# Chapter 5

# SPACE LAW, POLICY AND DOCTRINE

Space policy and doctrine define the overarching goals and principles of the US space program. International and domestic laws and regulations, national interests and security objectives shape the US space program. Furthermore, fiscal considerations both shape and constrain space policy. Space policy formulation is a critical element of the US national planning process, as it provides the framework for future system requirements. This chapter outlines the basic tenets of US space policy and examines the international and domestic legal parameters within which the US conducts its space programs. The chapter details Department of Defense (DOD) and Air Force space policies, derived from The National Space Policy. It concludes with an analysis of the doctrinal principles that guide the conduct of military space activities.

## INTERNATIONAL SPACE LAW

The term *space law* refers to a body of law drawn from a variety of sources and consisting of two basic types of law: international and domestic. The former refers to rights and obligations the US has agreed to through multilateral or bilateral international treaties and agreements. The latter refers to domestic legislation by Congress and regulations promulgated by executive agencies of the US government.

**Table 5-1** (pp. 5-27 to 5-29) summarizes key international treaties and agreements that affect the scope and character of US military space activities. Listed below are some of the more important basic principles and rules.

*International law applies to outer space*. Such law includes the United Nations (UN) Charter, which requires all UN members to settle disputes by peaceful means, prohibits the threat to use or actual use of force against the territorial integrity or political independence of another state. The charter also recognizes a state's inherent right to act in individual or collective self-defense.

*Outer space, the Moon, and other celestial bodies are not subject to appropriation by claim of sovereignty, use or occupation, or any other means*. In 1976, eight equatorial countries claimed sovereignty over the geostationary orbital arc above their territory. Most other countries, including all major space powers, rejected the claim.

*Outer space is free for use by all countries*. This principle relates to the non-appropriation principle and is analogous to the right of innocent passage on the high seas.

*Outer space will be used for peaceful purposes only*. Most western nations, including the US, equate peaceful purposes with non-aggressive ones. Consequently, all non-aggressive military use of space is permissible, except for specific prohibitions of certain activities noted elsewhere in this section.

*Astronauts are "peaceful envoys of mankind." If forced to make an emergency landing, they should not be harmed or held hostage and they must be returned to the launching country as soon as possible. Upon request, the spacecraft also should be returned if possible and the launching country will pay the costs involved.*

*Objects launched into space must be registered with the UN. Basic orbital parameters, launch origin, launch date and a brief explanation of the purpose of the satellite are required although the*

*UN set no time limit for providing this information.*

*A country retains jurisdiction and control over its registered space objects*. This rule applies regardless of the condition of the objects.

*A country is responsible for regulating, and is ultimately liable for, the outer space activities of its citizens*. *In outer space, liability for damage is based on fault; therefore, assessing blame for objects colliding would be extremely difficult. The launching country is absolutely liable for damage caused on earth.*

*Nuclear weapons tests and other nuclear explosions in outer space are prohibited*. Before this prohibition in 1958, the US exploded three small nuclear devices in outer space in Project Argus. This occurred over a period of two weeks; such an experiment would not be permissible today.

*Nuclear weapons and other weapons of mass destruction (such as chemical and biological weapons) may not be placed into orbit, installed on celestial bodies, or stationed in space in any other manner*.

*A country may not test any kind of weapon; establish military bases, installations, or fortifications, nor conduct military maneuvers on celestial bodies*. The use of military personnel for scientific research or other peaceful purposes is permissible.

*The development, testing, or deployment of space-based antiballistic missile (ABM) systems or components are prohibited*. This prohibition does not apply to research and development of space-based ABMs preceding field testing.

*Interfering with national technical means of verification is prohibited provided such systems are operating in accordance with generally recognized principles of international law and are in fact being used to verify provisions of specific treaties*.

The US adheres to the premise in international law that any act not specifically prohibited is permissible. Thus, even though the list (see **Table 5-1**) of prohibited acts is sizable, there are few legal restrictions on the use of space for non-aggressive military purposes. As a result, international law implicitly permits the performance of such traditional military functions as surveillance, reconnaissance, navigation, meteorology and communications. It permits the deployment of military space stations along with testing and deployment in earth orbit of non-nuclear (and, until 2002, non-ABM) weapon systems. This includes anti-satellite weapons, space-to-ground conventional weapons, the use of space for individual and collective self-defense, and any conceivable activity not specifically prohibited or otherwise constrained.

Another widely accepted premise is that treaties usually regulate activities between signatories only during peacetime. This rule holds true unless a treaty expressly states that its provisions apply or become operative during hostilities, or the signatories can deduce this from the nature of the treaty itself. In other words, countries presume that armed conflict will result in the suspension or termination of a treaty's provisions. Good examples are treaties whose purpose is to disarm or limit quantities of arms maintained by the signatories. Therefore, during hostilities, the scope of permissible military space activities may broaden significantly.

Finally, it is important to understand that the former Soviet Union (FSU) has been the most important space power next to the US. The Soviet Union signed most of the peace-related treaties to which the US has agreed upon, some of which are bilateral agreements exclusively with that nation. As the USSR dissolved, the US adopted a policy of continuing to observe the requirements

of all treaties and to apply their provisions to the independent states that have emerged. Nevertheless, a degree of legal uncertainty is likely to exist for a period of years until precedent establishes policy more firmly, or until formal agreements conclude with the new states. Although uncertainty applies on both sides, the obligations of the US under the new conditions are clear because the state of US sovereignty has not changed and the spirit of the original agreements still exists.

Regardless of US policy, the US cannot unilaterally hold any of the FSU states to any agreements. Most of the FSU states have agreed to continue to discharge the obligations arising out of international agreements signed by the USSR; however, not all have been formally ratified or acceded to.

A prime example of this is the ABM Treaty which was the subject of much debate both in Congress and with the Russians. The US wanted to press ahead with a limited form of national missile defense against the emerging missile technology in rogue nations, while the Russians remained vehemently opposed to any such system. The President rendered his decision in 2001.

## DOMESTIC SPACE LAW

Domestic law has always shaped military space activities through the spending authorization and budget appropriation process. For example, when Congress deleted funding for further testing of the USAF's direct ascent Anti-Satellite (ASAT) weapon in the mid- 1980s, it effectively canceled the program. In addition, a number of laws not designed solely to address space have a space aspect. For instance, under the Communications Act of 1934, the president has the authority to gain control of private communications assets owned by US corporations during times of crisis. Since the 1960s, this authority has included both the ground and space segments of domestically owned communications satellites. Space-specific legislation (beyond the annual National Aeronautics and Space Administration (NASA) authorization) is a relatively recent activity.

The Reagan administration placed emphasis on the creation of a third sector of space activity, that of commercial space, in addition to the traditional military and civil sectors. For example, Congress passed the Commercial Space Launch Act of 1984 to facilitate the development of a commercial launch industry in the US. From a DOD perspective, the importance of this legislation lies in its authorization for commercial customers to use DOD launch facilities on a reimbursable basis. Thus, DOD is now in the overseeing commercial operations from its facilities and placing commercial payloads in the launch queue. Although a recent development, there is a trend towards intertwining the commercial space industry and DOD space programs, whenever possible.

The Commercial Space Act of 1998 furthered this policy of getting the government out of the launch business and requires a DOD study of the projected launch services through 2007. It also calls on the DOD to identify the "technical, structural and legal impediments associated with making launch sites or test ranges in the US viable and competitive." It also requires the government to purchase space transportation services instead of building and operating its own vehicles, calls for NASA to privatize the space shuttle and allows for excess ICBMs to be used as low-cost space boosters.

## NATIONAL SPACE POLICY

A nation's space policy is extremely important, especially as it relates to space law and space doctrine. In order to understand present US space policy and attempt to predict its future, an examination of its evolution is necessary. Keep in mind, that while policy provides space goals and a national framework,

national interests and national security objectives actually shape the policy. This framework will lead towards building and meeting future US requirements and subsequent national space strategies.

## Early Policy

The launch of Sputnik I on 4 October 1957 had an immediate and dramatic impact on the formulation of US space policy. Although the military had expressed an interest in space technology as early as the mid 1940s, a viable program failed to emerge for several reasons. These include: intense interservice rivalry; military preoccupation with the development of ballistic missiles that prevented a sufficiently high funding priority from being assigned to proposed space systems; and national leadership that did not initially appreciate the strategic and international implications of emerging satellite technology. Once national leadership gained this appreciation, it became committed to an open and a purely scientific space program.

The emergence of Sputnik I transposed this line of thought: besides clearly demonstrating the Soviets had the missile technology to deliver payloads at global ranges, Sputnik led to much wider appreciation of orbital possibilities. The result was the first official US government statement that space indeed, was of military significance. This statement, issued on 26 March 1958 by President Dwight D. Eisenhower's science advisory committee, stated that the development of space technology and the maintenance of national prestige were important for the defense of the United States. Congress also quickly recognized that space activities were potentially vital to national security.

The first official national space policy was the National Aeronautics and Space Act of 1958. This act stated the policy of the United States was to devote space activities to peaceful purposes for the benefit of all humankind. It mandated separate civilian and national security space programs and created a new agency, the National Aeronautics and Space Administration to direct and control all US space activities, except those "peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States." The Department of Defense was to be responsible for these latter activities.

A legislative basis for DOD responsibilities in space was thereby provided early in the space age. The act established a mechanism for coordinating and integrating military and civilian research and development. It also encouraged significant international cooperation in space and called for preserving the role of the US as a leader in space technology and its application. Thus, the policy framework for a viable space program was in place. The principles enunciated by NASA have become basic tenets of the US space program. These tenets included: peaceful focus on the use of space, separation of civilian and military space activities, emphasis on international cooperation and preservation of a space role. All presidential space directives issued since 1958 have reaffirmed these basic tenets.

However, a space program of substance still did not exist. The Eisenhower administration's approach to implementing the new space policy was conservative, cautious and constrained. The government consistently disapproved of the early DOD and NASA plans for manned space flight programs. Instead the administration preferred to concentrate on unmanned, largely scientific missions and to proceed with those missions at a measured pace. It was left to subsequent administrations to give the policy substance.

## Intervening Years

Two presidential announcements, one by John F. Kennedy on 25 March 1961 and the second by Richard M. Nixon on 7 March 1970, were instrumental in providing the focus for the US space pro-

gram. The Kennedy statement came during a period of intense national introspection. The Soviet Union launched and successfully recovered the world's first cosmonaut. Although Yuri Gagarin spent just 89 minutes in orbit, his accomplishment electrified the world. This caused the US to question its scientific and engineering skills as well as its entire educational system. The American response articulated by President Kennedy as a national challenge to land a man on the Moon and return him safely to Earth defined US space goals for the remainder of the decade.

Prestige and international leadership were clearly the main objectives of the Kennedy space program. However, the generous funding that accompanied the Apollo program had important collateral benefits as well. It permitted the buildup of US space technology and the establishment of an across-the-board space capability that included planetary exploration, scientific endeavors, commercial applications and military support systems.

President Johnson's years in office saw the commencement of work on nuclear ASATs and the cancellation of the DynaSoar (Dynamic Ascent and Soaring) Flight program. This program, which began in 1958, was a 35 foot glider with a small delta wing and was to be boosted into orbit by a Titan III rocket. The program was determined to be unnecessary in light of NASA's manned spacecraft program.

As the 1960s drew to a close, a combination of factors including domestic unrest, an unpopular foreign war and inflationary pressures forced the nation to reassess the importance of the space program. Against this backdrop, President Nixon made his long-awaited space policy announcement in March 1970. His announcement was a carefully considered and worded statement that was clearly aware of political realities and the mood of Congress and the public. In part, it stated:

*"Space expenditures must take their proper place within a rigorous system of national priorities....Operations in space from here on in must become a normal and regular part of national life. Therefore, they must be planned in conjunction with all of the other undertakings important to us."*

Although spectacular lunar and planetary voyages continued until 1975 as a result of budgetary decisions made during the 1960s, the Nixon administration considered the space program of intermediate priority and could not justify increased investment or the initiation of large new projects. It viewed space as a medium for exploiting and extending the previously realized technological and scientific gains. The emphasis was on practical space applications to benefit American society in a variety of ways.

During the Nixon years, the space world saw three notable events:

- On 5 January 1972, Nixon approved the development of the space shuttle.
- The National Aeronautics and Space Council (started by the Space Act of 1958) was inactivated.
- The Gemini B/Manned Orbiting Laboratory (MOL) was shelved due to lack of urgency and funding.

Within the DOD, this accentuation on practicality translated into reduced emphasis on manned spaceflight, but led to the initial operating capability for many of the space missions performed today. For example, initial versions of the systems were all developed and fielded during this period. These versions are now known as: the Defense Satellite Communications System, the Defense Support Program, the Defense Meteorological Satellite Program and the Navy's Transit Navigation Satellite Program (later to evolve as the Global Positioning System).

One major new space initiative undertaken during the l970s eventually had far greater impact on the national space program than planners had originally envisioned: the space transportation system (STS), or space shuttle. The shuttle's goal was routine and low-cost access to orbit for both civil and military sectors. However, as development progressed, the program experienced large cost and schedule overruns. These problems caused the US space program to lose much of its early momentum, as the high costs would adversely affect other space development efforts, both civil and military. In addition, schedule slippage meant a complete absence of American astronauts in space for the remainder of the decade.

## Carter Administration Space Policy

President Jimmy Carter's administration conducted a series of interdepartmental studies to address the malaise that had befallen the nation's space effort. The studies addressed apparent fragmentation and possible redundancy among civil and national security sectors of the US space program. It also sought to develop a coherent recommendation for a new national space policy. These efforts resulted in two 1978 Presidential Directives (PD): PD-37, National Space Policy and PD-42, Civil Space Policy.

PD-37 reaffirmed the basic policy principles contained in the National Aeronautics and Space Act of 1958. It identified the broad objectives of the US space program, including the specific guidelines governing civil and national security space activities.

PD-37 was important from a military perspective because it contained the initial, tentative indications that a shift was occurring in the national security establishment's view on space. Traditionally, the military had seen space as a force enhancer, or an environment in which to deploy systems to increase the effectiveness of land, sea and air forces. Although the focus of the Carter policy was clearly on restricting the use of weapons in space, PD-37 reflected an appreciation of the importance of space systems to national survival; a recognition of the Soviet threat to those systems; and a willingness to push ahead with development of an anti-satellite capability in the absence of verifiable and comprehensive international agreements restricting such systems. In other words, the administration was beginning to view space as a potential war-fighting medium.

PD-42 was directed exclusively at the civil space sector to guide US efforts over the next decade. However, it was devoid of any long-term space goals, expecting the nation to pursue a balanced evolutionary strategy of space applications, space science, and exploration activities. The absence of a more visionary policy reflected the continuing developmental problems with the shuttle and the resulting commitment of larger than expected resources.

## Reagan Administration Space Policy

President Ronald Reagan's administration published comprehensive space policy statements in 1982 and 1988. The first policy statement, pronounced on 4 July 1982 and embodied in National Security Decision Directive 42 (NSDD-42), reaffirmed the basic tenets of previous (Carter) US Space Policy. It also placed considerable emphasis on the STS as the primary space launch system for both national security and civil government missions. In addition, it introduced the basic goals of promoting and expanding the investment and involvement of the private sector in space. Space-related activities comprise a third element of US space operations, which complemented national security and the civil sectors.

The single statement of national policy from this period that most influenced military space activities and illuminated the transition to a potential space war-fighting framework is NSDD-85, dated 25 March 1983. Within this document, President Reagan stated his long term

objective to eliminate the threat of nuclear armed ballistic missiles through the creation of strategic defensive forces. This NSDD coincided with the establishment of the Strategic Defense Initiative Organization (SDIO) and represented a significant step in the evolution of US space policy. Since 1958, the US had, for a variety of reasons, refrained from crossing an imaginary line from space systems designed to operate as force enhancers to establishing a warfighting capability in space. The antisatellite (ASAT) initiative of the Carter administration was a narrow response to a specific Soviet threat. However, the SDI program represented a significant expansion in the DOD's assigned role in the space arena.

The second comprehensive national space policy incorporated the results of a number of developments that had occurred since 1982, notably the US commitment in 1984 to build a space station and the space shuttle Challenger.

For the first time, the national space program viewed commercial space equal to the traditional national security and civil space sectors. Moreover, the new policy dramatically retreated from its previous dependence on the STS and injected new life into expendable launch vehicle programs. In the national security sector, this program was the first to address space control and force application at length, further developing the transition to warfighting capabilities in space.

In 1988, the last year of the Reagan presidency, Congress passed a law allowing creation of a National Space Council (NSPC), a cabinet-level organization designed to coordinate national policy among the three space sectors. The incoming administration would officially establish and very effectively use the National Space Council.

**Bush Administration Space Policy**

Released in November 1989 as National Security Directive 30 (NSD-30), and updated in a 5 September 1990 supplement, the Bush administration's national space policy retained the goals and emphasis of the final Reagan administration policy. The Bush policy resulted from an NSPC review to clarify, strengthen and streamline space policy, and has been further enhanced by a series of National Space Policy directives (NSPD) on various topics. Areas most affected by the body of Bush policy documentation included:

- US Commercial Space Policy Guidelines
- Provision of a framework for the National Space Launch Strategy
- Landsat Remote Sensing Strategy
- Space exploration initiative
- Concern for the Space-based Global Change Observation, a key component to the nation's overall approach to global stewardship and one of the nation's highest priority science programs

The policy reaffirmed the organization of US space activities into three complementary sectors: civil, national security and commercial. The three sectors coordinate their activities to ensure maximum information exchange and minimum duplication of effort.

The Bush policy proceeds to detail specific policy, implementing guidelines and actions for each of the three space sectors and inter-sector activities. The civil sector will engage in all manners of space-related scientific research, will develop space-related technologies for government and commercial applications, and establish a permanent manned presence in space. NASA is the lead civil space agency.

NASA and the Departments of Defense, Commerce and Transportation work cooperatively with the commercial sector to make government facilities and hardware available on a reimbursable basis.

The US will conduct those activities in space that are necessary to national defense. Such activities contribute to security objectives by: (1) deterring or, if

necessary, defending against enemy attack; (2) assuring that enemy forces cannot prevent our use of space; (3) negating, if necessary, hostile space systems; and (4) enhancing operations of US and allied forces. In order to accomplish these objectives, DOD develops, operates and maintains a robust space force structure capable of satisfying the mission requirements of space support, force enhancement, space control and force application.

Primarily directed at the civil and national security sectors, several policy requirements apply across sector divisions. These include such things as continuing the technology development and operational capabilities of remote-sensing systems, space transportation systems, space-based communications systems and the need to minimize space debris.

**Clinton Administration Space Policy**

A repositioning of priorities in the Clinton Administration was reflected by the decision in August 1993, to merge various White House science and technology councils into one National Science and Technology Council (NSTC), which would do most of the day-to-day work through permanent or ad hoc interagency working groups. The National Space Council was absorbed into the new "NSTC" along with the National Critical Materials Council and the Federal Coordinating Council for Science, Engineering and Technology.

The White House structure for articulating national policy for science and technology was put in place by the Presidential Review Directive (PRD)/NSTC series and the Presidential Decision Directive (PDD)/NSTC series as established by PDD/NSTC 1. Within four months during the summer of 1994, three additional policies were established articulating Clinton's space policy.

*PDD/NSTC 2 - US POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEMS (May 94)*

PDD/NSTC 2 calls for the Department of Commerce and Defense "to integrate their programs into a single, converged, national polar-orbiting operational environmental weather satellite system." This began occurring in 1997. The DMSP satellite program merged with the National Oceanic Atmospheric Administration (NOAA) satellite program in May 1998. The new system formed by the merger of the two programs will be known as the Polar Orbiting Environmental Satellite (POES) System.

*PDD/NSTC 3 - LANDSAT REMOTE SENSING STRATEGY (May 94)*

PDD/NSTC 3 replacing Bush's NSPD 5 assures "the continuity of LANDSAT-type and quality of data," and reduces the "risk of data gap," that is, loss of earth sensing data due to a lack of LANDSAT."

*PDD/NSTC 4 - National Space Transportation Policy (Aug 94)*

PDD/NSTC 4 superseded all previous policies for US space transportation and "establishes national policy, guidelines, and implementation actions for the conduct of national space transportation programs." It also provides allocated space transportation responsibilities among Federal civil and military agencies.

In May 1996, President Clinton set forth his National Space Policy.

## Current National Space Policy

*PDD/NSTC 8 - National Space Policy (May 96)*

In September 1996, the Clinton administration released its National Space Policy which had five goals:

- Knowledge by exploration (1989)
- Maintain national security (1989)
- Enhance competitiveness and capabilities(new)
- Private sector investment (1989)
- Promote international cooperation (1989)

These goals are very similar to those established in 1978 by President Carter and their heritage goes back as far as the 1958 National Aeronautics and Space Act under Eisenhower.

For each major area covered in the 1996 National Space Policy (Civil space, Defense space, Intelligence space, Commercial space and Intersector space), a set of guidelines similar to the ones in the 1989 National Space Policy was established.

<u>Department of Defense Sector Guide-Lines</u>

The most current National Space Policy is largely classified and supersedes the 1989 policy. Unclassified prominent aspects of the new policy dealing with DOD include:

- Renewed direction that the US will maintain its leadership role by supporting a strong, stable and balanced national space program that serves our goals in national security and other areas.
- Renewed direction that the goals of the US space program include:
  - Strengthening and maintaining the national security of the US
  - Promoting international cooperation to further US national security and foreign policies.
- Renewed direction that the US will conduct those space activities necessary for national security.
- Direction that key priorities for national security space activities are to improve our ability to support military operations worldwide, monitor and respond to strategic military threats, and monitor arms control and nonproliferation agreements and activities.
- Direction that the Secretary of Defense and the Director of Central Intelligence shall ensure that defense and intelligence space activities are closely coordinated; that space architectures are integrated to the maximum extent feasible; and will continue to modernize and improve their respective activities to collect against, and respond to, changing threats, environments and adversaries.
- Renewed direction that national security space activities shall contribute to US national security by:
  - Providing support for the US's inherent right of self defense and our defense commitments to allies and friends;
  - Deterring, warning and, if necessary, defending against enemy attack;
  - Assuring that hostile forces cannot prevent our own use of space;
  - Countering, if necessary, space systems and services used for hostile purposes;
  - Enhancing operations of US and allied forces;
  - Ensuring our ability to conduct military and intelligence space-related activities;
  - Satisfying military and intelligence requirements during peace and crisis as well as through all levels of conflict; and;

    - Supporting the activities of national policy makers, the intelligence community, the National Command Authorities, combatant commanders and the military services, other federal officials and continuity of government operations.
- Direction that critical capabilities necessary for executing space missions must be assured.
- Renewed direction that DOD shall maintain the capability to execute the mission areas of space support, force enhancement, space control and force application.
- Renewed direction that DOD, as launch agent for both the defense and intelligence sectors, will maintain the capability to evolve and support those space transportation systems, infrastructure and support activities necessary to meet national security requirements.
- Direction that DOD will be the lead agency for improvement and evolution of the current expendable launch vehicle fleet, including appropriate technology development.
- Direction that DOD will pursue integrated satellite control, continue to enhance the robustness of its satellite control capability and coordinate with other departments and agencies, as appropriate, to foster the integration and interoperability of satellite control for all governmental space activities.
- Renewed direction that, consistent with treaty obligations, the US will develop, operate and maintain space control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries.
- Direction that the US will pursue a ballistic missile defense program to provide for: enhanced theater missile defense capability later this decade; a national missile defense deployment readiness program as a hedge against the emergence of a long-range ballistic missile threat to the US; and an advanced technology program to provide options for improvements to planned and deployed defenses.

In general, this first post-Cold War statement of National Space Policy provides a coherent vision and direction for the conduct of space activities in response to the major changes which have occurred since 1989.

The significance of the policy is the degree to which the Department of Defense has recognized the utility of space in accomplishing national security objectives.

**Department of Defense Space Policy**

On July 9, 1999 the Secretary of Defense released the new revision to the DOD Space Policy, the previous one being dated 1987. This DOD Space Policy incorporates new policies and guidance promulgated since 1987 and includes the new National Space Policy issued by President Clinton in October 1998. It sets the freedom of space as a vital area, establishes definitions of the four mission areas using terms space combat, combat support, service support and space as a medium just like air, sea and land.

Major changes address the transformation of the international security environment; the promulgation of new national security and national military strategies; changes in the resources allocated to national defense; changes in force structure; lessons learned from the operational employment of space forces; the global spread of space systems, technology, and information; advances in military and information technologies; the growth of commercial space activities; enhanced inter-sector cooperation; and increased international cooperation.

In addition, the DOD Space Policy establishes a comprehensive policy framework for the conduct of space and space-related activities. US SPACE

COMMAND is listed as the POC for DOD military space. The DOD policy also calls for integrating space into military operations doctrine.

*The DOD Space Policy is published as DOD Directive 3100.10 and is dated July 9, 1999. Because of its importance, the entire document is included at Appendix D of this SRG.*

**Air Force Space Policy**

The earliest recorded statement of Air Force policy regarding space occurred on 15 January 1948, when Gen Hoyt S. Vandenberg stated: "The USAF, as the service dealing primarily with air weapons especially strategic has logical responsibility for the satellite." As reflected in General Vandenberg's statement, Air Force leaders have traditionally viewed space as an atmosphere in which the Air Force would have principle mission responsibilities. This view was perhaps best articulated by former Air Force Chief of Staff Gen Thomas D. White, when he coined the term *aerospace* during testimony before the House Committee on Science and Astronautics in February 1959:

*"Since there is no dividing line, no natural barrier separating these two areas (air and space), there can be no operational boundary between them. Thus, air and space comprise a single continuous operational field in which the Air Force must continue to function. The area is aerospace."*

As a result of this early positioning, the Air Force assumed the predominate space role within DOD. The Air Force Space Policy evolved as that role expanded. However, the policy was not formally documented until 1988. In late 1987 and early 1988, the Air Force convened the Blue Ribbon Panel on the future of the Air Force in space. A senior-level working group composed of both space and aviation professionals considered whether the service should continue to seek the leadership role for DOD space activities, and if so, how best to proceed.

The panel strongly affirmed the desirability of operating in space to accomplish Air Force missions and achieve wider national security objectives. It also developed a list of recommendations for making most effective use of the space arena in future Air Force operations. On 2 December 1988, the Air Force formally adopted the Blue Ribbon Panel's fundamental assumptions and codified them in a new space policy document. With only a few minor modifications to accommodate organizational change within the service, this document remains the current statement of comprehensive Air Force space policy. The tenets of that policy are:

*Space power will be as decisive in future combat as air power is today*. This long-term vision recognizes the inherent advantages that space operations bring to military endeavors and looks forward to a time when technology, experience and widespread acceptance allow the US to make full use of those advantages.

*The US must be prepared for the evolution of space power from combat support to the full spectrum of military capabilities.* The Air Force believes that space is a military operating arena just as are land, sea and air. Expansion of the space control and force application mission areas is necessary and desirable to take full advantage of space for effective accomplishment of national security objectives.

*The Air Force will make a solid corporate commitment to integrate space throughout the Air Force*. To use space effectively, the Air Force must fully institutionalize space operations. There can be no separation of a "space Air Force" and an "aviation Air Force." Combat power is greatest and most effective when operations in the two mediums are closely integrated. In an effort to accomplish this integration, the Air

Force became devoted to: incorporate space into its doctrine; normalize space responsibilities within the Air Staff; institute personnel cross-flow measures to expand space expertise throughout the service; encourage space-related mission solutions and expertise at all major commands and air component commands; and consolidate space system requirements, advocacy and operations (exclusive of developmental systems) in Air Force Space Command.

The US, DOD, and Air Force all have a policy for the military space mission areas of space control, force application, force enhancement and space support, possessing implementation guidelines for each area. An updated AF Space Policy is expected shortly in light of the new National and DOD Space Policies.

In summary, US national space policy has, for the most part, kept pace with the growth of its US space program and is now one of the most well-documented areas of government policy. It clearly articulates goals that are both challenging and within the realm of possibility.

## SPACE DOCTRINE

Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms,* defines doctrine as "fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application." A shorter and perhaps more workable definition espoused by Professor I. B. Holley, Jr., of Duke University is: "military doctrine is what is officially believed and taught about the best way to conduct military affairs."

Accordingly, military space doctrine articulates what is officially believed and taught about the best way to conduct military space affairs. This section examines joint space doctrine and Air Force space doctrine.

Doctrine drives the strategy that allows you to accomplish the mission. Doctrine provides a knowledge base for making strategy decisions. Without doctrine, military strategists would have to make decisions without points of reference and continually be faced with reinventing the wheel and risk repeating past mistakes. Doctrine and strategy are linked in that doctrine offers an analysis of lessons learned to devise and carry out strategy.

Strategy originates in policy and is an implementation of doctrine. Strategy addresses broad objectives and the plans for achieving them. While doctrine describes how a job should be done to achieve an objective, strategy defines how a job will be accomplished to achieve national political objectives. Thus, strategy, as defined by Webster, is the science or art of military command as applied to overall planning and conduct of large-scale combat operations, designed to support national policy and political objectives.

## NATIONAL SECURITY STRATEGY

National security strategy changes with the world's political and economic environments. What was strategy during the Cold War changed dramatically during the post-Cold War era of the 1990s.

In the post-Cold War era, national security strategy focused initially on "engagement and enlargement" which placed the US at the forefront of driving international relations. This new strategy called for the US to be engaged around the world with the objective of enlarging the family of democratic nations.

In October 1998, the White House issued its *"A National Security Strategy for a New Century."*

This latest strategy states that the nation's challenge and responsibility are to sustain the US's role as the most powerful force for peace, prosperity and the universal values of democracy and freedom. To accomplish that goal, the US must harness the forces of global integration for the benefit of our own people and people around the world. The national security strategy is pursuing a

tional security strategy is pursuing a forward-looking strategy attuned to the realities of the new era (21st century).

The new national security strategy has three core objectives:

- To enhance our security;
- To bolster America's economic prosperity; and
- To promote democracy abroad.

During the last five years, the US has been putting this strategy in place through a network of institutions and arrangements with distinct missions but with a common purpose— to secure and strengthen the gains of democracy and free markets while turning back their enemies. These institutions and arrangements are laying a foundation for security and prosperity in the 21st century.

This new national security strategy encompasses a wide range of initiatives known as the *"imperative of engagement"* – shaping the international environment in appropriate ways to bring about a more peaceful and stable world. These initiatives include expanded military alliances like NATO, its Partnership for Peace program, and its partnerships with Russia and the Ukraine; promoting free trade through the World Trade Organization and the move toward free trade zones in the Americas and elsewhere around the world; strong arms control regimes like the Chemical Weapons Convention and the Comprehensive Nuclear Test Ban Treaty; multinational coalitions combating terrorism, corruption, crime and drug trafficking; and binding international commitments to protect the environment and safeguard human rights.

This strategic approach requires that the US must lead abroad if we are to be secure at home, but we cannot lead abroad unless we are strong at home. Today's complex security environment demands that all of our instruments of national power be effectively integrated to achieve our security objectives.

These global leadership efforts will be guided by President Clinton's strategic priorities:

- To foster regional efforts led by the community of democratic nations to promote peace and prosperity in key regions of the world;
- To increase cooperation in confronting new security threats that defy borders and unilateral solutions;
- To strengthen the military, diplomatic and law enforcement tools necessary to meet these challenges; and
- To create more jobs and opportunities for Americans through a more open and competitive economic system that also benefits others around the world.

This strategy is tempered by the recognition that there are limits to America's involvement in the world. The US must be selective in the use of its capabilities and the choices made in advancing these objectives.

**Quadrennial Defense Review**

The Quadrennial Defense Review (QDR) looks at the National Security Strategy to determine where we were, where we are now, and where we are going. The QDR (1999) takes a fresh look at the world today and beyond to identify threats, risks, and opportunities for the US national security. From this, an overarching *defense strategy* is developed to deal with the world today and tomorrow, identify military capabilities, and the policies and programs needed to support them.

The QDR then focused on the fundamentals of military power today and in the future: quality people, ready forces, and superior organization, doctrine and technology needed to meet national objectives and strategy.

The template for seizing the technologies of the future and ensuring military dominance is *Joint Vision 2010,* the

plan set forth by the Chairman of the JCS for military operations in the future.

The QDR then defined a *shape-respond-prepare strategy* to build on the strategic foundation of the past and our experiences since the end of the Cold War. This strategy determines that the US must be capable of fighting and winning two major theater wars nearly simultaneously.

This requires the continuing need to maintain a continuous overseas presence in order to *shape* the international environment and to be better able to *respond* to a variety of smaller scale contingencies and asymmetric threats. The QDR also placed great emphasis on the need to *prepare now* for the future in which hostile and potentially hostile states will acquire new capabilities.

The QDR then discusses how JV2010 will describe the future of US military forces and the four operational concepts. Finally, the QDR discusses how defense forces are rebalanced to preserve combat capability and readiness.

**National Military Strategy**

The military has an important role in this "imperative of engagement" outlined by the President. The objective – to defend and protect US national interests – requires the US Armed Forces to advance national security by applying military power to help *Shape* the international environment and *Respond* to the full spectrum of crises, while they *Prepare Now* for an uncertain future.

*Elements of Strategy*

Shaping the International Environment. The US Armed Forces help shape the international environment through deterrence, peacetime engagement activities, and active participation and leadership in alliances. By increasing understanding and reducing uncertainty, engagement builds constructive security relationships, helps to promote the development of democratic institutions, and helps keep some countries from becoming adversaries tomorrow.

Responding to the Full Spectrum of Crises. The US military will be called upon to respond to crises across the full range of military operations. Our demonstrated ability to rapidly respond and to decisively resolve crises provides the most effective deterrent and sets the stage for future operations.

Preparing Now for an Uncertain Future. As we move into the next century, it is imperative that the US maintain the military superiority essential to our global leadership.

*Strategic Concepts*

The National Military Strategy describes four strategic concepts that govern the use of our forces to meet the demands of the strategic environment.

- *Strategic Agility* is the timely concentration, employment and sustainment of US military power anywhere, at our own initiative, and at a speed and tempo that our adversaries cannot match. Strategic agility allows us to conduct multiple missions, across the full range of military operations, in geographically separated regions of the world.
- *Overseas presence* is the visible posture of US forces and infrastructure strategically positioned forward, in and near key regions. Forces present overseas promote stability, help prevent conflict, and ensure the protection of US interests. Our overseas presence demonstrates our determination to defend US, allied, and friendly interests while ensuring our ability to rapidly concentrate combat power in the event of a crisis.
- *Power Projection* is the ability to rapidly and effectively deploy and sustain US military power in and from multiple, dispersed locations

until conflict resolution. Power projection provides the flexibility to respond swiftly to crises, with force packages that can be adapted rapidly to the environment in which they must operate, and if necessary, fight their way into a denied theater.

- *Decisive Force* is the commitment of sufficient military power to overwhelm an adversary, establish new military conditions, and achieve a political resolution favorable to US national interests.

## THE JOINT FORCE

### Joint Vision 2010

Joint Vision 2010, published by the Chairman of the JCS, is a conceptual template for how the Armed Forces will work in the future to achieve new levels of effectiveness in joint warfighting. JV2010 embodies the improved intelligence and command and control available in the information age and envisions four operational concepts:

- *Dominant Maneuver* refers to the multidimensional application of information, engagement and mobility capabilities to position and employ widely dispersed joint land, sea, air and space forces to accomplish the mission.
- *Precision Engagement* consists of a system of systems that enables our forces to locate an object or target, provide responsive C2, generate the desired effect, assess the level of success and retain the flexibility to re-engage with precision when required.
- *Full Dimensional Protection* will be control of the battlespace to ensure our forces can maintain freedom of action while providing multi-layered defense for forces and facilities at all levels.
- *Focused Logistics* is the fusion of information, logistics and transportation technologies that provide rapid crisis response, to track and shift assets while enroute, and to deliver tailored logistics packages where needed.

General Henry Shelton, the new Chairman of the JCS, in his Posture Statement before the 106th Congress in February 1999 stated his support for the new National Security Strategy and the "imperative of engagement." He restated the concept of Joint Vision 2010 and said that "to ensure that tomorrow's Joint Force remains the world's best, we are moving forward to "operationalize" Joint Vision 2010, (which is) our conceptual framework for future joint operations.

One of the concepts for future joint operations is to organize the Unified Commands under the Unified Command Plan (UCP). One of his objectives is to establish a Joint Forces Command, a Space and Information Command, and a joint command for homeland defense. The Joint Forces Command is in the UCP for establishment in 1999.

### Joint Vision 2020

The new Joint Vision 2020 has recently been released by the JCS. This vision focuses on full spectrum dominance as the major point for future warfare.

***Joint Vision 2020*** builds upon and extends the conceptual template established by *Joint Vision 2010* to guide the continuing transformation of America's Armed Forces. The primary purpose of those forces has been and will be to fight and win the Nation's wars. The overall goal of the transformation described in this document is the creation of a force that is dominant across the full spectrum of military operations – persuasive in peace, decisive in war, preeminent in any form of conflict.

In 2020, the nation will face a wide range of interests, opportunities, and challenges and will require a military that can both win wars and contribute to peace. The global interests and responsibilities of the United States will en-

dure, and there is no indication that threats to those interests and responsibilities, or to our allies, will disappear. The strategic concepts of decisive force, power projection, overseas presence, and strategic agility will continue to govern our efforts to fulfill those responsibilities and meet the challenges of the future. This document describes the operational concepts necessary to do so.

If our Armed Forces are to be faster, more lethal, and more precise in 2020 than they are today, we must continue to invest in and develop new military capabilities. This vision describes the ongoing transformation to those new capabilities. As first explained in *JV 2010*, and dependent upon realizing the potential of the information revolution, today's capabilities for maneuver, strike, logistics, and protection will become dominant maneuver, precision engagement, focused logistics, and full dimensional protection.

The joint force, because of its flexibility and responsiveness, will remain the key to operational success in the future. The integration of core competencies provided by the individual Services is essential to the joint team, and the employment of the capabilities of the Total Force (active, reserve, guard, and civilian members) increases the options for the commander and complicates the choices of our opponents. To build the most effective force for 2020, we must be fully joint: intellectually, operationally, organizationally, doctrinally, and technically.

The overarching focus of this vision is full spectrum dominance – achieved through the interdependent application of dominant maneuver, precision engagement, focused logistics, and full dimensional protection. Attaining that goal requires the steady infusion of new technology and modernization and replacement of equipment. However, material superiority alone is not sufficient. Of greater importance is the development of doctrine, organizations, training and education, leaders, and people that effectively take advantage of the technology.

The evolution of these elements over the next two decades will be strongly influenced by two factors. First, the continued development and proliferation of information technologies will substantially change the conduct of military operations. These changes in the information environment make information superiority a key enabler of the transformation of the operational capabilities of the joint force and the evolution of joint command and control. Second, the US Armed Forces will continue to rely on a capacity for intellectual and technical innovation. The pace of technological change, especially as it fuels changes in the strategic environment, will place a premium on our ability to foster innovation in our people and organizations across the entire range of joint operations. The overall vision of the capabilities we will require in 2020, as introduced above, rests on our assessment of the strategic context in which our forces will operate.

**USSPACECOM Vision for 2020**

Today, the United States is the preeminent military power in space. USSPACECOM's Vision for 2020, when attained, will ensure that preeminence-providing a solid foundation for securing our future national security in space.

To move towards attaining the USSPACECOM Vision for 2020, we developed four operational concepts from an examination of the Unified Command Plan's assigned missions, the *Joint Vision 2010* operational concepts and the anticipated strategic environment.

Control of Space (CoS) is the ability to ensure uninterrupted access to space for US forces and our allies, freedom of operations within the space medium and an ability to deny others the use of space, if required. The ability to gain and maintain space superiority will become critical to the joint campaign plan. With uninterrupted access to space, the United

States can launch and reconstitute satellite constellations as required without impediment from our adversaries. Just as dominant battlefield awareness (DBA) is critical to the success of land, sea, and air forces, space surveillance will help us achieve DBA of space. As the US military relies more on space, our vulnerability also increases, so we must protect our space assets and be able to deny other nations from gaining an advantage through their space systems.

Global Engagement (GE) is the combination of global surveillance of the Earth, worldwide missile defense, and the potential ability to apply force from space. GE addresses increasing ballistic and cruise missile threats, the need for force application, and the need for effective forward presence with reduced forward basing. By 2020, a second generation system for National Missile Defense is expected to be in place-with many of the weapons and sensors potentially moving into space. Surveillance and strike missions for land, sea, and air will improve using space systems. For example, a force application system based in space could be available for strategic attack, and space-based surveillance may augment systems on land and in the air. At present, the notion of weapons in space is not consistent with US national policy. Planning for the possibility is a purpose of this plan should our civilian leadership decide that the application of force from space is in our national interest.

Full Force Integration (FFI) seamlessly joins space-derived information and space forces with information and forces from the land, sea, and air. Space power will be instrumental in getting the right military capability to the right forces, at the right time. Space forces must integrate with all our fighting forces-from the Joint Task Force's headquarters down to warfighters in the land, sea, and air components. Innovative organizations and operational concepts, tailored flows of information, and trained, dedicated professionals are all keys to FFI.

Global Partnerships (GP) augment the military's space capabilities by leveraging civil, commercial, and international space systems. This operational concept results from the explosive growth of commercial and international space capabilities. The United States can use these systems to bolster-and decrease the cost of-military capabilities; they will also increase battlespace awareness and information connectivity. GP can improve stability, offer mutual advantages to all partners and increase flexibility for the United States. Partnerships make possible shared costs, shared risks, and increased opportunities.

As we move onto the 21st Century, space forces will continue to provide support from space, but will also begin to conduct space operations. The emerging synergy of space superiority-equal to land sea, and air superiority-will enable us to achieve Full Spectrum Dominance.

**Air Force Support of JV 2010**

The Air Force is already developing many of the systems required to support Joint Vision 2010. The new joint strategy for the future is entitled: "Global Engagement." (***Note:*** The Air Force has now updated its "Global Engagement" strategy based on the new JV 2020 - *see next section - "AF Vision 2020"*.)

Core Competencies, as defined by the Chief of Staff of the Air Force in AF Vision 2025, represent the combination of professional knowledge, airpower expertise and technological know-how that, when applied, produces superior military capabilities. Within the Air Force, core competencies provide a bridge between doctrine and the acquisition/programming process. Defining future core competencies provides strategic focus for the vision.

The six core competencies needed to maintain the Air Force of the future are:

- *Air and Space Superiority*. Provides US forces freedom from attack and freedom to attack. The

idea is that if air dominance is achieved, US and allied forces can operate with impunity throughout the battle area, which in turn will lead to quick victory. For this ability to be complete, the Air Force must be able to aggressively counter cruise and ballistic missiles.

- *Global Attack*. The ability of the Air Force to attack rapidly, anywhere on the globe and anytime, is unique. To maintain this ability, the Air force will keep its current level of overseas presence (80,000 troops permanently deployed and 12,000 to 14,000 on temporary duty). It will also increase the use of the air expeditionary force concept, in which the planes and troops deployed are tailored to a specific mission, rather than prepackaged.

- *Rapid Global Mobility.* Air mobility assets are a "combat force multiplier" and essential to the nation's ability to respond quickly and decisively to unexpected challenges. These are critical to all missions, including combat, peacekeeping and humanitarian efforts.
- *Precision Engagement* Apply selective air power against specific targets and achieve discrete and discriminant effects. By the 21st century, it will be possible to find, fix, track and target anything that moves on the surface of the Earth. But the Air force must develop new operations concepts for applying air and space power to a wide range of objectives.
- *Information Superiority.* Provide the strategic perspective and flexibility of air and space to information operations. This means using Air Force assets to provide any joint force with pictures of the entire battle space. To do this, the Air Force must expand its defensive information-warfare capabilities and continue to develop offensive information-warfare abilities.
- *Agile Combat Support.* Improve combat commanders' responsiveness, deployability and sustainability through effective combat-support operations. This will mean relying more on quick response than on pre-deploying inventories of supplies overseas, especially in the case of expeditionary forces whose destinations are less predictable.

**Air Force Vision 2020**

On 21 June 2000, F. Whitten Peters, Secretary of the Air Force, and Gen. Michael E. Ryan, AF Chief of Staff, announced the new Air Force Vision for the 21st century in line with the new Joint Vision 2020.

The new Air Force vision is called **"America's Air Force: Global Vigilance, Reach and Power"** and captures where the Air Force is going as a service and outlines the diverse challenges expected in the 21st century. This new document builds upon and extends ideas in the previous AF 2010 vision and reflects organizational and conceptual improvements since the publication of the last vision. It also supports the principles laid out in the recently released Joint Vision 2020.

According to the SECAF, the new AF Vision for 2020 is short and concise and does not talk about specific weapon systems or details of defense budgets. Instead, it represents our thinking about the aerospace domain and our role in it -- how we'll exploit the full aerospace continuum to meet the nation's needs.

Global Vigilance, Reach and Power are the overarching aerospace capabilities described in this new vision, according to General Ryan. It includes vigilance to anticipate and deter threats, reach to curb crises, and power to prevail in conflicts and win wars.

Key to this new concept is the Expeditionary Aerospace Force (AEF) which will provide both increased capabilities

to meet the nation's security requirements and greater predictability and stability for Air Force personnel.

Air Force Vision 2020 can be found on the web at www.af.mil/vision.

## Doctrine

Doctrine is not a hard set of rules to follow, but rather a guide to exercise judgment in using forces and weapons. Doctrine serves as a starting point for how to attack a problem and then is used as a standard to measure success or failure, which helps to determine how to alter doctrine. Its worth is that it draws upon hard learned lessons of past battles, incorporates new concepts and ideas and presents us with the results to help in decision making. The real key is the accurate analysis and interpretation of history and the experiences it provides. In order to win battles in the future, doctrine must grow and evolve to meet changing needs, experiences, technological changes and other aspects of the future which impact the way we fight.

Doctrine does not stand alone, without impact from outside sources. Several factors can influence doctrine:

- Government and politics, as well as public opinion, play a major role in how forces are employed and how doctrine is used (i.e., Vietnam War).
- Cultural change impacts doctrine.
- New threats can impact doctrine.
- New experiences can impact doctrine.
- Old experiences can be reinterpreted and impact doctrine.
- New technology can impact doctrine.

These factors not only influence doctrine; they sometimes impact on the application of doctrine and strategy in specific situations.

## The Doctrine, Strategy, Policy Triangle

Try to visualize how doctrine, strategy and policy fit together within a national vision. Vision drives strategy and policy. Vision begins at the highest national level as a view of how our nation will impact and be impacted by the world of the future. It drives policy and action decisions which in turn drive the strategic planning for accomplishing that vision.

Policy is a statement of important, high-level direction that guides decisions and actions throughout the Air Force. Policy translates the ideas, goals and principles contained in mission, vision and strategic plans into actionable directives.

Strategy originates in policy and addresses broad objectives and the plans for achieving them. To allow the US to meet the varied challenges of the post-Cold War world, the national security strategy of Engagement and Enlargement was defined, which called for the US to be actively engaged around the world with the objective of enlarging the family of democratic nations. This was replaced by the new national security strategy for the 21st century (Shape, Respond, Prepare Now) discussed earlier.

The new military strategy was developed to support this national vision and strategy. Strategy represents an implementation of doctrine; it is a guide to winning in combat. Doctrine provides a foundation from which to address and assess courses of action.

## Doctrinal Beginnings

Doctrine was originally developed from a set of beliefs about how wars should be conducted. As experiences developed using different strategies and tactics, doctrine changed with it. Experience is one of the major keys that led to statements of doctrine.

General Curtis LeMay, former CINCSAC, said:

"*At the very heart of war lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for utilization of men, equipment, and tactics. It is fundamental to sound judgment*."

Although the US had used two atomic weapons in the war against Japan, doctrine on exactly how to use this new weapon had not been fully developed. The doctrine of massive nuclear retaliation, symbol of the Cold War, had not been "tested", so doctrine in this regard was a *belief* about how nuclear weapons should be used.

Following World War II, the Cold War provided the US with its initial foray into international politics as the leader of the Free World. The "Truman Doctrine" was dictated by the threat from the communist World and focused on surviving as a nation while containing and, if necessary, defeating communism worldwide. This fostered National Military Strategy, a straightforward policy designed to preserve the US and its allies. The strategy was simple: prevent and deter an attack against the US and, if necessary, defeat an adversary using the strongest military power on earth. This particular policy served the US well for 50 years. The doctrine during this period was also straightforward: massive nuclear retaliation, if necessary, against an adversary committed to doing the same.

At the height of the cold war, space systems came into existence, allowing the US and the Soviet Union to collect intelligence data on each other from the realm of space. Space systems were initially developed to support the Cold War nuclear deterrence strategy. National space policy was developed as part of National Security Strategy with basically the same aims of self-preservation, assured warning of enemy attack and monitoring of nuclear arms treaties. Space systems proliferated to include communications, navigation, warning and reconnaissance.

In the 1980s, space became incorporated into doctrine and strategy. Many military thinkers knew that space was at a similar stage to the first use of airpower and that doctrine must be developed rapidly in order to take advantage of this new dimension of warfare.

General O'Malley, USAF Operations and Planning during that time, stated:

"*I believe the use of space by military forces is at a point paralleling the positions of air power after WW I…we must apply the same considerations to space systems as we do for other operations…and we must be prepared to protect our vital interests in space as well as those in land, sea, and air."*

National space policy added a new dimension to national military strategy. For the first time, space became a standard tool in the hands of military strategist; however, one in which no one had any experience in applying its capabilities.

Many schools of thought therefore arose on how to apply space systems to military doctrine and strategy. At Air University, students formed study groups on the use of space systems and various schools of thought emerged on the value of space systems and how they could be utilized. These various schools of thought provided an intellectual framework in the 1980s as a way to study the new space doctrine. It was meant to take a hard look at the beliefs that had been formulated initially, using air doctrine as a guide.

The four basic schools of thought that emerged were:

- *Sanctuary*. Viewed space systems as being able to provide information to the nation from the relative safety of space.
- *Survivability*. Determined space systems were not inherently safe and survivable and thus provided only limited safety. This view as-

sumed that if an adversary attacked our space systems, that we should retaliate in kind.

- *Control*. Felt that space provided extensive control over terrestrial operations, by providing a view that no other systems could provide and that space systems could be used to control both space and earth wars.
- *High Ground.* Believed that future wars would be won or lost in space because space systems could overcome any advantages that ground offensive systems possessed.

The end of the Cold War brought enormous changes to national security strategy and national military strategy, as noted earlier. Under the national security strategy at that time outlined by the President as "Engagement and Enlargement," the US would maintain a strong defense capability, promote cooperative security measures, work to open foreign markets, spur economic growth and promote democracy abroad.

Air Force leadership responded by focusing on how to support the nation in this new environment. The result was the Air Force's strategic architecture for the 1990s entitled: "Global Reach - Global Power." This strategy identified what Air Force organization and modernization priorities would be and provided the template for restructuring the Air Force in terms of sustaining readiness concurrent with force downsizing and new missions, including humanitarian ones.

While Global Reach - Global Power was the Air Force strategy for identifying the capabilities that provided security for the nation in the early 1990s and supported the national security strategy, a further vision was needed which planned for well into the future. This began with Joint Vision 2010, the JCS Chairman's vision for joint warfighting in the 21st century. The Air Force then developed its AF Vision 2025 to support the JV 2010 concepts. (The Army, Navy, and Marine Corps have developed similar concepts to support JV 2010.)

The Gulf War not only saw the first integrated use of air and space systems, but for the first time, the warfighter recognized the contribution of space systems. Gen Thomas Moorman, former commander of AF Space Command, said that the Gulf War was the "first space war." Space systems helped the warfighter maintain air supremacy, attack strategic and tactical targets, keep up with enemy positions and movements and guide our forces across the trackless desert.

The doctrine of how we fight and integrate with other services and for the first time, other allies, some of whom had never before been in our coalition, brought forth some new doctrinal concepts during the war. The result is that Air Force and Joint Doctrine has been forever changed by the Gulf War and must be redeveloped for future conflicts. We are on the ground floor of this change.

AFDD-1, *Basic Aerospace Doctrine for the USAF*, is a starting point to learn about doctrine and lists the basic tenets for air and space power.

Along with the evolution of doctrine comes the evolution of manuals and regulations. In addition to AFDD-1, the AF has published AFDD 2-2, *Space Operations*, which provides guidance for the use of space systems.

The mission of the Air Force has always been control of the air or air superiority. The newest mission statement now shows that air and space are indivisible:

*"The mission of the Air Force is to defend the US through the control and exploitation of air and space."*

Space must be controlled the same way that air is controlled to ensure freedom of action throughout the entire airspace realm. These new concepts are incorporated into AFDD-1.

## Joint Space Doctrine

The integration of air and space power, not only for Air Forces, but for joint/allied forces in the Gulf War, led to the beginning of Joint Space Doctrine and thinking on how to employ these new support assets.

Recent experiences in operations like JUST CAUSE, DESERT SHIELD/ DESERT STORM in Iraq and ALLIED FORCE in Kosovo have demonstrated the need for *joint* space doctrine. Developing joint space doctrine has now taken on a high priority. Space offers several roles in supporting joint operations:

- First, space is more than global in its environment. It is an "area" in which military power can be projected through terrestrial forces.
- Second, these capabilities result from technological advances which improve global command, control and communications.
- Third, we need the ability to monitor and respond to events worldwide. Space forces provide a continuous global presence in that regard.
- Fourth, the contribution of space forces to joint operations depends on people; both space and terrestrial warfighters.
- Lastly, space forces can decrease the fog of war to provide the warfighter with a clearer picture of the battle space. Information superiority mentioned earlier as part of Joint Vision 2010 does just that.

Space is the fourth operating medium, a region where, according to General Estes, former USCINCSPACE, unique capabilities offer a tremendous force multiplier and potential for independent force applications. Joint space doctrine can provide both the principles and a common framework for comprehending and integrating space capabilities.

Joint space doctrine will allow joint commanders and their planners to understand space as an aggregate of capabilities rather than as a single asset. Joint Publication 3-14 defines the use of space systems in joint operations but is still in final draft and coordination.

Space operations offers continuous global support, 24 hours a day. Space components can function across the full spectrum of conflict, from peace to war and can be quickly retasked to specific joint operations. Commanders can select those capabilities which best support their missions.

In developing joint space doctrine, planners must understand the capabilities of US Space Command to support their operations. *(See Chapter 18 for a full discussion of US Space organizations, their missions, and their capabilities.)*

You are already familiar with many of the systems under Space Force Enhancement as they serve you directly (i.e., communications, navigation, weather, etc.). The other areas provide important benefits for the warfighter also. For example, space control ensures that our satellite systems are protected from enemy attack and that we can negate any attempt to destroy our systems.

The joint operations planner must be aware of these capabilities and limitations. As another example, space forces may furnish the warfighter with missile warning information. However, the terrestrial commander must have the proper equipment to receive it, integrate it with other data from other assets and use it in theater missile defense operations. Joint operation planning for the use of space assets is at an infant stage. Additionally, there are several issues which impact on how space assets may be used, primarily from the political realm.

Several integrated wargames have been (and continue to be) conducted to focus on developing joint doctrine for space operations. The following two issues are the major themes that dominated the wargames under the important area of space control:

- Political constraints pervade the conduct of counterspace operations.

- Protecting space assets is a difficult problem.

The wargames determined that national command authorities have been directly involved in a great many decisions in space control and operations that terrestrial commanders often have control over in ground battle situations. Protection of space assets and negation of enemy assets are prime considerations which give high-level decision makers concern over escalating wartime operations. Coupled with this issue is the general fact that most political leaders have a lack of knowledge and experience with space systems and capabilities involved.

The second major issue is that of protecting our space assets. Often when space systems fail, it cannot be readily determined if it was a design failure, a cosmic event or a deliberate attack by a terrestrial enemy. Again political leaders are often unwilling to make any decision which may escalate the situation nor are they willing to attack an adversary's space assets as a starting point.

The wargames also showed that a determined adversary could develop very damaging offensive capabilities against satellite systems in less time than we could develop effective defenses.

These issues have a definite impact on development of joint and service doctrine on the use of space systems and must be taken into consideration.

**Air Force Space Doctrine**

The Air Force did not have a space doctrine until October 1982, when it published Air Force Manual (AFM) 1-6, *Military Space Doctrine.* AFM 1-6 clearly reflected the changing emphasis on the military use of space: it recognized the inherent benefits to be gained by any nation choosing to exploit the military advantages of space and chartered the Air Force "to provide forces for controlling space operations and gaining and maintaining space superiority." The manual also sought to establish the Air Force as the premier service with regard to space. It stated:

The Air Force was responsible for developing space forces, operational concepts, and employment tactics for the unified and specified commands (this was three years before the establishment of a separate unified command for space, US Space Command), for the management of space operations including launch, command and control, and on-orbit sustainment of military space assets for the DOD, NASA, and other government agencies and branches, and for promoting advanced technologies in order to develop the space force structure of the future.

AFM 1-6 never gained the wide acceptance necessary to institutionalize space doctrine, primarily because it failed to incorporate the historical experience gained in other military environments which might be relevant to space. The resultant doctrine was highly constrained by the policy of the time, rather than a clear articulation of "the best way to conduct military affairs" in space. The manual was rescinded in September 1990, in conjunction with a complete update of the hierarchy and content of all Air Force doctrine. However, it was successful in increasing the awareness of space operations and the potential of space throughout the Air Force during the eight years of its existence.

Current Air Force practice is to fully incorporate space into a single basic doctrinal manual for both air and space, AF Doctrine Document 1, *Basic Aerospace Doctrine of the United States Air Force,* and to promote detailed space doctrine through AFDD 2-2, *Space Operations.* The purpose is to recognize space forces as an immature but ultimately equal partner with air forces in the efficient employment of aerospace power. Together, these two manuals articulate space doctrine at the strategic and operational levels of war. (AFDD 1 and AFDD 2-2 were published in *August 1998*.)

Air Force space doctrine rests on four fundamental premises:

- *The focus of armed conflict will remain on the earth's surface for the foreseeable future*. Although the capabilities of space forces to influence the terrestrial battlefield are growing and actual conflict will probably occur in space someday, the terrestrial-based governments or other entities that command these forces are the ultimate focus of the conflict. Military force is used (in space or elsewhere) to cause these governments or entities to alter their policies and actions.
- *Space doctrine must be minimally constrained by current policy*. Instead, it articulates what is believed to be long-lasting principles about the best way to conduct military affairs. The doctrine and policy are used together to derive the military strategies and rules of engagement employed during combat.
- *Space doctrine must anticipate the future*. This is true of all military doctrine but is particularly necessary for space for at least three reasons. First, US military experience in space is very limited, and there is little choice but to anticipate future operations. Second, the rate of space technology development is extremely rapid, and publishing doctrine strictly for today's systems and operational concepts would quickly leave an obsolete doctrine. Third, one of the fundamental purposes of doctrine is to guide the development of future forces. If the US fails to anticipate the future, the risk will be fielding the same unimproved space systems indefinitely.
- *The principles of war: mass, objective, surprise, maneuver, the offensive, simplicity, unity of command, economy of force, and security apply fully and completely to space operations*. During this progression into space, no reasons have been found to question these principles, nor have any further principles been discovered.

The Air Force space doctrine builds on these premises along with the characteristics of space forces and the space environment. The general mission areas are; space control, force application, force enhancement and space support to develop operational-level employment principles for those forces. It also recognizes and articulates both the similarities and the differences between air and space forces. As the Air Force moves towards the concept of integrated aerospace power, a clear grasp of the differences between the two becomes more important. Some of the employment principles for space forces are similar to those for air forces, but others are quite different. Among the employment principles for space forces are:

- *Gain and maintain control of space*. With control of space, friendly space forces, acting either as a force enhancer or force applier, can help put enemy forces on the defensive, disrupt operations and even cause enemy forces to suffer significant losses. Control of space enhances and, in the future, may even secure freedom of action for friendly forces in all geographical environments and preserve for them the advantage of tactical surprise.
- *Centralize control, decentralize execution.* Space forces must be organized to achieve the concentration, direction and focus required to achieve decisive results. This is best accomplished through a single commander for space forces with responsibility and authority to prosecute the space campaign. Opportunities for decentralized mission execution are somewhat limited today but, in the future, will more fully allow

subordinate commanders to draw on their own ingenuity and initiative to accomplish campaign objectives.

- *Attack the enemy's centers of gravity*. A military center of gravity is a characteristic, capability, or locality from which a force derives its freedom of action, physical strength, or will to fight. For the present, space forces assist terrestrial forces who attack traditional centers of gravity in the future, space forces will have more direct space control and force application combat roles.
- *Seize the initiative*. Initiative allows commanders to dictate the timing and tempo of operations and exploit the capabilities of space forces to the maximum extent possible. By controlling timing and tempo, the space forces commander can dominate the action, remain unpredictable, create uncertainty in the enemy commander's mind, and operate beyond the enemy's ability to react effectively.
- *Maintain sufficient reserves*. Space forces commanders, in particular, should consider carefully what level of reserve capability is appropriate. They must consider ongoing and continuous space operations, as well as unanticipated future requirements. Moreover, forces held in reserve can have a dramatic effect when committed at times and places such that they produce significant changes in the space or terrestrial battle.

Space doctrine is concerned with the preparation and employment of space forces. Proper training and equipping of forces is a subject of both AFDD 1 and AFDD 2-2. AFDD 2-2 provides space doctrine down to the level of the space campaign, giving guidance for each of the space mission areas, in turn, from the perspective of the operational space forces commander. The overall effect of the two manuals together is to describe in some detail how the Air Force can use space systems and the space environment effectively to perform or support all of its missions and tasks.

Air Force doctrine is currently being revised to include space, because there are operational gaps in existing doctrine concerning space employment. Additionally, the vision for the future sees new and emerging missions for which we must rely on space systems to sustain us. Lessons learned from recent crises and new technologies all contribute to the development of Air Force space doctrine and the integration of that doctrine into the joint process.

We have already seen that the Air Force of the future will depend on six Core Competencies that will enable us to fulfill the mission and how those Core Competencies fit into the Chairman's Joint Vision. The Core Competencies will meld with the basic aerospace tenets (found in AFDD 1) to form future vision and doctrine. It is therefore important that you understand doctrine and these future concepts.

General Howard Estes, former USCINCSPACE, stated:

*"We are the world's most successful space-faring nation. We are also the world's most space-dependent nation, thereby making us vulnerable to hostile groups or powers seeking to disrupt our access to, and use of space. In purely military terms, the national dependence on space based systems equates to a vulnerability. History shows that vulnerabilities are eventually exploited by adversaries, so the US must be prepared to defend those systems."*

The responsibilities of the Air Force in space include a large and growing number of functions that contribute to the defense of the United States. Space operations are important elements of a credible deterrent to armed conflict. They have proven their value in helping to resolve conflicts on terms acceptable

to the United States by providing various kinds of information and support to military forces and national decision makers. In the future, space systems will provide the decisive edge in countering threats to US national interests.

The Air Force regards military operations in space as being among its prime national security responsibilities and conducts these operations according to the letter and spirit of existing treaties and international law. In response to national direction, the Air Force ensures freedom of access to space for peaceful pursuits and uses space systems to perform unique, economical, and effective functions to enhance the nation's land, sea and air forces. As the Air Force space program has matured over a period of nearly four decades, Air Force policy and doctrine have reflected ever increasing roles and responsibilities and have particularly expanded their emphasis on space as a warfighting medium wherein the full spectrum of military conflict may, and eventually will, take place.

## Table 5-1

## International Treaties[1], Agreements and Conventions that Limit Military Activities in Space

| *Agreement* | *Principle/Constraint* |
|---|---|
| United Nations Charter (1947) | Made applicable to space by the Outer Space Treaty of 1967.<br><br>Prohibits states from threatening to use, or actually using, force against the territorial integrity or political independence of another state (Article 2(4)).<br><br>Recognizes a state's inherent right to act in individual or collective self-defense when attacked. Customary international law recognizes a broader right to self-defense, one that does not require a state to wait until it is actually attacked before responding. This right to act preemptively is known as the right of anticipatory self-defense (Article 51). |
| Limited Test Ban Treaty (1963) | Bans nuclear weapons tests in the atmosphere, in outer space, and underwater.<br><br>States may not conduct nuclear weapon tests or other nuclear explosions (i.e., peaceful nuclear explosions) in outer space or assist or encourage others to conduct such tests or explosions Article I ). |
| Outer Space Treaty (l967) | Outer space, including the Moon and other celestial bodies, is free for use by all states (Article I).<br><br>Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, use, occupation, or other means (Article II).<br><br>Space activities shall be conducted in accordance with international law, including the UN Charter (Article III).<br><br>The Moon and other celestial bodies are to be used exclusively for peaceful purposes (Article IV).<br><br>Nuclear weapons and other weapons of mass destruction (such as chemical and biological weapons) may not be placed in orbit, installed on celestial bodies, or stationed in space in any other manner (Article IV).<br><br>A state may not conduct military maneuvers, establish military bases, fortifications or installations: or test any type of weapon on celestial bodies. Use of military personnel for scientific research or other peaceful purpose is permitted (Article IV). |

**Table 5-1 – (Continued)**

| *Agreement* | *Principle/Constraint* |
|---|---|
| Outer Space Treaty (l967) | States are responsible for governmental and private space activities, and must supervise and regulate private activities (Article VI). |
| | States are internationally liable for damage to another state (and its citizens) caused by its space objects (including privately owned ones) (Article VII). |
| | States retain jurisdiction and control over space objects while they are in space or on celestial bodies (Article VIII). |
| | States must conduct international consultations before proceeding with activities that would cause potentially harmful interference with activities of other parties (Article IX). |
| | States must carry out their use and exploration of space in such a way as to avoid harmful contamination of outer space, the Moon, and other celestial bodies, as well as to avoid the introduction of extraterrestrial matter that could adversely affect the environment of the Earth (Article IX). |
| | Stations, installations, equipment, and space vehicles on the Moon and other celestial bodies are open to inspection by other countries on a basis of reciprocity (Article XII). |
| Agreement on the Rescue and Return of Astronauts and Objects launched into Outer Space (1968) | |
| | Expands on the language of Article V of the Outer Space Treaty which declares astronauts are to be regarded as "Envoys of Mankind" and be rendered "all possible assistance." |
| | It calls for a state in which a spacecraft crashes or a state operating in space that is in a position to assist astronauts in distress to conduct rescue operations (if it is a manned craft) and to speedily return astronauts to the launching state. Hardware need only be returned to the launching state upon request, and need not be returned promptly. |
| Antiballistic Missile (ABM) Treaty between the US and USSR (1972) | |
| | Prohibits development, testing, or deployment of space-based ABM systems or components (Article V). |
| | Prohibits deployment of ABM systems or components except as authorized in the treaty (Article I). |
| | Prohibits interference with the national technical means a party uses to verify compliance with the treaty (Article XII). |

**Table 5-1 – (Continued)**

| *Agreement* | *Principle/Constraint* |
|---|---|
| Liability Convention (1972) | A launching state is absolutely liable for damage by its space object to people or property on the Earth or in its atmosphere (Article II).<br>Liability for damage caused elsewhere than on Earth to another state's space object, or to persons or property on board such a space object, is determined by fault (Article III). |
| Convention on Registration (1974) | Requires a party to maintain a registry of objects it launches into Earth orbit or beyond (Article II).<br><br>Information of each registered object must be furnished to the UN as soon as practical, including basic orbital parameters and general function of the object (Article IV). |
| Environmental Modification Convention (1980) | Prohibits military or other hostile use of environmental modification techniques as a means of destruction, damage, or injury to any other state if such use has widespread, long-lasting, or severe effects (Article I). |

***Notes:***

**[1] Text and information on these treaties and agreements can be found at** www.un.org. **See the section on International Law , Treaties at** http://untreaty.un.org/English/treaty.asp**. Another great reference is the Archimedes Space Law and Policy Library at** http://www.permanent.com/archimedes/LawLibrary.html.

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