Space Marines: Opportunities for the Marine Corps

Michael Johnson, Alison Vernon, and Maj Lewis Flinn (USMC)

> "*From commerce to meteorology to global communications, society not only relies on space capabilities, it expects the services they provide to always be present. Space enables our national security to preserve our way of life. From protecting the homeland and fighting our nation's wars alongside allies and partners, to providing humanitarian assistance, space makes the achievements of America's military possible*." – USSPACECOM [1]

Introduction

As the space domain becomes increasingly important to the US and Marine Corps forces, the service has made several changes, but big questions remain to ensure it is prepared for the future operating environment and possible new roles and responsibilities in the space domain. To that end, we examined the following questions: What are the Marine Corps' space equities? What are the Corps' organizations and billets to address its equities and develop its strategy for the space domain? And what are the bigger issues (challenges and opportunities) for the Corps at its current stage of space development? We provide a brief discussion of these questions in this information memorandum.

Approach and limitations

We reviewed the development of "Space Marines" through a literature review, discussions with subject matter experts (SMEs), and an examination of Marine Corps space-related billets. Literature included DOD publications, USMC concepts, MARADMINs, NAVMC Orders, Marine Corps Orders, prior CNA research, Army publications, news articles, and US Space Force (USSF) and US Space Command (USSPACECOM) documentation. SMEs included current and recent Space Marines at three Headquarters Marine Corps (HQMC) Deputy Commandants—Information (DC I); Plans, Policy, and Operations (DC PP&O) and Combat Development and Integration (DC CD&I)—and at Marine Corps Forces, US Space Command (MARFORSPACE), the Marine service component to USSPACECOM. For the purposes of this study, we define a Space Marine as any Marine in a billet designated for a holder of a Space MOS, whether located in the Fleet Marine Force (FMF), in the supporting establishment, or at MARFORSPACE. Space MOS designations include 1706, 1786 (currently 0540), and 8866. We considered only officers because there is no enlisted space MOS in the USMC.

Finally, we have several caveats, the biggest being that the space domain, USSF, and USSPACECOM are undergoing many changes and the other services and CCDRs are trying to organize for the moving target that is space. We also note that authorities and policies are still under review and development, and command and control structures are still in flux.

Background

What is space and the current US space strategy?

Joint Publication (JP) 3-14, *Space Operations*, defines the space domain as:

> the area above the altitude where atmospheric effects on airborne objects become negligible. United States Space Command's (USSPACECOM) area of responsibility (AOR) is the area surrounding the Earth at altitudes equal to, or greater than, 100 kilometers (54 nautical miles) above mean sea level. [2]

The DOD Space Strategy Summary identifies four lines of effort (LOE). [3] Based on our research, Space Marines are engaged primarily in LOE 2, but may provide limited support to other LOEs as well. The four LOEs for DOD in space are:

1. *Build a comprehensive military advantage in space*. This focuses on the development of space capabilities.
2. *Integrate military space power into national, joint, and combined operations*. This focuses on the incorporation of space power into operations.
3. *Shape the strategic environment*. This focuses on shaping the strategic environment associated with the development of space capabilities.
4. *Cooperate with allies, partners, industry, and other US government departments and agencies.* This focuses on cooperating with other key stakeholders in space. [4]

There are nine types of space operations[1]. They are prioritized and executed by a single combined force space component command (CFSCC) in support of USSPACECOM and the other combatant commands.[2] Before delving into the vagaries of CFSCC and the Space Operations Command (SpOC), we first provide a broad overview of the USSF and USSPACECOM to clarify the distinction between the two.

[1] The nine types of space operations are: (1) space situational awareness; (2) space control; (3) position, navigation and timing (PNT); (4) intelligence, surveillance, and reconnaissance (ISR); (5) satellite communications; (6) environmental monitoring; (7) nuclear detonation detection; (8) space lift; and (9) satellite operations. [2]

[2] Space Operations Command (SpOC) serves as the headquarters and staff for CFSCC. [5]

US Space Force

"The US Space Force (USSF) was established Dec. 20, 2019 when the National Defense Authorization Act was signed into law, creating the first new branch of the armed services in 73 years. As a separate and distinct branch of the armed services, USSF is organized under the Department of the Air Force in a manner very similar to how the Marine Corps is organized under the Department of the Navy." [5]

"The USSF is responsible for organizing, training, and equipping Guardians to conduct global space operations that enhance the way our joint and coalition forces fight, while also offering decision makers military options to achieve national objectives. As a new military service, the U.S. Space Force will leverage the Department of the Air Force for more than 75 percent of its enabling functions to significantly reduce cost and avoid duplication. The Department of the Air Force will provide support functions that includes logistics, base operating support, IT support, audit agencies, etc." [5]

"The Chief of Space Operations, U.S. Space Force, serves as the principal uniformed adviser to the Secretary of the Air Force on Space Force activities. The CSO presides over the Office of the Chief of Space Operations, transmits plans and recommendations to the Secretary of the Air Force and acts as the Secretary's agent in carrying them out." [5]

USSF has three subordinate commands: (1) Space Operations Command (SpOC), which "generates, presents, and sustains combat-ready intelligence, cyber, space and combat support forces and serves as the USSF Service Component to USSPACECOM"; (2) Space Training and Readiness Command (STARCOM), which provides training and education of forces, development of space TTPs, and test and evaluation of space capabilities; and (3) Space Systems Command (SSC), the space capability delivery organization of the USSF. [5] USSF will also establish service components at each of the geographic and functional combatant commands over the next few years.

USSF is still maturing, growing, and establishing itself as the sixth and newest branch of the military services.

US Space Command

US Space Command (USSPACECOM) was reestablished in 2019[3] as the unified combatant commander for all military space operations. As the newest of the eleven unified combatant commands (CCMD) in DOD, USSPACECOM will command USSF personnel and assets; that is, USSF will organize, train, and equip space forces, while "U.S. Space Command is the warfighting component that actively employs forces from [all services] to accomplish the mission in space." Its mission is "to conduct operations in, from, and through space to deter conflict, and if necessary,

[3] USSPACECOM was initially established in 1985 to provide joint command and control for all military forces in outer space and coordinate with the other combatant commands. USSPACECOM was disestablished in 2002, and its responsibilities and forces were merged into United States Strategic Command (USSTRATCOM). A second incarnation of Space Command was established in 2019, with a reemphasized focus on space as a warfighting domain.

defeat aggression, deliver space combat power for the Joint/Combined force, and defend U.S. vital interests with allies and partners." [6]

"USSPACECOM has two subordinate commands: Combined Force Space Component Command, also known as CFSCC, and Joint Task Force-Space Defense, also known as JTF-SD. CFSCC plans, integrates, conducts and assesses global space operations in order to deliver combat relevant space capabilities to the combatant force and the nation. JTF-SD conducts, in unified action with mission partners, space superiority operations to deter aggression, defend U.S. and allied interests and defeat adversaries throughout the continuum of conflict." [1]

Each of the services provides forces (service components) to USSPACECOM that USSPACECOM employs: (Army) Space & Missile Defense Command; MARFORSPACE; Navy Space Command; 1st Air Force; and (USSF) Space Operations Command (SpOC). [1] It should be noted that the deputy commander of SpOC is the commander of CFSCC.

As one of USSPACECOM's component commands, MARFORSPACE has doctrinal requirements to USSPACECOM.[4] The general idea of service componency and what service components are to provide to CCMDs (their roles and responsibilities (RRs) is derived from Joint Publication (JP) 1-0, "Doctrine for the Armed Forces of the United States." Service component RRs are the same for all the services. JP 1-0 is an overarching document that discusses componency in theoretical terms, including the full breadth of RRs for all service components. It lists nine functions for component commands assigned to either geographic or functional combatant commands. We summarize these functions as follows:

1. Make recommendations to the JFC on the proper employment, task organization, and command relationship of the forces of the service component.
2. Accomplish such operational missions as may be assigned.
3. Select and nominate specific units of the parent service component for attachment to other subordinate commands. Unless otherwise directed, these units revert to the service component commander's control when such subordinate commands are dissolved.
4. Conduct joint training, including the training, as directed, of components of other services in joint operations for which the service component commander has or may be assigned primary responsibility, or for which the service component's facilities and capabilities are suitable.
5. Inform the JFC, other component or supporting commanders, and the CCDR, if affected, of planning for changes in logistic support that would significantly affect operational capability or sustainability early in the planning process so that the JFC can evaluate the proposals prior to final decision or implementation. If the CCDR does not approve the proposal and discrepancies cannot be resolved between the JFC and the service component commander, the CCDR will forward the issue through the CJCS to the secretary of defense for resolution. Under crisis action or wartime conditions, and where critical

[4] For a full review of these requirements, please see [7].

situations make diversion of the normal logistic process necessary, service component commanders will implement directives issued by the CCDR.

6. Develop program and budget requests that comply with CCDR guidance on warfighting requirements and priorities. The service component commander will provide to the CCDR a copy of the program submission prior to forwarding it to the service headquarters. The service component commander will keep the CCDR informed of the status of CCDR requirements while service programs are under development.
7. Inform the CCDR of program and budget decisions that may affect joint operation planning. The service component commander will inform the CCDR of such decisions and of program and budget changes in a timely manner during the process to permit the CCDR to express the command's views before a final decision is made. The service component commander will include in this information service rationale for nonsupport of the CCDR's requirements.
8. Provide, as requested, supporting joint operation and exercise plans with necessary force data to support missions that may be assigned by the CCDR.
9. Logistic authority: the operating details of any service logistic support system will be retained and exercised by the service component commanders in accordance with instructions of their military departments, subject to the directive authority of the CCDR.
    a. Logistic functions—inform CCMD of changes in logistics functions that would significantly affect operational capability or sustainability. If the CCDR does not approve, CJCS achieves a solution.

Understanding the requirements that the CCMD has assigned to the Marines, communicating those requirements, and, in return, conveying to the CCMD what the Marines can do to fill those requirements is crucial. MARFORSPACE needs to translate the USSPACECOM requirements to HQMC and communicate HQMC's ability to fulfill those requirements back to USSPACECOM. The same is true of space capabilities consumption. MARFORSPACE needs to advocate on behalf of the Marine Corps what the Marines can do for USSPACECOM and what the Marines need from USSPACECOM. [8]

USSPACECOM has already embedded Joint Integrated Space Support Teams (JISTs) at the various CCMDs to act as advocates for USSPACECOM, but, as roles and responsibilities are still being hashed out, command and control (C2) relationships are also still in flux. As mentioned, USSF is in the process of standing up Space Force service components at the various CCMDs. Thus far, USSF operational assets have only been assigned to USSPACECOM. USSPACECOM has given TACON of assets to only a few CCMDs and generally, USSPACECOM intends to keep all assets and take back TACON of those that have been assigned to others temporarily. All of this is an ongoing debate and subject to change. For example, "Given the evolving landscape of space and the need for the service, the components, and space expertise to grow, we see the that over the longer term (the next 5 to 10 years), CDRSPACEFOR-INDOPAC takes control of USSF space assets assigned to INDOPACOM. To support effectiveness, ease, and speed, authorities need to be revised and realigned to allow tactical actions with space effects to be performed by CCMDs other than

USSPACECOM. CDRSPACEFOR-INDOPAC could be ultimately designated as Theater Joint Force Space Component Commander (TJFSCC) and exercise C2 of INDOPACOM space actions, coordinating with USSPACECOM CFSCC. This means that the JIST returns to its original RRs, as outlined in the terms of reference (TOR) guidance, in which the JIST takes a narrower role coordinating/deconflicting USSPACECOM strategic actions from INDOPACOM tactical space actions." [9] Based on in person data collection efforts and exercise observations we executed at CCMDs, we understand that the situation in INDOPACOM is unique. The JISTs in other CCMDs have the originally intended role. Prior to the standup of the USSF service components in the remaining CCMDs, the Air Force Service component is directing actions of assigned space assets.

How is the Marine Corps approaching space?

Equities

The Marine Corps has significant equities in the space domain. Deployed Marines rely upon PNT and satellite communications and increasingly demand space ISR. The USSPACECOM service components (e.g., MARFORSPACE) provide the conduits to their respective service headquarters to assist with the organize, train, and equip functions. They represent the combatant commander to the service headquarters and the service headquarters to the combatant commander. But the USSPACECOM service components do not link the user to USSPACECOM – the geographic MARFOR does via the GCC (e.g., MARFORPAC via INDOPACOM).

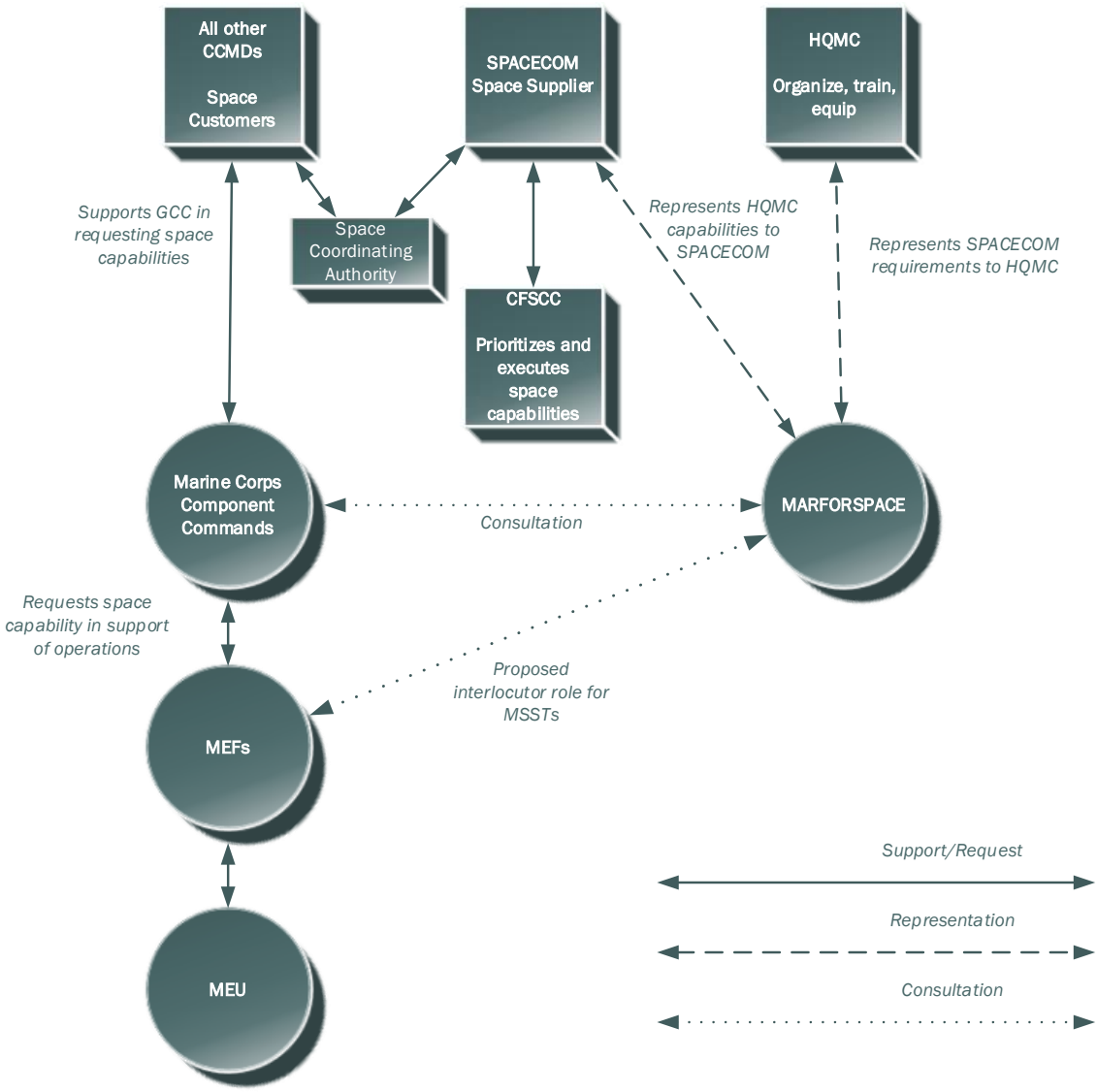
With guidance from USSPACECOM, the CFSCC accepts space missions from the other combatant commands. Component MARFORs—particularly those supporting geographic component commands—help the combatant command to request space capabilities to be employed in support of subordinate Marine Corps forces, such as the MEF or the MEU. The CCMD then makes those requests of USSPACECOM.

Organization and billets

Space Marines are part of the larger operations in the information environment (OIE) enterprise. Under DC I plans, Space Marines (alongside Cyber and Influence Marines) are considered part of information maneuver and may be designated as an information coordination center coordinator, integrating the employment of OIE across all capability areas.

Figure 1 represents various space roles for different organizations across the enterprise. The solid lines represent the flow of a space support request, the dashed lines are for representation of one organization to another, and the dotted lines show coordination. Space Marines are envisioned to be in each of the circles in Figure 1 that are part of the Marine Corps to ensure that this vision of support is maintained. Preliminary research found that the weakest point currently is at the MARFOR level under the GCCs. [8] Without Space Marines at the MARFORs, Marine Corps forces have difficulty getting their requests serviced by USSPACECOM and its CFSCC.

Figure 1. Space roles for different organizations



Source: CNA.

To date, a focus of the Corps regarding space has been setting up the Marine Space Support Teams (MSSTs). The MSSTs would reside in MARFORSPACE but deploy with MARFORs and MAGTFs to facilitate integration of space into Marine Corps operations. [10] These teams are designed to

mimic the Army Space Support Teams (ARSSTs) and fulfill multiple roles: as liaison between MARFORSPACE and the supported commander; as advisers and operational planners to the warfighters on the criticality that space assets and capabilities play in the conflict; and as a presence within USSPACECOM to represent Marine Corps equities and expertise. [11-13]

As originally envisioned, the MSSTs would have six responsibilities.[5] Three of those responsibilities focus on the liaison/advisor roles, including providing space situational awareness (SSA) to the MEFs; supporting the warfighting unit's staff with space expertise; and advising the commander on the capabilities and constraints of space, both in the conflict and during competition. ***Thus, the primary function of the MSSTs will be to act as a liaison and advisor between commands in charge of space and the Marines who are consumers of space-related capabilities.*** The remaining responsibilities focus on the space operational planning role, for both Marine Corps operations and base orders, and for representing the Corps' requirements to MARFORSPACE and USSPACECOM.

Challenges and opportunities

Command and control

As noted, general C2 structures and relationships are still being negotiated, including the C2 of the MSSTs. Some have stated that the MSSTs will be owned by MARFORSPACE, but placed within the MEFs, who may, then, delegate these 1706s to the MEUs. [8] More studies need to be done to determine the best ADCON and OPCON relationships.

It has also been suggested that the Space Marines at the MEF or at the MEU be assigned OPCON through a terrestrial geographic combatant commander yet will also need to liaison with MARFORSPACE as the service component to USSPACECOM. While space has been identified as a geographic area unto itself, many space capabilities that are necessary to forces on the ground cross terrestrial AORs. One of the first orders of business for the stand-up of Space Marines is to clarify the C2 of the Space Marine roles.

This C2 challenge may merely be a symptom of a larger debate over the delineation of space responsibilities between USSPACECOM and the other CCMDs. Many space SMEs at other CCMDs advocate for being assigned sufficient space assets to conduct tactical space actions in support of CCMD space operational priorities. USSPACECOM wants to maintain control and be given authority to conduct all space-related actions. Joint Publication 3-14, *Space Operations*, identifies a process for other CCMDs to coordinate with USSPACECOM CFSCC under the Space Coordinating Authority (SCA). That process allows CCMDs with support of their service components, including the MARFORs, to prioritize space support requirements for submission to USSPACECOM CFSCC. There is currently no discussion in JP 3-14 about what space-related responsibilities might be

[5] MSST responsibilities are: (1) primary advisor to the supported commander; (2) develop space operational requirements, including the space portion of a base order; (3) support unit's staff with space expertise; (4) provide space situational awareness of the space domain to the MEF; (5) plan and integrate with STRATCOM and MARFORSPACE/USSPACECOM; and (6) support red-team capabilities. [14]

retained by other CCMDs. Participating in the SCA process alone requires that USMC service components have space-related expertise on their service component and MEF staffs.

Career management for Space Marines

Based on our review of billet data[6] and suggestions made to us by SMEs, the Marine Corps should consider sending some 1706 Space Marines who have completed a first tour in space to NPS for the 8866-program vice non-1706 Marines. Using 1706 Marines for this would not take them out of their primary MOS for five years but could enhance their ability in their primary MOS. [15]

The establishment of a primary space-related MOS provides opportunities for the Marine Corps to develop Space Marines with multiple tours. Currently, it is rare for Space Marines to have successive space assignments. We asked SMEs about whether career paths have been identified for Space Marines now that a primary MOS has been established but found little consideration of preferred flows of personnel and no documentation on preferred career paths. [8] We did hear that the initial plan is to have captains transition to 1706 and then potentially be available for three or four tours as Space Marines. The only path found was for generic training by grade as show in Figure 2.

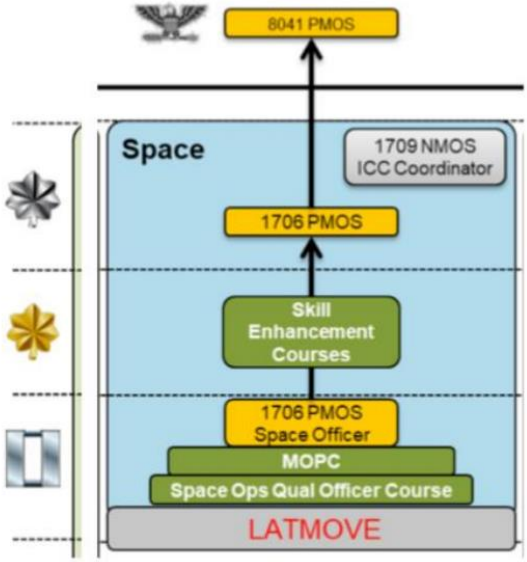
A career path for members in this primary MOS could articulate that Space Marines in specific billets should have previous experience in junior billets. We did hear about the idea that newly minted 1706s start in MARFORSPACE and then for subsequent tours serve in the MEFs or MARFORs and then later in HQMC or again in MARFORSPACE. However, details for the preferred career flow should follow the clarification of the C2 of Space Marines to ensure proper oversight and indoctrination of junior Space Marines.

Figure 2 shows a generic path from captain to lieutenant colonel with some training opportunities. [16] While this is a starting point, the Marine Corps should develop a documented plan so that experience in previous billets would enhance what is required in follow-on billets. We found that newly minted majors usually go to NPS to earn the 8866 qualification. With captains transitioning to 1706, it will be possible for an officer to complete a space billet as a 1706 and then be selected to attend NPS for the more detailed Space Systems Operations or Space Systems Engineering training required for 8866. As part of the career path effort, the Marine Corps should consider how many 1706s should go to NPS (as opposed to non-1706s) to become an 8866.

[6] As noted, for the purposes of this study, we define a Space Marine as any Marine in a billet designated for a holder of a Space MOS, whether located in the Fleet Marine Force (FMF), in the supporting establishment, or at MARFORSPACE. Space MOS designations include 1706, 1786 (currently 0540), and 8866. We considered only officers because there is no enlisted space MOS in the USMC.

Figure 2. DC I chart for space officers

1706	PMOS	1706 Maritime Space Officer (new)	Capt-LtCol
1786	FMOS	Space Operations Staff Officer (current 0540)	Capt-LtCol
8866	FMOS	Space Operations Officer (NGS grad)	Capt-LtCol



Source: [16].

Summary

As the Marine Corps' reliance on space capabilities increases, ensuring Marines' space demands get filled remains crucial and must be accomplished by specially trained Marines. The Marine Corps has made appropriate initial steps with creating a new PMOS of Maritime Space Officer and must reinforce its actions with an established career path to develop space expertise and gain personnel efficiency by having Space Marines fill multiple tours in their careers. Another crucial step in maturing the Marine Corps' space officers will be to establish clear C2 structures, especially of the MSSTs, to ensure that the role of Space Marines is best achieved. Space is of increasing importance to the Marine Corps and they need a system for ensuring that they have sufficient manpower expertise in space. The establishment of primary MOSs is not only needed among officers but ideally also on the enlisted side to establish critical expertise. Regardless, the debate over space-related authorities is not yet resolved.

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