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THE Air Force Operations & Planning

SMARTbook

Leader's Guide to Planning & Conducting Airpower Operations

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Command & Control (AOC, AFFOR & JFACC)

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Targeting & Assessment

Agile Combat Support (ACS)

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The Air Force Operations & Planning SMARTbook

Leader's Guide to Planning & Conducting Airpower Operations

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Preface

Leader's Guide to Planning & Conducting Airpower Operations

The role of the Air Force is to defend the US and protect its interests through airpower, guided by the principles of joint operations and the tenets of airpower. **Airpower** is the ability to project military power or influence through the control and exploitation of **air, space, and cyberspace** to achieve strategic, operational, or tactical objectives. Airpower exploits the **third dimension** of the operational environment, the electromagnetic spectrum, and time to leverage speed, range, flexibility, precision tempo, and lethality to create effects from and within the air, space, and cyberspace domains. From this **multi-dimensional perspective**, Airmen can apply military power against an enemy's entire array of diplomatic, informational, military, and economic instruments of power, at long ranges and on short notice. Airpower can be applied across the strategic, operational, and tactical levels of war simultaneously. Due to its **range, speed, and flexibility**, airpower can compress time, controlling the tempo of operations.

Historically, airpower has been associated with its more familiar and visible aspects, such as air-to-air combat, strategic bombing, and long-range heavy airlift. However, airpower has many less visible but equally important missions across the **range of military operations**: providing close air support and tactical mobility to our ground forces; positioning and resupplying remote forces; obtaining and providing detailed and timely intelligence, surveillance and reconnaissance; providing humanitarian relief; projecting world-wide command and control; and training of coalition partners in the use of airpower, just to name a few.

Military planning, and by extension Air Force planning, is the process by which a commander visualizes an end state and then determines the most effective ways by which to reach the end state. Through the Joint Operations Planning Process for Air (JOPPA), a commander can effectively plan for and execute operations, ensure that the employment of forces is linked to objectives, and integrate airpower operations seamlessly with the actions of a joint force. **Preparation** helps the JFACC transition between planning and execution. **Execution** is putting a plan into action by applying combat power to accomplish the mission and using situational understanding to assess progress and make execution and adjustment decisions. **Assessment** is the continuous monitoring and evaluation of the current situation and progress, thus ensuring the operation remains focused on accomplishing the mission.

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JP 3-09.3	Jul 2009	Close Air Support
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JP 3-30	Jan 2010	Command and Control for Joint Air Operations
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AFDD3-01	Sept 2010	Counterair Operations
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Chap 1

I. Introduction to Airpower

Ref: AFDD1, Air Force Basic Doctrine, Organization and Command (2011), chap. 2.

Airpower is the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives. As the nation's most comprehensive provider of military airpower, the Air Force conducts continuous and concurrent air, space, and cyberspace operations. The air, space, and cyberspace capabilities of the other Services serve primarily to support their organic maneuver paradigms; the Air Force employs air, space, and cyberspace capabilities with a broader focus on theater-wide and national-level objectives. Through airpower, the Air Force provides the versatile, wide-ranging means towards achieving national objectives with the ability to deter and respond immediately to crises anywhere in the world.

Airpower exploits the third dimension of the operational environment, the electromagnetic spectrum, and time to leverage speed, range, flexibility, precision, tempo, and lethality to create effects from and within the air, space, and cyberspace domains. From this multi-dimensional perspective, Airmen can apply military power against an enemy's entire array of diplomatic, informational, military, and economic instruments of power, at long ranges and on short notice. Airpower can be applied across the strategic, operational, and tactical levels of war simultaneously, significantly increasing the options available to national leadership. Due to its range, speed, and flexibility, airpower can compress time, controlling the tempo of operations in our favor. Airpower should be employed with appropriate consideration of land and maritime power, not just during operations against enemy forces, but when used as part of a team that protects and aids friendly forces as well.

Much of what airpower can accomplish from within these three domains is done to critically affect events in the land and maritime domains—this is the heart of joint-domain integration, a fundamental aspect of airpower's contribution to US national interests. Airmen integrate capabilities across air, space, and cyberspace domains to achieve effects across all domains in support of JFC objectives. For example, a remotely piloted aircraft operating from a ground station in the continental US (CONUS) relies on space and cyberspace capabilities to support operations overseas.

The Third Dimension (Air and Space Domains)

Airmen exploit the third dimension, which consists of the entire expanse above the earth's surface. Its lower limit is the earth's surface (land or water), and the upper limit reaches toward infinity. This third dimension consists of the air and space domains. From an operational perspective, the air domain can be described as that region above the earth's surface in which aerodynamics generally govern the planning and conduct of military operations, while the space domain can be described as that region above the earth's surface in which astrodynamics generally govern the planning and conduct of military operations. Airmen also exploit operational capabilities in cyberspace. Cyberspace is "a global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers" (JP 1-02). In contrast to our surface-oriented sister Services, the Air Force uses air, space, and cyberspace capabilities to create effects, including many on land and in the maritime domains, that are ends unto themselves, not just in support of predominantly land or maritime force activities.

See p. 2-7 for further discussion of the air domain.

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I. The Foundations of Airpower

Airpower provides the Nation and the joint force with unique and valuable capabilities. Airmen should understand the intellectual foundations behind airpower and articulate its proper application at all levels of conflict; translate the benefits of airpower into meaningful objectives and desired effects; and influence the overall operational planning effort from inception to whatever post-conflict operations are required.

Airpower stems from the use of lethal and nonlethal means by air forces to achieve strategic, operational, and tactical objectives. The Air Force can rapidly provide national leadership and joint commanders a wide range of military options for meeting national objectives and protecting national interests.

Elevation above the earth's surface provides relative advantages and has helped create a mind set that sees conflict more broadly than other forces. Airpower's speed, range, flexibility, and versatility are its outstanding attributes in both space and time. This combination of attributes provides the foundation for the employment concepts of airpower.

With its speed, range, and three-dimensional perspective, airpower operates in ways that are fundamentally different from other forms of military power. Airpower has the ability to conduct operations and impose effects throughout an entire theater and across the ROMO, unlike surface forces that typically divide up the battlefield into individual operating areas.

Airpower can be used to rapidly express the national will wherever and whenever necessary. The world at large perceives American airpower to be a politically acceptable expression of national power which offers reasonable alternatives to long, bloody ground battles while making an impact on the international situation. While a "boots-on-the-ground" presence may often be required, airpower makes that presence more effective, in less time, and often with fewer casualties. Increasingly, US national power and international influence are gauged in terms of what we can or cannot accomplish with this capability.

The Air Force provides national leadership and joint commanders with options, the threat of which may accomplish political objectives without the application of lethal force. The means is embedded in the ability to respond rapidly to crises anywhere in the world and across the ROMO.

The Air Force provides the unique ability to hold at risk a wide range of an adversary's options and possible courses of action; this is increasingly the key to successful joint campaigns. Airpower is increasingly the first military instrument brought to bear against an enemy in order to favorably influence the overall campaign. Frequently, and especially during the opening days of a crisis, airpower may be the only military instrument available to use against an enemy; this may be especially true if friendly ground forces are not immediately present in a given region.

Air Force forces can respond rapidly to apply effects. The same spacecraft which Airmen employ to observe hostile territory prior to the outbreak of hostilities provide key intelligence to battle planners. The same aircraft which provide visible deterrence to a potential aggressor can be employed immediately to defend or attack should deterrence fail. The shift from deterrent force to combat power is near-instantaneous.

Airpower is more than dropping bombs, strafing targets, firing missiles, providing precision navigation and timing, or protecting networks. It is also a way of influencing world situations in ways which support national objectives. To most observers in the post-Cold War world, the use of military power is politically less acceptable than in previous times. This is true even if we act in a purely humanitarian endeavor or influence a given international political situation with a modest show of force. In international disasters, natural or man-made, from the Berlin Airlift to earthquake relief operations in Pakistan, the Air Force is the only military force in the world which has the airlift and air refueling capability to provide immediate relief supplies and personnel in response to global emergencies. Air Force aircraft

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delivering relief supplies serve not only to alleviate the immediate situation, but also to provide a visible symbol of the care, concern, and capability of the US.

This influence is more than just airplanes. US space-based assets are a non-intrusive method of providing up-to-the-minute warning and information on the maneuver of hostile military forces or other potentially dangerous actions. The US often shares this information with friendly nations in response to potential adversaries to defuse points of conflict before they result in hostilities. US air, space, and cyberspace capabilities provide the means to alert allies of a potential aggressor's hostile intentions or impending attack when in-country physical presence is unwarranted. They can influence potential adversaries by stripping them of the ability to hide hostile military activity without violating national sovereignty.

Airpower's speed, range, flexibility, precision, and lethality provide a spectrum of employment options with effects that range from tactical to strategic. This range of effects is an important contribution. A surface-centric strategy often seeks its outcome through the destruction of hostile land forces and the occupation of territory. However, destruction of hostile land forces may be only a tactical or operational objective and may not achieve the desired strategic outcome. Further, territorial occupation, with its attendant large cultural footprint, may not be feasible or politically acceptable. Sea power, with its ability to project force and disrupt the economic lifeline of a maritime-capable adversary, also provides the potential for strategic results. However, slow surface speeds can constrain its capability to respond rapidly from one theater to another. In addition, it may be extremely vulnerable in littoral regions. Often, in such circumstances, the political risks far outweigh the actual military risks.

Airpower has a degree of versatility not found in any other force. Many aircraft can be employed in a variety of roles and shift rapidly from the defense to the offense. Aircraft may conduct a close air support mission on one sortie, then be rearmed and subsequently used to suppress enemy surface-to-surface missile attacks or to interdict enemy supply routes on the next. In time-sensitive scenarios, aircraft en route to one target, or air mobility aircraft in support of one mission, can be reassigned new targets or re-missioned as new opportunities emerge. Multirole manned and unmanned platforms may perform ISR, command and control (C2), and attack functions all during the same mission, providing more potential versatility per sortie. Finally, aircraft can be repositioned within a theater to provide more responsiveness, while space and cyberspace capabilities can be reprioritized.

Historically, armies, navies, and air forces massed large numbers of troops, ships, or aircraft to create significant impact on the enemy. Today, the technological impact of precision guided munitions enables a relatively small number of aircraft to directly achieve national as well as military strategy objectives. When combined with stealth technologies, airpower today can provide shock and surprise without unnecessarily exposing friendly forces. To destroy a single target, we no longer need the thousand-plane bomber raids of World War II or the hundreds of sorties of Vietnam. Today's air forces can provide accurate and assured destruction of vital targets with far fewer aircraft, sometimes multiple targets with a single aircraft. Moreover, that capability can be delivered from within the theater or around the globe if necessary.

With all those characteristics considered, one should remember that **air, space, and cyberspace superiority are the essential first ingredients in any successful modern military operation.** Military leaders recognize that successful military operations can be conducted only when they have gained the required level of control of the domains above the surface domains. Freedom to conduct land and naval operations is substantially enhanced when friendly forces are assured that the enemy cannot disrupt operations from above.

Control of the air, space, and cyberspace domains is not a goal for its own sake, but rather a prerequisite for all other military operations. Air mastery has allowed American land, naval, and air forces to operate where they want, at their own tempo, while creating the environment for success.

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Chap 2

IV. Air Force Roles, Missions & Functions

Ref: AFDD1, Air Force Basic Doctrine, Organization and Command (2011), chap. 5.

I. Air Force Core Functions

Recently the Air Force refined its understanding of the core duties and responsibilities it performs as a Service, streamlining what previously were six distinctive capabilities and seventeen operational functions into twelve core functions to be used across the doctrine, organization, training, materiel, leadership and education, personnel, and facilities spectrum. These core functions express the ways in which the Air Force is particularly and appropriately suited to contribute to national security, but they do not necessarily express every aspect of what the Air Force contributes to the nation. It should be emphasized that the core functions, by themselves, are not doctrinal constructs.

Air Force Core Functions

1. Nuclear Deterrence Operations (NDO)
2. Air Superiority
3. Space Superiority
4. Cyberspace Superiority
5. Command and Control (C2)
6. Global Integrated ISR
7. Global Precision Attack
8. Special Operations
9. Rapid Global Mobility
10. Personnel Recovery
11. Agile Combat Support (ACS)
12. Building Partnerships

Sample

Ref: AFDD1 (2011), Air Force Basic Doctrine, Org and Cmd, fig. 5-1, p. 43.

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Air Force Core Functions

Ref: AFDD1, Air Force Basic Doctrine, Organization and Command (2011), pp. 43 to 53. Note: AFDD1 (2011) streamlines what previously were six distinctive capabilities and seventeen operational functions into twelve core functions (listed below). See pp. 2-4 to 2-5 for further discussion.

1. Nuclear Deterrence Operations (NDO)

The purpose of Nuclear Deterrence Operations (NDO) is to operate, maintain, and secure nuclear forces to achieve an assured capability to deter an adversary from taking action against vital US interests. In the event deterrence fails, the US should be able to appropriately respond with nuclear options. The sub-elements of this function are:

- Assure/Dissuade/Deter
- Nuclear Strike
- Nuclear Surety

2. Air Superiority *(see pp. 2-7 to 2-16)*

Air Superiority is "that degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea, air, and special operations forces at a given time and place without prohibitive interference by the opposing force" (JP 1-02). The sub-elements of this function are:

- Offensive Counterair (OCA)
- Defensive Counterair (DCA)
- Airspace Control

3. Space Superiority *(see pp. 2-17 to 2-20)*

Space superiority is "the degree of dominance in space of one force over another that permits the conduct of operations by the former and its related land, sea, air, space, and special operations forces at a given time and place without prohibitive interference by the opposing force" (JP 1-02). Space superiority may be localized in time and space, or it may be broad and enduring. Space superiority provides freedom of action in space for friendly forces and, when directed, denies the same freedom to the adversary. Sub-elements include:

- Space Force Enhancement
- Space Force Application
- Space Control
- Space Support

4. Cyberspace Superiority *(see pp. 2-63 to 2-82)*

Cyberspace Superiority is "the operational advantage in, through, and from cyberspace to conduct operations at a given time and in a given domain without prohibitive interference" (AFDD 3-12, Cyberspace Operations). The sub-elements of this function are:

- Cyberspace Force Application
- Cyberspace Defense
- Cyberspace Support

5. Command and Control (C2) *(see Chap. 4)*

Command and control is "the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission" (JP 1-02).

6. Global Integrated Intelligence, Surveillance, and Reconnaissance (ISR) *(see pp. 2-55 to 2-62)*

Global Integrated ISR is the synchronization and integration of the planning and operation of sensors, assets, and processing, exploitation, dissemination systems across the globe to conduct current and future operations.

Sample

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7. Global Precision Attack *(see pp. 2-21 to 2-42)*

Global Precision Attack is the ability to hold at risk or strike rapidly and persistently, with a wide range of munitions, any target and to create swift, decisive, and precise effects across multiple domains.

- Strategic Attack (SA)
- Air Interdiction (AI)
- Close Air Support (CAS)

8. Special Operations

Special Operations are "operations conducted in hostile, denied, or politically sensitive environments to achieve military, diplomatic, informational, and/or economic objectives employing military capabilities for which there is no broad conventional force requirement. These operations may require covert, clandestine, or low-visibility capabilities. Special operations are applicable across the ROMO. They can be conducted independently or in conjunction with operations of conventional forces or other government agencies and may include operations through, with, or by indigenous or surrogate forces. Special operations differ from conventional operations in degree of physical and political risk, operational techniques, mode of employment, independence from friendly support, and dependence on detailed operational intelligence and indigenous assets" (JP 1-02).

9. Rapid Global Mobility *(see pp. 2-43 to 2-54)*

Rapid Global Mobility is the timely deployment, employment, sustainment, augmentation, and redeployment of military forces and capabilities across the ROMO. It provides joint military forces the capability to move from place to place while retaining the ability to fulfill their primary mission. Rapid Global Mobility is essential to virtually every military operation, allowing forces to reach foreign destinations quickly, thus seizing the initiative through speed and surprise. The sub-elements of this function are:

- Airlift
- Air Refueling
- Aeromedical Evacuation

10. Personnel Recovery

Personnel Recovery (PR) is defined as "the sum of military, diplomatic, and civil efforts to prepare for and execute the recovery and reintegration of isolated personnel" (JP 1-02). It is the ability of the US government and its international partners to affect the recovery of isolated personnel across the ROMO and return those personnel to duty. PR also enhances the development of an effective, global capacity to protect and recover isolated personnel wherever they are placed at risk; deny an adversary's ability to exploit a nation through propaganda; and develop joint, interagency, and international capabilities that contribute to crisis response and regional stability. The sub-elements of this function are:

- Combat Search and Rescue
- Civil Search and Rescue
- Disaster Response
- Humanitarian Assistance Operations
- Medical Evacuation/Casualty Evacuation

11. Agile Combat Support (ACS) *(see pp. 2-83 to 2-86)*

Agile Combat Support is the ability to field, protect, and sustain Air Force forces across the ROMO to achieve joint effects.

12. Building Partnerships *(see pp. 3-27 to 3-30)*

Building Partnerships is described as Airmen interacting with international airmen and other relevant actors to develop, guide, and sustain relationships for mutual benefit and security. It includes both foreign partners as well as domestic partners and emphasizes collaboration with foreign governments, militaries and populations as well as US government departments, agencies, industry, and NGOs. The sub-elements of this function are communicate and shape.

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Effects-Based Operations (EBO)

Ref: AFDD2, Operations and Organization (Apr '07), pp. 13 to 20.

Effects-based operations (EBO) are operations that are planned, executed, assessed, and adapted to influence or change systems or capabilities in order to achieve desired outcomes. EBO encompasses planning, execution, and assessment. The key insights are: that effective operations must be part of a coherent plan that logically supports and ties all objectives and the end state together; that the plan to achieve the objectives must guide employment; and that means of measuring success and gaining feedback must be planned for and evaluated throughout execution. EBO is focused upon desired outcomes—objectives and the end state—and all efforts should be directed in a logically consistent manner toward their attainment. In this respect, EBO is an elaboration of the "strategy-to-task" methodology long in use. Because it focuses upon the objectives, EBO is not about platforms, weapons, or methods. That is, EBO is "outcomes-based," not "inputs-based." It does not take available resources and attempt to reason desired outcomes from them. EBO seeks to attain objectives efficiently, but the availability of resources may constrain the options. That is, commanders must accomplish their assigned missions, but within that constraint, they should be accomplished for as little "cost" (in terms of lives, treasure, time, and/or opportunities) as possible.

See pp. 5-5 to 5-8 for discussion of effects-based considerations for planning.

Principles of EBO

- Effects-Based Operations Seek to Integrate Planning, Execution, and Assessment
- EBO Should Focus Upon the Objectives and the End State
- Effects-Based Operations Are About Creating Effects, Not About Platforms, Weapons, or Methods
- The Effects-Based Approach Should Consider All Possible Types Of Effects
- Effects-Based Operations Should Seek to Achieve Objectives Most Effectively, Then to the Degree Possible, Most Efficiently
- Effects-Based Operations Cut Across All Dimensions, Disciplines, and Levels Of War
- Effects-Based Operations Recognize that War is a Clash of Complex Adaptive Systems
- Effects-Based Operations Focus on Behavior, Not Just Physical Changes
- Effects-Based Operations Recognize that Comprehensive Knowledge of All Actors and the Operational Environment Are Important to Success, But Come at a Price
- Effects-Based Operations Should Always Consider The "Law Of Unintended Consequences"
- An Effects-Based Approach Is a Comprehensive Way of Thinking About Operations

Actions, Effects and Objectives

Properly understanding the relationship between actions, effects, and objectives is important to EBO. **Actions** produce specific direct effects, those effects produce other indirect effects, and this chain of cause and effect creates a mechanism through which objectives and the end state are achieved. An **objective** is an ultimate desired outcome of a set of actions and effects in a particular context or situation. Objectives at one level may be seen as effects at another, higher level. They are the effects that all actions, subordinate effects, and operations should contribute to accomplishing. **Effects** in general comprise all of the results of a set of actions, whether desired or undesired, direct or indirect, ultimate or intermediate, expected or unexpected.

See pp. 5-6 to 5-7 for further discussion of actions, effects and objectives.

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III. Joint Air Operation Planning (JOPPA)

Ref: JP 3-30, Command and Control for Joint Air Operations (Jan '10), chap. 3.

This discussion reflects that the JFC has designated a JFACC. Planning for joint air operations begins with understanding the JFC's mission and intent. The JFC's estimate of the operational environment and articulation of the objectives needed to accomplish the mission form the basis for determining components' objectives. The JFACC uses the JFC's mission, commander's estimate and objectives, commander's intent, CONOPS, and the components' objectives to develop a course of action (COA). When the JFC approves the JFACC's COA, it becomes the basis for more detailed joint air operations planning—expressing what, where, and how joint air operations will affect the adversary or current situation. The JFACC's daily guidance ensures that joint air operations effectively support the joint force objectives while retaining enough flexibility in execution to adjust to the dynamics of military operations.

Joint Operation Planning Process for Air

1. Initiation
2. Mission Analysis
3. COA Development
4. COA Analysis and War Gaming
5. COA Comparison
6. COA Approval
7. Plan or Order Development

Sample

Ref: JP 3-30, Command and Control for Joint Air Operations, fig. III-4, p. III-5.

The Joint Operation Planning Process for Air (JOPPA)

The JFACC is responsible for planning joint air operations and uses the joint operation planning process for air (JOPPA) to develop a JAOP that guides employment of the air capabilities and forces made available to accomplish missions assigned by the JFC. JOPPA is a seven-step process similar to the joint operation planning process found in Joint Operation Planning. JOPPA culminates in the production of the JAOP and supporting plans and orders. JOPPA may be accomplished during contingency planning, producing JAOPs that support OPLANs or concept plans. JOPPA may also be accomplished as part of crisis action planning or in conjunction with other operation planning. While the steps are presented in sequential order, work on them can be concurrent or sequential.

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Sample Joint Air Estimate of the Situation

Ref: JP 3-30, Command and Control for Joint Air Operations (Jan '10), app. B. See also p. 5-10.

A. Mission. State the assigned or deduced mission and its purpose.

- JFC's mission statement (from the JFC's estimate), or other overarching guidance if the latter is unavailable
- JFACC's mission statement. Include additional language indicating how overarching guidance will be supported, as required

B. Situation and Courses of Action.

1. Commanders' Intent

- JFC's intent statement, if available (or other overarching guidance stipulating the end state, as required)
- JFACC's intent statement

2. Objectives. Explicitly state air component objectives and the effects required to support their achievement. Include as much detail as required to ensure that each objective is clear, decisive, attainable, and measurable.

3. Summary of the Results of JIPOE. Include a brief summary of the major factors pertaining to the characteristics of the operating environment and the relative capabilities of all actors within it that may have a significant impact on alternative air COAs.

4. Adversary Capability. Highlight, if applicable, the adversary capabilities and psychological characteristics that can seriously affect the accomplishment of the mission, giving information that would be useful in evaluating the various air COAs. This section should describe, at a minimum, the enemy's most likely and most dangerous potential COAs.

5. Force Protection Requirements. Describe potential threats to friendly forces, including such things as the threat of terrorist action prior to, during, and after the mission that can significantly affect accomplishment of the mission.

6. Own Courses of Action. List air COAs that offer suitable, feasible, and acceptable means of accomplishing the mission. If specific air COAs were prescribed in the WARNING ORDER, they must be included. For each air COA:

- Combat forces required. List capabilities needed, and, if applicable, specific units or platforms. For each, list the following, if known:
  1. Force provider
  2. Destination
  3. Required delivery date(s)
  4. Coordinated deployment estimate
  5. Employment estimate
  6. Strategic lift requirements, if appropriate
- ISR forces required. List capabilities needed, and, if applicable, specific units or capabilities
- Support forces required. List capabilities needed, and, if applicable, specific units or capabilities

C. Analysis of Opposing Courses of Action. Highlight adversary capabilities and intent (where known) that may have significant impact on friendly COAs.

D. Comparison of Own Courses of Action. For submission to the JFC, include only the final statement of conclusions and provide a brief rationale for the favored air COA. Discuss the relative advantages and disadvantages of the alternative air COAs if this will assist the JFC in arriving at a decision.

E. Recommended Course of Action. State the JFACC's recommended COA.

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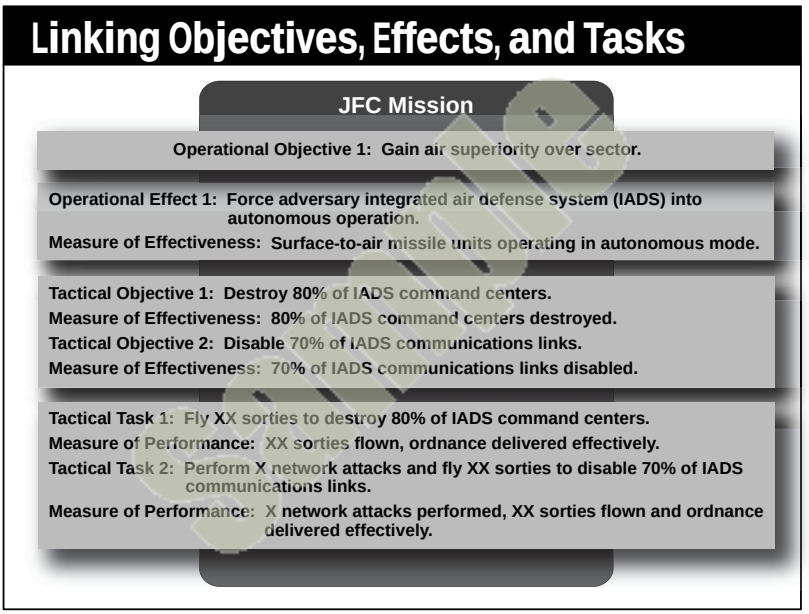
Linking Objectives, Effects, and Tasks

Commanders plan joint operations by developing objectives supported by measurable effects and assessment indicators. Analysis of effects (desired and undesired) and determination of measures of effectiveness during planning for joint air operations is usually conducted by the JAOC strategy plans and operational assessment teams, assisted by all other planning elements of the JAOC.

To clarify, objectives prescribe friendly goals. Effects describe system behavior in the operational environment. Desired effects are the conditions related to achieving objectives. Tasks, in turn, direct friendly action. Objectives and effects are assessed through measures of effectiveness (MOEs). Empirically verifiable MOEs may help ensure the JFACC knows when the desired ends have been achieved. Accomplishment of friendly tasks is assessed through measures of performance (MOPs). MOEs help answer questions like, "are we doing the right things, or are alternative actions required?" MOEs also help focus component operational assessment efforts, inform processing, exploitation, and dissemination (PED) priorities, and identify ISR requirements. MOPs help answer questions like, "are we doing things right: were the tasks completed to standard?"



Ref: JP 3-30, Command and Control for Joint Air Operations, fig. III-7, p. III-12.

Once strategists and planners define the joint air objectives and supporting effects and tasks, they further refine potential air COAs based on the objective priority, sequence, phasing, weight of effort, and matched resources. This is one method of differentiating COAs. Other methods include varying time available, anticipated adversary activities, friendly forces available, and higher-level guidance. For air planning, a single COA may be developed with several branches and sequels that react to possible adversary activities.

Planners should determine the validity of each air COA based on suitability, feasibility, acceptability, distinguishability, and completeness.

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