²² Colonel Delbert R. Terrill, Jr., USAFR, *The Air Force Role in Developing International Outer Space Law* (Maxwell AFB, AL: Air University Press, 1999), 29-30. See also: Curtis Peebles, *High Frontier: The United States Air Force and the Military Space Program* (Air Force History and Museums Program, 1997), 8-11.
- ²³ United Nations Resolution 1348 (XIII), Question of the peaceful use of outer space, 13 December 1958.
- ²⁴ Ivan A. Vlasic, “The Legal Aspects of Peaceful and Non-peaceful Uses of Outer Space,” in Bhupendra Jasani, ed., *Peaceful and Non-Peaceful Uses of Space* (New York: United Nations Institute for Disarmament Research, 1991), 38-39.
- ²⁵ *National Aeronautics and Space Act of 1958*, Public Law #85-568, 72 Stat., 426, signed by the President on 29 July 1958, Record Group 255, National Archives and Records Administration, Washington, DC.
- ²⁶ Ibid.
- ²⁷ Dana J. Johnson, “The Impact of International Law and Treaty Obligations on United States Military Activities in Space,” *High Technology Law Journal* 3 no. 33 (1987), 55-57.
- ²⁸ The White House, National Science and Technology Council, *Fact Sheet: National Space Policy*, 19 September 1996.
- ²⁹ *Report of the Commission to Assess United States National Security Space Management and Organization*, 55.
- ³⁰ Department of Defense Space Policy, Enclosure 2, DODD 3100.10, 9 July 1999, 23-24. See also *Space Operations*, Air Force Doctrine Document 2-2, 23 August 1998, 7-13; and Air Force Space Command, *Strategic Master Plan for FY02 and Beyond*, 9 February 2000, 19-32.
- ³¹ Ibid.
- ³² Ibid.
- ³³ Department of Defense Space Policy, Enclosure 2, 23-24.
- ³⁴ *Space Operations*, Air Force Doctrine Document 2-2, 7-13.
- ³⁵ Department of Defense Space Policy, Enclosure 2, 23-24; *Space Operations*, Air Force Doctrine Document 2-2, 7-13; and *Strategic Master Plan for FY02 and Beyond*, 19-32.
- ³⁶ *Strategic Master Plan for FY02 and Beyond*, vii.
- ³⁷ Arthur Larson, “Arms Control through World Law,” in Donald G. Brennan, ed., *Arms Control, Disarmament, and National Security* (New York: George Braziller, 1961), 427.
- ³⁸ USAF Air Command and Staff College, *Space Handbook: A Warfighter’s Guide to Space* (Maxwell AFB, AL: Air University Press, 1993), 57.

³⁹ Natalino Ronzitti, "Problems of Arms Control Treaty Interpretation," in Julie Dahlitz and Detlev Dicke, eds., *The International Law of Arms Control and Disarmament: Proceedings of the Symposium, Geneva, 28 February – 2 March 1991* (New York: United Nations, 1991), 115-125.

⁴⁰ The Vienna Convention on the Law of Treaties. Note: the United States has not ratified this convention but has acknowledged that it reflects contemporary international law.

⁴¹ Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (The Limited Test Ban Treaty), signed at Moscow 5 August 1963, entered into force 10 October 1963, 14 U.S.T. 1313, T.I.A.S. No. 5433, 480 U.N.T.S. 43.

⁴² Antarctic Treaty, 1 December 1959, 12 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71.

⁴³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty), signed 27 January 1967, entered into force 10 October 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205.

⁴⁴ The Charter of the United Nations, Article II.

⁴⁵ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Rescue Agreement), signed 22 April 1968, entered into force 3 December 1968, 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119.

⁴⁶ Convention on the International Liability for Damage Caused by Space Objects (Liability Convention), signed 29 March 1972, entered into force 1 September 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762.

⁴⁷ Convention on Registration of Objects Launched into Outer Space (Registration Convention), signed 14 January 1975, entered into force 15 September 1976, 28 U.S.T. 695, T.I.A.S. No. 8480.

⁴⁸ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement), signed 18 December 1979, entered into force 11 July 1984, G.A. Res. 34/68 U.N. GAOR Supp. (No. 46) at 77, U.N. Doc. A/34/76.

⁴⁹ The Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (Geneva Protocol), opened for signature 17 June 1925, 26 U.S.T. 571, T.I.A.S. No. 8061.

⁵⁰ Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (Biological Weapons Convention), signed 10 April 1972, entered into force 26 March 1975, 26 U.S.T. 538; T.I.A.S. No. 8062.

⁵¹ The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (Chemical Weapons Convention), opened for signature 13 January 1993, entered into force 29 April 1997 following ratification by 65 signatories. As of 28 November 2000, 141 countries had either ratified or acceded to the treaty, another 34 are signatories.

⁵² Comprehensive Nuclear Test Ban Treaty (CTBT), opened for signature 24 September 1996, entry into force is pending ratification by the 44 members of the Conference on Disarmament (CD) with nuclear power reactors or nuclear research reactors. Twenty-seven have ratified so far.

⁵³ Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Reduction And Limitation Of Strategic Offensive Arms (START I), signed 31 July 1991, entered into force 5 December 1994.

⁵⁴ Ibid.

⁵⁵ David Baker, ed., *Jane's Space Directory 1999-2000* (UK: Jane Information Group Limited, 1999), 505. The fractional orbital bombardment system concept was to launch nuclear weapons into Earth orbit and then reenter them over their targets prior to completing a full orbit.

⁵⁶ START I, Paragraph 4 of Article IV provides limits on ICBMs and SLBMs used for delivering objects into the upper atmosphere or space. The Parties recognized that such use of ICBMs and SLBMs is valid and economical, but they also recognized that such use must be limited because such missiles could also be used for their original purpose of weapons delivery. In order to limit the potential for breakout, paragraph 4 limits each Party to no more than five space launch facilities, which are defined as specified facilities from which objects are delivered into the upper atmosphere or space using ICBMs or SLBMs. Paragraph 4 also provides that these facilities may not overlap ICBM bases; limits each Party to a total of no more than 20 ICBM or SLBM launchers at those facilities, of which no more than ten may be silo and mobile launchers, unless otherwise agreed; and limits the number of ICBMs or SLBMs at a given space launch facility to no more than the number of launchers at that facility. Space launch facilities are not subject to inspection. The number of space launch facilities and the number of launchers at those facilities may be increased or decreased if the Parties agree. Such changes would not require an amendment to the Treaty.

⁵⁷ START I, Article X and the Telemetry Protocol.

⁵⁸ Agreement Between The United States Of America And The Union Of Soviet Socialist Republics On Notifications Of Launches Of Intercontinental Ballistic Missiles And Submarine-Launched Ballistic Missiles (Ballistic Missile Launch Notification Agreement), signed at Moscow 31 May 1988, entered into force 31 May 1988.

⁵⁹ START I Article by Article legal analysis makes specific reference to the National Aerospace Plane in describing the Treaty definition of "airplane" and the Treaty prohibition against flight-testing, equipping, and deploying nuclear armaments on an airplane that was not initially constructed as a bomber but has a range of 8000 km or more or an integrated planform area over 310 square meters. However, the Parties did not reach agreement on the applicability of the Treaty to future non-nuclear systems. During the negotiations, the United States stated its view that a future non-nuclear system could not be considered a new kind of strategic offensive arm and, thus, would not be subject to the Treaty. The Soviet Union did not accept this view. The Parties agreed, in the Second Agreed Statement, that, if "new kinds" of arms emerge in the future and if the Parties disagree about whether they are strategic offensive arms, then such arms would be subject to discussion in the Joint Compliance and Inspection Commission. Of course, if one Party deploys a new kind of arm that it asserts is not subject to the Treaty, and the other Party challenges this assertion, the deploying Party would be obligated to attempt to resolve the issue. There is, however, no obligation to delay deployment pending such resolution.

⁶⁰ START I, Article IX.

⁶¹ Treaty Between the United States of America and the Russian Federation on Further Reduction and Limitation of Strategic Offensive Arms (START II), signed 3 January 1993. The U.S. Senate provided its advice and consent to ratification of START II on 26 January 1996. The Russian Duma completed ratification on 14 April 2000 with conditions. U.S. Senate review of the modified treaty is pending.

⁶² Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches (JDEC MOA), signed in Moscow and entered into force on 4 June 2000.

⁶³ Memorandum of Understanding on Notifications of Missile Launches (PLNS MOU), signed 16 December 2000.

⁶⁴ Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (Environmental Modification Convention), signed 18 May 1977, entered into force 17 January 1980, 31 U.S.T. 333; T.I.A.S. 9614.

⁶⁵ Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty), signed at Moscow 26 May 1972, entered into force 3 October 1972, 23 U.S.T. 3435, T.I.A.S. No. 7503.

⁶⁶ Ibid., Article II.

⁶⁷ Ibid., Agreed Statement D.

⁶⁸ Ibid., Standing Consultative Commission Second Agreed Statement Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of 26 May 1972 (Common Understandings Included), signed 26 September 1997.

⁶⁹ Jefferson Morris, "Commercial Satellite Systems Crucial to Military Future, Experts Say," *Aerospace Daily*, 30 March 2001.

⁷⁰ International Telecommunication Convention, 25 October 1973, 28 U.S.T. 2495, T.I.A.S. No. 8572.

⁷¹ Commercial Space Launch Act, Pub. L. 98-575, 30 October 1984, 98 Stat. 3055 (See Title 49, Sec. 70101).

⁷² Table is a combined and expanded version of four tables which appear in Dana J. Johnson, "The Impact of International Law and Treaty Obligations on United States Military Activities in Space," *High Technology Law Journal* 3 no. 33 (1987), 73-80.

⁷³ *Fact Sheet: National Space Policy*.

⁷⁴ Institute for National Strategic Studies, *Strategic Assessment 1999*, (Washington, DC: National Defense University, 1999), xv.

⁷⁵ National Intelligence Council, *Global Trends 2015: A Dialogue About the Future With Nongovernment Experts*, December 2000, 7-9. Found at <http://www.cia.gov/cia/publications/globaltrends2015/index.html>.

⁷⁶ Ibid.

⁷⁷ The United States Commission on National Security/21st Century (also known as the Hart-Rudman Commission), *New World Coming: American Security in the 21st Century*, 15 September 1999, 1. Found at http://www.nssg.gov/Reports/New_World_Coming/new_world_coming.htm.

⁷⁸ *Global Trends 2015: A Dialogue About the Future With Nongovernment Experts*, 7-9.

⁷⁹ *New World Coming: American Security in the 21st Century*, 54-55.

⁸⁰ Andrea Stone, "USA's Dependence on Satellites Places Nation at Risk," *USA Today*, 11 January 2001.

⁸¹ *Strategic Assessment 1999*, 301-308.

⁸² *Report of the Commission to Assess United States National Security Space Management and Organization*, 100.

⁸³ *Global Trends 2015: A Dialogue About the Future With Nongovernment Experts*, 41.

⁸⁴ Report of the National Defense Panel, *Transforming Defense: National Security in the 21st Century*, (Washington, DC: Government Printing Office, December 1997), I. Found at <http://www.dtic.mil/ndp>.

⁸⁵ *Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States* (also known as The Rumsfeld Commission), 15 July 1998.

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- ⁸⁶ Harold Brown, "Is Arms Control Dead?" *The Washington Quarterly*, 23:2, 173-177.
- ⁸⁷ Richard D. Sokolsky, "Renovating U.S. Strategic Arms Control Policy," *Strategic Forum*, No. 178 (February 2001).
- ⁸⁸ *Strategic Assessment 1999*, 290.
- ⁸⁹ George W. Bush, "New Leadership on National Security," statement and remarks given at National Defense University, Washington, DC, 23 May 2000.
- ⁹⁰ "Presidential Election Forum: The Candidates on Arms Control," *Arms Control Today* (September 2000), 3-7.
- ⁹¹ Ibid. Between September 1991 and January 1992 a series of presidential (unilateral) initiatives were announced by the presidents of the United States and Russia that significantly reduced nuclear force posture and structure. Some of the measures were simply accelerations of those mandated by START I, while others were incorporated into START II. However, additional binding actions are not addressed in either treaty.
- ⁹² Ibid.
- ⁹³ George W. Bush, "A Period of Consequences," a speech given at The Citadel, South Carolina, 23 September 1999.
- ⁹⁴ Ibid.
- ⁹⁵ George W. Bush, "A Distinctly American Internationalism," a speech given at the Reagan Library, Simi Valley, California, 19 November 1999.
- ⁹⁶ Jennifer E. Sims, "The U.S. Domestic Context," in Jeffrey A. Larsen and Gregory J. Rattray, eds., *Arms Control Toward the 21st Century*, (Boulder: Lynne Rienner Publishers, Inc., 1996), 65.
- ⁹⁷ *Report of the Commission to Assess United States National Security Space Management and Organization*, 22.
- ⁹⁸ P.K. Menon, *The United Nations' Efforts to Outlaw the Arms Race in Outer Space* (Lewiston, NY: The Edwin Mellen Press, 1988), 38.
- ⁹⁹ UN Office at Geneva (UNOG), Conference on Disarmament. Basic Facts. Found at <http://www.unog.ch/disarm/disconf.htm>.
- ¹⁰⁰ Ibid.
- ¹⁰¹ Institute for Defense & Disarmament Studies, "574 Prevention of an Arms Race in Outer Space Negotiation at the Conference on Disarmament (CD)," *The Arms Control Reporter 2000*. Found under "Other Treaties" at <http://acr@idds.org/openindex.html>.
- ¹⁰² Conference on Disarmament. Document CD/1606. Letter dated 9 February 2000 from the Permanent Representative of China to the Conference on Disarmament Addressed to the Secretary-General of the Conference Transmitting a Working Paper Entitled "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament."
- ¹⁰³ "Deadlocked and Waiting at the UN Conference on Disarmament," *Arms Control Today* (December 2000), 8.
- ¹⁰⁴ Conference on Disarmament, CD/1487. Canada, Working Paper Concerning CD Action on Outer Space, 21 January 1998. Found at <http://www.unog.ch/frames/disarm/curdoc/1487.htm>.

¹⁰⁵ United Nations, *Study on the Application of Confidence-building Measures in Outer Space*, Study Series 27 (New York: United Nations, 1994), 37-47.

¹⁰⁶ “Illuminating Global Interests: The UN and Arms Control,” *Arms Control Today* (September/October 1999), 3-8.

¹⁰⁷ Ibid.

¹⁰⁸ George W. Bush, “Remarks by the President to Students and Faculty at National Defense University,” Washington, DC, 1 May 2001. Found at <http://www.whitehouse.gov/news/releases/2001/05/20010501-10.html>.

¹⁰⁹ Statement by Ambassador Robert T. Grey, Jr., United States Representative to the Conference on Disarmament, Geneva, 31 August 2000. Found at <http://usinfo.state.gov/topical/pol/arms/stories/00083102.htm>.

¹¹⁰ Statement by Ambassador Robert T. Grey, Jr., United States Representative to the Conference on Disarmament, Geneva, 14 September 2000. Found at <http://usinfo.state.gov/topical/pol/arms/stories/00091501.htm>.

¹¹¹ Statement by Ambassador Robert T. Grey, Jr., 31 August 2000.

¹¹² Ibid.

¹¹³ *Study on the Application of Confidence-building Measures in Outer Space*, 38-39.

¹¹⁴ *Arms Control and National Security: An Introduction* (Washington DC: The Arms Control Association, 1989), 19-20.

¹¹⁵ *Report of the Commission to Assess United States National Security Space Management and Organization*, 36.