

Chapter 11

Command and Control of Space Forces

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Nothing is more important in war than unity of command.

—Napoleon Bonaparte

The majority of the following information is excerpted directly from Air Force Doctrine Document (AFDD) 2-2, *Space Operations*, chapter 2, “Command and Control of Space Operations,” 27 November 2006.

Unity of command and unity of effort are immutable principles of war which are just as applicable to the medium of space as to the domains of ground, air, and sea. However, the characteristics of space and allocation of space capabilities throughout several federal agencies with no one central controlling authority present unique challenges to the command and control (C2) of space forces. Interagency responsibilities with authority are often split between organizations. Further exacerbating the situation is the interdependence between global and theater space forces. Theater missile defense during Operation Desert Storm illustrates the challenges of C2 of space forces. Army Patriot missile defense batteries received missile launch notifications from the Air Force’s Defense Support Program (DSP) and the Army-Navy joint tactical ground station (JTAGS) system. This integrated missile-defense warning data was crucial to the combined force air component commander (CFACC) in his responsibility as the area air defense commander (AADC).

Other challenges occur when one organization owns an asset while another has responsibility for the actual operation, or when one organization operates the platform while another has responsibility over the onboard payload. For example, Defense Meteorological Satellite Program (DMSP) weather satellites, which provide weather data for Department of Defense (DOD) and national operations, currently fall under the combatant command of US Strategic Command (USSTRATCOM), but are operated on a daily basis by the National Oceanic and Atmospheric Administration (NOAA) under the Department of Commerce, and requirements for onboard sensor tasking are provided by the Air Force Weather Agency, an Air Force field operating agency.

Given the inherent challenges to C2 space forces and the ever-increasing role of space operations to achieve the objectives of a joint force commander (JFC), this chapter provides a doctrinal construct for C2 of space operations. However, it does not discuss the “ongoing debate over deployable space forces, such as CCS [Counter Communications System], which will undoubtedly be part of a growing OCS [offensive counterspace] component of theater campaign plans.”¹ A compelling argument for the need of a doctrinal approach to C2 of “deployable space forces,” if the reader chooses to explore this subject further, is made by Maj Mark Schuler, USAF, in his treatise “It Isn’t Space, It’s Warfare!”² Schuler notes that DOD space doctrine at the

time of his publication is “unclear what the official belief is regarding the C2 of deployable space forces.”³ Therefore, this chapter discusses the C2 of space assets of global and theater spaces forces to include C2 considerations. The chapter concludes with the CFACC’s authority and role in theater space operations. This construct has proven to be effective in recent operations and exercises and will remain the typical arrangement for the foreseeable future.

Global and Theater Considerations

Many space assets support joint operations in more than one geographic area. Space assets may be used to fulfill single-theater, multiple-theater, or global objectives. Thus, the C2 structure established for integrating space assets and forces must be robust enough to account for these various operating areas.

When the employment of space assets meets global or multiple-theater requirements, a structure that bridges more than one theater and is capable of dealing with non-DOD agencies is normally necessary. In this case, USSTRATCOM usually provides such a structure. A geographic combatant commander (GCC) may control those space forces which produce strategic, operational, or tactical effects within his or her theater. Furthermore, the combatant commander will usually delegate operational control (OPCON) of theater space forces to the appropriate service component commander and tactical control (TACON) to the appropriate functional component commander if needed by a joint force. The CFACC is usually best suited to integrate space operations within a combined/joint force. Within that force, the commander, Air Force forces (COMAFFOR) is best suited to integrate Air Force space operations because of his or her ability to exercise C2 of space capabilities and the COMAFFOR’s theater-wide war-fighting perspective.

When the situation arises that there are no Air Force forces attached to a joint task force (JTF), the COMAFFOR to the joint force commander may be tasked in a supporting relationship to the JTF to integrate and provide space capabilities and effects. For example, multiple JTFs in US Central Command’s area of responsibility (AOR) require space effects for the ongoing global war on terrorism. The CFACC provides/coordinates these effects for JTFs in Afghanistan, Iraq, and the Horn of Africa.

Although not operated or controlled by USSTRATCOM, nonmilitary US space assets also provide critical space capabilities for war fighters. Some assets belong to national agencies such as NASA, the National Reconnaissance Office, and NOAA. International consortia such as the International Telecommunications Satellite (INTELSAT) Organization and the International Maritime Satellite (INMARSAT) Organization own other space assets. USSTRATCOM has established coordination channels with some US nonmilitary organizations.

If such channels are not already established, a JFC may request USSTRATCOM assistance in coordinating with these nonmilitary organizations for integration of their capabilities. The secretary of defense and combatant commanders develop processes to streamline discussions, policies, procedures, and rules of engagement for space forces. These assets are important in establishing space superiority for global and theater operations.

USSTRATCOM Joint Functional Component Commands

USSTRATCOM executes assigned missions through a number of subordinate elements called joint functional component commands (JFCC) in lieu of JTFs. These commands are responsible for the day-to-day planning and execution of primary USSTRATCOM mission areas: space; global strike and integration; intelligence, surveillance, and reconnaissance; network warfare; integrated missile defense; and combating weapons of mass destruction. The commander, JFCC Space (CDR JFCC Space) serves as USSTRATCOM's single point of contact for military space operational matters to plan, task, direct, and execute space operations. The CDR JFCC Space will conduct space operational-level planning, integration, and coordination with other JFCCs, combatant commanders, and other DOD and non-DOD partners to ensure unity of effort in support of military and national security operations. The CDR JFCC Space will be the primary USSTRATCOM interface for operational space effects. The mission of the CDR JFCC Space includes employing joint space forces for missile warning; position, navigation, and timing; communications; space lift; and counterspace operations.

Command and Control of Global Space Forces

The Unified Command Plan establishes USSTRATCOM as the functional unified command with overall responsibility for military space operations. The commander, USSTRATCOM (CDRUSSTRATCOM) has combatant command (COCOM), or command authority, of all space forces as assigned by the secretary of defense in the "Forces for Unified Commands" memorandum. CDRUSSTRATCOM employs these forces to support worldwide operations.

Command and Control of Theater Space Forces

Theater commanders integrate space effects throughout joint military operations. Space effects are created by a mix of global and theater space forces. Global space forces normally support national objectives and multiple theaters and produce effects for theater operations. Theater space forces move forward to conduct operations in a specific theater or consist of organic space forces assigned in theater. Global space forces and theater space forces require different command relationships and levels of coordination to achieve effects within the theater.

Space experts on theater staffs facilitate space integration. The Air Force embeds space expertise within its component and air and space operations center (AOC) staff. Also, the Air Force augments theater staffs with additional space expertise, when requested, to assist with integration of global space effects and control of theater space forces.

Integrating Global Space Forces

When a theater requests global space forces to produce effects, the secretary of defense specifies a command relationship between CDRUSSTRATCOM and the combatant commander—normally a supporting/supported relationship. This will be employed

at appropriate levels within both the supporting and supported commands. These support relationships fall into four categories: general, mutual, direct, and close support. General support is used when the support is given to the supported force as a whole. Mutual support is that support which units render each other against an enemy because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities. Direct support is used when a mission requires a force to directly support another specific force. Close support is used to describe actions by a supporting force in close proximity against objectives near the supported force which require detailed integration of the supporting actions of the supporting force.

For space forces providing effects via a support relationship, it is important for both supported and supporting commanders to document their requirements in an establishing directive. The establishing directive should specify the purpose of the support relationship, the effect desired, and the scope of the action to be taken. Additional information includes:

- The space forces and resources allocated to the supporting commander's effort.
- The time, place, level, and duration of the supporting commander's effort.
- The relative priority of the supported commander's effort.
- The degree of authority exercised by the supported and supporting commanders over the effort, to include processes for reconciling competing requirements and emergency events expeditiously, as required.

To facilitate a support relationship, an appropriate level of coordination should occur between the involved commanders. This facilitates planning the detailed integration of space capabilities and effects with theater operations and enables theater war fighters to coordinate directly at either the same or differing organizational levels.

Typically, CDRUSSTRATCOM will retain control of global space forces. However, a theater commander may require a greater degree of command authority than specified by a support relationship. This assumes the requisite expertise, ability, and means to perform C2 of space forces exist in theater. In those instances, the secretary of defense may transfer control over specified global space forces conducting operations affecting an individual theater.

Examples of Space Support

The four categories of space support relationships—general, mutual, direct, and close—have all been employed in recent conflicts to provide space support crucial to accomplishing the mission.

General Support. During the major combat operations phase of Operation Iraqi Freedom (OIF), USSTRATCOM provided general support from space operations to the Iraqi theater of operations. This support relationship helped the joint force integrate space capabilities, such as positioning, navigation, and timing from GPS, and counter-space effects.

Mutual Support. During the counterinsurgency phase of OIF, the combatant commander assigned the CFACC the task of space superiority. For this objective, the JFC designated the CFACC as the supported commander with other component commanders in a mutual support relationship for space operations.

Direct Support. During Operation Allied Force (OAF), a direct support relationship was established between the CFACC and the 11th Space Warning Squadron (SWS). This relationship allowed the AOC to directly task 11th SWS personnel and exchange real-time information from the DSP satellite for time-critical actions like personnel recovery after aircraft shoot-downs.

Close Support. Future space capabilities will be responsive to the war fighter. These space forces may operate in close proximity with theater forces and will require detailed integration to provide close support to theater operations. These types of forces could emerge as technologies based on the Air Force's operationally responsive space and joint war-fighting space operating concepts.

Theater Space Forces

If space forces are tasked to impact only a single theater, the secretary of defense may direct CDRUSSTRATCOM to attach the forces with specification of OPCON or TACON to the GCC with the mission requirement. It is the responsibility of the secretary of defense to specify the command relationship the gaining commander will exercise. The typical relationship for attached forces is OPCON, but a TACON or support relationship may be appropriate depending on the ability of the theater commander to C2 space operations, as well as other factors, including the nature and duration of the operation. Usually, the GCC delegates OPCON of attached forces to the service component commander who requires those forces and has the capability to C2 them. In the case of attached Air Force space forces, this is the COMAFFOR, who also is usually dual-hatted as the CFACC, and designated supported commander for counterspace operations in the joint operations area (JOA).

Theater-Organic Space Forces

GCCs exercise COCOM of assigned theater space forces. Service component commanders are normally then delegated OPCON of those forces. During contingencies, those forces may be incorporated into a joint force. Within the joint force, the appropriate functional component commander normally exercises TACON of forces made available by service component commanders. For space forces, this component commander should be the CFACC if one is designated.

Presentation of Forces

If a contingency operation requires a joint force, Air Force forces will be presented as an air and space expeditionary task force (AETF). The commander, Air Force Space Command (AFSPC/CC) is responsible for providing Air Force space forces to an AETF when required. Within the AETF, space forces may be attached to an air expeditionary wing, group, or squadron. Attached space forces are commanded by the COMAFFOR who commands the AETF through an A-staff and controls forces through an AOC. The AOC coordinates integration of space effects with the Space AOC/Joint Space Operations Center (JSpOC), and execution of assigned, attached, and supporting space forces (direct liaison authority) should be authorized for coordinated planning between the AOC and Space AOC/JSpOC.

CFACC's Authority and Role in Theater Space Operations

The CFACC is normally delegated space coordinating authority (SCA) and designated the supported commander for counterspace operations by the JFC. In cases where the CFACC is other than an Air Force officer, the COMAFFOR will fill designated billets within the CFACC staff to ensure proper employment of space assets. If a CFACC is not appointed, the JFC may delegate SCA to the COMAFFOR, designate another component/service commander SCA, or opt to retain SCA.

Space Coordinating Authority

Space coordinating authority is an authority within a joint force aiding in the coordination of joint space operations and integration of space capabilities and effects. SCA is an authority, not a person. As such, the commander with SCA serves as the focal point for gathering space requirements from the JFC's staff and each component commander. This provides unity of effort for space operations in support of the JFC's campaign. These requirements include requests for space forces (e.g., deployed space forces), requests for space capabilities (e.g., support to personnel recovery operations), and requests for implementation of specific command relationships (e.g., a support relationship between the CFACC and CDR JFCC Space). The commander with SCA develops a recommended prioritized list of space requirements for the joint force based on JFC objectives. The sphere of influence and focus of SCA in theater is the JOA. While a commander with SCA can facilitate nontraditional uses of space assets, planning staffs should use the established processes for fulfilling intelligence and communications requirements.

Because component commanders normally execute forces, the JFC may delegate SCA to the component-commander level. Coordination should be done at the operational level because that is where requirements are prioritized to support the operations of the component commanders, which in turn support the overall campaign. Moreover, the commander-delegated SCA should have a theater-wide perspective and a thorough understanding of integrating space operations with all other military activities.

SCA is a specific type of coordinating authority where authority is delegated to a commander or individual for coordinating specific space functions and activities involving forces of two or more military departments, functional components, or two or more forces of the same service. The commander with SCA has the authority to require consultation among the agencies involved but does not have the authority to compel agreement. The common task to be coordinated will be specified in the establishing directive without disturbing the organizational relationships in other matters. Coordinating authority is a consultation relationship between commanders, not an authority by which command may be exercised.

Space coordinating authority carries with it several responsibilities:

- Recommend appropriate command relationships for space forces to the JFC or JFACC.
- Establish, deconflict, prioritize, and recommend military space requirements.
- Recommend guidelines for employing space capabilities, such as rules of engagement, for the joint force.
- Guide strategy development, operational planning, and space integration.

- Provide status of space assets that affect the JOA to key theater staffs.
- Maintain space situational awareness.
- Ensure optimum interoperability of space assets with coalition forces.

Delegation of SCA is tied to force assignment, and it is normally delegated to the functional component commander with the preponderance of space forces, expertise in space operations, and the ability to C2 space assets, including reachback. The preponderance of space forces is based on a component's space capabilities affecting the theater, through the C2 of space forces assigned, attached, and in support. Users of space capabilities are not a factor in the determination of preponderance; it is based solely on the ability to operate space capabilities and produce effects with space forces.

During times of conflict or large-scale contingencies, it is important to have a coordinating authority for space within the joint force structure to appropriately represent the space requirements of the joint force. With each component and many allies having their own organic space capability, there is a requirement to integrate, synchronize, and deconflict among the space operations, redundant efforts, and conflicting support requests. By designating SCA for the joint force to a single commander, the JFC can optimize space operations in the JOA. To facilitate unity of effort within theater space operations and with global space assets, the JFC normally delegates SCA to the CFACC.

There are several reasons why the JFC normally delegates SCA to the CFACC. First, the CFACC has space expertise embedded in his or her staff. Second, the CFACC has the ability to command and control space forces via the AOC, including reachback to the Space AOC/JSpOC. Lastly, unlike the land or maritime component commanders, who are assigned specific areas of operations (AO) within a theater, the CFACC maintains a JOA and theater-wide perspective. This perspective is essential for coordinating space operations that also support the JFC throughout the theater.

Supported Commander for Counterspace Operations and Strategic Attack

To ensure unity of command, the JFC should designate the CFACC as the supported commander for counterspace operations. These operations are designed to maintain space superiority. With US dependence on space capabilities for our asymmetric advantages in the operational environment and the proliferation of various threats to space systems, it is critical to have a single component commander focused on maintaining space superiority using all available capabilities as part of the overall joint campaign.

The CFACC is well suited to execute counterspace operations for the JFC as part of the overall campaign for several reasons. First, the Air Force has the overwhelming majority of satellite operations, maintenance, and C2 experience, making it especially qualified to plan, execute, and assess offensive and defensive space activities. This expertise is integrated into the CFACC's staff. Second, the CFACC has a complete AOR perspective due to range, speed, and flexibility and is able to employ various methods to attack the user/user equipment through kinetic and nonkinetic means, both directly and indirectly. Also, the CFACC, as the COMAFFOR, can recommend theater defensive measures to ensure that tactics, techniques, and procedures as well as infrastructure reduce or mitigate potential threats. For example, the CFACC could provide guidance in the special instructions that units should be prepared to employ weapons in a GPS-hostile environment. Third, the CFACC, through its organic C2 centers (to include reachback), has the ability to integrate assets to deliver effects when and where needed. Fourth, the Air

Force understands the treaty, legal, and policy considerations associated with space operations. For these reasons, the CFACC should be designated as the supported commander for counterspace operations. In this role, the CFACC has the authority to designate target priority, effects, and timing of these operations and attack targets across the entire JOA (to include targets within the land and maritime AOs, although operations within a surface AO must be coordinated with the AO commander).

To coordinate with the JFC and other component commands, the CFACC may collocate an air component coordination element (ACCE) within their respective staffs. The purpose of the ACCE is to act as the CFACC's liaison to other commanders. The CFACC will normally integrate space expertise (and counterspace expertise, if designated the supported commander for counterspace) in the ACCE (or other liaison elements) to coordinate space-related issues with the JFC and component commanders, on his or her behalf.

In future operations and consistent with treaty obligations, assigning theater activities for force application from or through space to the CFACC would enhance unity of command. The CFACC, as the supported commander for strategic attack, would integrate these capabilities into the overall joint campaign. The CFACC has the ability within the AOC to integrate and deconflict all strategic attack capabilities to meet the JFC's objectives. All Air Force strategic attack capabilities should be integrated throughout joint operations to achieve the commander's desired effects.

Director of Space Forces

To plan, execute, and assess space operations, the COMAFFOR typically designates a director of space forces (DIRSPACEFOR), an Air Force senior space advisor who facilitates coordination, integration, and staffing activities. In the preferred construct of a dual-hatted COMAFFOR/CFACC, the DIRSPACEFOR serves as the senior space advisor to the CFACC in an appropriate capacity, such as special staff, to tailor space operations as part of the JFC's campaign plan. Also, this position normally requires a small support staff to work requirements specific to the JOA and ongoing military operations. Because the intended scope includes coordination with both Air Force and other service space forces, the DIRSPACEFOR accomplishes joint responsibilities, especially given the normal situation where the CFACC is delegated SCA and designated supported commander for counterspace operations. The DIRSPACEFOR is a senior Air Force officer with broad space expertise and theater familiarity, nominated by AFSPC/CC and approved by the theater CFACC. AFSPC ensures DIRSPACEFORs are trained and certified to perform their responsibilities, and the CFACC provides theater-specific information and orientation.

When the situation arises that there are no Air Force forces attached to a JTF, the COMAFFOR to the joint force commander may be tasked in a supporting relationship to the JTF to integrate and provide space capabilities and effects. In the situation of multiple JTFs, the DIRSPACEFOR should work for the theater COMAFFOR/CFACC, who normally is delegated SCA, to provide space effects to the JTF based on JFC priorities.

The DIRSPACEFOR has the following tasks:

- Recommend appropriate command relationships for space forces.
- Establish, deconflict, prioritize, and recommend operational military space requirements.

- Recommend policies for employing space capabilities, such as rules of engagement.
- Provide senior space perspective for strategy and daily guidance development, effects and target selection, and space integration throughout joint force operations.
- Monitor status of space forces that affect the JOA, and provide status to JFC staff and components.
- Maintain space situational awareness.
- Request space inputs from JFC staff during planning and operations.
- Ensure optimum interoperability of space assets with coalition forces.
- Execute day-to-day SCA responsibilities on behalf of the CFACC, or act as the CFACC's representative to the SCA if the authority is retained by the Combined Forces Command or delegated to another component; assist the COMAFFOR with command and control of Air Force space forces if another component is designated CFACC.

The Air Force organizes, trains, and equips space forces for employment during military operations based on the construct of a COMAFFOR/CFACC. However, there may be exceptional circumstances which fall outside the bounds of this construct. First, for the rare instances when the CFACC is not delegated SCA (e.g., a JFC retains SCA or delegates SCA to another component commander), the DIRSPACEFOR will continue to work space-related issues on behalf of the COMAFFOR/CFACC. Second, for the special case when the JFC chooses to organize and employ military forces through service components and does not designate a CFACC, the DIRSPACEFOR works for the COMAFFOR, who is expected to be delegated SCA. In all these special circumstances, theaterwide coordination will be the responsibility of the component commander delegated SCA, who will normally be aided by a senior space advisor. The Air Force recommends a senior space advisor handle day-to-day SCA responsibilities on behalf of the component commander delegated SCA.⁴

The space assets available to the DIRSPACEFOR are available under the auspices of USSTRATCOM, who in turn leverages the operational capabilities of its respective service component commands: Army Space Command (ARSPACE), Naval Network Warfare Command (NETWARCOM), and Space Air Forces (SPACEAF).

These components have distinct space missions. The mission of ARSPACE is to provide space control operations and space support to the joint force and Army component, coordinate and integrate Army resources in the execution of USSTRATCOM plans and operations, provide theater missile warning through employment of joint tactical ground stations, provide space support through the use of Army space support teams, and perform Defense Satellite Communications System payload and network control. Additionally, ARSPACE functions as the satellite communications (SATCOM) system expert (SSE) for Wideband Global SATCOM super-high frequency (SHF) communications satellites and is the parent command for the regional satellite communications support centers servicing all combatant commands, their components, the defense agencies, and other users. US Army Space and Missile Defense Command is the Army major command that organizes, trains, equips, and provides forces to ARSPACE and plans for national missile defense.

NETWARCOM's mission is to ensure space-based support to naval war fighters. This mission is accomplished via four means: providing operations and operational support;

providing space expertise and training; performing requirements advocacy; and fostering the advancement of space technologies.

Additionally, NETWARCOM operates the Naval Space Operations Center (NAVSPOC) to provide integrated support to naval and joint war fighters as well as other members of the space community. The primary goal of the NAVSPOC is to provide situational awareness by monitoring not only space activity, but also fleet deployments to ensure that space-based support is optimized. The NAVSPOC is capable of pushing space-related intelligence and other data products to fleet and fleet Marine forces on a continuous basis. Additional support and products may be provided as requested. The NAVSPOC also serves as operational manager of ultra-high frequency (UHF) communications systems, provides satellite sustainment, and coordinates commercial satellite communications support. NETWARCOM also operates other space-based communications, meteorological and oceanographic (METOC), and research and development systems in support of naval needs. NETWARCOM also provides manpower and training support for the Army's JTAGS units.

Important to the continuity and survivability of C2 operations, the NAVSPOC serves as the alternate space control center, providing C2 of the space surveillance network in support of USSTRATCOM operations. NAVSPOC formerly operated the Naval Space Surveillance Radar Fence, which detects and tracks objects in space.⁵ However, operations were transferred to Air Force control on 1 October 2004, and the fence was re-named the Air Force Space Surveillance System (AFSSS).

The aforementioned C2 construct for joint space operations has served as a fundamental and workable construct, in which the CDRUSSTRATCOM currently has COCOM of all space forces. Moreover, the CDRUSSTRATCOM employs these forces to support worldwide operations. In conclusion, lessons learned concerning C2 of space operations from Operations Iraqi Freedom and Enduring Freedom will require inclusion into future doctrine. Moreover, space capabilities are certain to increase and with them the demand for those capabilities to support the JFC in a responsive manner. Space capabilities will be a subject of discussion and exploration which the secretary of defense, CDRUSSTRATCOM, and COCOM commander will no doubt address for future doctrine to ensure the necessary responsiveness.

Notes

1. Maj Mark A. Schuler, "It Isn't Space, It's Warfare!" in *Space Power Integration: Perspectives from Space Weapons Officers*, ed. Lt Col Kendall K. Brown, (Maxwell AFB, AL: Air University Press, 2006), 6.
2. *Ibid.*, 65-88.
3. *Ibid.*, 73.
4. AFDD 2-2, *Space Operations*, 27 November 2006, 8-17.
5. Joint Publication 3-14, *Space Operations*, 6 January 2009, II-4.