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## MILITARY SPACE DOCTRINE

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### ABSTRACT

General Thomas D. White, Chief of Staff of the Air Force, introduced the term, "aerospace," during Congressional testimony in the late 1950s. He did this to anchor future Air Force functions, roles, missions, and tasks in this operational medium. We must continue this thrust--an Air Force dedicated to a future in space.

Our scientific, technological, and economic communities have established the industrial base for this Nation to proceed with the conduct of space operations. Now our basic doctrine and strategy and our operational concepts, doctrine, and strategy must advance to provide the direction, scope, and vision necessary for future space programs and operations.

Purposeful action must be taken to build a space-operations capability. We must build the conceptual foundation for space missions by understanding the opportunity for military space operations. We must develop an extended plan and strategy--with the priorities--to establish our space functions and responsibilities. We must establish the Institution to organize, develop, train, equip, and sustain our space forces. And we must set up a unified organization for deployment and employment of space resources.

Then we must act to bring our concepts to reality. All these efforts are required to preserve the security, freedom, and welfare of the United States.

### INTRODUCTION

The development of space operations is a natural outgrowth of the development of airpower. Space operations now offer the potential to revolutionize military capabilities similarly to the way airpower changed our capabilities in the first half of the

twentieth century. Through imaginative leadership, time, and effort; operational maturity in space operations will be achieved. A first step toward that operational maturity is the establishment of basic doctrine which articulates the principles and beliefs to guide our military space operations.

### HISTORY

General White introduced the term Aerospace during Congressional testimony in the late 1950s. He did this to anchor future Air Force functions, roles, missions, and tasks in this operational medium.(1) We must continue this thrust--an Air Force dedicated to a future in space.

Our scientific, technological, and economic communities have established the industrial base for this nation to proceed with the conduct of space operations. At least as important is the fact that the capabilities and experiments of potential adversaries have made such operations essential for our national security. We must use the entire potential of the aerospace to ensure our freedom of action and national security.

The Air Force is confronted with three major space issues--one conceptual, another chronological (a matter of timing and priorities), and the third organizational. All three of these issues must be accommodated within the framework of national objectives.

### APPROACH(2)

First, the Air Force must build the conceptual foundation and develop an understanding of the requirements and potential missions for military space operations. We must determine what is required to assure national security--and take action to meet the needs.

Next, the Air Force must develop priorities for our space functions. The priority of the space mission bespeaks both funding and utility--that is, support for warfighting and deterrence capabilities. We must recognize that we are bound by fiscal limits and yet must be alert to existing and innovative threats. We must strive for technological breakthroughs and design our systems with flexibility, readiness, and security in mind--that is, with a warfighting potential.

And third, the Air Force must establish the responsibility for organizing, training, equipping, and sustaining this space force. Concurrently, the Services, Joint Chiefs of Staff, and the Secretary of Defense must decide what type of operational command would be responsible for space operations--the organization for command and control and the procedures for deployment, alerting, and employment of space systems and forces.

#### RATIONALE

Airpower had a dramatic and profound effect on military capabilities during the first three quarters of this century.(3) Space related operations are now a growing and indispensable part of this capability and represent a revolutionary potential. The development of the space mission will require imaginative--bold and visionary, yet mature--leadership, patience, time, effort, and investment.(4)

The way will be difficult. Civilizations and even modern futurists have difficulty projecting, understanding, or adapting to new concepts, technology, and weapon systems. Casual observation suggests this. History highlights it. History also suggests an evolution of weapon systems within a weapons family or operational medium. In many cases, new systems introduced for scouting, surveillance, reconnaissance, signaling, or communications uses evolved quickly into firepower weapon systems.(5)

Military space operations with associated functions, roles, missions, and tasks will be formed by examining objectives, concepts, strategy, threats, and potential capabilities for space systems. During this continuing review our national security needs must be viewed with concern for legal, moral, and economic constraints. Military space operations should be developed to take advantage of both manned and unmanned space systems.

The fundamental building block for developing mili-

tary space operations is doctrine. Doctrine provides the bridge from the past through the present to the future. It is based on our understanding of history, a projection of needs in the future, and the operational environment for the instruments of national power. These instruments--the political, economic, psychosocial, scientific-technical, and military--must all contribute to our implementation strategy and be reflected in sound national policy if our approach to military space operations is to contribute to a comprehensive space program.

#### NATIONAL POLICY

Military space operations are based on The National Aeronautics and Space Act; DoD Directive 5160.32, Development of Space Systems; International Law; and Presidential Directives. This policy guides both the civil and military sectors in attaining our space program objectives. In general our space policy directs that national resources be aimed at advancing national interests through the exploration and use of space; that close coordination, cooperation, and information exchange is maintained among all departments and agencies conducting space research, development, and operations; and that this nation cooperates with other nations to maintain the freedom of space.

The National Aeronautics and Space Act (Public Law 85-868, 42 USC 2451) is the legal basis for our military and civilian space activities. The Act defines civilian and military responsibilities and established coordination procedures. It established the National Aeronautics and Space Administration to direct aeronautics and space research and development. The Act further states that the military is responsible for our defense against attacks from space.(6)

The DoD Directive, Development of Space Systems, gave the Air Force the responsibility for developing, producing, and operating space systems associated with surveillance and warning. This Air Force responsibility included launch and orbital support of military space systems. The directive highlights the Department of Defense's responsibility to insure the security of the United States and other areas vital to our national interests. This directive was modified by a Secretary of Defense memo of February 1971. The memo permitted assignment of program management responsibilities of space systems on a case-by-case basis to Services other than the Air Force, however, Air Force coordination on all military space programs is required.(7)

International Law affecting our military space operations consists of rulings by the World Court, United Nations resolutions, and treaties and agreements signed and ratified by the United States. Significant provisions that influence our initiatives include:

- Nuclear weapons will not be tested in space.
- Weapons of mass destruction will not be placed in orbit.
- The space medium and celestial bodies are free for exploration and use by all nations. Systems placed on celestial bodies for exploration and scientific knowledge are national property.
- Outer space and celestial bodies are not subject to national appropriation.
- Bases, installations, and fortifications; testing of weapons; and conducting military maneuvers are prohibited on celestial bodies.
- Astronauts in distress will be rendered all possible assistance.
- The United Nations will be informed of the nature, purpose, locations, and results of national space activities.

Presidential and executive directives on space operations provide a summary of national policy. The general guidance listed below is paraphrased from a Presidential press release on space activities and operations. It includes statements articulating the National Intention: (8)

- To pursue space activities that increase scientific knowledge, develop useful commercial and government applications of space technology.
- To ensure continued leadership in space technology.
- To sustain a commitment to the freedom of the space medium. This implies all nations can explore space and use it for peaceful purposes and the benefit of mankind. However, this does not preclude prudent attention to matters of national defense and security.
- To sustain a commitment to the exploration and use of space to support our national well-being.
- To reject claims to sovereignty over space or celestial bodies. We also reject limitations on the basic right to acquire data from space.
- To sustain the position that space systems of any nation are national property with the right of passage through and operations in space. Any deliberate interference with space systems shall be viewed as a violation of sovereign rights.
- To sustain a commitment to continue activities in space that supports our right of self-defense, strengthens our national security, enhances the deterrence of attack, and enables verification of arms control agreements.
- To continue international cooperative space ac-

tivities that benefit our scientific-technical, political, economic, psychosocial, and military interests.

- To continue development and operation of active and passive remote sensing systems that conduct global operations supporting national objectives.
- To maintain existing responsibility and management relationships within the space community. Close coordination and information exchange will be maintained among space program management sectors to avoid duplication and encourage cross-utilization of all capabilities.
- To develop civil space programs to amplify and augment our scientific knowledge about the earth and the universe. This will include encouraging commercial development of space capabilities for our economic benefit and to increase our technological position. However, commercial earth-oriented remote sensing satellites will fall under government authorization, supervision, or regulation.
- To provide data from our civil space programs to increase the welfare of all human beings and nations of the world.
- To develop Space Transportation System to provide service to authorized foreign and domestic users. NASA and DoD will cooperate and jointly manage and determine mission priority for system operations.
- To develop security-related space programs that provide functions such as command and control, communications, navigation, environmental monitoring, warning and surveillance, and space defense.
- To develop a program to identify and integrate appropriate civil and commercial resources into military operations when directed by the National Command Authorities during national emergencies declared by the President.
- To improve the survivability of space systems.
- To seek verifiable, comprehensive limits on anti-satellite capability and use. However, in the absence of such an agreement, we will vigorously pursue development of our own anti-satellite capability.

#### DEPARTMENT OF DEFENSE RESPONSIBILITY

Based on the parameters of International Law (including the laws of Armed Conflict), the United States Code, Regulations, and National Policy; the Department of Defense is our agency that conducts and is accountable for military operations to ensure our national security. The Services provide forces to Unified and Specified Commands to:

- Deter attacks against the United States and areas important to the security of the United States; or resolve conflict on acceptable terms.

- Monitor compliance with treaties to which the United States is a party.
- Insure our freedom of action in space.
- Study and develop plans and technology for manned and unmanned military space-related systems.
- Enhance the effectiveness and efficiency of land, sea, and aerospace forces through space operations.
- Assume control of all civilian space resources, including NASA, during periods of national crisis, increased readiness, theater conflict, or war. Such action will be based on the direction of the National Command Authorities.
- Develop the potential to defend our space assets and to conduct operations that will deter attacks against United States space assets.

agreements, potential areas of conflict between nation-states are expanded.

Concurrently there is an increased dependence on space systems for the conduct of terrestrial war. This in turn could require the development of capabilities to defend our space systems that detect, identify, neutralize, and verify neutralization of offensive, defensive, and support space systems during hostilities. Space defense capabilities could be essential to ensure the continuing operation of critical civil and military space systems during all levels of conflict.

### MILITARY INTERESTS

Aerospace operations are conducted in the total expanse beyond the earth's surface, the three-dimensional operating environment of the Air Force. The application of technology in space offers certain advantages in carrying out tasks that are essential to our national security. The use of space is of critical importance to the military sectors of the United States.

Increasingly our national security will depend on the capability to operate in space. The economy, effectiveness, flexibility, and efficiency available from space-based systems in supporting or providing environmental surveillance, communications, navigation, command and control, indications and warning, and reconnaissance is essential for military operations now and in the future. Hence, a nation's space capability may significantly influence the outcome of terrestrial combat. However, this involvement in space creates a degree of dependency that makes our space resources--in the aerospace and on the earth--an important target.

The unique advantages offered by space operations will lead to expanded involvement in space-related activities. A casual examination of the history of the instruments of warfare suggests that initial exploration of an area or an operational medium leads to recognition of advantages and development of resources accessible only through that medium. As the value of use of the medium and its inherent advantages increases, pre-existing tensions are extended into that medium, and new ones--unique to the medium--arise. A dependence develops and this in turn leads to a requirement for protection of investment and other potential capabilities. And in the absence of mutually beneficial international

### MILITARY MISSIONS (9)

Military space missions are derived from national security and military interests in space. At this time there are three general categories of military space missions; force enhancement, space defense, and space support.

The force enhancement mission includes operations that greatly improve the responsiveness and readiness of land, sea, and aerospace forces of the United States. Certain space systems are oriented primarily toward this enhancement mission. Force enhancement operations provide flexible and rapid global communications, electronics support for administrative, command and control, intelligence, and indications and warning functions. Force enhancement systems enable efficient and effective information collection, processing, and dissemination.

The space defense mission includes operations that alert and defend the United States against attacks from or through space, as well as defend our assets and interests in space. Space defense provides the physical security for space assets. This physical security includes protective measures for the satellite launching, control, and support systems and facilities. Space defense includes design-criteria that will enable satellites to maneuver to avoid potential threats. Space defense includes the system for informing appropriate agencies of actions, events, and phenomena that threaten our space operations.

The space support mission includes operations and activities that are critical to the success of active space operations. These activities are essential to create and maintain an operational space capability and have a direct bearing on the effectiveness and efficiency of space operations.



Future space missions will be derived from a growth in our concepts of space operations. Initially this growth will be reflected in an expansion of support operations with on-orbit resources. This growth will include capabilities that extend existing plans and concepts for space shuttles, stations, orbital transfer vehicles, energy generators, manufacturing processes, and military space systems.

## THE CHALLENGE(12)

Operational doctrine for deployment and employment throughout the aerospace is in the future. This doctrine will be based on our observation, inference, generalization, and abstraction from courses of action, simulation, and events. Today, the best we can do is to undertake a projection of concepts that will scope and push our future operations.

As we develop this body of data--and this experience--we can extrapolate from related aerospace experience to formulate tentative operational doctrine, procedures, and tactics. Thinking and discussions concerning space operations are vital as dialogue provides the background for concepts that focus and shape decisions and actions on our investment strategy for space.

Decisions, actions, and investment based on our views of today will determine our status and fix the nature of our national welfare and the extent of our influence in the future. This means we must examine our responsibility to the future when considering the scope and character of our aerospace objectives, programs, and weapon systems.

The future is not clear. We must ensure the interaction of our political, economic, and military leadership with that of the scientific-technical and research and development communities to achieve a dialogue that will push space objectives and developments. To make the future clear and promising we must evaluate:

## AIR FORCE POLICY

Within the Department of Defense, the Air Force is responsible for aerospace operations.(10) This implies two other responsibilities. First, we are responsible for coordination and integration of military space operations with NASA operations.(11) And second, we are responsible to lead in the development of requisite technology to support present and future military space operations. In this leadership capacity the Air Force provides support and expertise for space activities to the civil sector and other military departments.

The implementation of Air Force long term objectives requires a systematic approach. This approach--including concepts, strategy, planning, programming, and the formulation of doctrine for space operations--provides direction to and a continuity of efforts.. This implementation also requires an organization to provide the command decisions, leadership and management necessary to develop, deploy, and employ space operations. The employment of operational space capabilities will adhere to the proven principles of aerospace power: centralized control; decentralized execution; and coordinated effort, cooperation, and common doctrine. The organization will follow the concept established in JCS Pub 2, Unified Action Armed Forces.

-- The administrative command will have the responsibility to organize, train, program for, equip, and sustain military space operations.

-- The operational command will have the characteristics of both a unified and a specified command. That is, the operational command must be responsive to national, strategic, tactical, theater, and joint Service needs. Additionally, the roles and missions of each Service are enhanced by the capabilities and characteristics of military space operations. This in turn requires that all operational commands and their components have access to space resources.

-- The soundness of our intellectual framework and our objectives and concepts.

-- The successes and failures of intermediate and support programs. This requires an understanding that progress is made sequentially and that decisions and actions must be timely.

-- Our ability to deal with ambiguity, opposition, and ambivalence.

-- The decisions to fund and sustain programs through experimental phases. This requires the ability to articulate decisions for funding in the face of opposition and the courage to look past the crisis of today to insure our future.

-- The relevance and ability to implement our world view and our perspective of the future. We must determine the critical questions and approach each question with a range of solutions. These solutions must be effective and efficient. They will be bounded by our intellectual, technical, political, psychosocial, and economic resources.

## CONCLUSION

In summary, the Air Force will continue to develop concepts and plans and to program for forces required for the activities that comprise the military space mission areas. We must remain aware of the growing potential of space operations and their implications for warfighting. Air Force actions will enable expanded space operations, reduce the opportunity for technological surprise, and improve the effectiveness and efficiency of forces defending our national security. Concurrently we must understand that we are able to adapt only slowly -- even with the push of necessity -- to new environments, technological advances, and operational mediums.

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