



Test engineers prepare the Lonestar Tactical Space Support Vehicle for employment at the Leidos Dynetics facility clean room in Huntsville, Alabama. Launched 1 July 2022, the Army's Lonestar satellite was designed to provide space-based situational awareness directly into the hands of the tactical warfighter. (Photo by Gary Gee, courtesy of Leidos Dynetics)

Army Space Policy

Past, Present, and Future

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Since launching America's first satellite in 1958, the U.S. Army has played a pivotal role in the Nation's space operations. This involvement necessitated the development of an Army space policy the following year. The policy provided purpose and guidance for the Army's nascent space operations and space-based systems with the goal of optimizing its

effectiveness in land warfare. As the use of the space domain evolves, so too must this policy. In this context, examining the past, present, and future of the Army space policy not only reflects the critical role the Army has played in space operations but also reveals the importance of continually updating and improving the Army space policy. An effective space policy articulates

purpose and goals, is adaptable to change, and provides direction for strategic decisions.

Given the central role of the Army space policy in shaping its space operations, it is helpful to understand the broader role of how policy helps guide actions. Defining policy can be challenging, as there is no universally agreed-upon definition. However, a loose consensus exists that suits a meaningful discussion: a policy is a statement in any form, given by the government or an organization with authority, declaring its intentions to address a problem. Issued as a law, regulation, ruling, or decision depending on the level at which it is codified, the policy may also include instances where the governing body deliberately refrains from action.¹ Policies often represent overarching goals, guiding principles, or specific actions to achieve objectives, with

definitions sometimes tailored for specific purposes by some person or agency with the appropriate authority.²

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Past Policy

1940s and 1950s.

The origins of the Army space policy date back to 1945, the end of World War II. By this time, the Army had accumulated battle-tested experience in aerial intelligence, signals intelligence, global communication ground stations, air defense early warning, and rocket propulsion development.³ The Army's Signal Corps worked for decades to develop mobile communication devices and signal intelligence capabilities. Concurrently, Army ordnance worked on long-range rockets and liquid and

solid propellants. Then, in 1945, three initiatives converged that set the path for Army missile and signal capabilities: the Army's prior research under ordnance; California Institute of Technology, which was the contract vehicle for the partnership with the Jet Propulsion Laboratory; and Project Paperclip's employment of German rocket experts, including Wernher von Braun.⁴

The Army Air Forces commander, Gen. Henry "Hap" Arnold, sought to ensure the U.S. military was well-equipped with the most advanced weapons and technologies for the next war.⁵ In addition to missile and signal advancements, another technological concept discussed was an intelligence-gathering system that could "circle the earth" and prevent another scenario like Pearl Harbor.⁶ To this end, Arnold recommended to the secretary of war the establishment of Project RAND, an independent consultant group tasked with conducting operations research, researching prospective weapon developments, and providing advice on emerging technologies, including an intelligence earth-circling capability.⁷

Arnold appointed Maj. Gen. Curtis LeMay as the first deputy chief of air staff for research and development to oversee Project RAND. In 1945–46, the Army Air Force competed with the Navy for prospective congressional research funds for "earth-circling" systems. When the Army and Air Force split in 1947, Arnold and LeMay had well-established strongholds on the reasoning for space research funds to go to the Air Force. Then, "in January 1948, General Vandenberg, Vice Chief of Staff of the US Air Force, signed a Statement of Policy for a Satellite Vehicle."⁸ This policy announced that the Air Force was "the Service dealing primarily with air weapons—especially strategic—has logical responsibility for the Satellite."⁹

During the split, the Army received the primary responsibility of land operations and air defense and either ignored or did not receive Vandenberg's memo.¹⁰ Braun and his team believed space and missiles were intrinsically linked. In 1954, Braun and Frederick Durant III, president of the International Astronautical Federation, met at the Office of Naval Research to discuss "developing a satellite program using already existing rocket components."¹¹ After multiple meetings, Braun submitted a secret report to the Army titled *A Minimum Satellite Vehicle: Based on Components*

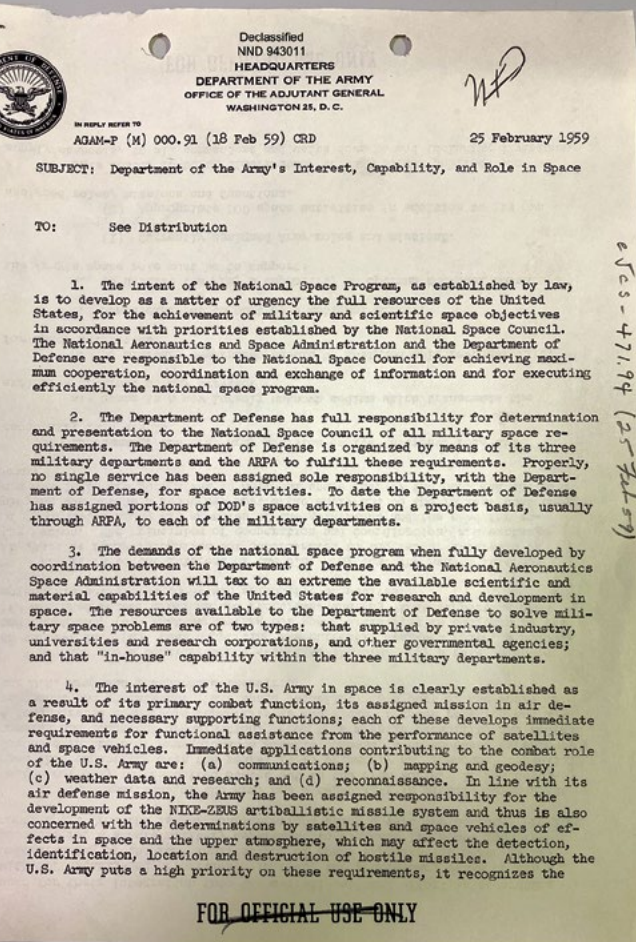
Available from *Missile Developments of the Army Ordnance Corps*.¹² The Army agreed to this joint venture, contingent on the program not detracting from its assigned air defense mission and subsequent missile development program. Over the next few years, some of the worst interservice infighting occurred among the military services, as each raced to develop the first satellite and launch capabilities.

On 31 January 1958, the U.S. Army launched the first satellite, Explorer I, and with it followed the first Army space policy.¹³ Despite being first in space, the Army was concerned it would lose its pertinence. One year after launching Explorer 1, the Army published its space policy, "Department of the Army's Interest, Capability, and Role in Space," on 25 February 1959.¹⁴ Here, the Army stated its position on space: "Space is a new largely unknown medium which transcends the exclusive interest of any service ... No military department should be assigned sole responsibility for space activities."¹⁵ The Army would (albeit a little too late) reiterate this position in hearings with the Senate and the House of Representatives as Congress grappled with the best way to dole out space responsibilities and funds.

The Army's new policy was very clear on what it perceived as its interest and role in space activities:

The interest of the U.S. Army in space is clearly established as a result of its primary function, its assigned mission in air defense, and necessary supporting functions; each of these develops immediate requirements for functional assistance from the performance of satellites and space vehicles. [...] [T]he U.S. Army's role in space [is] threefold: (a) that supporting its currently assigned roles, missions, and functions, (b) that supporting DoD space activities in addition to its own assigned roles, missions and functions, and (c) that supporting NASA scientific activities to attain scientific objectives.¹⁶

The intense interservice fighting and political shifts surrounding space initiatives continued. Despite the Army repeatedly stressing the importance of space-based



"Department of the Army's Interest, Capability, and Role in Space," published in 1959. To read the complete memorandum, see the appendix.

capabilities in support of land combat and air defense, it ultimately had to relinquish most of its fledgling space programs.

In 1959 and 1961, Secretary of Defense Robert McNamara reshuffled space responsibilities. Responsibilities were split between the newly created National Aeronautics and Space Administration (NASA), Advanced Research Projects Agency, and the Air Force, leaving the Army with very little. This loss left the Army without a clear and centralized focus for its space initiatives. Without focus, there was no perceived overarching need for a comprehensive policy to guide its remaining efforts. The absence of such a policy left the Army without a defined purpose or clear framework for its remaining space initiatives. This led to disjointed efforts and a common belief that the Army had little to no role in space for several decades.

1960s and 1970s. During the 1960s and 1970s, the U.S. Army played a crucial but largely unacknowledged role in the Nation's space efforts. While NASA held the public's attention with its journey to the moon, the Army's contributions to space activities included satellite communications systems, ground terminals, imagery payloads, space surveillance, ballistic missiles, and ballistic missile defense systems, geodesy and mapping (Army Mapping Agency), and space infra-

contributions. In addition to Advent, some of its efforts included work on programs such as Corona, Argon, Mudflap, and the Hexagon mapping camera.¹⁸ Most of the Army's space-related work was classified during this time, which prevented dialog between agencies or recognition outside specific projects.

Despite the Army's contributions, it consistently faced challenges when collaborating with other organizations, sometimes even within the same organization,

“ In September 1969, the task group released *The Post-Apollo Space Program: Directions for the Future* report to Nixon. NASA was encouraged to pursue 'robotic and human space programs.' ”

structure building (Corps of Engineers at Johnson and Kennedy Space Centers). Unfortunately, most of this went unnoticed by the American population and other governmental agencies.

In 1961, when McNamara directed the Army to transfer most of its space-related programs to either the Air Force or NASA and its Jet Propulsion Laboratory, the Army managed to retain a few programs. The remaining programs under Army control included the Advent communication satellite system, the Pershing missile system, and the Nike-Zeus anti-ballistic missile system, including the Zeus acquisition radar. These programs would be a cornerstone for the Army to rebuild its internal space interest, knowledge, and expertise. Select personnel in the Army embraced the 1961 Department of Defense (DOD) Directive 5160.32, *Reconnaissance, Mapping and Geodetic Programs*, as it slowly and disjointedly reconstructed a space portfolio. The directive stated, “Each military department and Department of Defense agency is authorized to conduct preliminary research to develop new ways of using space technology to perform its assigned function.”¹⁷ This directive only allowed for preliminary research on how space-based effects could benefit land warfare. Once the program was past the initial stages, the Army had to turn it over to the Air Force.

Throughout the 1960s, the Army was recognized primarily as a user of space-based capabilities but rarely for its research and capability development

such as the National Reconnaissance Office (NRO). The NRO was responsible for several mapping projects, and the Army contributed to several of these initiatives. Yet, in 1966, when the Army requested to join the NRO's Manned Orbiting Laboratory space initiative, it was initially denied.¹⁹

The NRO, mainly comprised of Air Force and Central Intelligence Agency personnel, flatly told the Army everything it was requesting to be a part of was “in the area of NRO responsibility.”²⁰ The Army obtained clearance for the NRO's Manned Orbiting Laboratory team to learn about their work on high-resolution satellite photography systems, which was a separate NRO program. After learning about the Army's work, the NRO requested an Army officer join its test operations division or mission planning division.²¹ Decades would pass before these and other contributions saw the light of day, long after projects were declassified.

Shortly after assuming office in 1969, President Richard Nixon established the Space Task Group to recommend “post-Apollo space goals and programs” for the military and NASA.²² Less than a year later, in September 1969, the task group released *The Post-Apollo Space Program: Directions for the Future* report to Nixon. NASA was encouraged to pursue “robotic and human space programs.”²³ The military did not receive the same encouragement. The report stated that the “DoD will embark on new military space programs

only when they can clearly show that particular mission functions can be achieved in a more cost-effective way than by using more conventional methods.”²⁴ This same year, DOD Directive 5160.32 was modified to add the following:

Military Department proposals for space development programs will require specific OSD [Office of the Secretary of Defense] approval based on DCP and DSARC pol-

1980s. The 1980s brought U.S. space initiatives back to the forefront: NASA launched the first space shuttle in April 1981, and President Ronald Reagan delivered a robust national space policy (National Security Decision Directive 42) on 4 July 1982. In this new national policy, Reagan stated,

The United States will conduct those activities in space that are necessary to national defense. The military space program shall

“ Gen. John Wickham, chief of staff of the Army, would say, ‘Space assets and related technologies provide unique means to accomplish critical tasks in support of AirLand Battle Doctrine.’ ”

icies. DCPs for space communications, navigation, unique surveillance (i.e., ocean or battlefield), meteorology, defense/offense, mapping, charting, geodesy, and major technology programs will designate the Military Department or DOD agency responsible for the execution of the program.²⁵

The Defense Systems Acquisition Review Council would use the development concept papers (DCP) as a guide to approve the initiation of new programs. The DCP outlined a program’s characteristics, objectives, plans, and performance targets.²⁶ This recommendation and new directive fueled select Army personnel to embark on new space initiatives. In small, isolated, and disconnected groups, the Army conducted (mainly classified) research into unique battlefield surveillance, communication, navigation, mapping, and geodesy satellites.

Unfortunately, the Army continued not to have any unifying space policy. The Vietnam War had consumed most of the Army’s resources and attention. Even without a formal policy, the Army’s modest and predominantly classified contributions to space-based capabilities continued to be significant. As the United States transitioned into the 1980s, the Army’s disjointed approach to space-related projects limited its potential and resulted in missed opportunities. This would soon change in the coming years, but at the end of the 1970s, the Army’s involvement with space-based initiatives was limited, disconnected, and mostly concealed.

support such functions as command and control, communications, navigation, environmental monitoring, warning, tactical intelligence, targeting, ocean and battlefield surveillance, and force application (including an aggressive research and development program which supports these functions). In addition, military space programs shall contribute to the satisfaction of national intelligence requirements.²⁷

One month later, the Army published its new AirLand Battle doctrine.

AirLand Battle placed a greater emphasis on collaboration between land and air forces. In a few years, Gen. John Wickham, chief of staff of the Army, would say, “Space assets and related technologies provide unique means to accomplish critical tasks in support of AirLand Battle Doctrine.”²⁸ However, in 1983, the Army still needed to figure out its purpose in space. This began with the creation of the Army Space General Officer Working Group. The working group’s goal was to provide guidance for Army space-related initiatives and detail the land-based problems that space-based assets could help solve.

The Army Space General Officer Working Group met regularly, but after a year, there was no forward movement. By 1984, the “Army was the only service which had not established a strong central staff organization to manage its space activities.”²⁹ The Army’s space

initiatives were still as disjointed and fractured as they were through the 1960s and 1970s. Additionally, “Army participation in joint space matters was [still] halting and poorly coordinated.”³⁰ By 1985, action was needed. To help push action, the Army deputy chief of staff for planning launched the Army Space Initiative Study (ASIS) that May. The ASIS would become a significant milestone for the Army, determining its role in space.

The ASIS was tasked to compile an inventory of all Army “space activities” and to “develop a blueprint for future Army involvement and investment in space through the first quarter of the 21st century.”³¹ At the onset, the ASIS realized the Army lacked a definition for “space activities.”³² A definition was required because “the Army was dealing with space systems and did not realize it.”³³ With that, the group defined space activities as the “research, procurement or operation of any system that directly interfaces with or relies upon a space-based segment.”³⁴

ASIS’s report included several notable findings and insights. The study found that, as of the preceding year, “the Army is executing nearly \$1,820 million and has 5,235 people involved in space activities.”³⁵ ASIS found personnel conducting space activities in four categories: “staff planning; research and development; evaluation and training; and operations.”³⁶ The amount of space-related work the Army was doing was more extensive than any singular department or person realized.

Concurrently, the Army Space General Officer Working Group published an Army space policy on 4 June 1985. Some key elements of this policy included the following: (1) the Army will “exploit space activities that contribute to the successful execution of Army missions,” (2) the Army must build a “pool of experts” and take the initiative to participate in national and joint programs that would contribute to fulfilling Army requirements, and (3) doctrine must capitalize on developing space capabilities.³⁷

The following December, ASIS unveiled its conclusions along with the Army Master Space Plan. The plan utilized the new Army space policy as its guidelines. The plan opened with, “perceptions that space is the sole domain of the Air Force and NASA are changing,” and “the Army is by no means a newcomer to space activities.”³⁸ The Army once again had a unifying policy, a purpose, and was back in the space game.

1990s. The 1990s brought what reporters and historians would call the “first space war.” Operation Desert Storm showcased the unprecedented integration of space-based navigation technology in a major land campaign. Global Positioning System (GPS) allowed allied forces to move across the featureless terrain of the desert, while early warning satellites offered crucial minutes for defensive measures. “The satellite communications network established during Desert Shield reflected considerable system flexibility and cooperation among the military, civil, and commercial space sectors.”³⁹ This conflict revealed the Army’s purpose with space-based capabilities, highlighting its crucial role in the joint utilization of these capabilities for land warfare.

Although the Army had been a member of the GPS joint development planning team since 1973, it wasn’t until Operation Desert Storm that most soldiers and Army civilians had the opportunity to understand how space contributed to AirLand combat operations, as stated in the 1985 Army space policy.⁴⁰ This policy emphasized the need for the Army to “exploit space activities that contribute to the successful execution of Army missions.” Desert Storm solidified the vital role of space-based technologies in modern land warfare and underscored the importance of continued innovation, adaptation, and relevancy by the U.S. Army. With a new understanding of the possibilities, the Army would publish an updated space policy.

The Army also realized it needed to redefine where space activities took place. In 1985 the ASIS group determined that the Army regarded space differently than the Air Force and Navy. To the Army, “Space operations are a logical extension of the battlefield.”⁴¹ The Army had seen this during Desert Storm. On the other hand, the Air Force and Navy took the stance that space activities took place where the space system was located—above the Karman line. The updated 1994 *Army Space Policy* addressed this. “The Army will consider space to include those regions from, through, or in which space or space-surrogate systems operate.”⁴² In the coming years, the rest of the DOD would come to use “from, through, or in” or a similar variation to encompass where space activities took place.⁴³

The 1994 *Army Space Policy* was only one paragraph long, but it contained language that would set the trajectory for Army space initiatives and personnel for the next twenty-five years. It maintained the 1985 language

about exploiting space activities that “contribute to the successful execution of Army missions,” growing the Army space expertise, and embedding space applications in doctrine and training.⁴⁴ It also included the following:

Employment of space products that meet land warfighter requirements will provide a force multiplier essential to our power projection force. Information technology which enables success on the battlefield relies heavily on space solutions. Beyond affecting future space systems design and developmental initiatives, the Army, in joint and combined operations, will organize and train Army forces using space capabilities and products to make them more responsive, flexible, interoperable, survivable, and sustainable.⁴⁵

This language in the 1994 *Army Space Policy* was highly reminiscent of Gen. Lyman Lemnitzer’s summation of the 1959 policy given to the House of Representatives Committee on Science and Astronautics in February 1960:

The Army’s role and interests in space are initially directed toward the application of space to modern terrestrial warfare and, more specifically, to its application in the accomplishment of the Army’s principal assigned missions in this environment. These principal missions are threefold: (1) to provide and support forces for land combat; (2) to provide and support forces for air and missile defense; and (3) to provide a number of related services, not only for the Army, but in support of the other armed services as well.⁴⁶

The difference was now, in 1994, others were finally beginning to see what the Army had seen thirty-five years prior. What happens in space is inextricably connected to what is happening on the ground, in the air, and on the seas.

Present Policies

2000s. Through the 1980s and 1990s, the Army space policy was broad and nonprescriptive. The primary and shared purpose of each of the previous policies was to assert that the Army would utilize space activities that contributed to mission accomplishment and the systems that enabled it. That changed in the

2003 *Army Space Policy*. The policy became prescriptive, leaving little ambiguity and calling out the specific capabilities the Army would advocate for and pursue. The last time the Army space policy called on types of capabilities was in 1959.

In 1959, with three U.S. Army satellites in orbit, the capabilities called out were as follows: communications, mapping and geodesy, weather data and research, and reconnaissance, “all in line with the Army’s air defense mission.”⁴⁷ The air defense mission included the responsibility for antiballistic missiles and a means to detect and track “hostile missiles.”⁴⁸ These capabilities were explicitly connected to the purpose, and the policy identified the problem that these capabilities intended to solve. In contrast, the 2003 *Space Policy* language was too prolix, obscuring any intended purpose and making it difficult to understand:

Responsive, dynamic space-based intelligence, surveillance, and reconnaissance sensors networked with land, sea, air, and soldier sensors; Seamlessly integrated, dynamic bandwidth, satellite communications (SATCOM) on the move; Responsive, tactically relevant Space Control capabilities synchronized and integrated with Land, Sea, Air and Information Operations; Assured, accurate, real-time missile warning and tracking distributed direct to affected forces and battle command systems; Precise, redundant, jam-resistant: position, velocity, navigation, and timing services; Advanced sensors for timely, tailorable weather, terrain, and environment.⁴⁹

This language was not only prescriptive but also crossed over into requirements. Returning to the agreed-upon definition of policy, “Policies often represent overarching goals, guiding principles, or specific actions to achieve objectives, with definitions sometimes tailored for specific purposes.”⁵⁰ The question becomes, what is this policy’s goal, principle, objective, or purpose? Three possibilities exist embedded in this policy:

The Army must promote a federated and distributed information network of sensors and communication devices among Commercial, Military, and National Space-Based Capabilities as part of the Global Information Grid. A seamless space-to-soldier continuum



1st Space Brigade's Chief Warrant Officer 2 Robert Wyman, Cpl. Terrence Shatswell, and Staff Sgt. Robert Harris rehearse crew drills 24 April 2023 in preparation for a 75th Ranger Regiment raid during the U.S. Army Special Operations Command's Capabilities Exercise held 23–27 April 2023 at Fort Liberty, North Carolina. (Photo courtesy of the U.S. Army Space and Missile Defense Command)

of sensors, networks, and information is the signature characteristic of well-integrated Space and Land Force and Joint Operations; Achievement of these space capabilities will dramatically change how Army and Joint forces collect, exploit, and distribute information; In the 21st Century we must fully exploit the high ground of Space to empower adaptive leaders and soldiers with the ability to see first, understand first, act first, and finish decisively.⁵¹

Of these possible choices for a “goal, principle, objective, or purpose,” none explain why the policy requires listing out narrowly defined capabilities.

The objective in 1959 was to use space to support currently assigned roles and missions. The objective shifted in 1985 toward exploiting space activities that contributed to the Army mission. Similarly, the 1995 policy aimed to “enhance operational support to war-fighters and contribute to the successful execution of Army missions.”⁵² These previous policies were clear.

These previous policies provided a clear purpose for unifying efforts toward exploiting space capabilities to support the Army mission, aiming to improve land warfighting abilities. However, the 2003 *Space Policy* failed to provide the same clear and unifying purpose as its predecessors. Rather than explicitly stating the policy goal, the language was rambling and lacked focus. The absence of clear and concise policy guidance would begin to hinder the Army’s potential, repeating the same past mistake.

Six years later, the Army published a new Army space policy. This time, instead of releasing a stand-alone policy, the policy would be published as a chapter in the 2009 Army Regulation (AR) 900-1, *Department of the Army Space Policy*. This construct provided a concise method for delivering the policy and the framework for executing the policy. While the goal and objectives were easy to identify, their meaning and focus remained unclear. The goal was “enable the land force to conduct the full range of military operations now and in the future.”⁵³ There were four objectives, with the

first one returning to its previous simplicity. “Maximize the effectiveness of current space capabilities in support of operational and tactical land warfighting needs.”⁵⁴ In the coming years, the policy’s lack of clarity and focus would hinder Congress and the DOD’s understanding of the Army’s role in space.

Unfortunately, the 2009 policy also maintained the prescriptive nature of the 2003 policy. Inside the policy, there were initially four “broad space-related objectives.”⁵⁵ Within that list was a sublist with ten capabilities listed as what the Army would “pursue and advocate.” Then there was another additional sublist labeled “To achieve the Army’s space responsibilities, the Army will ...” This second sublist detailed eight paths to achieving the responsibility of “actively participating in defining space-related capability needs that ensure the necessary force structure and systems are developed and acquired to enable the land force to conduct the full range of military operations now and in the future.”⁵⁶

There is a place for connecting systems and implementation methods. However, by including too many detailed capabilities and implementation methods within the same chapter as the policy, the Army failed to articulate the purpose of its space program clearly. A better approach would have been to separate the various sections into distinct chapters, allowing for a clearer understanding of the problem the policy intended to solve. As it stood, a soldier not connected to space operations would have struggled to understand the policy’s purpose beyond the vague statements of “enabling the land force to conduct military operations” and “participating in defining space-related capabilities.” This lack of clarity ultimately limited the policy’s effectiveness in guiding the Army’s space program.

2010s. Space technological advancements and commercial participation increased drastically during the 2010s. At the beginning of the decade, fewer than a thousand satellites were in orbit. By 2020, that number would increase to over three thousand, with companies able to launch over a hundred at a time. The Army’s structure for the employment and support of space capabilities also grew, and an updated AR 900-1, *Army Space Policy*, was published in 2017.

Like its predecessors, the 2017 *Army Space Policy* is overly verbose and lacks clarity and conciseness. For a person outside of the space community, it is difficult to understand the main points. Moreover, the policy

contains nebulous statements that are open to interpretation. Additionally, the purpose, the reason for Army to have space, changes from the previous policies. The overarching purpose for the Army to have space responsibilities in the 2017 *Army Space Policy* is to “integrate space capabilities across the force, provide needed space capabilities and support, and develop capabilities needed to provide space effects in support of Army requirements.”⁵⁷

This subtle shift from supporting the Army mission to addressing Army requirements is small but significant. It detracts from the primary objective of using space capabilities to support the overall mission and instead focuses on meeting specific requirements. This change results in a less cohesive and effective space policy, ultimately hampering the Army’s ability to leverage space capabilities in support of its missions.

At a time when space-based requirements, systems, and programs are moving from the Army to the U.S. Space Force, it is prudent to focus on what is more important. As the Army evolves, its requirements for space-based capabilities will change. However, the fundamental reason the Army needs space will remain the same as it was sixty-four years ago.

Future Policy

In 1988, “the Army Space Agency became Army Space (ARSPACE) and in August 1992, ARSPACE became a subordinate command of the U.S. Army Space and Strategic Defense Command, a predecessor of the U.S. Army Space and Missile Defense Command.”⁵⁸ In 1997, the Army then established its Space and Missile Defense Command with the mission to provide the Army perspective in planning for DOD space support to land forces and strategic defense operations. No policy in the twenty-first century directly states that part of the purpose, goal, or objective of the Army space policy is to support the Army’s mission with strategic defense operations, such as missile defense. These ideas could be inferred, and those who work in the Army space community might know what it means. However, a good policy should not require someone to assume the intent, and folklore does not turn something into policy.

The Army needs a space policy that speaks to the purpose of space for the Army, provides an objective, and allows us flexibility to grow as the space

environment changes. Every soldier should know why the Army employs space-based capabilities and effects in the same way that every soldier knows why we use tanks. The Army space policy should clearly articulate why we exploit space-based capabilities to support land warfare and the Army's space role in multidomain operations. This support ranges from Assured-Positioning, Navigation, and Timing used by a brigade combat team, to global missile defense, and precision targeting in a multidomain formation. These are elements any soldier could articulate. Any soldier would understand how these space-based effects better enable land warfare.

In the 1950s, many skeptics outside the Air Force posed a legitimate question: What was a military service defined by ground warfare doing with a space program?⁵⁹ This question has reverberated throughout the decades and is once again at the forefront of discussions with the establishment of the Space Force. As we witness the dawn of the next era in space exploration, new space-based capabilities, and how our Nation conducts warfare, it is imperative that the Army learns from the past and concentrates on its core competencies to ensure a cohesive and efficient Army space policy that capitalizes on the unique strengths of its service. ■

Notes

1. Thomas A. Birkland defines policy as "a statement by government of what it intends to do, such as a law, regulation, ruling, decision, order, or a combination of these. The lack of such statements may also be an implicit statement of a policy not to do something." Thomas A. Birkland, *An Introduction to the Policy Process: Theories, Concepts, and Models of Public Policy Making*, 5th ed. (New York: Routledge, 2020), 6, 249. He further defines the policy codification levels on pages 249–50. The top four levels of policy and where each is codified are as follows: (1) constitutional (federal or state constitution), (2) statutory (U.S. Code, Statutes at Large), (3) regulatory (Federal Register, Code of Federal Regulation), and (4) formal record of standard operating procedure (operating procedures, operating manuals). The U.S. Army and its internal policies fall under this fourth level of policy.

2. Richard Wilson, "Policy Analysis as Policy Advice," in *The Oxford Handbook of Public Policy*, ed. Michael Moran, Martin Rein, and Robert E. Goodwin (New York: Oxford University Press, 2008), 153.

3. Eddie Mitchell, *Apogee, Perigee, and Recovery: Chronology of Army Exploitation of Space* (Santa Monica, CA: RAND Corporation, 1991), 53.

4. *Ibid.*, 44.

5. H. H. Arnold, *Third Report of the Commanding General of the Army Air Forces to the Secretary of War, November 12, 1945* (Washington, DC: U.S. Government Printing Office [GPO], 1945), 68.

6. R. Cargill Hall, "Essay: 'Origins of U.S. Space Policy: Eisenhower, Open Skies, and Freedom of Space,'" in *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program Volume I: Organizing for Exploration*, ed. John M. Logsdon et al. (Washington, DC: NASA History Office, 1995), 213; Delbert R. Terrill Jr., *The Air Force Role in Developing International Outer Space Law* (Maxwell Air Force Base, AL: Air University Press), ix.

7. Terrill, *The Air Force Role*.

8. Dwayne Day, "Invitation to Struggle: The History of Civilian-Military Relations in Space," in *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program*

Volume II, ed. John M. Logsdon et al. (Washington, DC: NASA History Office, 1996), 236.

9. *Ibid.*

10. Mitchell, *Apogee, Perigee, and Recovery*, 39; Day, "Invitation to Struggle," 238. The Army had no responsibility to acknowledge or act upon the policy memo put forth by the vice chief of staff of the Air Force. These actions did, however, lay the foundation for the Army creating its unique service conception of how space should operate.

11. Day, "Invitation to Struggle."

12. *Ibid.*

13. *Investigation of Governmental Organization for Space Activities: Hearings Before the Subcomm. on Governmental Organization for Space Activities of the Comm. on Aeronautical and Space Sciences*, 86th Cong., 1st sess. (14 April 1959), 227–45.

14. Office of the Adjutant General, Headquarters, Department of the Army, Department of the Army's Interest, Capability, and Role in Space, 25 February 1959 (Department of the Army's Interest, Capability, and Role in Space); box 34, "471.94 (1959)"; General Twining, 1957–1960 (Twining, 1957–1960); Records of the U.S. Joint Chiefs of Staff, Chairman's File, Record Group 218 (RG 218); National Archives at College Park, College Park, MD (NACP). This reference was provided by Logsdon et al., *Exploring the Unknown*, 2:255–56.

15. *Ibid.*

16. *Ibid.*

17. Department of Defense (DOD) Directive 5160.32, *Development of Space Systems* (Washington, DC: U.S. DOD, 6 March 1961), https://www.nro.gov/Portals/65/documents/foia/declass/WS117L_Records/215.PDF.

18. Kevin C. Ruffner, ed., *Corona: America's First Satellite Program* (Washington, DC: Center for the Study of Intelligence, 1995); Guy F. Welch, "Hexagon (KH-9) Mapping Camera Program and Evolution" (presentation, Chantilly, VA, December 1982); Sharon Watkins Lang, "With Project MUDFLAP, NIKE-ZEUS Demonstrates ASAT Capability" (unpublished white paper, June 2022).

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Appendix. "Department of the Army's Interest, Capability, and Role in Space"



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25 February 1959

SUBJECT: Department of the Army's Interest, Capability, and Role in Space

TO: See Distribution

1. The intent of the National Space Program, as established by law, is to develop as a matter of urgency the full resources of the United States, for the achievement of military and scientific space objectives in accordance with priorities established by the National Space Council. The National Aeronautics and Space Administration and the Department of Defense are responsible to the National Space Council for achieving maximum cooperation, coordination and exchange of information and for executing efficiently the national space program.

2. The Department of Defense has full responsibility for determination and presentation to the National Space Council of all military space requirements. The Department of Defense is organized by means of its three military departments and the ARPA to fulfill these requirements. Properly, no single service has been assigned sole responsibility, with the Department of Defense, for space activities. To date the Department of Defense has assigned portions of DOD's space activities on a project basis, usually through ARPA, to each of the military departments.

3. The demands of the national space program when fully developed by coordination between the Department of Defense and the National Aeronautics Space Administration will tax to an extreme the available scientific and material capabilities of the United States for research and development in space. The resources available to the Department of Defense to solve military space problems are of two types: that supplied by private industry, universities and research corporations, and other governmental agencies; and that "in-house" capability within the three military departments.

4. The interest of the U.S. Army in space is clearly established as a result of its primary combat function, its assigned mission in air defense, and necessary supporting functions; each of these develops immediate requirements for functional assistance from the performance of satellites and space vehicles. Immediate applications contributing to the combat role of the U.S. Army are: (a) communications; (b) mapping and geodesy; (c) weather data and research; and (d) reconnaissance. In line with its air defense mission, the Army has been assigned responsibility for the development of the NIKE-ZEUS antiballistic missile system and thus is also concerned with the determinations by satellites and space vehicles of effects in space and the upper atmosphere, which may affect the detection, identification, location and destruction of hostile missiles. Although the U.S. Army puts a high priority on these requirements, it recognizes the

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need for their integration into the overall national effort in accordance with DOD established priorities. In fact, the preliminary stage of man's understanding of the full implications of space exploitation makes it impossible for a single military department to evaluate its space requirements apart from the larger considerations which govern the national program.

5. The Department of the Army has a capability in missile development unique not only in the United States but in the Free World. It has developed this capability over the years; it is primarily an "in-house" capability focussed in the U.S. Army Ordnance Missile Command, a broad-based experienced, complex and competent organization. From this missile capability has emerged a demonstrated comparable capability in the field of space research and development and operations. This space capability is a part of the whole of the U.S. Army and inseparable therefrom.

6. The above considerations establish the U.S. Army's role in space as three-fold: (a) that supporting its currently assigned roles, missions, and functions, (b) that supporting DOD space activities in addition to its own assigned roles, missions and functions, and (c) that supporting NASA scientific activities to attain scientific objectives.

7. It is to the interest of the U.S. Army that the Army's interest in space be fully recognized but subordinated to the larger interests of the Nation. The principles of cooperation and coordination, and exchange of information among all agencies of the government and the need for employing the Nation's resources most efficiently and to the fullest that they are available are recognized in national space law, by the DOD, and the U.S. Army.

8. In Summary, the U.S. Army position on its interest, role and capability in space is:

- a. Space is a new largely unknown medium which transcends the exclusive interest of any service.
- b. No military department should be assigned sole responsibility for space activities.
- c. Space exploration must be a national effort.
- d. To utilize the Army's capability to optimum national advantage the Army's space role must be to support:
 - (1) Currently assigned Army roles and missions.
 - (2) Appropriate DOD space activities in addition to its own assigned roles, missions and functions.

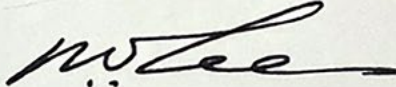
9. This letter is being distributed, through normal publications supply channels, to all commanders and units down to and including divisions,

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25 February 1959

and to units and headquarters of comparable size (including installations and activities located off an installation).

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