

Chapter 5

US Military Space Planning

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If you find yourself in a fair fight, you didn't plan your mission properly.

—Col David Hackworth

Successful planning will lead to successful integration of space capabilities into the joint fight. Space planning takes time and must begin early in order to bring effective capabilities into the joint campaign. Once a crisis occurs, it can be too late to integrate space effects. Air Force Doctrine Document (AFDD) 2-2, *Space Operations*, stresses this by mentioning integration five times on the first page of the space operations planning chapter.¹ This integration is key to building the operation plan (OPLAN), the geographic and functional combatant commander's (CCDR) key planning product for a theater of operations.²

The Operation Plan

The OPLAN defines the tasks and responsibilities of the supported CCDR and supporting CCDRs, administration and logistics requirements, and command and control of forces. OPLANs are used both for long-term planning and for responding to crises. According to Joint Publication (JP) 5-0, *Joint Operation Planning*, “A joint OPLAN is the most detailed of the planning products, and provides a complete concept of operations (CONOPS), all annexes applicable to the plan, and the time-phased force and deployment data (TPFDD) for the specific operation.”³ A CCDR's OPLAN is the result of the seven steps of the joint operation planning process (JOPP).⁴ OPLANs contain plans for responding to potential crises within a theater of operations.

Execution of an OPLAN is conducted in six phases:

1. Phase 0: Shape
2. Phase I: Deter
3. Phase II: Seize the initiative
4. Phase III: Dominate
5. Phase IV: Stabilize
6. Phase V: Enable civil authority⁵

For space to be effective in phase 0, “agreements with space-faring nations and commercial and international organizations are essential in order to shape the international space community and ensure that potential adversaries are denied needed space capabilities.”⁶ Satellite communications and space situational awareness (SSA) also provide capabilities to “shape the operational environment.”⁷

SSA in conjunction with defensive space control (DSC) also helps in phase I by monitoring satellite assets and deterring others “from initiating attacks against space and terrestrial capabilities.”⁸ The US Strategic Command's (USSTRATCOM) Joint

Functional Component Command for Integrated Missile Defense (JFCC-IMD) and the JFCC for Global Strike and Integration also continuously utilize strategic space assets for deterrence.⁹

In order to seize the initiative in phase II, the United States combines SSA with global coverage. This global surveillance creates the ability to “seize the initiative with in-place communication, navigation, environmental, intelligence, surveillance and reconnaissance (ISR), and warning systems to exploit an adversary’s weaknesses.”¹⁰

Phase III dominance in the space arena has always been inherent in the military’s ability to always hold the high ground, which is critical in military operations.¹¹ This dominance leads to space superiority and the ability to conduct military operations “at a given time and place without prohibitive interference by the opposing force.”¹²

As space capabilities are routinely used by the commercial and civilian sectors, the defense of these assets will be required to complete the stabilization phase and to eventually enable civil authority. Conducting SSA of “civil space capabilities and operations”¹³ and providing imagery, satellite communications, remote sensing, and search and rescue support all help civil authorities in the execution of their various duties.¹⁴

The space operations annex (Annex N) provides details of the above capabilities, phase-by-phase and as integrated across time, space, and purpose with the CCDR’s OPLAN. As part of the OPLAN, the space operations annex covers the contributions space assets will bring to the fight. The space operations annex should cover the space operations contributions to the CCDR mission (friendly space systems), as well as enemy space capabilities that may threaten mission accomplishment.¹⁵

Annex N is tied into the Joint Operation Planning and Execution System (JOPES), which is the principal system within the Department of Defense for responding “to requirements from the President, the [Secretary of Defense], or the CJCS [chairman of the Joint Chiefs of Staff]. It specifies policies, procedures, and reporting structures—supported by modern communications and computer systems—for planning the mobilization, deployment, employment, sustainment, redeployment, and demobilization of joint forces.”¹⁶

Additional information on space planning can be obtained from JP 3-14, *Space Operations*; AFDD 2-2, *Space Operations*; and Army Field Manual (FM) 3-14, *Space Support to Army Operations*.

Joint Operation Planning and Execution System

JOPES is a system that includes a set of publications and documents to guide the development and operational planning process that develops OPLANs and operations orders (OPORD); JOPES also includes a computer support system for processing support.¹⁷ According to AFDD 2-2, “Annexes B (Intel), C (Operations), K (Communications), N (Space), and S (Special Technical Operations) of supported commander OPLANs and campaign plans contain space contributions to the overall effort. Development of these annexes is the supported commander’s responsibility but requires coordinated effort between the JFC and component staffs and USSTRATCOM staffs at joint and Service component levels.”¹⁸

JP 3-14 directs that “once the supported commander develops a joint OPLAN with annexes, the supporting combatant commanders will write CONPLANs [concept plans] in support of the OPLAN.”¹⁹ The Joint Forces Component Command for Space (JFCC

Space) now has day-to-day responsibility within USSTRATCOM for planning space operations with “other USSTRATCOM joint functional components, other combatant commanders through their space coordinating authority (SCA), and other Department of Defense (DoD), and when directed, non-DoD partners to ensure unity of effort in support of military, national security operations, and support to civil authorities.”²⁰

The CONPLAN is a capabilities-based vice a requirements-based plan. This means the plan discusses capabilities within Strategic Command’s means to control and operate assets in space. According to AFDD 2-2.1, *Counterspace Operations*, “An effects-based methodology of planning places the highest priority on achieving a given desired outcome, in order to attain or directly contribute to the attainment of military and political objectives.”²¹

The plan provides tasks and responsibilities for both the supported commander and supporting commanders, including USSTRATCOM: “Because much of theater space integration involves forces controlled by USSTRATCOM, they need to be consulted when building plans.”²² Responsibilities for USSTRATCOM and JFCC Space include:

Taking lead for Space control, Space situational awareness, Space offensive and defensive operations, Space force enhancements such as Intelligence, Surveillance and Reconnaissance; ITW/AA [integrated tactical warning and attack assessment]; environmental monitoring; Satellite Communication; Positioning, Navigation and Timing; and also in Space support (lift and satellite operations) and Space force applications. JFCC-Space is also the day to day manager of missile warning capability and serves as the supporting commander to JFCC-Integrated Missile Defense and JFCC-Intelligence Surveillance and Reconnaissance for management of the missile warning centers and data.²³

Integrating Space into Operation Plans

According to AFDD 2-2, “The challenge for campaign planners is to ensure space operations are integrated throughout the joint force commander’s (JFC’s) scheme of maneuver across all levels of war—strategic, operational, and tactical.”²⁴ Annex N is only one part of the overall effort, but it is a critical part. In order to be fully effective, space support and thinking must be integrated throughout as many of the JOPES annexes as possible. Of prime importance are the intelligence, operations, and communications annexes. The execution checklists must also contain information showing what space support to expect at various times.

Most planners consider space a separate entity, much like maintenance or communications. This thinking must be revised, and space should be incorporated as an integral part of all planning and war fighting. Though it can be challenging, integrating space into joint operations is a necessity.

As CCDR staffs are populated with increasing numbers of Space Weapons School graduates, or space weapons officers (SWO), they will assume greater responsibility for authoring the theater or functional space operations annexes of their respective OPLANs. These SWOs will also play an increasingly important role in the development of the joint space operations plan (JSOP) in much the same way as the joint force air component commander’s (JFACC) staff develops the joint air operations plan (JAOP). “The JSOP details how joint space operations will support both global missions and theater requirements. The JSOP prioritizes space operations across all AORs [areas of responsibility] and functions based on geographic and functional combatant commander’s

requests and CDRUSSTRATCOM [commander, USSTRATCOM] priorities. Theater strategists should include theater space requirements in the JAOP.”²⁵

Previously, Air Force space support teams (SST) would “supplement the supported commander’s staff to assist in integrating space into the joint campaign plan and provide tailored space support through space support team personnel to train and/or assist Service forces.”²⁶ Today, highly trained space professionals from across the Air Force have replaced these SSTs in order to provide the best integrated space-planning efforts across the globe.²⁷

Annex N: Space Operations

Annex N resulted from a review of Desert Storm operations, which revealed that space systems were not integrated into OPLANs because operators were not aware of space-system capabilities or how to access or request space-system support. This led to the generation of SSTs and USSTRATCOM support plans, which were a result of direction from the CJCS to incorporate space system education into all professional and technical military education curriculums,²⁸ with a focus “on how satellite systems enhance warfighting.”²⁹

OPLAN 1002-90, begun in March 1990, was to serve as a blueprint for a war with Iraq:

Annex N to OPLAN 1002-90 was supposed to describe the concept of operations and explain theater-wide space forces support required by US Central Command’s employment plan. However, the level of detail reflected the relative immaturity of the space mission. Some space force functional areas, such as communications, weather, and intelligence, contained enough detail to be of use. On the other hand, navigation, early warning, and geodesy lacked even basic information. Any good planning found in Annex N can be largely attributed to the fact that there were separate, detailed annexes in some functional areas, such as communications, intelligence, and weather. Nevertheless, even in these areas pre-planning was not totally acceptable. For example, SATCOM communications links had to be altered at least 75 times, and the intelligence dissemination network worked backwards. The lack of planning for interoperability between service dissemination systems forced intelligence data collected by one service to be routed from the theater back to the Pentagon, then transmitted back to the theater. Consequently, throughout the Gulf War operations space support took on an ad hoc character because of inadequate planning for the use of space forces.³⁰

Annex N, the space operations annex included in a CCDR’s OPLAN, provides planning guidance concerning space-related support and capabilities for the supported CCDR for use during the campaign. The annex describes how capabilities will be utilized by phase and “should include a prioritized list of those space forces and capabilities critical to the success of the plan.”³¹ Specifically, space forces provide the following four capabilities: space force enhancement, space control (or counterspace), space force application, and space support:

Space force enhancement (SFE) capabilities contribute to maximizing the effectiveness of military air, land, sea, and space operations (e.g., ISR, warning, communication, PNT [position, navigation, and timing], blue force tracking, space environment monitoring, and weather services). *Space control* (SC) capabilities attain and maintain a desired degree of space superiority by allowing friendly forces to exploit space capabilities while denying an adversary’s ability to do the same (e.g., surveillance, protection, prevention, and negation). The Air Force uses *counterspace* as an equivalent definition of the space control mission. Counterspace aligns more appropriately to other Air Force air and space power functions (i.e., counterair, counterland, and countersea), provides less ambiguity, and provides

common Air Force language. *Space force application* (SFA) capabilities execute missions with weapons systems operating in, through or from space which hold terrestrial-based targets at risk (e.g., intercontinental ballistic missiles [ICBM], ballistic missile defense, and force projection). *Space support* (SS) capabilities provide critical launch and satellite control infrastructure, capabilities and technologies that enable the other mission areas to effectively perform their missions.³²

Annex N also addresses how the above capabilities are utilized or exploited by potential enemies, friendly forces, and allies in-theater. Planning assumptions should include identifying shortfalls, limiting factors, an understanding of the world situation, and the ability to replace on-orbit assets “in the event of the loss of space forces or services.”³³ Additional Annex N information will be discussed further in the Annex N template provided at the end of this chapter.

Developing a Theater Annex N

Before developing an Annex N, planners need situational awareness of red, blue, and even grey space assets. Space planners must also be aware of the supported commander’s objectives and tasks, by phase, for the operation. One example is that counterspace requirements may be “emphasized early in an operation and be de-emphasized once space superiority is firmly established.”³⁴ USSTRATCOM is responsible for planning on the global level and the geographic CCDR is responsible for theater integration.³⁵

To develop the Annex N, one first needs to ask some basic questions. For example, what kinds of space support are required by the supported CCDR? The answer to this question might include satellite communications (SATCOM), PNT support, intelligence, surveillance, imagery, attack warning, weather, and multispectral imagery (MSI). PNT support should include combat search and rescue.³⁶ Environmental monitoring information should include weather and MSI for terrain/water-depth analysis, map updates, and ground cover classification.³⁷

As the campaign evolves and deployment to a theater nears, more specific questions need to be discussed and resolved, such as the following:

- What are the supported/supporting relationships for required space capabilities?
- What are the decision points between the phases of the campaign?³⁸
- What are in-theater system capabilities? Can theater units receive information from satellites properly and in a timely manner? Is additional equipment needed?
- What are area and target coverage requirements? Can target imagery or wide area coverage be pinpointed?
- What is the response time of various satellite systems? How do we get data in real time or near real time to the theater?
- What are the resolution and accuracy of satellite information?
- What are the availability and survivability of space systems?

Next, we will need to know specific, unique theater requirements.

- Do users have the proper terminal or receiver equipment to obtain the needed support data and information (e.g., weather terminals and tactical data processors)?

- Have connectivity and interoperability among the service components (and allies) been determined and resolved (e.g., super-high frequency [SHF] versus ultra-high frequency [UHF] communications; imagery dissemination)?³⁹
- Has maintenance support, especially of dissimilar equipment, been addressed and resolved?
- Has training and exercise space support to the theater been practiced so that deployments do not present personnel with new situations or unknown systems?

Allies also need to be knowledgeable about what US systems there are and how they can be used to maximum advantage.⁴⁰

Here are some additional hints on preparation of the Annex N and supporting appendices:

- Focus on unique space capabilities and their application to the operation.
- Refer to the Annex N of the next higher command's OPLAN.
- Cross-reference with and avoid repeating information in other annexes.

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Excerpt of a Sample Annex N

The following excerpt of a sample Annex N is from CJCS Manual 3122.03, *Joint Operation Planning and Execution System*, vol. 2, *Planning Formats and Guidance*.⁴¹ Amplifying information not in CJCS Manual 3122.03 is italicized within the sample Annex N below. Italicized information is not required in accordance with the JOPEs format and is for information only.

ANNEX N—SPACE OPERATIONS

HEADQUARTERS, US EUROPEAN COMMAND
APO AE 09128
25 May 200X

ANNEX N TO USEUCOM OPLAN 4999-05 SPACE OPERATIONS

References: List documents essential to this annex. *List Annex N of the next higher command's OPLAN or OPORD and other documents, maps, overlays and standard operating procedures (SOP) that provide guidance and information for use with this annex. Applicable annexes include A, B, C, J, K, N, and S, "at a minimum."*⁴²

1. Situation

a. General. Identify political decisions needed to use space operations to support the mission. *Describe planned and available space support to the OPLAN. Explain how to obtain and coordinate space support and list operational constraints and shortfalls, especially potential legal considerations.*⁴³ *Describe relationships between supporting and supported organizations. Refer to other annexes or provide enough information about the*

overall situation to give subordinate and supporting units a clear understanding of the operations contemplated which require space operations support.

b. Enemy. Identify enemy capabilities to interfere with the space operations. Refer to Annex B, Intelligence, for amplifying information. Describe enemy space capabilities, how they will be used, and their value to the enemy.⁴⁴

1. Estimate the impact of enemy space capabilities on friendly operations. Describe notification or warning reports to friendly units of enemy space activities to include enemy reconnaissance, surveillance, and target acquisition of friendly forces by manned and unarmed space systems. Discuss the enemy's ability to use friendly space systems to support operations. Refer to Annex B, Intelligence, for amplifying information.
2. Identify enemy space weaknesses and vulnerabilities such as inadequate coverage, poor resolution, inability to launch new or replacement systems, and inability to counter the capabilities of friendly space systems.
3. Describe what the enemy is capable of doing and probably will do with space, air, surface, or subsurface assets to interfere with friendly space systems and space operations that support the missions and tasks envisioned in this plan. Note the hostile space activities that deny unrestricted friendly access to space, deny the full capabilities of friendly space assets, or restrict friendly surface resources required by these space assets. Refer to Annex B, Intelligence, for amplifying information.

c. Friendly. Identify all friendly space forces and assets in theater and to be deployed to theater. Identify systems available for communications, environmental, navigation, surveillance, tactical warning, space control, nuclear detonation detection, or other application categories. Identify friendly space weaknesses and vulnerabilities.⁴⁵ Describe changes or modifications to established procedures, memorandums of agreement, or memorandums of understanding that may be in effect. Use an appendix for detailed information. Refer to the Annex N of the next higher command and adjacent commands.

d. Assumptions. State any assumptions not included in the basic plan relating to friendly, enemy, or third-party capabilities that may affect, negate, or compromise space capabilities. If any assumptions are critical to the success of the plan, indicate alternative courses of action.

2. Mission

State in concise terms the space tasks to be accomplished in support of the operations in the basic plan and describe desired results in support of this OPLAN.⁴⁶

3. Execution

Space activities may range from satellite communication and intelligence support to space control operations. The functions required may vary greatly within the area of operations or between phases of the operation. This paragraph, therefore, may require considerable detail and possibly alternative courses of action to accomplish the mission. Appendixes should be used as necessary to provide detailed guidance.

a. Concept of Operations. Describe how space operations support the operation. Emphasize the aspects of the basic plan that will require space support and that may affect space capabilities.

1. *General: State the general concept of space operations required to support the forces in the task organization of the OPLAN and briefly describe how space operations fit into the entire operation or refer to the basic plan. Emphasize the aspects of the basic plan that will require space support and that may affect space capabilities. State OPSEC planning guidance for tasks assigned in this annex, and cross-reference other OPSEC planning guidance for functional areas addressed in other annexes.*
 2. *Employment: If the operation is phased, discuss the employment of space assets during each phase. Include discussion of priorities of access, usage, and capabilities in each phase. Discuss ability to launch new or replacement space systems.*
- b. Space Support. *Identify space support and procedures that will support the OPLAN. Use appendixes for detailed discussion and information.*
1. *Communications: Describe space systems that will support communications plans as described in Annex K. List military and commercial satellites and ground systems that will provide support. If any satellites are not in geostationary orbit, provide orbital data sufficient to determine the time and duration of their availability. Include procedures for obtaining additional SATCOM space and ground assets and allocations. Refer to Annex K, Command, Control, and Communications Systems, for amplifying information.*
 2. *Environmental: Describe meteorological, oceanographic, geodetic, and other environmental support information provided by space assets. List receivers and processors available to receive Defense Meteorological Satellite Program (DMSP) and civil weather satellite data. Describe availability of data from the various weather satellites based on transmission schedules, orbital parameters, and so forth. Describe capabilities, products, and availability of multispectral satellite data. Describe provisions to acquire, receive, or gain access to data from weather, multispectral, and other satellites that cannot be received by systems in the theater of operations. Describe provisions to deny the enemy access to data from civil weather satellites. Refer to Annex H, Meteorological and Oceanographic Operations, or Annex L, Environmental Considerations, for amplifying information.*
 3. *Precision, Navigation, and Timing: Describe the capabilities of space-based navigation systems that will aid the position location and navigation of ships, vehicles, personnel, or spacecraft. Describe types of GPS receivers available to subordinate units. Identify which receivers are not able to compensate for selective availability. If continuous 3-D coverage is not available, describe outage periods or times of reduced coverage. Describe requirements to jam or spoof GPS receivers that may be in use by the enemy. Describe requirements for differential GPS.*
 4. *Reconnaissance, Intelligence, Surveillance, and Target Acquisition (RISTA): Describe capabilities available to friendly forces to include imagery intelligence (IMINT), signals intelligence (SIGINT), measurement and signature intelligence (MASINT), nuclear detonation (NUDET), multispectral, and others. Describe intertheater and intratheater dissemination architecture and procedures. Describe which systems can be used and the type of information they provide. Describe availability of multispectral data, its processing, and products. Refer to Annex B, Intelligence, for amplifying information.*

5. *Tactical Warning: Describe the capabilities of space systems to detect an enemy ballistic missile, attack by space-based weapons, or other enemy activities. Describe coordination and channels needed to disseminate warnings quickly. Identify additional resources needed. Describe linkage and coordination with ground- and air-based radar systems. Identify whether tactical warning data will be passed to allied military forces and civil agencies and the channels to do so. Refer to Annex B, Intelligence, for amplifying information.*
6. *Space Control: Describe actions performed by space, air, or surface assets to ensure friendly forces access to space or deny enemy forces unrestricted use of space and space assets. Include planned or anticipated actions in response to the enemy's use of space or denial of friendly access to space and space systems.*

c. Tasks. Identify tasks for each applicable subordinate unit, supporting command, or agency that provides support to the plan. Provide a concise statement of the task with sufficient detail to ensure that all elements essential to the operational concept are described properly.

d. Coordinating Instructions. Provide necessary guidance common to two or more components, subdivisions, or agencies. *Describe liaison requirements, if any.*

4. Administration and Logistics. Identify administrative and logistics support for space operations. Address support of mobile or fixed space assets within the theater here, or refer to the annex where this information is available. Reference to Annex D, Logistics, or pertinent command directives may suffice. Identify augmentation requirements for headquarters requiring space operations personnel. Identify operations security (OPSEC) planning guidance and cross-reference other OPSEC planning guidance for functional areas addressed in other annexes. *Describe support needed and who will provide it for any space-related ground stations supporting the command. Describe resupply procedures for cryptological supplies.*

5. Command and Control (C2)

a. Command Relationships. Identify unique command and control channels and command relationships for space activities. Refer to the appropriate sections of Annex J, Annex K, or the basic plan for general C2 support of space activities. *If applicable, state requirements for augmentation of appropriate headquarters with space operations personnel.*

b. Command, Control, Communication, and Computer (C4) Systems. Summarize requirements for general C4 support of space activities. Refer to appropriate sections of Annex K.

t/
 General
 Commander
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 Major General
 Director, J-3

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Notes

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2. Ibid.
3. JP 5-0, *Joint Operation Planning*, 26 December 2006, I-12.
4. Ibid., III-20.
5. Ibid., IV-34.
6. JP 3-14, *Space Operations*, 6 January 2009, I-4.
7. Ibid., II-7.
8. Ibid.
9. Ibid., IV-10–IV-11.
10. Ibid., I-3.
11. AFDD 2-2, *Space Operations*, 1.
12. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 (as amended through 17 October 2008), 500.
13. JP 3-14, *Space Operations*, IV-3.
14. Ibid., IV-24–IV-25.
15. CJCS Manual 3122.03, *Joint Operation Planning and Execution System*, vol. 2, *Planning Formats and Guidance*, 17 August 2007, E-N-1.
16. JP 5-0, *Joint Operation Planning*, xi.
17. Ibid.
18. AFDD 2-2, *Space Operations*, 18.
19. JP 3-14, *Space Operations*, V-2.
20. USSTRATCOM, “Joint Functional Component Command for Space Fact Sheet,” http://www.stratcom.mil/fact_sheets/fact_space.html (accessed 17 March 2008).
21. AFDD 2-2.1, *Counterspace Operations*, 2 August 2004, 38.
22. AFDD 2-2, *Space Operations*, 19.
23. Maj J. Dave Price, USA, “Life in the Joint Side of Space,” *Army Space Journal* 6, no. 1 (Winter 2007): 22.
24. AFDD 2-2, *Space Operations*, 3.
25. Ibid., 20.
26. JP 3-14, *Space Operations*, viii.
27. The Army still utilizes the SST concept.
28. General Accounting Office (GAO), *Improvements Needed in Military Space Systems’ Planning and Education* (Washington, DC: GAO, May 2000), 33–34.
29. Ibid., 5.
30. “OPLAN 1002 Defense of the Arabian Peninsula,” GlobalSecurity.org, <http://www.globalsecurity.org/military/ops/oplan-1002.htm> (accessed 24 February 2008).
31. JP 3-14, *Space Operations*, V-2.
32. AFDD 2-2, *Space Operations*, 4–5.
33. JP 3-14, *Space Operations*, V-2.
34. AFDD 2-2, *Space Operations*, 21.
35. Ibid.
36. Lt Col Kendall K. Brown, USAFR, ed., *Space Power Integration: Perspectives from Space Weapons Officers* (Maxwell AFB, AL: Air University Press, 2006), 5.
37. JP 3-14, *Space Operations*, IV-8.
38. AFDD 2-2, *Space Operations*, 21.
39. Ibid., 14.
40. Ibid., 39.
41. CJCS Manual 3122.03, *Joint Operation Planning and Execution System*, vol. 2, E-N-1–E-N-2.
42. JP 3-14, *Space Operations*, V-1.
43. AFDD 2-2, *Space Operations*, 26.
44. Ibid., 32.
45. Ibid., 23.
46. Ibid., 18–19.