AIR FORCE DOCTRINE PUBLICATION 3-03

COUNTERLAND OPERATIONS

U.S. AIR FORCE

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AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03
COUNTERLAND OPERATIONS

INTRODUCTION TO COUNTERLAND OPERATIONS
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Counterland doctrine is constantly evolving. It guides us to effectively organize and employ through the complexities of counterinsurgency and steady-state operations and help us re-learn the lessons of large-scale peer and near-peer conflict and competition in contested environments. As we continuously improve our airpower capabilities and capacities, our ability to revolutionize counterland and incorporate new concepts and technologies will identify the new best practices that shape future counterland doctrine. The competition continuum that encompasses peacetime through large-scale combat, is always a consideration when determining the best practices for our Air Force. Consideration of peer and near-peer competition is a continuing necessity for doctrine as the Air Force supports the joint fight. Every Airman is an innovator and is integral to this continuous development process–we should all connect, share, and learn together to succeed. Counterland in a contested environment against a peer adversary requires the air component to be more adaptive, resilient, and agile in its deployment and employment plans and leadership philosophies.

The air component commander executes counterland operations by conducting air interdiction (AI) or by supporting land forces with close air support (CAS). AI and CAS can function under an overall theater posture of offense or defense and are typically integrated and coordinated with the land component commander's target nomination list and ground scheme of maneuver to maximize the effect on the enemy. Military history provides many examples where airpower successfully engaged enemy land forces in modern warfare, from the breakout of Normandy in World War II, to the destruction of the Iraqi army in 1991 and 2003, to the overthrow of the Taliban government. Airpower is a vital element in joint warfare and continues to demonstrate a unique ability to deliberately and dynamically attack enemy land forces. With a solid comprehension of counterland operations, Airmen increase their ability to properly plan and execute airpower operations against enemy land forces.
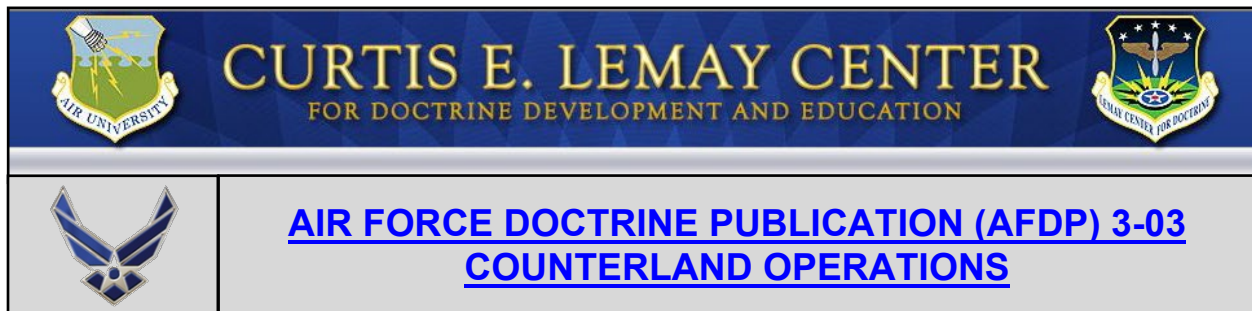
Counterland operations create effects at all levels of warfare and significantly influence the course of joint all-domain operations. Counterland effects focus at the

tactical and operational [levels of war](#) by targeting fielded enemy ground forces and their supporting infrastructure. Counterland operational [effects](#) contribute to strategic effects by denying the enemy's ability to execute coherent ground operations. In cases where the enemy places strategic value on a specific portion of their ground combat force, counterland operations can produce more immediate effects at the strategic level.

Counterland operations are applicable across the competition continuum and the range of operations. Counterland operations apply to both large-scale combat operations and [stability operations](#) characterized by [insurgency](#), guerrilla tactics, and civil strife.[1] Counterland operations against a modern, highly mechanized army differ from operations conducted in an asymmetric environment against irregular forces. Therefore, it is crucial to understand the nature of the conflict to properly apply airpower during counterland operations.[2]

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[1] Historical examples include: British air policing in the Middle East during the interwar period, French operations during the battle for Algeria, the US in Vietnam, the insurgent war in El Salvador, and recent US air operations in Iraq and Afghanistan.

[2] This publication focuses on air interdiction and close air support over land and littoral areas. For a discussion of airpower in support of maritime operations see AFDP 3-04, *Countersea Operations*.

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ROLE OF COUNTERLAND OPERATIONS

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Counterland operations are defined as airpower operations against enemy land force capabilities to create effects that achieve joint force commander (JFC) objectives. Counterland operations aim to dominate the land environment using airpower to assist friendly land maneuver while denying the enemy the ability to resist. Although most frequently associated with support to friendly ground forces, counterland operations may also be conducted independent of friendly ground force objectives or in areas where friendly land forces are not present. Recent conflicts in the Balkans, Afghanistan, and Iraq illustrate situations where counterland operations have been used with small numbers of friendly land forces or special operations forces (SOF) who provided target cueing. This independent attack of enemy land forces by airpower often leads to success when seizing the initiative, especially in the beginning of combat operations.

Counterland operations are a form of maneuver warfare that seeks to destroy an enemy's fighting ability through focused attacks against key enemy targets. Air Force forces, with their inherent speed, range, and precision attack capabilities, are combat multipliers for the JFC. The destruction of decisive points, forces, and capabilities by striking enemy military targets such as fielded land forces, command and control (C2) nodes, vital logistics, or supporting infrastructure degrades the enemy system and ultimately contributes to an enemy incapable of effective resistance. Persistently applied, airpower can disrupt the enemy and destroy its ability to fight as a coherent, effective whole, thus wresting initiative and dictating tempo.

Counterland operations can support and facilitate maneuver warfare on land. World War I saw the first widespread use of airpower in support of allied land operations when combat aircraft began cutting supply routes, strafing trenches, and bombing fielded forces. Military leaders soon realized that airpower added a synergistic element to conventional ground forces because of its ability to attack behind enemy lines and support offensive breakthroughs. Since then, counterland operations have occurred in every major war as well as numerous smaller conflicts characterized by protracted, low-intensity conflict. Airpower has proven invaluable in supporting friendly ground maneuvers by diverting, disrupting, delaying, or destroying an enemy's operational military potential.

Counterland operations can serve as the main attack and be the decisive means for achieving JFC objectives. Although often associated with support to friendly ground forces, counterland operations also include operations that directly support the JFC's theater strategy rather than exclusively supporting a land component. In some cases, counterland operations can provide the sole US effort against the enemy. This occurred in Libya during Operations ODYSSEY DAWN and UNIFIED PROTECTOR. During these US and NATO led operations, there were not significant numbers of US or NATO ground forces, and air operations were employed to achieve the operational and strategic military end states. In concert with strategic attack operations, during Operation ALLIED FORCE, the NATO independent counterland battle against Serbian ground forces helped end Slobodan Milosevic's ethnic cleansing campaign in Kosovo.

In other campaigns where a friendly ground force presence is required to achieve the desired end state, counterland operations can decisively engage enemy fielded forces prior to engagement by friendly ground forces. During Operation DESERT STORM, counterland operations severely damaged the Iraqi army and achieved JFC objectives aimed at weakening enemy forces prior to the start of ground operations. In the end, the devastating effects of counterland operations paved a path for coalition forces to roll back a demoralized Iraqi army in Kuwait. These historical examples illustrate that directly attacking enemy land forces by airpower forces can quickly gain control over the battlefield during early combat operations.

Counterland operations are not associated with a particular type of aircraft or weapon system. Instead, a variety of airpower assets conduct counterland operations to deliver lethal and nonlethal effects against enemy land forces and infrastructure. Predominant weapons systems used in counterland operations include aircraft equipped with cannons, bombs, standoff missiles, rockets, and electronic warfare systems. Air assets, space systems, cyberspace systems, and SOF provide intelligence, surveillance, and reconnaissance (ISR) as well as target cueing, navigation aids, and battle damage assessment. Each weapon system has unique characteristics that should be considered, determined by the nature of the threat, desired effects, and environmental conditions. Fighters, bombers, gunships, remotely piloted or unmanned aircraft,[1] helicopters, cruise missiles, and surface-to-surface artillery and missile systems are a few examples of joint assets that commanders can use to execute counterland operations. Also, joint space and cyberspace capabilities can be employed to deny or disrupt enemy command and control, communications, navigation, ISR, missile warning, integrated air defense systems, and supporting systems.

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[1] The Air Force refers to some of its larger unmanned aircraft as remotely piloted aircraft (RPA) to differentiate its operators who have been trained to similar standards as manned aircraft pilots.

Counterland Operations Achieved JFC Objectives

In the first week of November 2001, bombers and fighters supported by SOF destroyed Taliban forces defending the enemy stronghold of Mazar-i-Sharif during Operation ENDURING FREEDOM. These actions facilitated the Northern Alliance's capture of the town on 9 November 2001. Soon, counterland airpower cued by SOF teams routed Taliban forces throughout Afghanistan until Kabul itself fell just days after Mazar-i-Sharif. Within two weeks, Coalition forces took control of Afghanistan by relying on the powerful combination of counterland airpower and distributed ground forces using small-unit tactics.
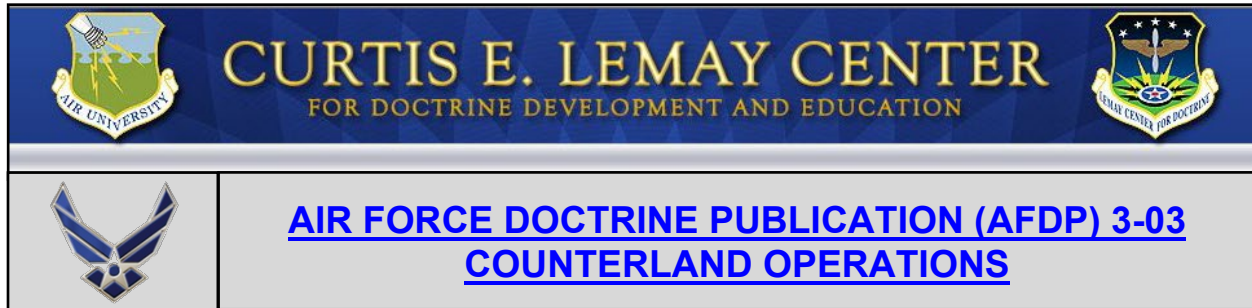
AIR INTERDICTION FUNDAMENTALS

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The Air Force defines air interdiction (AI) as air operations conducted to divert, disrupt, delay, or destroy the enemy's military potential before it can be brought to bear effectively against friendly forces, or to otherwise achieve joint force commander's (JFC's) objectives, and conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.

When the joint definition for air interdiction was last updated the meaning of the definition was inadvertently changed. The current joint definition for AI is defined as "air operations conducted to divert, disrupt, delay, or destroy the enemy's military surface capabilities before they can be brought to bear effectively against friendly forces, or to otherwise achieve objectives that are conducted at such distances from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required" (Joint Publication 3-03, *Joint Interdiction*). As written, the definition implies the "objectives" are conducted at such distances from friendly forces, instead of the correct meaning that the "air operations" are conducted at such distances from friendly forces. This is to be corrected during the next revision of JP 3-03.

When conducted as part of a joint campaign, AI needs the direction of a single commander who can exploit and coordinate all the forces involved. The air component commander is normally the supported commander for the joint force commander's (JFC's) overall AI effort. When designated as the supported commander, the air component commander conducts theater-wide or joint operations area- (JOA-) wide AI, in accordance with the JFC's overall theater objectives. The air component commander (aided by the component and Service liaisons) recommends theater or JOA-wide targeting priorities and, in coordination with other component commanders, forwards the air apportionment recommendation to the JFC. The air component commander plans and executes the interdiction effort in accordance with the JFC's guidance. Because of the air component commander's theater/JOA-wide perspective and joint planning capabilities, the JFC may also delegate the air component commander with

responsibility for planning and coordination of all theater/JOA-wide interdiction operations outside of land component commanders' areas of operations. [1]

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[1] Interdiction operations employ means that can create both lethal and nonlethal effects. Not all air interdiction falls under the category of counterland. History has many examples of airpower interdicting the enemy's air or sea lines of communication; these are actually counterair or countersea missions even though they may have an interdiction effect at the operational level. Additionally, some interdiction missions may be considered a subset of strategic attack or counterspace operations.

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CLOSE AIR SUPPORT FUNDAMENTALS

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Close air support (CAS) is defined as air action by aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces (Joint Publication 3-09.3, *Close Air Support*)**.** CAS provides supporting firepower in offensive and defensive operations to destroy, disrupt, suppress, fix, harass, neutralize, or delay enemy targets as an element of joint fire support. The speed, range, and maneuverability of airpower allows CAS assets to attack targets that enable the ground scheme of maneuver. When conditions for air operations are permissive, CAS can be conducted at any place and time friendly forces are in close proximity to enemy forces and, at times, may be the best means to exploit tactical opportunities.

Although in isolation CAS rarely achieves campaign-level objectives, at times it may be the more critical mission due to its contribution to a specific operation or battle. CAS should be planned to prepare the conditions for success or reinforce successful attacks of ground forces. CAS can halt enemy attacks, help create breakthroughs, destroy targets of opportunity, cover retreats, and guard flanks. To be most effective, CAS should be used at decisive points in a battle and should normally be massed to apply concentrated combat power and saturate defenses. Elements of the theater air control system (TACS) should be in place to enable command and control (C2) and clearance to attack in response to rapidly changing tactical circumstances. In fluid, high-intensity warfare, the need for terminal attack control, the unpredictability of the tactical situation, the risk of collateral damage and friendly fire, and the proliferation of ground-based air defenses make CAS especially challenging.
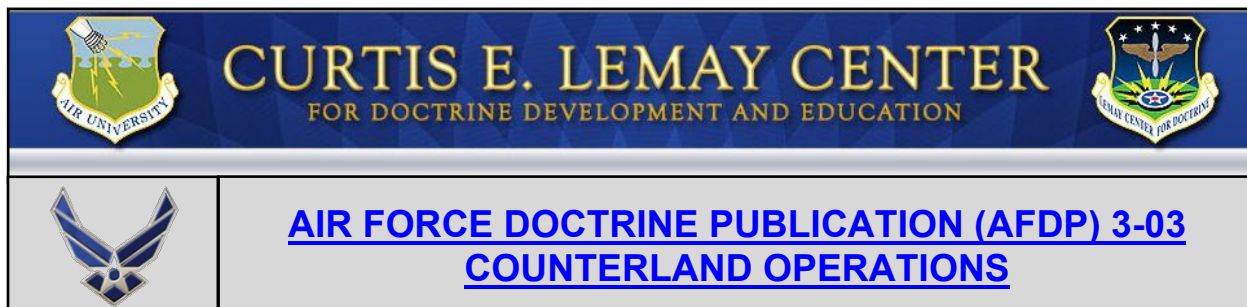
CAS requires a significant level of coordination between air and ground forces to produce desired effects, avoid excessive collateral damage, and prevent friendly fire. CAS employment should create effects that support the ground scheme of maneuver. The fluidity of the ground situation that exists within close proximity usually requires real-time direction from a joint terminal attack controller (JTAC) to ensure targets of highest priority to the ground commander are struck. Additionally, when friendly forces are within close proximity, the more restrictive, terminal attack control measures are required to integrate CAS with ground maneuver and joint fires. The integration of airpower and ground maneuver is an important factor for mitigating friendly fire incidents. Thus, Airmen should consider three key factors when employing CAS: the

need for flexible, real-time targeting guidance; the avoidance of affecting friendly ground forces in close proximity to the target; and compliance with rules of engagement (ROE) and the law of war.

DETAILED INTEGRATION AND RELEASE AUTHORITY

In the definitions of air interdiction (AI) and CAS, the requirement for detailed integration is a key difference between the two missions. When targets are not in close proximity to friendly forces, detailed integration may not be required because the possibility of friendly fire is lower. Since AI should not require detailed integration, aircrew employ munitions according to the ROE and target identification standards set forth in theater guidance, without the need for additional clearance. AI release authority may be delegated to the aircrew conducting the mission. Beyond the fire support coordination line (FSCL) this delegation would come from the air component commander or an authorized element of the theater TACS. For AI release authority short of the FSCL (i.e., within fire support coordination measures such as a kill box), the air support operations center (ASOC) normally coordinates with the air operations center and acts as the Air Force C2 element. Although AI release authority is delegated to the aircrew, this does not preclude off-board target cueing or terminal guidance operations from special operations forces, Joint Surveillance Target Attack Radar System, strike coordination, and reconnaissance, ASOC, or intelligence, surveillance, and reconnaissance platforms.

Conversely, CAS requires detailed integration because friendly forces are in close proximity to the engagement. The ground commander is the release authority within the area of operations (AO) and usually does not delegate it to the aircrew with the possible exception of a forward air controller (airborne). The ground commander delegates this release authority to personnel trained as JTACs in direct support of his or her element, who in turn provide clearance to CAS aircraft.

TYPES OF AIR INTERDICTION AND CLOSE AIR SUPPORT

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Counterland missions are either scheduled or on-call. Scheduled missions result from preplanned requests during the normal air tasking cycle and allow for detailed coordination between the tactical units involved. Preplanned requests may result in sorties in an on-call status (either airborne or ground alert) to cover periods of expected enemy action, respond to immediate requests, or attack emerging targets. Scheduled air interdiction (AI) missions use detailed intelligence to attack known or anticipated targets in an operational area to generate effects that achieve the joint force commander's (JFC) objectives. Scheduled close air support (CAS) missions are normally provided to a specific ground unit or operation.

With the appropriate commander's approval, scheduled AI or CAS missions can be re-tasked to provide CAS or attack time-sensitive targets via the dynamic execution process. Threats, aircrew qualifications, weapons load, and weapons fusing should be considered when re-tasking missions. Commanders and planners should carefully consider the balance between effectiveness and efficiency of keeping a portion of air assets in reserve when identifying airborne and ground alert missions. Immediate requests may result from situations that develop after the suspense for preplanned requests in a particular air tasking order (ATO) period. Dynamic execution provides a responsive use of on-call or dynamically re-tasked counterland missions to exploit enemy vulnerability that may be of limited duration. However, dynamic execution may reduce success because of reduced time for mission preparation and target study.

The following are types of counterland missions, followed by the corresponding Theater Battle Management Core Systems mission-type codes:

☢ **AI/AI** is a mission scheduled to strike particular targets in response to JFC or component target nominations.

☢ **GAI/GINT** is the AI term used to identify an on-call mission placed on ground alert to provide responsive AI throughout the theater in response to emerging targets.

☢ **XAI/XINT** is the AI term used to identify an airborne alert AI mission tasked for on-call targets that may be re-tasked during execution for targets of opportunity (also referred to as armed reconnaissance).

- ✪ **SCAR/SCAR (**Strike Coordination and Reconnaissance**)** missions use aircraft to detect targets for dedicated AI missions in a specified geographic zone. The area may be defined by a box or grid where worthwhile potential targets are known or suspected, or where mobile enemy ground units have relocated because of ground fighting. For more information on SCAR, see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.72, *Multi-Service TTP for Strike Coordination and Reconnaissance*.

- ✪ **CAS/CAS** is a mission scheduled to provide air support to preplanned CAS requests.

- ✪ **GCAS/GCAS** is the CAS term used to identify an on-call mission placed on ground alert status to provide responsive air support to ground forces that encounter substantial enemy resistance. CAS assets located close to the supported ground forces normally provide faster response times. GCAS missions may be changed to XCAS as the situation dictates. *See '*Pull CAS*' discussion.*

- ✪ **XCAS/XCAS** is the CAS term used to identify an on-call mission on airborne alert status in the vicinity of ground forces that expect to encounter enemy resistance. XCAS sorties typically remain in established holding patterns to provide responsive air support while waiting on a tasking from any ground unit that needs CAS. If no tasking evolves during the vulnerability period, XCAS missions may shift to an AI role if other targets exist. *See '*Push CAS*' discussion.*

> ### Command Relationships and Mission Types
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> The TBMCS uses "mission type" descriptors for missions ranging from direct support of ground forces, to the independent application of airpower supporting JFC objectives in the absence of ground forces. Descriptors and their prefixes are not linked to command relationships. An XINT mission using special operations forces (SOF) as a sensor could quickly devolve into a CAS mission if the SOF unit becomes compromised. In this case, airpower supported by SOF becomes SOF supported by airpower, and the TBMCS mission type planned is irrelevant.

NOTE: When "X" prefix missions are scheduled with the objective of providing flexible or continuous airborne presence, the effort constitutes a persistent air mission. XINT missions are designed to provide persistent reconnaissance or persistent attack, on-call airpower where targeting is expected to be highly dynamic or unpredictable. High-endurance unmanned aircraft have inherent advantages when executing this approach. However, building persistence into ATO assigned missions is not bound to a specific aircraft type. Planning for a persistent combination of surveillance, kinetic, and non-kinetic actions is the underlying goal of any ATO. Dominance in the air translates into

key effects in the land domain and provides integration points for cross-domain access. Further, the ability to continuously create effects at a position or defined area for long durations can enable cross-domain capabilities.

Some theaters of operation may use nondoctrinal mission taskings such as "armed overwatch." These are specific applications of CAS or AI and should not be confused as a new counterland mission category. During counterinsurgency (COIN) operations in Iraq and Afghanistan, ground commanders relied heavily on aircraft conducting "armed overwatch" missions to provide full motion video in support of the ground commander's scheme of maneuver. Armed overwatch provided critical situational awareness and when necessary, immediate CAS in the dynamic COIN environment. If the situation requires the "armed" portion of the mission, including shows of force, it should be considered CAS in support of the affected ground force and use CAS procedures as outlined in Joint Publication 3-09.3, *Close Air Support*. Armed overwatch should not be considered a new or independent counterland mission area distinct from CAS; however, commanders may develop specific procedures in addition to CAS procedures if required for the "overwatch" portion of mission.

Other examples of unique counterland missions include the generic term "attack" for missions that do not clearly meet AI definitions, and strategic attack for missions that fall under a different operational function than counterland.

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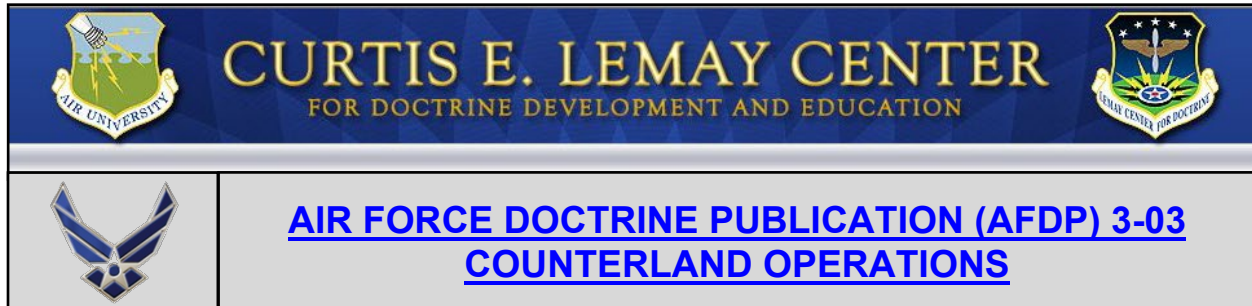
DERIVATIVE MISSIONS ASSOCIATED WITH COUNTERLAND
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Derivative mission types are frequently tasked to complement and support counterland operations. The following discussion briefly describes common missions associated with the effective accomplishment of close air support (CAS) and air interdiction (AI).

Forward Air Controller (Airborne) (FAC[A]). FAC(A) missions provide terminal attack control (TAC) for CAS aircraft operating in close proximity to friendly ground forces. Due to the risk of friendly fire, FAC(A)s are specifically trained aviation officers qualified to provide delivery clearance to CAS aircraft. The FAC(A) is the only person cleared to perform such control from the air and can be especially useful in controlling CAS against targets that are beyond the visual range of friendly ground forces.

Tactical Air Coordinator (Airborne) (TAC[A]). TAC(A) missions provides communications relay between the tactical air control party (TACP) and attack aircraft, as well as other agencies of the theater air control system, in the absence of the Joint Surveillance Target Attack Radar System (JSTARS) or a FAC(A). Air Force two-aircraft FAC(A) flights, especially in higher threat environments, may divide responsibilities so one aircraft fills the normal FAC(A) role while the second becomes a TAC(A). The TAC(A) expedites CAS aircraft-to-joint terminal attack controller handoff during "heavy traffic" CAS.

Strike Coordination and Reconnaissance (SCAR). SCAR missions use aircraft to detect targets for dedicated AI missions in a specified geographic zone. The area may be defined by a box or grid where worthwhile potential targets are known or suspected to exist, or where mobile enemy ground units have relocated because of ground fighting.

SCAR missions are normally part of the command and control (C2) interface to coordinate multiple flights, detect and strike targets, neutralize enemy air defenses, and provide battle damage assessment (BDA). SCAR aircrew perform a similar function for AI missions that FAC(A) provide for CAS missions. Typical tasks include cycling multiple attacking flights through the target area and providing prioritized targeting guidance to maximize the effect of each sortie. Aircrew on most fighters and some C2 platforms, such as the JSTARS, are trained to coordinate SCAR missions. Platforms like remotely piloted aircraft can perform specific SCAR tasks such as locating,

verifying, and cross-cueing other assets to positively identify targets and pass target updates. These platforms may also be able to engage targets on their own, buddy lase for manned aircraft, and provide BDA for the same mission. Optimally, the control and sequencing of aircraft is best performed by an Airborne Warning and Control System (AWACS) or a control and reporting center (CRC).

Even though some SCAR responsibilities are similar to those of a FAC(A), SCAR aircrew do not have the authority to conduct terminal attack control of CAS. FAC(A)s undergo specialized training to effectively coordinate and integrate air-ground forces to conduct TAC safely during CAS—a SCAR aircrew does not have terminal attack control authority. A FAC(A)-qualified pilot can conduct SCAR, but a SCAR pilot without FAC(A) qualification cannot conduct FAC(A) duties. Planners and commanders should understand this important nuance when tasking airborne alert AI or armed reconnaissance missions, or diverting airborne aircraft to an immediate CAS request, since the AI aircrew may not be CAS qualified. For more information on SCAR see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.72, *Multi-Service TTP for Strike Coordination and Reconnaissance*.

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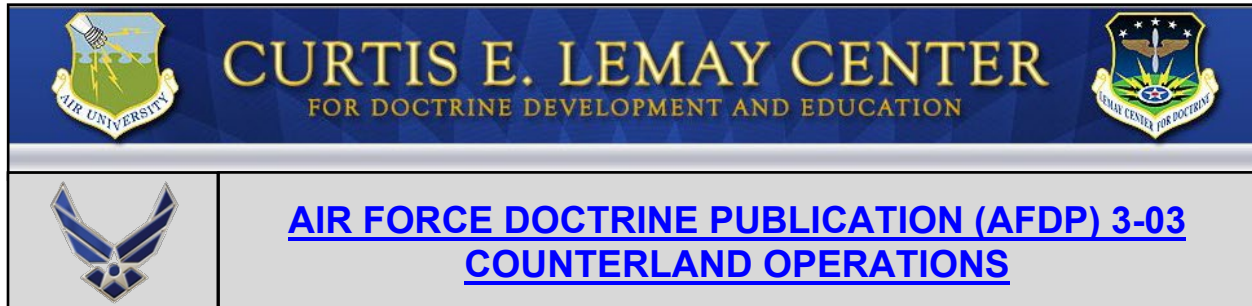
COUNTERLAND AND UNITY OF EFFORT

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Counterland operations are most effective when planned and conducted in a unified effort with other forces. Counterland levies requirements on airpower planners to plan, execute, and assess in coordination with land components. Commanders should work together to identify crucial targets; decide when, where, and how to attack them; and determine how ground operations and counterland can best complement each other to achieve joint force commander (JFC) objectives and to create opportunities for other maneuver elements to exploit.

When discussing airpower in counterland operations, it is necessary to recognize the contribution of other components' aviation arms to a unified effort. Navy, Marine Corps, Army, and special operations forces (SOF) aviation assets can be used for both air interdiction (AI) and close air support (CAS). While the primary task for Marine aviation is support to its own forces, excess Marine sorties may execute other elements of the JFC's plan. Scout and attack helicopters may also prove valuable platforms for counterland missions due to their habitual relationship with maneuver forces and their detailed understanding of the ground scheme of maneuver. Although the Army does not consider their helicopters CAS platforms, they can nevertheless employ CAS tactics, techniques, and procedures when operating in support of land forces. Depending on circumstances and the threat, SOF manned and unmanned aircraft, as well as special tactics teams may be available to support certain counterland operations. Air- and surface-launched cruise missiles and high altitude, long range Army surface fires can also be employed for interdiction. In multinational operations, forces from partner nations may be available for counterland employment.

Regardless of which component the assets come from, the counterland effort is based on component and Service target nominations for AI and Department of Defense Form 1972[1] requests for CAS, and is guided by a single air component commander and directly supports the overall joint operation or campaign. Centralized control is a fundamental airpower tenet that commanders exercise to guarantee the optimum concentration of airpower where it is most needed. The air component commander is normally the supported commander for the JFC's overall AI effort. When designated as the supported commander, the air component commander conducts theater-wide or

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[1] Joint Tactical Air Strike Request.

joint operations area- (JOA-) wide AI in direct support of the JFC's overall theater objectives. This functional responsibility is executed by engaging the enemy across the operational area wherever valuable AI targets are found, including those found inside a ground area of operations (AO). AI used in this manner tends to have the greatest overall effect on the enemy, but the results may be delayed in comparison with AI employed closer to the ground battle. If theater objectives dictate, AI may operate in support of a portion of the theater where it is more closely integrated with the ground battle. This form of AI may strike targets nominated through the joint targeting process by either the air or land component and often produces results visible to the ground commander more quickly than a theater-wide AI effort. To further enhance unity of effort, the JFC may also delegate overall responsibility for planning and coordination of all theater/JOA-wide interdiction operations outside of land component commanders' AOs.

The most detailed integration of air and land components is found in CAS where the air attack and ground battle are a single cohesive effort. Proper integration of counterland and ground operations is vital to the success of both, and the synergistic effect of integrated operations is often much greater than the sum of individual air and ground operations. This is especially so if a single, integrated joint operations plan is employed instead of attempting to synchronize individual plans developed by the various components.

The Airman's perspective is that airpower can reach to any depth of the operational area—from the close battle area back to and beyond the enemy's heartland. Depending on the designated strategy, airpower's reach enables a commander to focus counterland effects in a small area or disperse them uniformly across the theater at whatever depth is required. Normally the air component operates across the area of responsibility. Airpower should not be limited to a single or even multiple independent AOs.

Air and land maneuver forces share supporting roles during counterland operations. CAS represents aerial maneuver in direct support of ground maneuver. Air attack of ground-nominated AI targets is aerial maneuver indirectly supporting ground maneuver. Air attack against theater-wide AI targets is aerial maneuver that either provides general support to the ground force or directly achieves JFC objectives. In some circumstances ground maneuver may support aerial maneuver by forcing the enemy into a position that is more vulnerable to air attack, enabling airpower to deliver a decisive blow. Moreover, SOF have proven extremely effective for target identification and cueing, as was the case during Operations ENDURING FREEDOM and IRAQI FREEDOM. In those circumstances, air forces conducted AI in the absence of friendly ground forces, and enemy forces were able to disperse and seek cover in ways that complicated the problem for Airmen. However, as was shown in Operation ALLIED FORCE, airpower can still create decisive effects and lead to success for the joint force. Whether air or ground forces are the decisive element is not what matters. Instead, the proper integration of forces is required for successful joint operations.

Fires are defined as the use of weapon systems, or other actions, to create specific lethal or nonlethal effects on a target. Joint fires are fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective. Counterland itself is not joint fires; rather, it represents a form of aerial maneuver, which delivers fires on various targets as required. Those counterland missions that are apportioned to support another component, such as CAS and some AI, can be defined as meeting the description of "two or more components in coordinated action." Therefore, the application of these missions can be called joint fires. Those missions that operate in direct support of theater strategy, such as theater-wide AI, are not operating in "coordinated action" with another component; rather those missions are conducted with assigned forces in support of a scheme of maneuver. Therefore, the fires produced by these missions are not considered joint fires.

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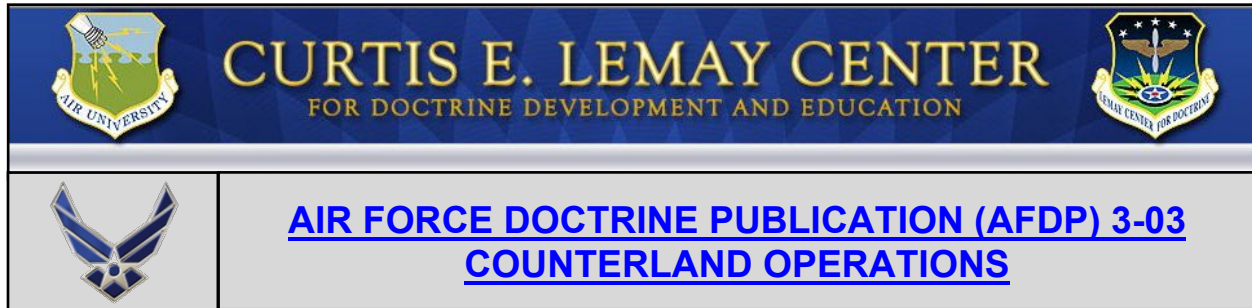
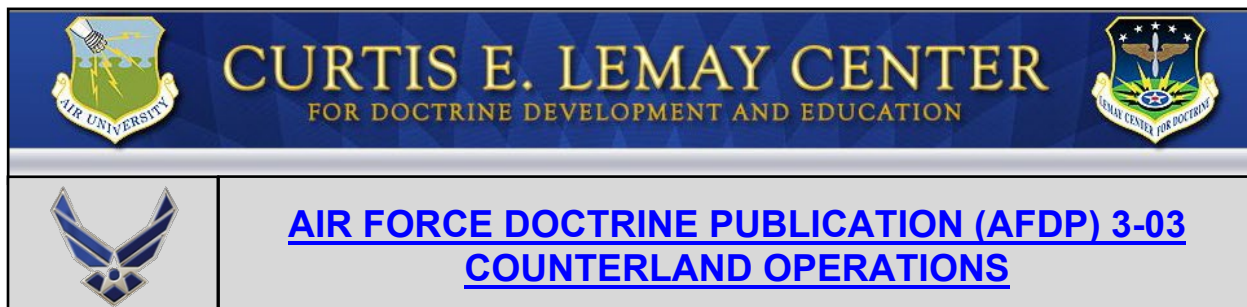# AIR INTERDICTION

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Air interdiction (AI) represents a flexible form of airpower that can be used in various ways to prosecute joint all-domain operations. However employed, certain principles such as centralized control and decentralized execution should be followed to achieve maximum effectiveness with minimum losses. AI can channel enemy movement, constrain logistics, disrupt communications, or force urgent movement to put the enemy in a favorable position for friendly forces to exploit. To be most effective, AI requires persistence, concentration, joint integration, and intelligence that is both timely and accurate. Whether supporting the land offensive by attacking land component nominated targets or decisively halting an enemy advance with theater-wide interdiction, AI provides a powerful tool for defeating the enemy ground force.

The air component often conducts theater-wide air attacks against enemy land forces and their resources to achieve joint force commander (JFC) objectives. This autonomous use of AI usually occurs outside of a land or maritime component's area of operations (AO). Special operations forces' air and land assets may play a significant supporting role during AI with their ability to integrate seamlessly into the find, fix, track, target, engage, and assess process.

Using JFC priorities and understanding the land or maritime component's scheme of maneuver, the air component commander can employ AI to provide effects that facilitate and support that maneuver. The air component commander may support a land scheme of maneuver by conducting AI within a ground commander's AO, or in support of the land component target nominations outside the land component's AO. After coordinating priorities, effects, timing, and targets with land components, the air component commander directs responsive AI across the joint operations area against enemy military capabilities that contribute directly to, or are maneuvering to reinforce, the conflict. Ground commanders often consider AI synonymous with what they express as "shaping" operations within the ground commander's AO. From an Airman's perspective, shaping may be regarded as preparing the operational environment with AI to assist the land component's scheme of maneuver.

Air Interdiction and Shaping Operations

The Army defines shaping operations as an operation that establishes conditions for the decisive operation through effects on the enemy, other actors, and the terrain (Army Doctrine Publication 3-0, *Operations*). Therefore, soldiers may consider AI as shaping which solely supports their maneuver elements. From an Airman's perspective, AI may be conducted either in support of land force objectives or in direct support of JFC objectives; in the latter case, the air component commander might be the supported commander. Because of these slightly differing views, there is a potential for friction between the air and land components regarding supporting/supported roles and responsibility for planning. These situations require careful and continuing dialogue between the senior commanders and their common superior commander.

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AIR INTERDICTION OBJECTIVES

Last Updated: 21 October 2020

It is not necessary for an air interdiction (AI) operation to focus on a single objective; AI typically inflicts multiple effects on the enemy. The enemy army traveling to the front while under air attack will suffer some level of destruction. The remaining force will likely be delayed in getting to its destination and will suffer some level of physical and psychological disruption. The following describes the objectives for interdiction.

Divert. AI diverts enemy fielded forces from areas where critically needed, to a location more favorable to the joint force commander (JFC), or around established lines of communications (LOCs). It may divert resources en route to repair and recover damaged equipment and facilities as well as forces tasked to keep existing LOCs open.

Disrupt. AI planners should focus on the enemy critical vulnerabilities that result in disruptive effects on command and control, intelligence collection, and transportation and supply lines (e.g., ammunition or petroleum, oil, and lubricants). Planners should consider the psychological effect on the enemy's morale and will. When analyzing the enemy considerations include the enemy's strategy, current operational situation, what reserves or workarounds are available to the enemy, and time before the enemy is affected by friendly actions.

Delay. Delaying the enemy allows friendly forces to gain time and momentum. While its purpose is to improve the JFC's operational environment, for delay to have a major impact on combat operations the enemy must face urgent movement requirements in support of its own operations or in countering friendly maneuver, or enhance the effect of a planned friendly maneuver. Ideally, by the air component maintaining the initiative, the opponent is forced to make unplanned urgent movements at times and places that maximize its exposure to additional friendly targeting. Delay payoffs include prolonging the time of risk of attack to land or naval forces, vehicles amassed behind a damaged route segment, or ships trapped in harbor due to mines, rendering them ineffective and making them more vulnerable to attack.

Destroy. Destruction of the enemy ground force, supporting elements, and supplies is the most direct of the four objectives of AI but the act (actual or perceived) may also provide synergy among the four. The enemy's perception of its imminent destruction

can achieve substantial delay and diversion of enemy resources, which can be as effective as physically destroying target systems, if it causes the enemy to react in a way friendly forces can capitalize. Destroying transportation systems may cause the enemy to move only at night or to mass air defense assets (which may be useful elsewhere) around critical transportation nodes. The actual or perceived destruction of LOCs may divert engineering resources from other tasks to prepare alternate routes in anticipation of possible attacks. This may be true when transportation systems remain largely undamaged. Planners should be cognizant that destruction may also inhibit friendly freedom of action. For example, destruction of key transportation targets could hinder future ground operations that intend to use the same infrastructure. Appropriate coordination of AI with other joint force components helps preserve friendly freedom of action.

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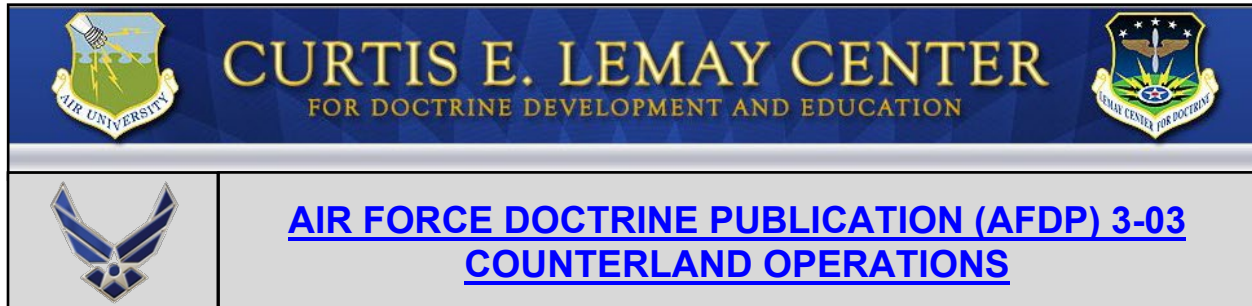
AIR INTERDICTION EFFECTS

Last Updated: 21 October 2020

Air interdiction (AI) effects differ with every situation and can significantly affect the course of an operation. AI against an enemy with minimal logistics requirements, a simple force structure, and primitive logistics systems differs from AI conducted against a highly mechanized, modern force possessing intensive logistics requirements (such as potential peer or near-peer rivals). Interdiction conducted against enemy forces and logistics, without regard to the overall theater situation, may be largely ineffective; therefore planning for interdiction should be closely integrated in the joint force commander's overall planning process.

The effectiveness of AI depends on a number of variables. The time required for AI to affect the enemy, and the duration and depth of those effects, depends on several factors. These factors include, but are not limited to, the distance between interdiction operations and the location of intended effects; the means and rate of enemy movement (ships, trains, aircraft, trucks); the physical target (forces, supplies, fuel, munitions, infrastructure); the level of enemy activity; enemy tactics; and the resilience of the targeted force or system.

AI will have a more robust effect in linear combat against a modern, mobile, conventional force using significant resources. The timing and magnitude of effects will vary depending upon where AI is conducted and the nature of the enemy. AI deep in the operational area will usually produce extensive, protracted effects that take longer to occur while AI conducted near the front lines typically produces immediate, but geographically limited, effects. During major operations and campaigns, the effects of AI are typically more apparent by influencing an enemy's ability to command, mass, maneuver, supply, and reinforce available conventional combat forces. AI may have negligible effects against an insurrection during stability operations where the enemy employs a shadowy force structure, a simple logistics net, and unconventional tactics. Timely, accurate intelligence and persistent operations allow AI to disrupt enemy supply operations, destroy weapons caches, or deny sanctuary to insurgents. To maximize the influence AI has on an enemy, commanders should understand how its effects will differ depending on the nature of the conflict being fought.

Whether the Air Force is involved in major operations and campaigns or smaller scale contingencies, **AI can channel movements, constrict logistics systems, disrupt communications, force urgent movement, and attrit enemy fielded forces.**

CHANNELING ENEMY MOVEMENTS

AI channels the movement of ground forces when conditions force the enemy to maneuver through or along predictable avenues. This generally results from the lack of transportation routes, manmade and natural obstacles, and other geographic constraints. With fewer routes available to transport enemy supplies and reinforcements, the greater the loss or delay caused by severing those routes. Attacks on enemy lateral lines of communications (LOCs) can channel movement, impair reinforcement, reduce operational cohesion, and create conditions for defeating the enemy in detail. Geography influences the rate of enemy movement, the size of the force to be moved, where it can move, and the means required to move the force. Geography may also restrict or channel ground movement, creating chokepoints and concentrated targets. In cases where geography favors rapid movement of enemy forces, AI assets can create artificial or temporary chokepoints by dropping bridges or collapsing tunnels.

Air component planners should coordinate the AI effort with the land component planners when they are establishing their overall scheme of maneuver. LOCs used by the enemy may also facilitate rapid advance of our own ground forces, requiring

properly coordinated tradeoffs between the enemy and preserving key routes for advancing friendly ground units.

CONSTRICTING THE ENEMY'S LOGISTICS SYSTEM

Heavy ground combat creates demands on enemy fielded forces and speeds consumption of vital war materiel. This in turn increases the effects of AI operations by straining the enemy support system and reducing stockpiles. When the enemy consumes large quantities of supplies because of heavy combat or extensive movement, interdiction operations have an accelerated impact for two reasons. First, when opponents are under heavy pressure, they may be forced to use up stockpiles reserved for ongoing or future operations. Inability to stockpile supplies makes it more difficult for the enemy to initiate large-scale offensive operations. Second, high consumption drives an enemy to use more direct routes, making them more vulnerable to interdiction attacks. The nature of ground combat also determines which supporting elements are most critical at any given time, as which items of supply and infrastructure are critical can vary greatly with the situation. Historically, an enemy force fighting under static conditions is more affected by the destruction of munitions, while a highly mobile enemy is more disrupted by the loss of fuel and transportation.

The less surplus capacity the enemy's logistics system has, the less it can compensate for damage. Degrading the mobility of the enemy's distribution system hinders its ability to redistribute assets to effectively counter friendly operations. When attacking the enemy's logistics systems, it is normally prudent to concentrate efforts on a small number of limiting factors such as concentrations of supplies; petroleum, oils, and lubricants; storage and resupply systems; or soft vehicles. There may not be enough interdiction assets to attack all an enemy's logistics systems, even sequentially over time.

The enemy transportation system itself should also be broken down into components when analyzing for weaknesses to attack. Most transportation systems consist of the actual conduit for travel (roads, rail, etc.), vehicles used to transport troops or supplies along the conduit, energy required for those vehicles to operate (typically fuels or electricity), command and control (C2) to run the transportation system, and repair facilities to keep the system operating. The loading and unloading points in the transportation system may prove especially lucrative, as large concentrations of enemy forces or supplies are often found there. Examples include rail yards, harbors, and airfields. If forces or supplies are critically needed at the front, the enemy may not have the luxury of dispersing them during loading or unloading, which increases vulnerability to attack. Moreover, environmental impacts on the transportation system can create additional chokepoints worth exploiting. In many cases, the enemy will use the same transportation system for both forces and supplies. Under such circumstances, destroying or degrading the enemy's LOCs will affect both their force mobility and resupply capability. When analyzing an enemy transportation network for importance to their overall strategy, all possible uses for such a system should be considered. Before making the decision to interdict the enemy's transportation network, planners or

engagement authorities must conduct a proportionality analysis. Planners or engagement authorities consider surplus capacity, potential adverse impact upon the civilian population and reconstitution capability, among other factors. Failure to do this has sometimes led to large-scale AI efforts that caused unintended harm to the civilian population or had little chance of success (e.g., the limited effectiveness in halting activity on the Ho Chi Minh Trail during the Vietnam War).

DISRUPTING ENEMY COMMUNICATIONS

The enemy's combat operations may be disrupted with attacks on their C2 nodes; the level of communications disruption should be commensurate with overall objectives. C2 attacks may seek complete isolation of enemy combat forces from higher headquarters, or such attacks may force the enemy to use less capable, less secure backup communication systems that can be more easily exploited by friendly forces. When the enemy employs rigid, top-down C2, they can be particularly vulnerable to the disruptive effects of C2 interdiction. This is especially important when the enemy has not had a long preparation period to exercise their plan, or when the conflict has moved beyond the initial stages. Conversely, an enemy that practices a high degree of C2 autonomy will likely be less affected by attacks on their C2 network. When the ground situation has been static for long periods before the campaign, chances are greater that the enemy has planned and trained for either offensive or defensive operations. Under such circumstances, attacks on enemy C2 are less likely to have significant effects, as the enemy is still able to react in a scripted manner. Once enough time has elapsed for events to overcome a preplanned enemy response, attacks on C2 will impair their ability to respond and pay larger dividends on the battlefield. In some circumstances, such as when the operations plan includes forcing the enemy to react to friendly maneuver, complete destruction of their C2 architecture would be counterproductive. The capability to affect the enemy through information operations should also be considered, as this approach may lead to better overall results while freeing up conventional attack assets for other forms of AI.

FORCING URGENT MOVEMENT UPON THE ENEMY

The enemy may execute urgent movement for several reasons: an attempt to achieve surprise, the need to attack before reinforcements or supplies arrive, the requirement for rapid reinforcement of threatened defensive positions, the attempt to exploit offensive operations, or when driven to urgent movement by interdiction effects. Under these conditions, the enemy has a strong incentive to attain specific objectives within time constraints. Rapid movement of enemy forces and supplies may make them more vulnerable to AI. They generally become more concentrated while traversing more exposed and predictable avenues, foregoing time-consuming camouflage and concealment efforts. However, urgent movements are temporary due to a desire to limit exposure. For friendly forces to capitalize on such opportunities, they should deny the enemy mobility when needed most. Close coordination is required among all forces to take full advantage of the situation. Additionally, commanders should have access to information systems able to process real-time and near real-time intelligence to exploit

the capabilities of interdiction and opportunities that AI operations create. Friendly forces should take full advantage of all intelligence, surveillance, and reconnaissance assets, from air- and spaceborne sensors to special operations force air and ground elements, to detect when these movements occur. Coordination should occur among all forces to take full advantage of the situation in the time provided; otherwise, the enemy may escape the desired effects of AI.
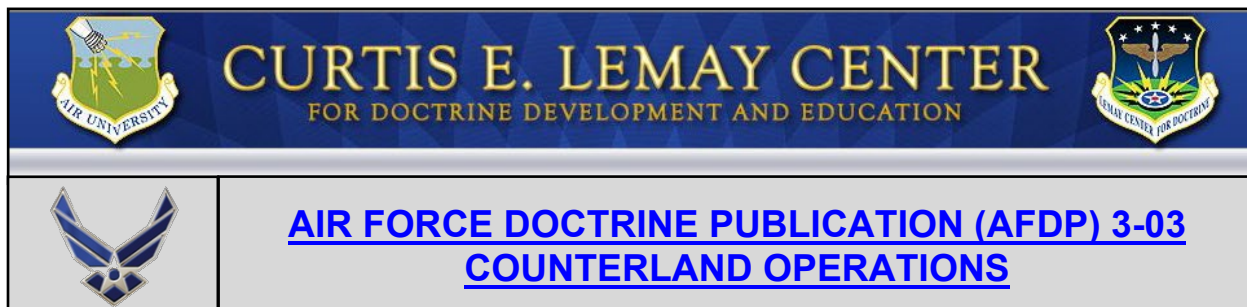
ATTRITION OF THE ENEMY

AI can attrite enemy forces and materiel, tipping the balance of forces in favor of friendly units. Resources, terrain, weather, enemy actions, and enemy characteristics are just a few variables to consider when developing an AI strategy.

The fact that directly attacking individual enemy forces is possible does not mean it is always the most efficient approach in terms of munitions and sorties available. Although the direct destruction of individual enemy forces has an immediate impact on enemy combat power, it usually requires more assets due to the larger number of individual targets—especially if they are dispersed or dug in. Often, the isolation of large enemy formations by destroying enemy logistics nets, sustaining resources, and supporting infrastructure can achieve more widespread results than attacking individual tanks or artillery pieces.

Terrain and weather affect the ability to attrit enemy forces. Attacking an enemy in open terrain in good weather significantly differs from striking an enemy in rough wooded terrain under a layer of adverse weather. As an example, exposed Iraqi forces were much easier AI targets for coalition airpower during Operation DESERT STORM than dispersed Serbian forces that took cover using trees, valleys, and adverse weather conditions during Operation ALLIED FORCE.

Enemy characteristics influence an [attrition-based strategy](). The number and vulnerability of enemy fielded force components, along with the enemy's ability to replace its losses, should be weighed against the expected results of targeting the supporting infrastructure. An attrition-based strategy against enemy fielded forces tends to produce intense localized results with fewer disruptive effects across the entire enemy system. Psychologically disruptive effects, however, may prove to be an added benefit. Enemy movement also influences the ability to destroy enemy fielded forces. During Operations DESERT STORM and IRAQI FREEDOM, the presence of coalition land forces forced the enemy to react *en masse,* leaving them detectable and exposed to air attack. However, because Operation ALLIED FORCE saw no use of significant coalition land forces, the Serbians were able to use dispersion, deception, and concealment tactics. Thus, friendly ground maneuver that forces an enemy to react and become predictable can make an attrition strategy viable and more effective. Retreating enemy forces remain a legitimate target in AI operations as such forces may be available for continuous use by the opposing commander.

AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS

TYPES OF AIR INTERDICTION REQUESTS

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Air interdiction (AI) requests fall into two categories: preplanned and immediate. Each type of request is influenced by a variety of factors. Unless time constraints dictate otherwise, preplanned requests should always be accomplished to allow for proper weapon-target combination, target area tactics planning, threat avoidance, weather study, and other variables, to maximize the probability of target destruction with minimal losses and minimization of collateral damage. Attacking mobile or short-notice targets provides a more flexible response that can capitalize on opportunities, but lack of mission planning can reduce effectiveness, increase the risk of causing collateral damage, and higher friendly losses may be expected. Real-time information technology and digital cockpit imagery reduce, but do not eliminate, these factors. Kill box operations can also add a flexible response option, enabling timely and effective coordination and control as well as facilitating rapid attacks. Combining the traditional aspects of both an airspace coordinating measure and fire support coordination line (FSCL) enables expeditious air-to-surface attack of targets that can also be augmented by or integrated with surface-to-surface indirect fires.

PREPLANNED REQUESTS

Preplanned AI is the normal method of operation in which aircraft attack prearranged or planned targets. This mode is used to hit specific targets that are known in advance, and detailed intelligence information is available to support strike planning. Preplanned attacks are normally flown against fixed targets or against mobile targets that are not expected to move in the interval between planning and execution (e.g., revetted tanks). Target information for scheduled AI can come from sources that vary from overhead reconnaissance to ground-based special operations forces (SOF). Preplanned AI is conducted within the normal air tasking cycle and provides enough time for close coordination with other joint force components. It is crucial for component liaisons to communicate and work together to facilitate centralized planning and effective integration and avoid duplicating effort. Preplanned AI requests evolve into scheduled and on-call missions.

○ **Scheduled missions** are planned against targets on which air attacks are delivered at a specific time.

- ☼ **On-call missions** are planned against targets other than scheduled missions for which a need can be anticipated but which will be delivered upon request rather than a specific time. On-call AI missions can produce responsive, flexible effects. In cases where a specific area to search for enemy AI targets cannot be predetermined, these missions are designated as airborne air interdiction (XAI) or ground-based alert air interdiction (GAI) on the air tasking order (ATO) and may be put on an airborne alert status. The appropriate command and control (C2) agency provides guidance to a specific target, kill box, or target area. XAI missions are normally given a target priority list or other guidance defining which targets to attack for greatest disruption of the enemy. This set of target priorities may be available prior to takeoff, or may be passed in flight by an appropriate C2 agency such as a forward air controller (airborne), an air support operations center (ASOC), Airborne Warning and Control System, or a Joint Surveillance Target Attack Radar System (JSTARS). If no targets are discovered in the designated area, XAI missions should be prepared to proceed to a backup target if available or requested by the designated controlling agency. Planners should attempt to match proper weapons load-out with expected target types to maximize XAI effects. When flexible AI is flown in direct support of the land component, the target priorities should reflect those established by the land component and communicated via the appropriate component liaison officer within the theater air-ground system. The ASOC normally coordinates the airspace control requirements for preplanned AI requests flown short of the FSCL.

IMMEDIATE REQUESTS

Immediate AI meets specific requests which arise during a battle and which by their sudden nature are not planned in accordance with the normal air tasking cycle. Immediate AI requests can respond to unplanned or unanticipated targets that require urgent, time-sensitive attention. It should be noted that many immediate requests for AI allow sufficient time for in-depth planning prior to execution even if those requests fall inside the normal 72-hour air tasking cycle that defines "immediate." Immediate AI often responds to attack requests against dynamic or time-sensitive targets (TSTs).

Dynamic targeting (AF doctrine calls this dynamic execution) prosecutes targets identified too late, or not selected for action in time to be included in deliberate targeting.[1] It is the active process of identifying, prosecuting, and effectively engaging emerging targets. Dynamic targeting includes prosecution of several categories of targets:

- ☼ Joint force commander (JFC)-designated TST—targets or target set of such high importance to the accomplishment of the JFC's mission and objectives, or one that presents such a significant strategic or operational threat to friendly forces or allies, that the JFC dedicates intelligence collection and attack assets, or is willing to divert assets away from other targets in order to engage it.

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[1] The dynamic targeting process is referred to as find, fix, track, target, engage and assess (F2T2EA).

✪ Targets considered crucial for success of friendly component commanders' missions but are not JFC-approved TSTs. Component commanders may nominate targets to the JFC for consideration as TSTs. If not approved as TSTs by the JFC, these component-critical targets may still require dynamic execution with cross-component coordination and assistance in a time-compressed fashion.

✪ Targets that are scheduled to be struck on the ATO being executed but have changed status in some way (such as fire support coordination measures changes).

✪ Other targets that emerge during execution that friendly commanders deem worthy of targeting, prosecution of which may not divert resources from higher-priority targets.

Time-sensitive targets

A TST is a JFC-validated target or set of targets requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. The air component commander may recommend TSTs to the JFC. TSTs are prosecuted using the dynamic execution process described above but are of higher priority and may require additional coordination with other components or the joint task force. The destruction of these high payoff targets is considered critical for achieving JFC objectives. The JFC is ultimately responsible for TST prosecution and relies upon the component commanders for conducting TST operations.

When using on-call or dynamically re-tasked assets, immediate AI often relies on an off-board sensor such as JSTARS to provide initial target detection and attack targeting information. Using real-time target information via data link, response times can be as short as a few minutes, depending on the distances and C2 arrangements involved. Immediate AI requests allow assets to exploit enemy vulnerability that may be of limited duration. It can work particularly well when attacking enemy ground forces on the move in the enemy rear area and provide a responsive use of counterland attack when supporting the land component. The ASOC normally coordinates and directs immediate AI requests flown short of the FSCL.

The same responsive nature of immediate AI that allows it to take advantage of fleeting opportunities can also have a negative impact on individual mission success. Scheduled missions allow aircrews more time to study the target imagery and to align attack axes to optimize weapons effects. Detailed study can reduce threat exposure and allow mission planners to optimize the weapon's fusing for maximum effect. Preplanning allows better packaging of strike and support assets when required. The bottom line for dynamic execution of airborne assets is that it should be used in those cases when the need for a short reaction time outweighs the reduced effectiveness that may result when compared with preplanned operations. Moreover, opportunity costs should be considered. Commanders should ensure the benefits of diverting airpower away from a preplanned target outweigh the costs by evaluating several variables. **Is it affordable to delay striking a preplanned target? What are the priorities? Will diverting airpower to an unplanned target create greater effects or is it less efficient?** In

short, the payoff of striking an emerging target should be worth the cost of diverting preplanned assets.

To increase situational awareness during dynamic execution, C2 elements should ensure that aircrews have the most current information pertaining to the location of SOF, friendly ground forces, and no-strike target lists.

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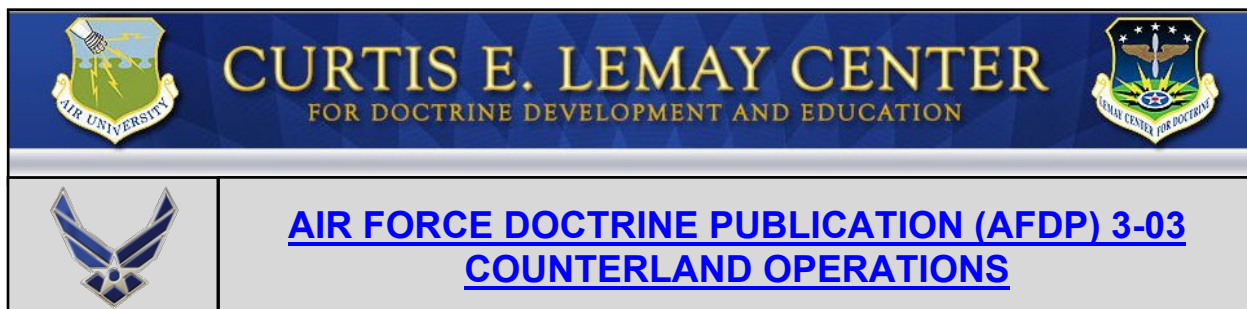
ELEMENTS OF EFFECTIVE AIR INTERDICTION

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In addition to the previously discussed elements of counterland operations, counterland planning and execution should include integration with ground maneuver and command and control, sustained and concentrated pressure on the enemy, and accurate and timely intelligence, surveillance, and reconnaissance (ISR). To what degree each element contributes to the operation varies with the nature of the conflict, geographic location, weather, and characteristics of the enemy.

INTEGRATION WITH GROUND MANEUVER

An important factor in successful air interdiction (AI) operations is integrating air maneuver with ground maneuver. Planning and conducting AI and ground operations within a coherent framework enhances their synergistic effect in those operations involving air and ground forces. Proper integration can create a dilemma for the enemy commander as he or she reacts to the resulting complementary multi-domain effects of air and ground combat power. Two complementary maneuver schemes serve as an example. The first involves airpower fixing enemy ground forces, thus allowing friendly ground forces to engage with advantage. Airpower can hold enemy ground forces in place leaving friendly land forces free to maneuver. If the enemy counters ground maneuver with movement, losses from air attack (due to reduced concealment, greater detectability, and increased predictability) may become unacceptable. As a result, measures required to minimize losses from AI leave the enemy more susceptible to defeat by friendly ground forces. The second scheme involves ground forces fixing enemy forces, thus allowing airpower to engage the enemy. An actual or threatened ground advance can force an enemy to respond with countermaneuvers or resupply. By placing sustained pressure on the enemy, ground combat increases target acquisition by flushing the enemy from concealment thereby enabling airpower to destroy enemy forces at a greater rate than can be replaced. Close coordination among all components helps maximize enemy vulnerability to AI.

Mission-type orders allow for the optimum employment of airpower forces by maximizing effects and increasing employment flexibility. For example, using broad guidance, the joint force commander (JFC) may direct theater-wide interdiction of all enemy second echelon forces. The air component commander can then conduct a tailored interdiction effort against those forces with specific targeting guidance being

developed at the component or even tactical level. In another example, the land component commander might indicate to the JFC that delay or disruption of a particular enemy ground force is the highest priority for air support. The air component commander can then determine the best way to achieve those desired effects. Ground commanders requesting supporting AI should clearly state how it will enable or enhance their operations, listing both the desired effects and effects to be avoided. The latter might include consequences of destroying lines of communications critical to the ground scheme of maneuver or the hazards associated with air-delivered cluster munitions and mines. Airmen at the tactical and operational levels of war, especially those in the field advising the ground component on proper use of airpower, can facilitate the commander's intent process by ensuring that air support requests clearly state the desired effects.

Accurate, timely, and relevant intelligence about the enemy's support characteristics, force structure, and ability to adapt is imperative for successful AI. Intelligence provides information about the enemy's probable course(s) of action, identifies interrelated target systems, allows the air component commander to anticipate enemy actions, and facilitates correct assessment. A prerequisite for planning counterland operations is an understanding of the capabilities and limitations of the enemy and how the enemy is most likely to fight. Accurate intelligence allows commanders to develop achievable objectives, select appropriate targets, apply the appropriate weapon and delivery systems, and keep abreast of the enemy's response. In order to accomplish this, commanders require information systems that facilitate exploitation and dissemination of real-time and near real-time intelligence. Such intelligence is particularly useful in dealing with targets that may have near or immediate effects on ground forces or whose location was not accurately known. AI targets should be identified and then prioritized in relation to their importance in achieving the operation's objectives.

Two key characteristics of successful counterland operations are sustained and concentrated pressure on the enemy. AI demands sustained, persistent

Sustaining Effects

A thorough assessment of the enemy's ability to reconstitute or work around air interdiction damage is vital to success.

action. Success or failure often comes down to the balance between the enemy's ability to repair the damage versus friendly ability to inflict more damage to the system being

interdicted. Persistence is a critical element in ensuring the prolonged effect of both AI and close air support (CAS). Eventually, resourceful enemies may potentially circumvent even the most prolonged effects of air attack. Effective employment of ISR assets provides critical information to the air component commander on the results of the opening attacks and on the effect achieved over time by airpower operations as a whole. Such information will be used in re-attack decisions and in deciding when to attack follow-on targets while the enemy attempts to recover from the original attacks. AI is often directed against replaceable systems (vehicles; weapons; petroleum, oil, and lubricants; communications systems) and repairable systems such as bridges or railroad lines. Therefore, pressure should be sufficient to impede efforts to replace or repair affected targets and cause stress on the entire enemy operation. This requirement applies particularly to operations of long duration, such as might prevail in conflict with a peer or near-peer adversary, because time normally allows the enemy to restore losses. Attacks on key repair and replacement assets may be advisable if such targets represent the weak link in the enemy's support infrastructure. Concentrating the effects of counterland operations against critical targets is essential due to the generally limited numbers of AI and CAS-capable assets.

AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS

CLOSE AIR SUPPORT
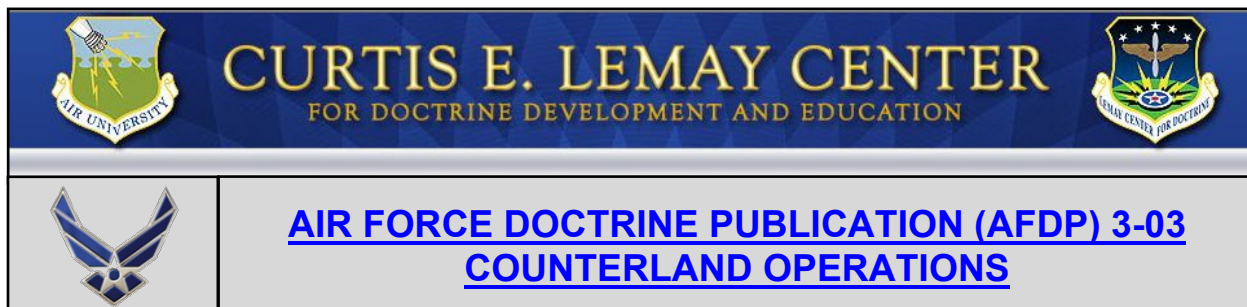
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Close air support (CAS) involves employing ordnance within close proximity of ground troops; that employment and the requirement for detailed integration to prevent friendly fire incidents are two characteristics that distinguish CAS from other types of air warfare.

✪ **Close proximity.** Close proximity does not represent a specific distance. Instead, the phrase "close proximity" is situational and requires detailed integration and terminal attack control (TAC) pursuant to friendly force proximity to enemy targets. Detailed integration and TAC help ensure engagement of correct targets and mitigation of friendly fire and collateral damage. Thus, CAS is not defined by a specific location of an operation; it can be conducted at any place and time friendly ground forces are in close proximity to enemy forces. For example, special operations forces operating anywhere in the joint operations area may require CAS support if there are friendly troops within close proximity to the enemy forces being attacked.

✪ **Detailed integration.** The requirement for detailed integration because of fires, proximity, or movement is the determining factor for CAS. Detailed integration describes a level of coordination required to achieve desired effects while minimizing the risk of friendly fire—from either surface fires or air-delivered weapons. Because of this level of integration, each element should be controlled in real time to prevent friendly fire with ground or air forces. Procedures should be flexible enough so that CAS, surface fires, and the ground scheme of maneuver are not overly restricted. The range at which the preponderance of effects against the enemy shifts from surface fires to airpower is the prime factor (among several) used to define the maximum range requiring detailed integration and a good depth for commanders to consider delineating between CAS and air interdiction.

The joint force commander establishes the guidance and priorities for CAS in the concept of operations, operation plan or campaign plan, air apportionment decision, and by making capabilities and forces available to the components.

The air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. For CAS, these responsibilities

normally include recommending air apportionment, allocating forces and capabilities made available from the JFC and components, including command and control elements of the theater air control system, creating and executing the air tasking order, and other applicable actions associated with CAS execution. The air component commander maintains close coordination with the other component commanders to ensure CAS requirements are being met in accordance with joint force commander guidance.

## AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03
COUNTERLAND OPERATIONS

CLOSE AIR SUPPORT OBJECTIVES

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Close air support (CAS) provides firepower in offensive and defensive operations, day or night, to destroy, suppress, neutralize, disrupt, fix, or delay enemy forces in close proximity to friendly ground forces. For CAS to be employed effectively, it should be prioritized against targets that present the greatest threat to the supported friendly ground force. Moreover, CAS assets should arrive in a timely manner. CAS that arrives late may be ineffective due to the fluid nature of ground battle.

Almost any enemy threat in close proximity to friendly forces on the modern battlefield is suitable for CAS targeting. However, indiscriminate CAS application against inappropriate targets decreases mission effectiveness, increases the risk of friendly fire, and dilutes availability of CAS aircraft to an unacceptable level. Although there is no single category of targets most suitable for CAS application, mobile targets and their supporting firepower (in general) present the most immediate threat to friendly ground forces and thus are prime candidates for consideration. This is especially an issue when supporting light forces, such as airborne or amphibious units, since they are not able to bring as much organic heavy firepower into battle as do heavier mechanized or armored units. CAS provides the ground commander with highly mobile, responsive, and concentrated firepower. It enhances the element of surprise, is capable of employing munitions with great precision, and is able to attack targets that may be inaccessible or invulnerable to available surface fire.

The success of CAS during both offensive and defensive operations in contiguous, linear warfare may depend on massing effects at decisive points — not diluting them across the entire battlefield. During large-scale ground operations, there are often more requests for CAS than can be serviced by available air assets. The centralized command and control of CAS employment is essential to allow the massing of its effects where needed most. This may often be beyond the troops-in-contact range, as CAS missions operating there will have reduced risk of friendly fire, and enemy forces destroyed or delayed there are often kept from engaging friendly ground forces. Ground commanders should properly prioritize and focus the firepower of apportioned and allocated CAS at decisive places and times to achieve their objectives. Distributing CAS among many competing requests dilutes the effectiveness of those assets and may result in less, rather than more, effective air support to ground forces.

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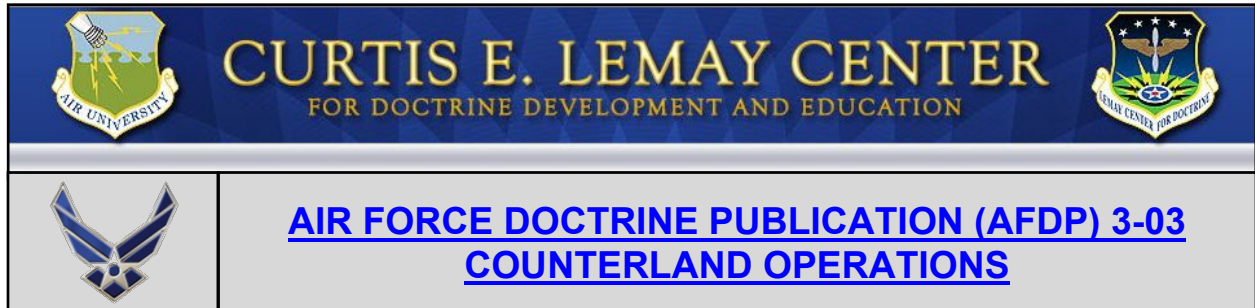
CLOSE AIR SUPPORT EFFECTS

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When it is necessary to provide troops in contact with supporting fires, close air support (CAS) can devastate enemy forces while spearheading offensive operations or covering retrograde operations. CAS can also be used for harassment, suppression, and neutralization. However, because those effects are typically assigned to surface fire support assets, such use may represent a less efficient use of limited CAS missions. Ground commanders should use their organic firepower when better suited for the task before calling in requests for CAS. However, a ground commander's organic firepower—particularly longer-range systems—may not always be the most appropriate fire support asset. Thus, when planned and integrated well, CAS provides desired effects that can be exploited by the commander responsible for the scheme of maneuver. Ultimately, each of the different CAS applications should be weighed against other, potentially more effective, uses for CAS-capable assets such as air interdiction or even strategic attack. CAS generates the following benefits:

- ✪ **Facilitate Ground Action.** CAS enhances opportunities for ground commanders to seize the initiative through offensive action. CAS can facilitate the offensive by providing the capability to deliver a wide range of weapons, massed or distributed as necessary, and by creating opportunities to break through enemy lines, protecting the flanks of a penetration, or preventing the countermaneuver of enemy ground forces. Defensive requirements to blunt an enemy offensive may also dictate the need for close support. CAS can protect the maneuver and retrograde movement of ground forces, protect rear area movements, or create avenues of escape. CAS aircraft may also be used to provide escort and suppressive supporting firepower for air mobile and airborne forces, and to conduct surveillance and security for landing forces or patrol and probing operations.

- ✪ **Induce Shock, Disruption, and Disorder.** CAS should be massed to apply concentrated firepower where it is most needed by the ground commander. When massed, CAS has immediate physical and psychological effects on enemy capabilities. Since available assets are usually limited, CAS is applied against targets of immediate concern to ground forces when those forces cannot produce the desired effect with organic weapons alone, when ground forces are committed without heavy organic weapons support, or when the disposition of targets prevents successful attack by surface firepower. When used against enemy targets that are

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beyond troops-in-contact range, CAS often provides support that is more effective to the ground force due to the decreased risk of friendly fire and the reduced interference of CAS with organic surface fires. The task of CAS is to provide selective and discriminating firepower, when and where needed, in support of ground forces.

- ✪ **Support Stability Operations.** Stability operations commonly occur during a theater campaign where operations are transitioning from large-scale combat to stabilization and enabling of civil authority, but they can occur at any time, even when large-scale combat operations are still being conducted in other areas of operations (AOs) or other parts of the joint operations area. Nonetheless, stability operations tend to be determined by AOs rather than traditional fire support coordination measures such as fire support coordination lines and coordinated fire lines. Ground forces conducting stability and counterinsurgency operations frequently assign the entire AO to subordinate ground echelons in an attempt to operate in a more distributive manner. During stability operations, concerns about collateral damage and civilian casualties create more stringent joint fires rules of engagement (ROE) and clearance requirements. Consequently, counterland operations are often limited to CAS procedures because the ROE dictate that the supported ground commander clear all fires in his AO.

  - ✪✪ CAS in support of stability operations should be responsive to immediate requests over potentially large AOs. Typically, this diverges from the concept of massing CAS at a specific point, as the more likely scenario is a simultaneous presentation of small targets over a widely dispersed area. Given that CAS missions during stability operations are often supporting small units that are lightly armed, timely response becomes even more critical. By default, in these situations, CAS may be the only method of nonorganic fire support available to the ground commander to counter enemy forces they are engaging. In addition to friendly fire prevention considerations, minimization of civilian casualties also drives more restrictive ROE during these missions. Therefore, the number of weapons expenditures tends to be lower than it would be during large-scale combat operations and more restrictions are placed on weapon types.

  - ✪✪ Finally, CAS support during stability operations can be complicated by multiple supported commanders within the same AO. Although a conventional ground unit may clearly be defined as an AO owner and responsible for all fires within the AO, other units such as other government agencies, military reconstruction teams, or logistics forces can and will request CAS for either troops in contact or to service high-value targets. Even though the owning ground commander is responsible for establishing priority, effects, and timing of all fires within an AO, this relationship may not always be as clear cut with multiple commanders in the same AO. CAS aircrew may find themselves competing for airspace with other assets in support of the same ground AO. Theater air control system elements such as the air support operations center, air liaison officers, control and reporting center, and the Airborne Warning and Control System, use the

air operations directive to clarify priorities and supported or supporting command relationships during stability operations to preclude CAS conflicts.

	AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS
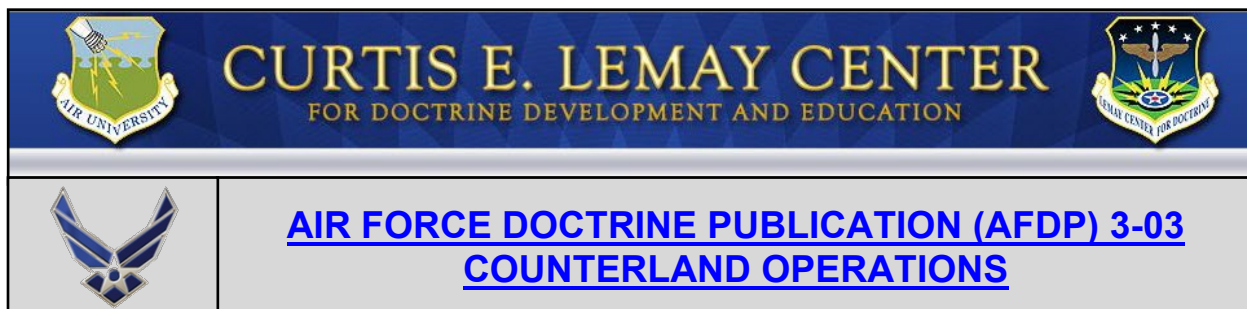
TERMINAL ATTACK CONTROL
Last Updated: 21 October 2020

Flexible, real-time targeting guidance, collateral damage minimization and friendly fire avoidance are critical considerations when conducting close air support (CAS). To integrate air-ground operations safely and effectively, either a joint terminal attack controller (JTAC) or a forward air controller (airborne) (FAC[A]) provides terminal attack control (TAC) for CAS missions. TAC is defined as the authority to control the maneuver of and grant weapons release clearance to attacking aircraft. Current and qualified JTACs and FAC(A)s will be recognized across the Department of Defense as capable and authorized to perform TAC.

A JTAC is a qualified (certified) Service member who, from a forward position, directs the action of combat aircraft engaged in CAS and other offensive air operations. The JTAC provides recommendations on the integration of CAS with the ground commander's scheme of maneuver. A JTAC should be trained to:[1]

✪ Know the enemy situation and location of friendly units and civilians.

✪ Know the supported commander's target priority, desired effects, and timing of fires.

✪ Know the commanders intent and applicable rules of engagement.

✪ Validate targets of opportunity.

✪ Advise the commander on proper employment of air assets.

✪ Submit immediate requests for CAS.

✪ Control CAS with supported commander's approval.

✪ Deconflict aircraft and fires from CAS sorties.

✪ Perform battle damage assessment (BDA).

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[1] Terminal Attack Control roles and responsibilities are outlined in Table 32 of Air Force Tactics, Techniques, and Procedures (TTP) 3-2.6, *Multi-Service TTP for Joint Application of Firepower*.
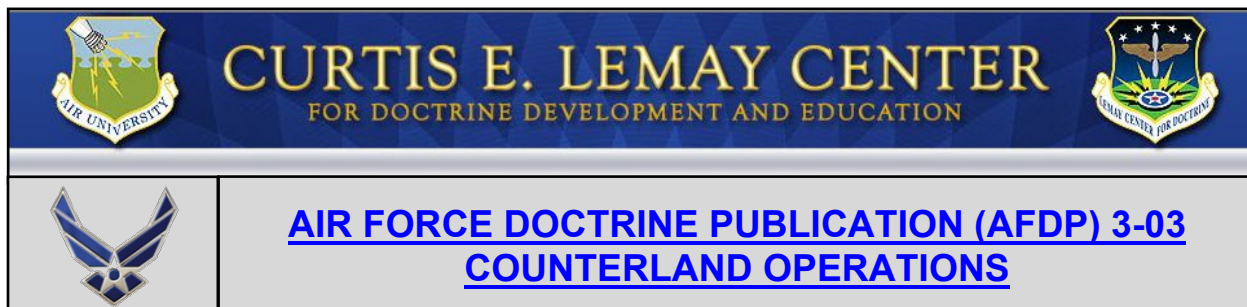
The FAC(A) is a specifically trained and qualified aviation officer, normally an airborne extension of the tactical air control party (TACP) who exercises control from the air of aircraft engaged in CAS of ground troops. Only specially trained and certified aircrews are authorized to perform FAC(A) duties, as they require detailed knowledge of friendly and target locations, artillery operations, available aircraft weapons and fuel states, the ability to conduct all types of terminal attack control, and the flexibility to prioritize and adjust in a dynamic environment. At the request of the JTAC or TACP, a FAC(A) can assume the tasks of Brief, Stack, Mark, and Control. Each of these tasks has a specific responsibility associated with it, understanding that the absence or misidentification of the tasks and duties for the FAC(A) during planning and execution will likely result in delayed CAS operations. FAC(A)s should receive land maneuver commander clearance, normally through the TACP, before expending or authorizing other aircraft to expend ordnance. The FAC(A) may provide TAC, relay CAS briefings, provide immediate target and threat reconnaissance, and mark targets for attacking aircraft. Threats and weather permitting, the FAC (A) may see well beyond the visual range of ground-based JTACs. The FAC(A) can perform tactical battle management by cycling aircraft through the target area while prioritizing targets in coordination with a JTAC. In this role, the FAC(A) is operating as a tactical air coordinator (airborne) (TAC[A]). The FAC(A) may provide positive identification, collateral damage estimation, and immediate BDA.

The TAC(A) is an extension of the theater air control system (TACS) air support control agencies. In the absence of Joint Surveillance Target Attack Radar System or a FAC(A), a TAC(A) may provide communications relay between the TACP and attack aircraft. A two-ship FAC(A) flight, especially in higher threat environments, may divide responsibilities so one aircraft fills the normal FAC(A) role while the second becomes a TAC(A). The TAC(A) expedites CAS aircraft-to-JTAC handoff during "heavy traffic" CAS. TAC(A) tasks may include coordination of CAS briefs and attack times; CAS and FAC(A) hand-offs to terminal attack controllers; relay of threat updates and BDA to command and control (C2) agencies; coordination of aircraft and surface fire support; coordination of fixed and rotary-wing operations; visual reconnaissance; coordination of indirect fire support including naval surface fire support; and assisting strike coordination and reconnaissance missions.

Joint Fires Observer (JFO). A JFO can request, adjust, and control surface-to-surface fires, provide targeting information in support of CAS, and perform terminal guidance operations (TGO). TGO are those actions that provide electronic, mechanical, voice, or visual communications that provide approaching aircraft or weapons additional information regarding a specific target location. The JFO adds joint warfighting capability but cannot provide TAC during CAS operations. Unless qualified as a JTAC or FAC(A), **personnel conducting TGO do not have the authority to control the maneuver of or grant weapons release to attacking aircraft.** JFOs provide the capability to exploit those opportunities that exist in the operational environment where a trained observer could be used to efficiently support air-delivered fires, surface-to-surface fires, and facilitate targeting. The JFO is not an additional person provided to a

team, but rather an existing team member who has received the supplemental proper training and certification. **The intent of a JFO is to add joint warfighting capability, not circumvent the need for qualified JTACs.** JFOs expand the target set available to ground commanders by passing accurate targeting information to both the JTAC and aircrew.

Special Tactics Team **(STT).** Air Force STTs are composed primarily of special operations combat control and pararescue personnel. Combat control personnel support SOF ground elements by providing air-ground interface; fire support; target designation; C2 communications; and airfield, helicopter landing zone, and drop zone surveys. Some combat controllers are JTAC-qualified.

**AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03
COUNTERLAND OPERATIONS**

TYPES OF TERMINAL ATTACK CONTROL

Last Updated: 21 October 2020

There are three types of terminal attack control (TAC) designated as Type 1, 2, or 3. Each type is characterized by a specific set of procedures outlined in Joint Publication 3-09.3, *Close Air Support (CAS)*. The ground commander considers the situation and issues guidance to the joint terminal attack controller (JTAC) based on the associated risks identified in the tactical risk assessment. The intent is to offer the lowest level supported commander the latitude to determine which type of TAC best accomplishes the mission. Risk level is not directly tied to a given type of TAC. The three types of control are not ordnance-specific and the tactical situation will define the risk level (e.g., Global Positioning System (GPS) and digital targeting systems used in Type 2 control may be a better mitigation of risk than using nonguided free-fall munitions under Type 1 control). It is important to understand the most important risk mitigation tool is target verification prior to attack. Therefore, when delivering guided weapons, the point designated by the aircraft sensor, or the coordinates entered into an inertial guided weapon, may be more practical factors for risk mitigation as opposed to attack aircraft nose position. Only a JTAC or forward air controller (airborne) (FAC[A]) can provide Types 1-3 TAC.

Because there is no requirement for the JTAC to visually acquire the target or attacking aircraft in Type 2 or 3 control, JTACs may be required to coordinate close air support attacks using targeting information from an observer or other asset with real-time targeting information. The JTAC maintains control of the attacks, making clearance or abort calls based on the information provided by additional observers or targeting sensors. The JTAC should consider the timeliness and accuracy of targeting information when relying on any form of remote targeting.

Technological advances in aircraft capabilities, weapons systems, and munitions have provided JTACs additional tools to maximize effects of fires while reducing collateral damage and the risk of friendly fire when employing airpower in close proximity to friendly forces. GPS-equipped aircraft and munitions, laser range finders/designators, and digital system capabilities are technologies that can be exploited in the CAS mission area. Regardless of the general guidance listed here, **specific procedures for TAC should always be addressed in theater special instructions (SPINS) or rules of engagement (ROE).** The following discussion provides an operational description of Types 1-3 control of CAS:

- ✪ **Type 1** control is used when the JTAC or FAC(A) requires control of individual attacks and the situation requires the JTAC or FAC(A) to visually acquire the attacking aircraft and the target for each attack. "Visually acquire" is literally eyes-on or via optics such as binoculars, without the use of third-party devices such as laptops or other digital imagery. Analysis of attacking aircraft geometry is required to reduce the risk of collateral damage or the attack affecting friendly forces. Language barriers when controlling coalition aircraft, lack of confidence in a particular platform, ability to operate in adverse weather, or aircrew capability are all examples where visual means of TAC may be the method of choice.

- ✪ **Type 2** control is used when the JTAC or FAC(A) requires control of individual attacks and is unable to visually acquire the attacking aircraft at weapons release or is unable to visually acquire the target. The JTAC or FAC(A) must visually acquire the target or utilize targeting data from a scout, fire support team, joint fires observer, unmanned aircraft (UA), special operations forces, CAS aircrew, or other asset with accurate real-time targeting information. Type 2 control may be applicable during certain conditions, such as night, adverse weather, and high altitude, or standoff weapons employment. Type 2 control is also applicable when using configured UA or targeting pod sensor aimpoint via remotely operated video enhanced receiver. A JTAC, who can see a laser spot on the target or a real-time feed from a targeting pod, may be better able to minimize collateral damage and deconflict an attack from friendly forces than one relying on visual contact with an attacking aircraft at high altitude. Currently fielded technology has the capability to improve the flow of information between the JTAC and pilot. These tools are an additional means to ensure the destruction of the enemy, minimization of collateral damage and prevention of friendly fire, and in many cases are a more reliable means of aimpoint verification than observing the attacker's nose position.

- ✪ **Type 3** control is used when the JTAC or FAC(A) requires the ability to provide clearance for multiple attacks within a single engagement subject to specific attack restrictions. Type 3 control does not require the JTAC to visually acquire the aircraft or the target; however, all targeting data must be coordinated through the supported commander's battle staff. During Type 3 control, JTACs provide attacking aircraft targeting restrictions (e.g., time, geographic boundaries, final attack heading, specific target set, etc.) and then grant a "blanket" weapons release clearance to meet the prescribed restrictions. The JTAC monitors radio transmissions and other available digital information to maintain control of the engagement. The JTAC maintains abort authority. Observers may be used to provide targeting data and the target mark during Type 3 control. Type 3 is a CAS TAC procedure and should not be confused with terminal guidance operations or AI. **Missions attacking targets not in close proximity to friendly forces, and beyond the range requiring detailed integration with surface fires and maneuver, should be conducted using air interdiction (AI) procedures vice CAS.**

JTACs provide the type of control as part of the CAS brief. It is not unusual to have two types of control in effect at one time for different flights. For example, a JTAC may

control helicopters working Type 2 control from an attack position outside the JTAC's field of view while simultaneously controlling medium or low altitude fixed-wing attacks under Type 1 or 3 control. The JTAC maintains the flexibility to change the type of TAC within guidelines established by the supported commander. Senior commanders may impose restrictions that prevent subordinate commanders from using certain types of terminal attack control. However, the intent is for senior commanders to provide guidance that allows the lowest level supported commander to make the decision based on the situation. The JTAC maintains abort authority in all cases.

Armed unmanned aircraft considerations. Clearance of fires and CAS final control for armed UA should be clearly established before combat operations begin.[1] Armed UA procedures should follow the same procedures as other CAS airframes in most cases, but there are situations that require additional consideration. The air support request (ASR) process typically begins when a ground commander requests CAS from the air support operations center (ASOC) through the joint air request net. The ASR process often works in reverse when an intelligence, surveillance, and reconnaissance (ISR)-tasked UA locates hostile forces in an area that requires detailed integration with or is in close proximity to ground forces. In this case, the UA operator usually informs the ground commander (through the ASOC or the direct air support center [DASC]) that a recently discovered target may require CAS as opposed to the ground commander making the request. There are two basic scenarios in which an armed UA could require clearance of fires and final control. These cases all assume that targets identified by a UA meet ROE requirements.

⊛ **Case 1: UA on an ISR tasking in communication with a JTAC who is in communication with the ground force commander.** In this case, standard CAS procedures should be used. The local ground commander clears and gives approval for fires in the target area, and the JTAC provides final control.

⊛ **Case 2: UA on an ISR tasking that is not in communication with ground forces.** In this case, the UA operator should receive approval to terminate the ISR tasking temporarily. UA responsibilities within the air operations center (AOC) should transition from the senior intelligence duty officer to the senior offensive duty officer.[2] Overall command and control (C2) should transition from the AOC to the ASOC or DASC. The UA operator should contact the ASOC or DASC to ensure the appropriate ground commander is contacted through appropriate command channels. If the local ground commander has an available JTAC, the ASOC or DASC should provide a C2 and datalink frequency for the UA operator to facilitate clearance of fires.

Terminal attack control and clearance of fires is important to the effective employment of armed UA during CAS. There is an increased chance of collateral damage, friendly

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[1] The USAF refers to some of its larger UAs as remotely piloted aircraft (RPA) to differentiate its operators, who have been trained to similar standards as manned aircraft pilots.

[2] See Air Force Instruction 13-1 AOC, Volume 3, *Operational Procedures—Air Operations Center* for an expanded discussion on AOC divisions and teams.

fire, mid-air collision, and confusion if procedures are not clearly defined. These risks are further increased with the proliferation of armed UA. Because every conflict is different, these procedures may not apply exactly to every combat situation. The bottom line: **commanders should ensure the SPINS include clear and precise procedures for armed UA**.

Technological advances in weaponry and data link systems provide significant enhancements to the CAS mission; however, commanders and operators should fully understand the capabilities and limitations of the systems being brought to the fight. Descriptive, concise dialog between the JTAC and aircraft often remains the best means to understand and mitigate the risk and produce the desired effect on target. **It is essential that all CAS participants use standard procedures and terminology** (see Joint Publication 3-09.3, *Close Air Support* and Air Force Tactics, Techniques, and Procedures (TTP) 3-2.6, *Multi-Service TTP for Joint Application of Firepower [JFIRE]*).

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## FOR DOCTRINE DEVELOPMENT AND EDUCATION

AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS

CLOSE AIR SUPPORT EXECUTION WITH NON-JOINT TERMINAL ATTACK CONTROLLER PERSONNEL

Last Updated: 21 October 2020

In certain circumstances, the ground commander might require air support when a joint terminal attack controller (JTAC) or forward air controller (airborne) (FAC[A]) is not available, or is no longer able to provide assistance, but detailed integration and synchronization with friendly forces fire and movement is still required. Aircrews executing close air support (CAS) under these circumstances bear increased responsibility for the detailed integration and synchronization required to minimize friendly fire and collateral damage, tasks normally done by a JTAC or FAC(A). Non-JTAC personnel should advise the aircrew they are not a JTAC. In these circumstances, CAS aircrew should assist non-JTAC-qualified personnel or units to the greatest extent possible to bring fires to bear.

Due to the complexity of air support, the ground commander must consider the increased risk of friendly fire and collateral damage when using personnel who are not JTAC or FAC(A) qualified. The requester must alert their command element when a JTAC or FAC(A) is unavailable to conduct Type 1, 2, or 3 control. If the maneuver commander accepts the risk, the request is forwarded to the CAS controlling agency. This information will alert the CAS controlling agency (e.g., air support operations center; direct air support center; air operations center) that aircrews will be working with non-JTAC personnel. See Air Force Tactics, Techniques, and Procedures (TTP) 3-2.6, *Multi-Service TTP for Joint Application of Firepower (JFIRE)*, for additional details.

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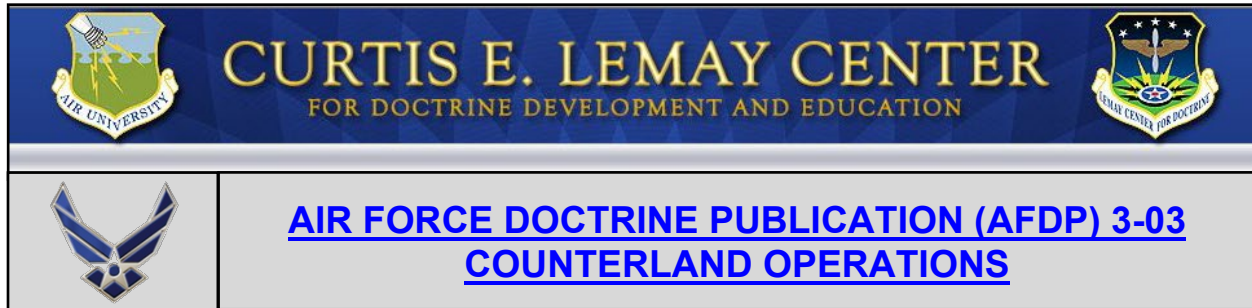
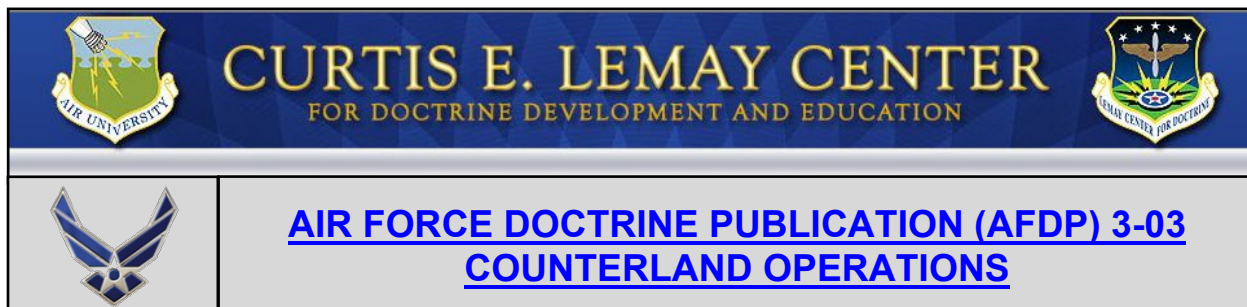## FRIENDLY FIRE AND COLLATERAL DAMAGE AVOIDANCE

Last Updated: 21 October 2020

Avoiding friendly fire and minimizing collateral damage are crucial to employing close air support (CAS) effectively. CAS operations are conducted in close proximity to friendly forces; therefore, CAS procedures, training, and scenario rehearsals require particular emphasis on the avoidance of friendly fire and civilian casualties. Although occasionally attributed to weapons malfunction, friendly fire and civilian casualties are most often the result of confusion on and over the battlefield. The law of war does not prohibit collateral damage but does prohibit attacks that cause excessive collateral damage in relation to the concrete and direct military advantage. Collateral damage, particularly civilian casualties, may increase the risk of the ability to achieve strategic, operational, or campaign objectives. Causes include misidentification of targets, target location errors, target or friendly locations incorrectly transmitted or received, or a loss of situational awareness by joint terminal attack controllers (JTACs), CAS aircrews, or air support request agencies. Items that can significantly reduce the likelihood of friendly fire and civilian casualties are sound procedures for friendly force tracking, immediate air requests and clearance of fires, detailed mission planning, realistic training and mission rehearsal, use of friendly tagging or tracking devices, and effective coordination. Excessive collateral damage should be considered a critical vulnerability, and planners should consider second and third order effects during operational planning.

All participants in the CAS employment process are responsible for the effective and safe planning and execution of CAS. Each participant should make every effort possible to identify friendly units and enemy forces correctly prior to targeting, clearing fires, and weapons release. Combat identification (CID) is defined as the process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision (Joint Publication 3-09, *Joint Fire Support*). Performed in accordance with the rules of engagement, CID characterizations enable engagement decisions and the subsequent use, or prohibition of use, of weaponry to create both lethal and nonlethal effects to accomplish military objectives. It is critical for all involved in the CAS process to realize that their actions can either prevent or contribute to unintentional or inadvertent friendly fire incidents.

Risk assessment is a critical factor in preventing friendly fire and civilian casualties. As the battlefield situation changes, commanders and staffs should make continuous tactical risk assessments. Risk assessments involve the processing of available

information to ascertain a level of acceptable risk to friendly forces or noncombatants. Based on the current risk assessment, the supported commander weighs the benefits and liabilities of authorizing specific weapons types or a particular type of terminal attack control. Considerations during risk assessment should include, but not be limited to the following: capabilities of units involved, information flow, uncertainty, communications reliability, battle tracking, targeting information, weather, and ordnance effects. Proximity of friendly troops is also a key factor during risk assessment.

Risk-estimate distances allow the supported commander to estimate the potential danger to friendly troops from a CAS attack. They are discussed as 0.1 percent probability of incapacitation (Pi) (i.e., 1 in 1000 Pi). Ordnance delivery inside the 0.1 percent Pi distance will be considered "danger close." The supported commander must accept responsibility for the risk to friendly forces when targets are inside the 0.1 percent Pi distance. Risk acceptance is confirmed when the supported commander passes their initials to the attacking CAS aircraft through the JTAC or FAC(A), signifying they accept the risk inherent in ordnance delivery inside the 0.1 percent Pi distance. See Joint Publication 3-09.3, *Close Air Support*, and Air Force Tactics, Techniques, and Procedures (TTP) 3-2.6, *Multi-Service TTP for Joint Application of Firepower (JFIRE)*, for more detailed discussions of risk-estimate distances.

TYPES OF CLOSE AIR SUPPORT REQUESTS AND MISSIONS
Last Updated: 21 October 2020

CLOSE AIR SUPPORT REQUESTS

Preplanned Requests for CAS. Preplanned requests for CAS are initiated when the Department of Defense (DD) Form 1972, *Joint Tactical Air Strike Request*, are sent to the air operations center (AOC) and result in a scheduled mission in the air tasking order (ATO). These missions are scheduled on the ATO for a particular target/area, time on target, and a weapons load specifically tailored to match the desired effects specified in the DD Form 1972, which normally coincides with the anticipated time when CAS will be needed most by the ground component. Preplanned requests for CAS result in one of two types of mission: scheduled or on-call (discussed below).

Immediate Requests for CAS. Immediate requests for CAS are those requests that were not made early enough during planning cycles to result in a scheduled ATO mission. Immediate requests may result from unanticipated or unplanned needs on the battlefield, often of an emergency nature, that require diverting, rescheduling, or dynamically re-tasking aircraft from other missions. Without the benefit of thorough preplanning, immediate requests may increase the risk of friendly fire or excessive collateral damage. Immediate requests can be filled with ground or airborne alert CAS, if available, or by diverting aircraft from preplanned CAS (or even air interdiction) missions that are of lower priority.

CAS MISSIONS

Scheduled CAS. From a planner's perspective the preferred use of a CAS asset is to have it preplanned and prebriefed in order to provide participants an opportunity to walk through the operation, achieve familiarity with terrain, airspace restrictions and procedures, and to identify shortfalls. Scheduled missions normally have a specific contact point at a specific time to expect handoff to a joint terminal attack controller (JTAC) or a forward air controller (airborne) (FAC[A]). Scheduled CAS missions are the most likely to have good intelligence on the expected type of target, resulting in a better munitions-to-target match. Although joint doctrine states that a specific target must be identified when requesting scheduled CAS, the reality of dynamic operational environments makes identifying a CAS-eligible target days in advance very difficult.

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On-call CAS involves putting the aircraft on ground-based or airborne alert (often listed as GCAS [ground-based alert] or XCAS [airborne alert] in the ATO) during a preplanned period when the need for CAS is likely, but not guaranteed. During major operations when there is competition for counterland resources, on-call CAS can result in a less than optimum use of resources. Because these CAS assets may or may not actually employ against the enemy, it is important that on-call CAS assets have a backup target or a plan to transition to within the ground commander's area of operations.

In a situation in which the air component knows the joint force commander has placed CAS as a high priority in the air apportionment decision, but the land component has few requests for CAS, the AOC can use "push CAS" or "pull CAS" to meet both the JFC's intent, and the land component's un-forecasted need for CAS. Both methods provide on-call CAS when needed but differ in aircraft location when the need is recognized.

✪ **Push CAS** represents a proactive method of CAS that differs from the request-driven pull CAS method. Push CAS provides the CAS already on station, in a contact point, awaiting tasking. While similar in concept to other preplanned CAS missions, push CAS differs because it is planned and often flown before any actual request for CAS is made by the supported ground component. The term "push"
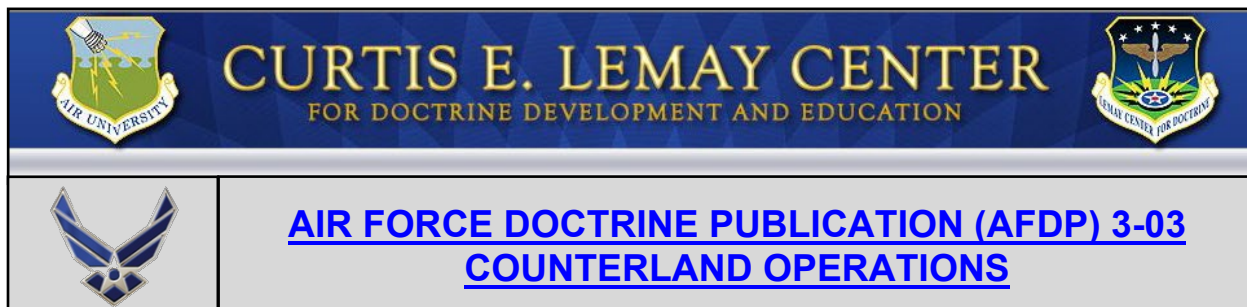

The Origins of "Push CAS"

The successful DESERT STORM tactic of "push CAS" can trace its origins at least back to World War II. By 1944, the US Army Air Force and Great Britain's Royal Air Force in Italy had perfected a method of flowing fighters into the CAS area on a regular, prescheduled basis. This system, known as "cab rank" for its similarity to a line of taxicabs waiting for passengers, provided a constant flow of fighters overhead for the ground controllers, then known as "Rovers." If not needed for close air support, these missions pressed on to a preplanned backup target, typically a bridge or other interdiction target of known value to the enemy. The cab rank system was possible because of Allied air superiority and large numbers of counterland assets and provided the ground force with very responsive air support. Cab rank response time was as little as a few minutes, while traditional CAS missions that were only scheduled in response to specific requests by the ground force might not arrive for several hours.

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refers to the fact that CAS missions are "pushed" forward to the air support operations center (ASOC), direct air support center, FAC(A), or JTAC before the formal CAS request is made; those assets not needed for CAS should be pushed to preplanned backup targets so the sorties are not wasted. Push CAS works best in

an environment where many CAS targets are available, so the assets involved will likely have a lucrative target to attack. Although push CAS significantly cuts response times, the number of sorties required is often high and the advantages gained should be weighed against the other potential uses for these assets (such as interdicting known targets). Therefore, planners should regularly assess how much push CAS to use based on such factors as available assets, existing targets, and the ground scheme of maneuver.

✪ **Pull CAS** has the aircraft on ground alert, awaiting the need to be recognized before the aircraft launch. The term "pull" refers to the fact that CAS missions are "pulled" from ground alert, after the formal CAS request is made. Pull CAS works best in an environment where few CAS targets are available, so the assets involved will not need to fly until targets are found. Therefore, planners should regularly assess how much CAS is required based on such factors as available assets, existing targets, and the ground scheme of maneuver. For pull CAS to be most effective the ASOC should be delegated launch and divert authority by the AOC.

There are several factors to consider before diverting counterland aircraft for immediate CAS requests. First, the aircrew must be CAS qualified for all but emergency situations. Extensive knowledge and familiarity with specialized CAS procedures are required to destroy targets, minimize collateral damage and avoid friendly fire. Second, suitable mission materials such as required maps, code words, and communications gear should be available. Finally, appropriate ordnance—fusing and weapons effects are critical factors when attacking targets in close proximity to friendly forces, and especially so in urban environments or where avoiding collateral damage is necessary.

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AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS

CONDITIONS FOR EFFECTIVE CLOSE AIR SUPPORT

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Effective close air support (CAS) requires proper training, equipment, and an understanding of the strengths and limitations of airpower. In addition to air superiority, joint complementary operations, appropriate munitions, and favorable environment, the following factors are crucial to the effective conduct of CAS.

Planning and Integration. Effective CAS relies on thorough, coherent planning and detailed integration of airpower with ground operations. The ability to mass CAS at a decisive point and to provide the supporting fires needed to achieve the commander's objectives is made possible through detailed integration with ground forces. To achieve this detailed integration, it is critical that the ground liaison detachments are in contact with their parent battlefield coordination detachment, and have detailed contact information for units requesting CAS, in order to develop better briefings for aircrews. The preferred use of a CAS asset is to have it preplanned and prebriefed. Training and rehearsals provide participants an opportunity to practice operations/procedures, gain familiarity with the terrain, identify airspace restrictions, and discover any shortfalls. Participants should include aircrews, ground forces, liaison elements, and command and control (C2) agencies such as the air support operations center (ASOC) and direct air support center.

Integrated C2 Infrastructure. CAS requires an integrated, flexible C2 structure to identify requirements, request support, prioritize competing requirements, task units, move CAS forces to the target area, provide threat warning updates, enhance combat identification procedures, and so forth. Accordingly, C2 requires dependable and interoperable communications among all involved forces. Any airspace coordinating measures and fire support coordination measures should allow for timely employment of CAS without adversely affecting other fire support assets.

Flexible and responsive C2 permits requests for CAS, coordinated with the appropriate agencies, to originate at any level of command within the supported ground force or by elements of the theater air control system, such as air liaison officers (ALOs) and joint terminal attack controllers (JTACs). During stability operations, additional restrictions may be imposed such as increased focus on collateral damage estimation or more restrictive rules of engagement, which may result in decreased flexibility. The interval between a unit's request for support and the delivery of the supporting attack is a critical

factor in CAS effectiveness. Prompt response times allow a commander to exploit fleeting battlefield opportunities and to survive in a defensive situation. The air component commander may grant launch and divert authority of scheduled CAS assets to the ASOC to facilitate reduced response time. Diverted airborne aircraft from lower priority missions may also be used. However, a balance is required between the most effective use of resources and their response times. Effective C2 also enhances the ability to integrate CAS with ground operations, coordinate support, and update or warn of threats to CAS assets. The depth at which the ASOC controls operations depends a great deal on the ability to both communicate with forces and maintain situational awareness on targets, threats, and other factors. The authority to redirect aircraft to or from missions beyond the fire support coordination line (FSCL) should remain centralized at the air operations center (AOC), while the authority to flow CAS assets to and from shallow air interdiction targets short of the FSCL is often delegated to the ASOC or tactical air control party (TACP). An ASOC is normally tasked to support an Army division but can also support units from other organizations (e.g., Army Corps, special operations, multinational forces). It may also augment other missions requiring airspace control (e.g., counter threat operations and humanitarian efforts). The placement of the ASOC with Army or special operations echelons under conditions of nontraditional support requires a particular focus on joint capabilities to control the airspace, integrate fire support assets, provide high-fidelity intelligence, surveillance, and reconnaissance, communicate critical weather forecasts and reports, and to provide airlift support to ground maneuver forces.

Since CAS operates in close proximity to friendly ground units, reliable communications are mandatory. JTACs normally provide targeting instructions, final attack clearance, and friendly fire avoidance instructions to CAS aircraft. Forward air controllers (airborne) (FAC[A]s) can also provide this capability and are normally in contact with JTACs to determine targeting, ground scheme of maneuver, coordination measures, and details on the location of friendly forces. Since CAS procedures are used to prevent friendly fire incidents, specific communications procedures and training are required for air and ground terminal attack controllers and CAS aircrew. This process can be expedited if the ASOC provides a situation update prior to pushing the aircrew to the FAC(A) or JTAC. Standard procedures and terminology are published in Joint Publication 3-09.3, *Close Air Support,* and Air Force Tactics, Techniques, and Procedures (TTP) 3-2.6, *Multi-Service TTP for Joint Application of Firepower (JFIRE)*, and may be modified by theater and local standards.

CAS requires interoperable communications between all involved forces. Mismatched equipment slows coordination of fire support, and lack of secure or frequency-agile radios may lead to compromised, garbled, or no communicated mission data. Such simple errors as having the air and land components deploy with different codes or frequencies for their communications equipment can delay the proper execution of CAS.

As with the other aspects of CAS, the only way to ensure interoperable communications in war is to conduct fully integrated exercises during peacetime.

Target Marking. CAS effectiveness is greatly improved with timely and accurate target

Cross Domain Synergy

Successful CAS requires precise teamwork between air and ground elements

marks. Target marking builds situational awareness, identifies specific targets in an array, reduces the possibility of friendly fire, minimizes collateral damage, facilitates terminal attack control, and can greatly increase the accuracy of CAS attacks. When commanders or planners foresee a shortfall in ability to mark for CAS, they should request that capability during planning. Marking can identify both friendly and enemy positions in addition to being overt or clandestine.

Target marking can be accomplished through various means, including smoke or illumination rounds, laser designation, and flares.

With the use of low light and infrared systems becoming more widespread, the use of marking devices in those spectra can be more effective than visible target marking, depending on how the aircrew actually acquires the target and employs ordnance on it. When marking targets, JTACs should be aware there is a potential risk of highlighting their position to the enemy.

Streamlined and Flexible Procedures. CAS should be responsive to be effective. Responsive CAS allows airpower to exploit fleeting battlefield opportunities. Because the operational environment can be extremely dynamic, the CAS C2 system should also be flexible enough to rapidly change targets, tactics, or weapons. The requestor is usually in the best position to determine fire support requirements. Techniques for improving responsiveness include:

✪ Effective planning and rehearsal between air and ground units.

- ⊕ Using forward operating sites near the AO.

- ⊕ Placing aircrews in a designated ground or airborne alert status.

- ⊕ Delegating launch and divert authority to subordinate units.

- ⊕ Positioning JTACs and ALOs to facilitate continuous coordination with ground units, communication with aircraft, and observation of enemy locations.

Flexible and responsive procedures are critical for effective employment of CAS. The tactical employment of CAS is centrally controlled by the ASOC and decentrally executed at the tactical level. Launch and divert authority of scheduled CAS assets at the ASOC or airborne controlling agency provides reduced response time. Aircraft diverted from lower priority missions may also be used; however, a balance is required between rapid response and efficient use of limited assets. Effective C2 also enhances the ability to integrate CAS with ground operations, coordinate support, and update, or warn of threats to CAS assets.

Regardless of the intensity of the conflict, the ASOC operates the joint air request net to receive air support requests from the TACPs supporting the ground commanders. The air request net permits the TACP at each level of command to review the CAS requests as it goes up to the ASOC. This stepping-stone approach allows intermediate ground commanders to filter low priority requests (or requesting units) or use other fires to attack the target, ensuring that only the highest priority CAS requests are reviewed at the ASOC. Because CAS sorties are a high-value and limited asset, ground commanders at each level should prioritize where and when to employ CAS to maximize its effectiveness on the battlefield. The ASOC may develop abbreviated message and request formats to speed the flow of information between C2 nodes. If conducting detached, distributed, or autonomous operations, special operations forces may set up unique procedures with the ASOC or AOC to facilitate requests for CAS.

AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03 COUNTERLAND OPERATIONS
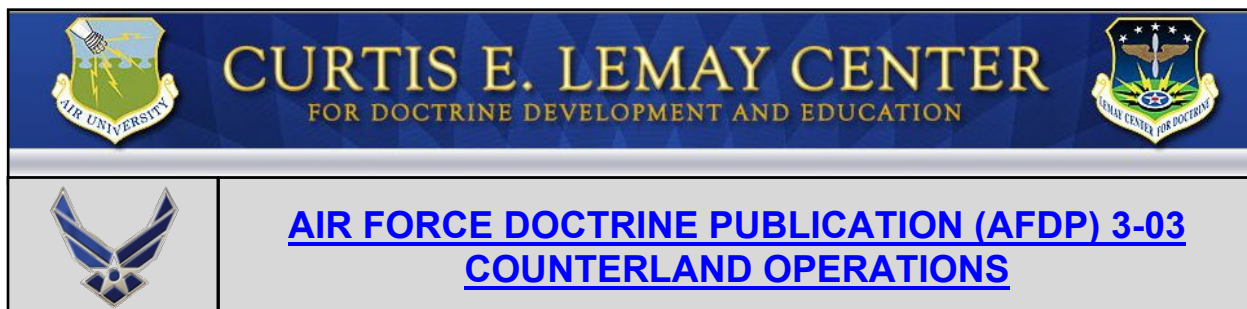
COMMAND AND ORGANIZATION

Last Updated: 21 October 2020

The air component commander derives his or her authority, guidance, and responsibilities from the joint force commander (JFC). The air component commander normally provides the JFC with an air apportionment recommendation, in addition to the assigned responsibilities for planning, coordinating, allocating, and tasking airpower based on the JFC's apportionment guidance. Since there may not be enough counterland-capable assets to meet all demands, a single air component commander can best ensure the unity of effort required for optimal use of those assets and supports the principle of unity of command.

The air component commander is normally the supported commander for the JFC's overall air interdiction effort outside of assigned land or maritime areas of operations (AOs). Within the assigned land or maritime AO, the AO commander is responsible for determining priority, effects, and timing of fires. The JFC sets overall theater priorities, which guide component objectives and determine the level of support that air and land maneuver will provide each other. Based on the JFC's guidance, the air component commander normally establishes the specific priorities for theater-wide air interdiction (AI) and applies these priorities to AI targets located both inside and outside of any land or maritime AO. Land commanders can determine specific AI targets and, in accordance with the JFC's joint targeting cycle, provide target nominations which include requested effects to the air component that allow more leeway in tactical mission planning and a more efficient use of the apportioned airpower. The use of the JFC's joint targeting cycle allows the air component commander to best determine how to support land or maritime commanders who, in turn, will receive more effective airpower support. If targeting outside of their assigned AOs with organic fires, commanders must coordinate those fires with the air component commander to deconflict with ongoing JOA-wide AI operations and with the ACA for airspace deconfliction. Because of the air component commander's theater/JOA-wide perspective and to further enhance integrated planning of interdiction, the JFC may delegate the air component commander overall responsibility for planning and coordinating all interdiction operations outside of land component AOs. This has historical precedent during interdiction operations during Operation IRAQI FREEDOM.

> "Since we began Operation IRAQI FREEDOM on the 19th of March, United States and United Kingdom ships have fired over 800 Tomahawk missiles in support of General Franks' campaign. Sailors and ships…we coordinate all those targets with the Air Force. As I think you all talked last week with General Buzz Moseley, he is the air component commander, and so all offensive air operations, manned or unmanned, are coordinated with—through Buzz Moseley's targeting shops. So, any target that we're assigned and told to prosecute, that is vetted with Buzz Moseley's air component command headquarters."
>
> **—Vice Admiral Timothy Keating, 12 April 2003**

The intent of centrally controlling airpower is to create the desired lethal and nonlethal effects against all relevant targets, consistent with the theater commander's strategy. When the number of targets exceeds airpower's ability to attack them, centralized control ensures they are attacked according to the JFC's priorities, regardless of which component nominated them. It is important to remember that all components support the JFC's overall strategy—there should not be great disparities between the various components' priorities for airpower as long as the JFC's overall objective remains in view.

Throughout the entire process, close air support (CAS) and AI operations remain under the control of the air component while supporting the other functional and Service component commanders. Guidance and priorities for all air component and land maneuver operations come from the JFC. The JFC apportions CAS and AI based on his overall strategy and the air component commander's recommendation. The air component commander allocates CAS sorties in response to Department of Defense Form 1972s,[1] and AI in response to target nominations submitted by other Service or component commanders to support the JFC's apportionment decision and assigns CAS and AI missions via the air tasking order. Land commanders, having requested CAS in advance of operations as part of their overall concept of operations, distribute the allocated CAS to ground forces based on anticipated prioritized requirements. While the land commander is normally the supported commander for CAS, direct control of CAS missions rests with the air support operations center (ASOC), forward air controller (airborne), and joint terminal attack controllers. Direct control of AI missions, which are the result of component/Service commander target nominations, rests with the airspace control elements.

Effective CAS C2 begins with a clear understanding of command relationships within the affected theater. The theater air control system (TACS) is the Air Force system within the joint theater air-ground system and is the air component commander's means
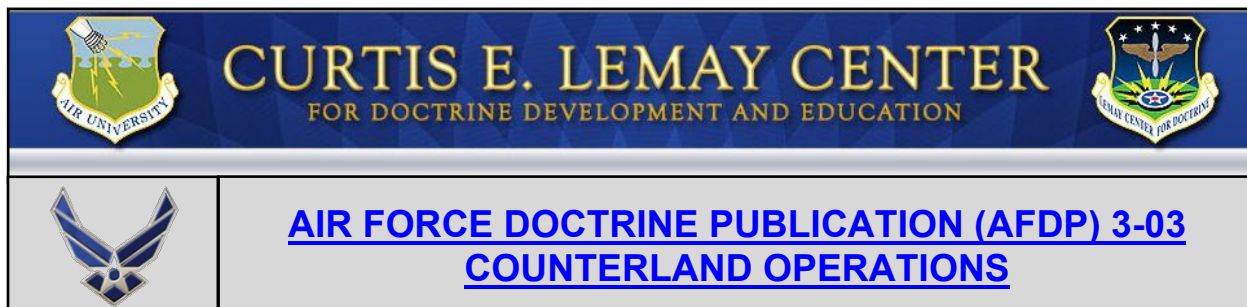
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[1] Joint Tactical Air Strike Requests.

of commanding and controlling available USAF/Air Component forces. Air Force elements of the TACS assigned with ground units are under the operational control (OPCON) of the commander, Air Force forces (COMAFFOR) and tactical control (TACON) of the joint force air component commander (JFACC), even in the unlikely event that the COMAFFOR is not the JFACC (i.e., the JFACC is an officer of another Service or multinational partner). The direct support relationship remains the same. It is this OPCON-TACON relationship between the COMAFFOR and JFACC that enables an ASOC to be co-located with a ground echelon, and have the delegated authority to control not only Air Force assets, but also air component assets employed in direct support of ground forces.

The land commander's aligned TACS elements distribute allocated CAS sorties according to the ground commander's scheme of maneuver. The portion of the TACS in direct support of the land commander and his subordinate echelons ensures airpower is integrated with the ground scheme of maneuver. The air liaison function should also guide the ground commander in the optimum distribution of CAS among his various units, keeping in mind that airpower is most effective when concentrated at the decisive points within the ground commander's AO.

As with the air and land relationships previously discussed, to create synergy with special operations forces (SOF), the combination of SOF and airpower requires cooperative support relationships. Within a joint special operations area, the joint force special operations component commander (JFSOCC) is the supported commander for CAS and AI. At the request of the JFSOCC, the air component commander provides elements and C2 nodes to SOF. This may include placing a liaison or C2 element with the JFSOCC, joint special operations task force, or other SOF elements.

There may also be occasions where the JFSOCC is a supporting commander for AI sorties. Whether operating under control of the air component commander or the JFSOCC, SOF, and airpower maneuver elements should be closely coordinated to ensure synchronization and prevention of friendly fire incidents. SOF aviation and ground assets are integrated closely in all joint air operations, from planning through execution. To ensure this, the JFSOCC provides the air component commander a special operations liaison element to coordinate, synchronize, and deconflict SOF operations with air component forces.

Command relationships below the level of the air component commander are exercised using the TACS. Decisions, such as the degree of battle management authority delegated to subordinate command elements, should provide balance among the commander's intent, communications connectivity, time constraints, and access to information. As with all command and control, the air component commander should clearly state what level of decision-making authority is possessed by subordinate TACS elements to avoid confusion.

THEATER AIR CONTROL SYSTEM

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Within the Theater Air Ground System (TAGS), the theater air control system (TACS) is the air component commander's mechanism for commanding and controlling USAF airpower. It consists of airborne and ground elements to conduct tailored command and control (C2) of air operations. The air component commander ensures all elements of the TACS are in place, including liaison positions, which are filled prior to, or soon after, the start of an operation or campaign. The structure of the TACS should reflect sensor coverage, component liaison elements[1], and the communications required to provide adequate support. **The TACS provides the air component commander the capability to centrally plan and control joint air operations through the air operations center (AOC) while facilitating decentralized execution through the subordinate elements of the TACS.**

GROUND-BASED C2 ELEMENTS

AOC. The AOC is the senior C2 USAF element of the TACS and includes personnel and equipment from necessary disciplines to ensure the effective planning and conduct of operations (e.g., communications, operations, intelligence, etc.). The AOC is normally the headquarters in which the joint force commander's (JFC) draft joint integrated prioritized target list is built based on the Service/component target nominations presented by Service/component liaisons. Those target nominations begin the process of allocation of air interdiction (AI) in support of the JFC's apportionment guidance. Similarly, the Service/component liaisons bring to the AOC their Service/component's Department of Defense Form 1972s[2] for close air support (CAS), which begins the AOC's allocation of CAS.

Control and Reporting Center (CRC). The CRC is a deployable ground-based airspace control element that manages air component missions as specified in the ATO. For CAS missions, the CRC may relay the current situation update from the air support operations center (ASOC) to ingressing CAS aircraft and may receive battle damage assessment from egressing aircraft for immediate relay to the ASOC. For AI missions,

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[1] A detailed description component liaison elements can be found in JP 3-30, *Joint Air Operations.*
[2] Joint Tactical Air Strike Request.

the CRC may relay updates from previous AI missions to ingressing AI assets in order to improve the situational awareness of the inbound AI assets.

The CRC performs centralized C2 of joint operations by conducting threat warning, battle management, weapons control, combat identification, and strategic communications. It can facilitate decentralized execution of air defense and airspace control functions by detecting and identifying hostile airborne objects or by scrambling and diverting air defense aircraft. In a limited capacity, the CRC can relay AOC/ASOC information to and from aircraft. The CRC integrates a comprehensive air picture via multiple data links from air-, sea-, and land-based sensors and surveillance and control radars.

ASOC. The ASOC is the primary control agency of the TACS for execution of airpower in direct support of Army or joint force land component operations. As a direct subordinate element of the AOC, the ASOC is responsible for the direction and control of air operations within Division Assigned Airspace. Division Assigned Airspace is normally short of the fire support coordination line (FSCL), from the left to right boundaries of the division area of operations, upward to the coordinating altitude. Within Division Assigned Airspace, the close proximity of friendly forces and enemy forces requires integration with other supporting arms and ground forces in order to prevent friendly fire incidents. To accomplish this, the ASOC is collocated with the division fires cell to form the joint air-ground integration center (JAGIC). The ASOC coordinates operations with the assigned tactical air control parties (TACPs) and the AOC. For further discussion on the ASOC, see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.17, *Multi-Service TTP for the Theater Air-Ground System*.

The AOC may delegate launch or divert authority for alert CAS missions to the ASOC, providing a faster response time when air support is needed. The decision to delegate retargeting authority to the ASOC for specific AI missions inside the FSCL will depend on actual circumstances, including the timeliness required for getting desired effects on target.

Air support operations group (ASOG) and air support operations squadron (ASOS). The air component commander presents TACS capabilities to ground forces through ASOGs and ASOSs. The ASOG is aligned, in garrison, to a corps and the ASOS is aligned to a division. Both the ASOG and ASOS are tasked to provide air support liaisons to assist in planning. However, only the ASOS is charged with execution capabilities, via JTACs and the ASOC, within Division Assigned Airspace. The personnel and capabilities depend upon the mission assigned to the corps or division, and the level (operational or tactical) at which the corps or division is operating. When/if the corps is designated as the land-component senior tactical echelon, normally the ASOC will still reside at the division, thus enabling the JAGIC to conduct airspace control within Division Assigned Airspace.

The ASOC is one mission task of an ASOS (the other is TACP), and the ASOS commander is typically dual hatted as the ASOC director. In this dual role, the ASOC director normally exercises [operational control] and [administrative control] of subordinate

Operation ENDURING FREEDOM Theater Air Control System

During the initial stages of Operation ENDURING FREEDOM, there was no conventional Army corps deployed to Afghanistan. At this time, the ASOC was aligned with the Army's corps. Thus, an ASOC was not deployed to handle the CAS in what was an AI / terminal guidance operations-centric air war in Afghanistan. Prior to March 2002, land forces in Afghanistan consisted of limited numbers of Special Forces Operational Detachment Alphas (ODAs) deployed in Afghanistan. Because the limited numbers of ODAs were geographically spread across Afghanistan, the lack of an ASOC had little effect on air operations. In March 2002, Operation ANACONDA signaled a change from Special Operations Forces-centric operations, to conventional land force operations. However, the conventional force used in Operation ANACONDA was a partial division, not a corps…thus, still no ASOC deployed to Afghanistan. This hampered airpower in a number of different ways. Real-time target updates, target prioritization for air assets, and aircraft deconfliction in the target area were often accomplished solely by on-station forward air controllers (airborne). The lack of an ASOC caused counterland assets to spend valuable time and fuel seeking information normally found in the situation update regarding the ground order of battle. Without the situation update normally passed from the JTACs to the ASOC, mission essentials such as frequencies to contact ground forces, preliminary 9-line briefings, and any target information other than a set of friendly coordinates were lacking. These shortcomings hampered the integration required to ensure efficient CAS operations.

TACP, as delegated from the air component commander. Further, when operating within a joint environment, the ASOC director normally exercises [tactical control](#) of air component assets made available for tasking. The ASOC commander / ASOC director usually acts as the division air liaison officer and the air component commander's primary representative to the division commanders.

Three principles should be considered when employing an ASOC. First, an ASOC should not be divided other than to relocate it. The ASOC derives synergy and efficiency from a group of highly trained Airmen working in concert. Second, the ASOC should be in a relatively secure location. If taken out through enemy action, friendly ground forces lose a significant force multiplier. However, security should be weighed against radio limitations. In order to control airpower, an ASOC needs the ability to communicate with aircraft. Thus, the third principle is that the ASOC should be located where it can maintain line-of-sight communications with aircraft to its maximum operating depth. While high frequency and satellite radio enhance the range of the joint air request net, many aircraft communications are restricted by factors such as radio power, antenna size, and so forth. Terrain is another consideration: if located in a valley, for instance, the ASOC's range is reduced because of line-of-sight restrictions.

AIRBORNE TACS ELEMENTS

Airborne TACS elements act as extensions of the AOC or ASOC. Airborne elements of the TACS, such as [Airborne Warning and Control System](#) (AWACS) and [Joint Surveillance Target Attack Radar System](#) (JSTARS), operate beyond the normal communication coverage of ground TACS elements and may act either as a self-contained airborne command post or as a relay.[3] Airborne TACS elements ensure continuity of operations in the event ground elements of the TACS are not yet deployed or have been disabled. Attack aircraft checking in for CAS within an AO may communicate with airborne TACS elements when unable to talk directly with the ASOC, due to radio or line-of-sight limitations. Attack aircraft conducting AI within an AO will normally communicate with airborne TACS elements en route to their target area, only contacting the ASOC for AI conducted short of the FSCL.

✪ **AWACS.** AWACS is normally the air component commander's first tactical C2 element to arrive in theater. Its primary mission is to conduct air surveillance, identify airborne objects, and control air operations. AWACS provides the deep look capability to support offensive and defensive air operations. It provides low-level and extended radio coverage for the control of air operations. AWACS performs these roles as the primary C2 extension of the AOC, until such time that the CRC can be employed. As an ASOC serves as the air component commander's airspace control element within Division Assigned Airspace, AWACS are normally the airspace control element responsible for airspace control outside, and above, Division Assigned Airspace.

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[3] Unmanned Aircraft can act as a communications link when equipped with appropriate communications gear. This can be very useful in small-scale operations or [stability operations](#) when low-supply and high-demand aircraft such as AWACS or JSTARS are unavailable.

✪ **JSTARS.** JSTARS is an integrated Army-Air Force airborne C2 platform. It provides deep look, ground moving target indicator radar for real-time detection of moving surface targets, rotating antennas, and low, slow-flying fixed and rotary-wing aircraft and synthetic aperture radar for stationary targets. The system provides ground situational awareness data to multiple air and ground C2 nodes.

Counterland Operations at Al Khafji

During the evening of 29 January 1991, the Iraqi Army set elements of three divisions in motion southward out of static positions in occupied Kuwait. While their ultimate objectives were not known, there is no question all three advances were aimed at engaging coalition forces, with the largest ground battle developing in the Saudi town of Ra's al Khafji. As news of the initial contacts with Iraqi ground forces flowed into the air control center at Riyadh, additional sorties by JSTARS and fighters armed for AI were ordered.

JSTARS located and tracked columns of advancing Iraqi vehicles, and provided vectors for fighters, bombers, attack aircraft, and attack helicopters from all the Services. Close air support was flown in and around Khafji itself in support of engaged coalition ground forces, resulting in heavy losses to the Iraqi 5th Mechanized Division. Further north, the other two lines of Iraqi advance suddenly found themselves very exposed, with their own movement serving only to highlight themselves as targets. Coalition air interdiction missions took full advantage of this, using a variety of night vision devices and precision guided munitions to inflict even greater damage and stop the Iraqi advance. After losing hundreds of vehicles and taking thousands of casualties, the Iraqis abandoned the attack as a costly failure.


For more information on TAGS, see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.17, *Multi-Service TTP for the Theater Air-Ground System.*

AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03
COUNTERLAND OPERATIONS

COUNTERLAND OPERATIONS

Last Updated: 21 October 2020

Airpower has attributes that allow it to be employed to conduct diverse and multiple operational tasks across the joint operations area. However, there is rarely enough airpower available to satisfy all demands for airpower. To maximize use of available airpower counterland-capable assets, effective counterland operations call for centralized control and decentralized execution. The air component commander optimizes the use of normally scarce airpower assets through centralized control. Centralized control also minimizes undue dissipation and fragmentation of effort and ensures unity of effort and focus on essential joint force commander objectives. Because no single commander can personally direct all the detailed actions of a typical complement of assigned and available airpower, decentralized execution of air missions is necessary and is accomplished by delegating appropriate authority for detailed mission planning and execution. Decentralized execution ensures effective employment of limited assets, allows tactical adaptation, and accommodates the Services' different employment concepts and procedures.

**AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-03
COUNTERLAND OPERATIONS**
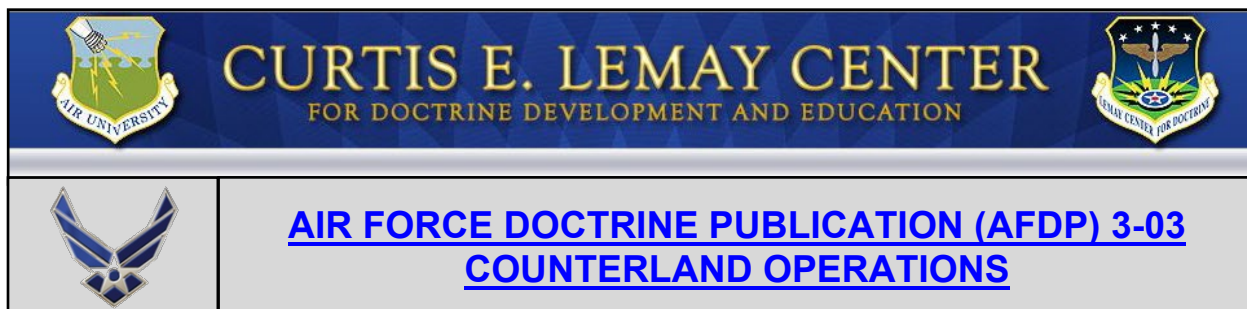
BASIC PLANNING CONSIDERATIONS

Last Updated: 21 October 2020

Both air interdiction (AI) and close air support (CAS) operations require the full spectrum of support, from logistics to force protection to administrative services. Logistics and other combat support are key enablers to counterland operations. Key factors affecting logistics supportability include force beddown and base support planning, deployment and sustainment of munitions and fuel, and maintenance support for critical spares. A robust air mobility capability, especially for intratheater movement, is critical for getting this logistical support to the bases that require it. As an expeditionary force, these key support issues assume even greater importance. This section highlights some of the support aspects that are particularly important to the counterland function.

MUNITIONS REQUIREMENTS

Maintaining proper stocks of precision-guided munitions is critical. There are tradeoffs involved in deciding which weapons to employ against specific targets, and availability is often a factor. Knowledge of the munitions available at each air base, carrier battle group, and so forth, and weapons resupply capability is vital. Munitions with the greatest potential for accuracy, destructiveness, or standoff range are often in short supply. Targeteers and weaponeers should keep in mind factors such as anticipated length of the operation, munitions needs of the various operations, and tradeoffs of each weapons type when making munitions recommendations. At times the air operations center (AOC) may allow tactical units to manage weapons selection for CAS missions by placing general guidance in the air tasking order (ATO), such as "best available anti-armor" in the munitions portion of the mission tasking.

AIR REFUELING

Tanker aircraft are a force multiplier that increase the effectiveness of joint and allied nation forces. Air refueling operations enable the initial deployment of assets to the theater and provide access to a wider range of targets and payloads. On-station times increase for AI and CAS missions, which provide decreased response times and increased effects on the enemy. While technically a support asset, air refueling has become such an integrated part of counterland force packaging it would be difficult to imagine operating without the enhanced capabilities it provides. For example, enemy anti-ship defenses may force an aircraft carrier to stand off from the counterland area,

requiring Air Force refueling support to get carrier aviation to the fight. In anti-access and area denial environments where air superiority is in dispute, and enemy aircraft and missiles threaten air bases close to the ground fighting, air refueling may be the only way to get counterland missions to the fight from protected bases further to the rear.

One of the key tasks for ATO production teams is to optimize available tankers; availability of refueling booms and drogues is often the limiting factor that determines how many counterland targets can be attacked in a given ATO execution period. Tanker availability is further complicated during coalition operations as certain combinations of tankers and receivers may not be permitted by national rules.

TARGET DEVELOPMENT

During target development, the planned targeting process should relate specific targets to objectives, desired effects, and accompanying actions. Target development requires a systematic examination of potential target systems to understand where critical linkages and vulnerabilities exist. Target development involves four distinct functions: target analysis, target validation, target nomination, and collection and exploitation requirements. AI, like other domain-centric interdiction operations, is the result of component, Service, and joint force commander (JFC) target nominations, unlike CAS missions, which are direct results of Department of Defense Form 1972 (DD 1972)[1] requests for CAS. The product of this phase is the joint integrated prioritized target list. Doctrine AFDP 3-60, *Targeting*, provides information on air planning and the targeting process.

Some targets require special care and consideration during attack planning and execution. Examples include certain leadership targets, due to potential political or diplomatic repercussions, and targets containing chemical, biological, radiological, and nuclear (CBRN) agents or materials where an attack could lead to the spread of CBRN contamination. See Joint Publication (JP) 3-60, *Joint Targeting*, for prioritization and special considerations related to planning and executing attacks on certain targets. See JP 3-40, *Countering Weapons of Mass Destruction (WMD)*, for information on countering WMD operations.

Once potential targets are identified, intelligence provides precise locations of individual target elements, status of defenses, and other information necessary for the detailed planning of counterland missions.

The suitability of a target set for attack is often decided by a combination of its criticality and vulnerability. For example, fewer conveyances and depots in an enemy transportation system increase the enemy's dependence on that system; therefore, each potential target in that transportation system becomes more critical. Conversely, an enemy possessing a varied, dispersed transportation system is less operationally vulnerable to infrastructure interdiction. Tactical vulnerability refers to the ease of

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[1] Joint Tactical Air Strike Request.

attacking a particular target based on hardening, defenses, and so forth, once it has been identified that the attack will produce the desired effects. Tactical vulnerability is important, as the benefit of attacking a target should be balanced against the expected cost. Timing is also important to a particular target's criticality to the enemy. For example, rotary-wing forces typically operate from forward arming and refueling points that are mobile and thus not exceedingly hardened. Catching an enemy helicopter force at such a location could yield high payoffs in terms of both forces and infrastructure destroyed. When marshaling for an attack, or deploying for transport to the forward area, ground combat units may be vulnerable for short periods. The enemy may risk this temporary vulnerability to get their forces into combat, but proper friendly intelligence can create opportunities for high payoff attacks by allowing planners to focus on the exact time of maximum enemy vulnerability.

Mobile targets normally require a slightly different approach than fixed targets, whether attacking actual enemy combat forces or their fielded support. This difference is because mobile targets' locations change as they move, unlike a fixed facility whose location remains the same once the fixed facility is created in Modernized Integrated Database and appears on subsequent target lists. This movement requires updates to the location of the mobile target from initial target nomination through AI execution against those mobile targets. Sensors such as moving target indicators can often locate and compute accurate bombing solutions for any moving vehicle on a battlefield, and the heat generated by operating engines and equipment often makes mobile units easily located by either onboard sensors or precision-guided munitions. In some theaters, the AOC employs a dynamic execution cell to ensure planning both maximizes the effectiveness of counterland attack on mobile targets and integrates the effort with the ground scheme of maneuver. Fixed targets may be more hardened against weapons effects, but their fixed nature makes target location easier, thus simplifying targeting with weapons such as aided bombs or missiles.

Prior to the execution of AI missions, planners should coordinate with other organizations and components to prevent friendly fire, coordinate airspace usage, minimize collateral damage, and avoid providing a propaganda advantage for the enemy. Extensive coordination is required with the land component and special operations liaison element to facilitate operations. The Service and component liaisons (e.g., the Army's Battlefield Coordination Detachment (BCD) and the USMC's Marine Liaison Element) located in the AOC enable this extensive coordination to occur within the AOC. Therefore, the AOC is the only headquarters with these organized, trained, and equipped Service and component personnel to enable this coordination. For more information on liaisons, see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.17, *Multi-Service TTP for the Theater Air-Ground System*.

URBAN CONSIDERATIONS

Doctrine outlined in JP 3-06, *Joint Urban Operations,* describes the triad of terrain, population, and infrastructure to be considered before and during operations in that environment. Urban warfare is specific to an environment and should not be substituted with the related terms of irregular warfare or asymmetric warfare.

While urban environments vary greatly, challenges to counterland operations can be expected in identification of combatants, collateral damage, preservation of infrastructure, restrictive rules of engagement (ROE), line-of-sight issues (targeting and communications), and freedom of maneuver. Command and control of airpower does not change in the urban environment, but tactics, techniques, and procedures may be vastly different from those employed on the open battlefield.

Planners should consider that ground operations will be largely decentralized due to communication limitations, and coordination may be time-consuming to prevent friendly fire and mitigate collateral damage. Large munitions may be traded for increased loiter time in fuel, as smaller precise weapons with tailored effects may be more desirable.

Collateral damage in cities or towns represents great risk that should be considered and minimized. One real, alleged, or staged collateral damage or friendly fire event can have strategic impact, affecting ROE, special instructions, host nation restrictions on operations, and so forth. Planners should integrate public affairs and military information support operations into counterland operations from strategy development through mission execution and assessment. Public information planners should be involved early and throughout the process to counter propaganda and misinformation and provide context for successes and mishaps that can enhance trust and support for counterland operations while driving adversary behavior. In addition, the planners should consider how information capabilities, alone and in concert with physical power, can affect adversary behavior to create the commander's desired effects. Next, planners should account for weather effects caused by the urban environment. Factors include increased pollution and aerosols affecting target detection, warmer temperatures affecting infrared signatures, and variable wind speeds affected by building layout. Finally, urban operations, by their very nature, involve significant law of war considerations. In particular, commanders and aircrew should determine whether military necessity justifies the operation and whether the expected collateral damage would be excessive in relation to the concrete and direct military advantage.

CAS in an urban environment is highly demanding, as the task of locating and identifying friendlies and locating enemy targets is more difficult than in open terrain, due to factors like obstructions from multistory structures that hamper both sensor and weapon line of sight. Using overlaying tactical charts, local street maps, and Urban Grid Systems may prove useful in identifying enemy and friendly positions. CAS in an urban environment requires increased reliance on friendly ground forces to locate and mark targets since enemy combat units are often concealed inside buildings.

During urban engagements, such as the battle for Fallujah in Iraq, ground commanders developed urban grid reference systems for aircrews to use to quickly identify targets in urban terrain. In urban environments, aircrews should give extra attention to the axis of attack and target designation. Larger urban areas with more vertically developed buildings add increased elevation issues to the targeting problem, and the combination of tall buildings and narrow streets can cause an "urban canyon" effect leading to masking issues for line-of-sight munitions and targeting sensors. Munitions effects will vary depending on whether the enemy can be attacked in the open versus inside buildings, requiring both patience and flexibility for mission success. Buildings may interfere with communications between air and ground, complicating the coordination process. Ground forces may also have difficulty marking targets for CAS aircraft in an urban environment, and careful consideration should be given to the type of terminal attack control selected. The AC-130 gunship and strike aircraft with precision-guided munitions, particularly small diameter munitions, have proven particularly effective in many urban operations with their combination of precision and wide range of onboard sensors. The AC-130 and unmanned aircraft (UA)[2] have been useful in urban environments, where extended loiter times are often necessary to pinpoint target sets near civilians and civilian objects.[3]

WEAPONEERING AND ALLOCATION

Weaponeering is defined as the process of determining the specific means required to create a desired effect on a given target.[4] Weaponeering considers desired effects against the target (both direct weapons effects and indirect desired effects), target vulnerability, delivery accuracy, damage criteria, and weapon reliability. Targeting personnel quantify the expected results of weapons employment against prioritized targets to produce desired lethal and nonlethal effects.

Weapons effects are always a critical part of targeting for counterland. Some munitions and fuses are designed for very specific applications and are effective against certain targets with little or no capability against others. Good intelligence data on target information are vital to the proper matching of munition to target. Likewise, the flexibility of some munitions and fuses to provide multiple effects allows planners options for maximum effect against preplanned targets and in many cases allows inflight selection of weapon and fuse settings for emerging targets. The latter capability is especially important for CAS and on-call AI when the specific target type may not be known prior to takeoff. When possible, combat aircraft should have a variety of munitions to meet operational requirements.

Allocation is the distribution of limited resources among competing requirements for employment. Allocation assigns specific airpower assets, based on the JFC's apportionment guidance and Service/component target nominations. The master air

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[2] The USAF refers to some of its larger UAs as remotely piloted aircraft (RPA) to differentiate its operators who have been trained to similar standards as manned aircraft pilots.
[3] See AFTTP 3-2.29, *Aviation Urban Operations*.
[4] JP 3-60, *Joint Targeting*.

attack plan is created, which matches assets against AI targets, in accordance with the joint integrated prioritized target list, and CAS in accordance with DD 1972 requests. The final step of the process is the actual ATO production, which allocates AI and CAS assets to achieve optimum effect against the enemy.

Mobile, rather than fixed, AI targets nominations are not often presented in the standardized basic encyclopedia (BE) number designation, because AI missions against mobile targets normally seek to create the requested effects against what is normally only a small portion of the total, BE numbered unit. (i.e. "Destroy six T-90 main battle tanks, from the 123d Tank Regiment.") If the land component needs a particular enemy unit attacked, and that unit meets the requisite priority criteria, planners should ensure that particular enemy unit is affected as required. This requires the AOC planners to maintain awareness of that enemy unit's position; for land component target nominations against mobile targets, the BCD is responsible for updating proposed target location. Instead of concern over a particular enemy unit, the land component may have a certain geographic area of concern to its scheme of maneuver. In this case, the friendly ground force requires an attack on any enemy forces that happen to be there. Planning methods should therefore allow for either an area or unit-specific focus for AI mobile targeting. AI against enemy land forces are most effective when prioritized targeting guidance is included in the nomination, such as artillery first, armor second, and so forth. When possible, however, air support can be most effective when the land component specifies desired effects against an enemy unit, such as "delay enemy X Brigade 72 hours from achieving contact" or "fix enemy Y Division in place for 48 hours" or "destroy six T-90 main battle tanks, from the 123d Tank Regiment."

Before the individual ATO AI or CAS mission is executed, justified changes to targets and targeting priority can be incorporated. Once the ATO is in final production, those changes are typically passed on to the AOC's combat operations division for incorporation either at tactical unit level planning or during actual mission execution. If the enemy ground force does move to an unexpected location, it is not likely to have moved far enough to require significant changes to counterland missions. This allows for a relatively simple retargeting of an ATO mission to the new target location. Any changes should account for differing air defenses, proximity to friendly ground forces, and other factors before final approval.

For those missions where lucrative targets are highly likely, but preplanned targets or locations are not available, airborne or ground alert AI may be appropriate. Airborne alert AI can be used to "push" AI into a nearer proximity to provide the most rapid AI response, once final targeting guidance comes from off-board sources or airspace control elements representing the AOC, or at times, from the AOC itself. Airborne alert, or "push," missions should only be planned when lucrative targets are likely to exist. Otherwise the missions will utilize resources that should not be wasted. Alternatively, ground alert, or "pull" missions, may be used when AI targets are possible, but the expenditure of fuel or risk from launching the aircraft do not warrant airborne alert. Airborne or ground alert is also a common method employed for CAS when there is typically not a preidentified target, prior to mission execution. When utilizing the "push"

method for AI or CAS, the AOC planners may provide preplanned backup targets for both CAS and AI missions to give each mission a fixed target of some military value if the primary target fails to materialize.
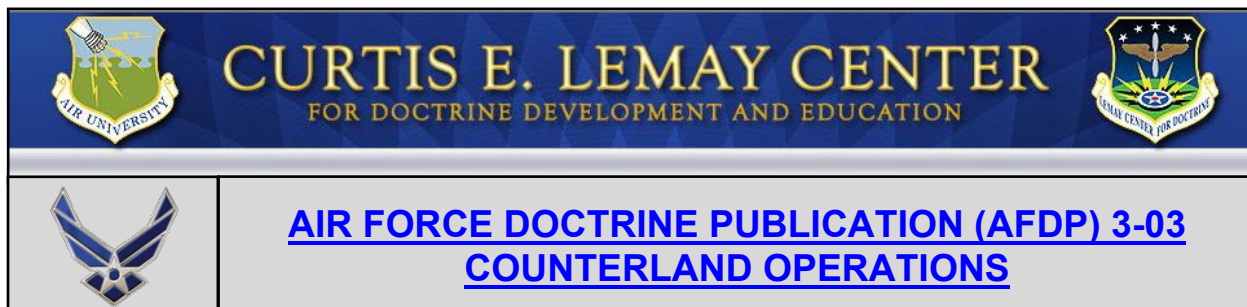
BATTLESPACE GEOMETRY

Last Updated: 21 October 2020

Close air support (CAS) and air interdiction (AI) require maneuver control measures (MCMs) and fire support coordination measures (FSCMs) that are flexible, simple, effective, and relevant. Since counterland operations are normally conducted in conjunction with friendly land forces, mutual understanding of MCMs and FSCMs between air and land forces must be established to integrate joint fires and avoid friendly fire incidents. MCMs, such as boundaries, are used to establish common understanding regarding the responsible headquarters for a joint force commander (JFC) assigned volume within the theater. FSCMs are then established to enable common understanding by all forces providing fires within that volume of space. The Conflict Continuum may involve rapidly advancing ground maneuver or widely distributed ground operations; either of these approaches will require nonlinear FSCMs.

CONTIGUOUS AND NONCONTIGUOUS OPERATIONAL AREAS

Operational areas may be contiguous or noncontiguous. When they are contiguous, a boundary separates them. When operational areas are noncontiguous, they do not share a boundary; regardless of whether contiguous or noncontiguous, boundaries are used to determine areas of operations (AOs). Within assigned AOs, the commander assigned to that AO determines the priority, effects, and timing of fires within that AO. A noncontiguous operational area normally is characterized by a 360-degree boundary. The higher headquarters is responsible for the area between noncontiguous operational areas. The close area is the portion of a commander's area of operations assigned to the subordinate maneuver forces. Operations in the close area are operations that are within a subordinate commander's AO. A deep area is the portion of the commander's area of operations that is not assigned to subordinate units. Operations in the deep area involve efforts to prevent uncommitted enemy forces from being committed in a coherent manner. See figure, "Contiguous versus Noncontiguous Operations" below.
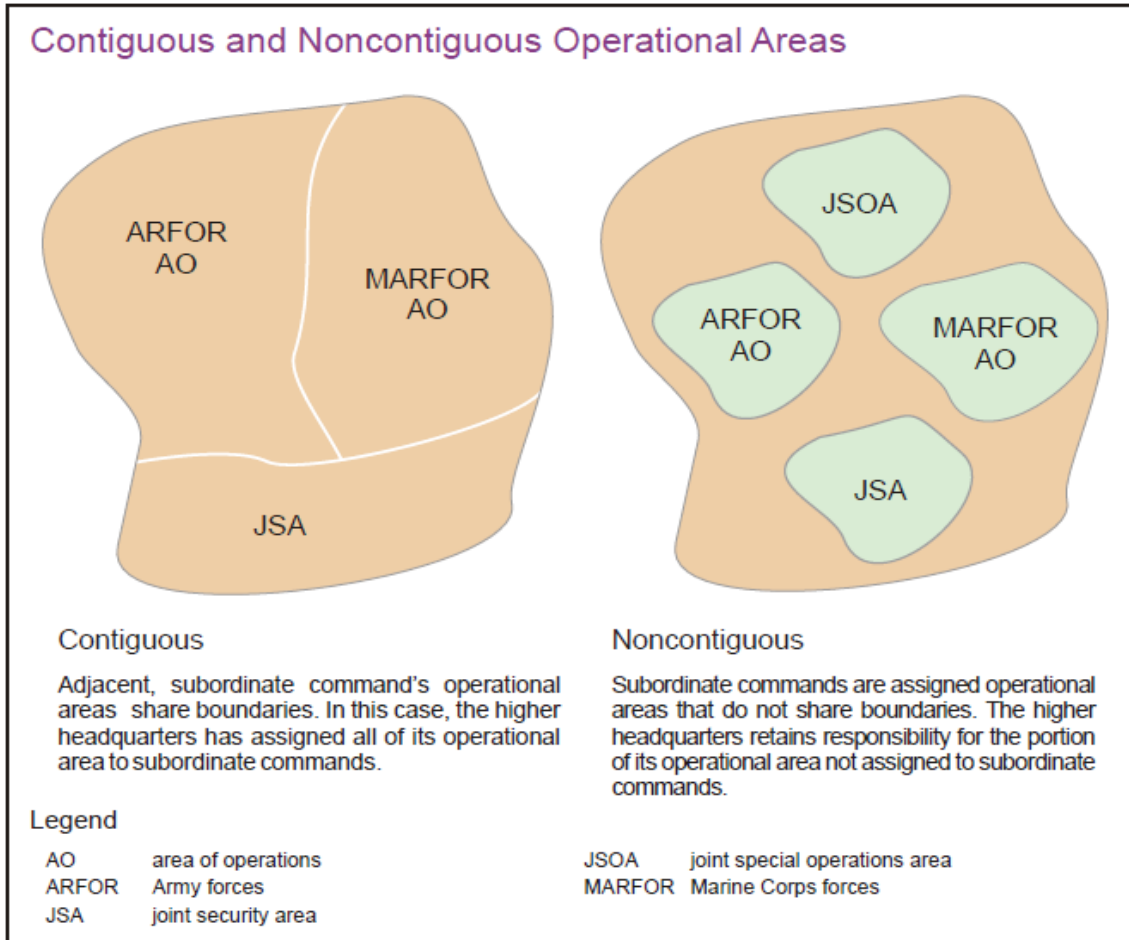
Contiguous and Noncontiguous Operational Areas (Source: JP 3-0)

LINEAR AND NONLINEAR OPERATIONS

In linear operations, commanders direct and sustain combat power toward enemy forces in concert with adjacent units. Linearity refers primarily to the conduct of operations along lines of operations with identified forward lines of own troops (FLOTs). In linear operations, emphasis is placed on maintaining the position of the land force in relation to other friendly forces. This positioning usually results in contiguous operations where ground forces share boundaries. Linear operations are normally conducted against a deeply arrayed, echeloned enemy force or when the threat to lines of communications reduces friendly force freedom of action. In these circumstances, linear operations allow commanders to concentrate and integrate combat power more easily.

In nonlinear operations, forces orient on objectives without geographic reference to adjacent forces. Nonlinear operations typically focus on multiple decisive points and are characterized by noncontiguous operations. Nonlinear operations emphasize simultaneous operations along multiple lines of operations from selected bases. Nonlinear operations place a premium on intelligence, air mobility, and sustainment. Often integrated with ground maneuver, swift aerial attack delivering concentrated,

precise fire against several decisive points can induce paralysis and shock among enemy troops and commanders. Operations JUST CAUSE, ENDURING FREEDOM, ODYSSEY DAWN, and UNIFIED PROTECTOR are examples of nonlinear operations. The joint forces orient more on their assigned objectives (for example, destroying an enemy force or seizing and controlling critical terrain or population centers) and less on their geographic relationship to other friendly forces. To protect themselves and achieve objectives, ground forces may rely on airpower to provide operational area awareness, mobility advantages, and freedom of action. Depending on the situation, the JFC may conduct linear or nonlinear offensive and defensive operations in contiguous and noncontiguous areas. Linear contiguous warfare typically characterizes large-scale combat operations and campaigns, while stability operations are usually nonlinear and noncontiguous.

BOUNDARIES

Various boundaries and coordination measures are used for airspace control and fire support coordination when planning and executing counterland operations. The measures help integrate air and ground maneuver, ensure deconfliction, avoid friendly fire, and identify which parts of the operational area require specialized control procedures. The JFC may define lateral, rear, and forward boundaries to define AOs for the various land components.

The following discussions center on linear boundaries and coordination measures that play a significant role in counterland operations.

Boundaries. Boundaries are used to define a component's AO and serve as the limit of an organization's responsibility. Within their designated AOs, component commanders not only integrate and synchronize maneuver and fires, but also designate target priority, effects, and timing of fires.

FLOT. The FLOT is a line that indicates the most forward positions of friendly forces during linear operations at a specific time. The FLOT normally identifies the forward location of covering and screening forces, historically the role of cavalry forces. The zone between the FLOT and the fire support coordination line (FSCL) is typically the area over which friendly ground forces intend to maneuver in the near future and is also the area within which ground force organic fires are employed. This zone is the area where air operations are normally executed through the air support operations center (ASOC).

FSCM. FSCMs are necessary to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. FSCMs are divided into two categories: permissive and restrictive. Permissive FSCMs facilitate attacks and include coordinated fire lines, free fire areas, and FSCL. Restrictive measures safeguard friendly forces and include no-fire areas, restrictive fire areas, restrictive fire lines, and airspace coordination areas.

When supporting the land-component commander, airpower operates within the confines of all joint force land component commander (JFLCC) FSCMs. In order to reduce the risk of friendly fire and still take advantage of airpower's inherent flexibility and versatility, FSCMs should be clearly defined, easily controlled, and not overly restrictive. For detailed information on FSCMs, see Joint Publication (JP) 3-03, *Joint Interdiction* and JP 3-09.3, *Close Air Support*.

Advancements in data link technology and digital information have increased the potential for combat forces to effectively coordinate and conduct both linear and nonlinear operations. The expanded distances between friendly units in nonlinear operations require Airmen responsible for conducting CAS to continually evaluate the capabilities of the controlling ASOC to ensure adequate resources (manning, radios, frequencies, computer support, etc.) are available to meet the command and control (C2) needs of aircraft operating in ever-increasing dispersed AOs in the joint operations area (JOA).

FSCL. The FSCL is a fire support coordination measure established by the land or amphibious force commander to support common objectives within an area of operation, beyond which all fires must be coordinated with affected commanders prior to engagement. Short of the line, all fires must be coordinated with the establishing commander prior to engagement. The FSCL does not divide an AO by acting as a de facto boundary between close and deep operations or a zone for CAS. However, the air component uses the FSCL to divide sectors of control between the ASOC and Airborne Warning and Control System (AWACS) or control and reporting center (CRC) with the ASOC's sector of control being beneath the coordinating altitude, from division's rear boundary to the FSCL and AWACS or CRC controlling forward of the FSCL. The FSCL applies to all fires from any domain, using any type of ammunition. Forces attacking targets beyond a FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid friendly fire. This coordination is normally conducted with the air operations center (AOC), via the Service and component liaisons within the AOC who represent the other affected commanders. Supporting elements attacking targets beyond the FSCL should ensure the attack will not produce adverse attacks on, or to the rear of, the line.

Operation IRAQI FREEDOM (OIF) FSCMs

As the most recent large-scale combat operation, OIF employed all the existing FSCMs. However, due to the lack of common understanding of usage of FSCMs, the initial FSCL was placed well beyond the range of land fires, in order to accommodate the anticipated rapid movement of land forces into Iraq.

The deep placement of the FSCL reduced the efficiency of airpower by overcomplicating the execution of AI missions. Ground forces and their associated tactical air control parties were incapable of detailed integration beyond the range of their organic fires because no one was able to observe enemy targets. Aircrews were still required to comply with CAS-centric, ASOC command and control procedures short of the FSCL. The time-consuming CAS clearance process (which is doctrinally necessary to avoid potential friendly fire incidents) hindered the expeditious attack of fleeting targets that were beyond the range of the organic artillery. As a result, the area between the maximum range of land fires and the established FSCL created a sanctuary for enemy forces.

The FSCL is often used as the forward limit of the airspace controlled by the ASOC. This mandates the various ASOCs and other theater air control system (TACS) components that have the required connectivity to monitor not only air activity out to the FSCL but also be able to monitor friendly and enemy ground positions, surface-to-air threats, and all other key aspects of situational awareness. Likewise, when any component attacks targets beyond the FSCL, it is necessary to coordinate with the other components to ensure deconfliction and prevent multiple assets attacking the same target. This deconfliction is normally done within the AOC because the AOC is the only headquarters that doctrinally contains liaison elements from all Services, components, and nations involved in the conflict, enabling it to rapidly coordinate the desired attack(s).
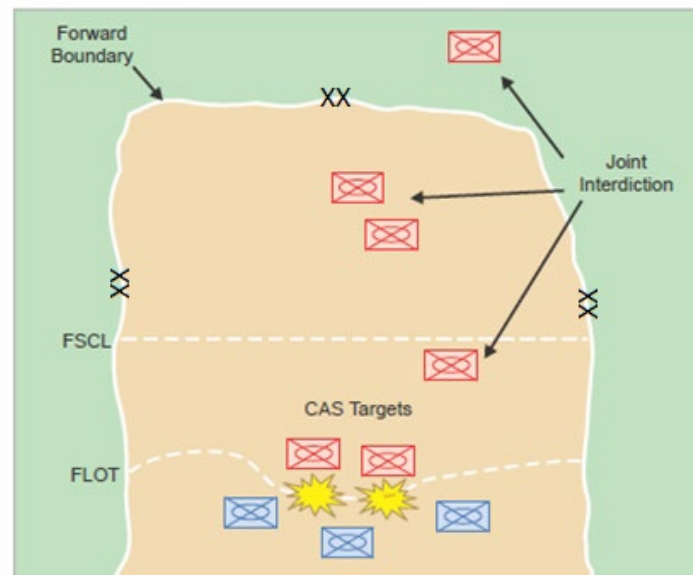
The optimum placement of the FSCL varies with specific circumstances, but typically it should be placed at or near the maximum range of organic artillery, where the ability to create effects on the battlefield shifts from the ground component's organic artillery capabilities to the air component. In this way, the FSCL placement maximizes the overall effectiveness of the joint force, and each component suffers only a small reduction in efficiency. To place the FSCL so deep or shallow that one component is given complete freedom to operate usually results in the other components being so restricted that overall joint effectiveness suffers. The proper

location for the FSCL shifts as artillery moves, from one phase of the operation to the next. FSCL placement should consider the ground scheme of maneuver and should account for the anticipated artillery placement based on unit rate of march, rather than the current ground force positions at the time the FSCL will be active. History has shown that placing the FSCL too deep can be detrimental to overall joint force effectiveness and may even provide the enemy a sanctuary from effective air attack.

The preponderance of lethal effects shifts from landpower to airpower near the maximum range of organic field artillery. Therefore, under all but the most rapid ground maneuvers, the FSCL is normally placed near the maximum range of tube artillery because airpower provides the most expeditious attack of surface targets beyond that point. To facilitate a rapidly moving battlefield, components should plan "on-call FSCLs" in advance of actual need that can be activated as the ground force moves. In the past, establishing the FSCL along an easily identifiable terrain feature has been critical to success. Modern technology has reduced the importance of aligning the FSCL with obvious terrain features, to make it easily identifiable from the air. Thus, simply planning to overlay the FSCL on preplanned maneuver phase lines is an optimal way to tie maneuver control measures and fire support coordination measures.

Although sometimes thought of as a JFLCC responsibility, FSCL placement should be based on the placement of the division(s)' organic artilleries maximum range. This ensures all components can integrate and maximize effects in support of JFC objectives, and the designated AO owner, without creating the enemy sanctuary found during OIF. Joint doctrine does not define a depth or range for placing the FSCL in relation to the FLOT or forward edge of the battle area, as the location of the FSCL should be based on the placement of the cannon artillery, rather than the troops. This permits the theater commander to tailor FSCL placement according to specific battle conditions that optimize and facilitate joint operations.

Notional JOA with Designated Land and/or Maritime AOs (Source: Joint Publication 3-03)

The FSCL is primarily used to establish C2 procedures for planning and execution purposes—it does not define mission types. Missions flown beyond the FSCL typically do not require oversight from the ASOC, because those missions are not in close proximity to friendly forces and thus beyond the distance where detailed integration is required. However, CAS missions can be flown in the portions of the operational area beyond the FSCL if friendly troops are operating beyond the FSCL and require support. When any component attacks targets beyond the FSCL, it is necessary to coordinate with the AOC, and their Service or component liaisons found within the AOC, to ensure deconfliction and to prevent multiple assets from attacking the same target. Ground forces, such as SOF teams that often operate beyond the FSCL, should have their locations coordinated with the appropriate TACS element for terminal attack control and have contact with a special operations liaison element (SOLE) at the AOC. Short of the FSCL, all missions typically require check-in with the ASOC while en route to the target area, for an update on potential targets, surface-to-air threats, and friendly troop locations. All air component short-of-the-FSCL missions, even those that usually do not directly support the ground component such as counterair or strategic attack, normally contact the ASOC for situation updates and deconfliction while in the ASOC's airspace.

Battlefield Coordination Line (BCL)

The Marines put in place a supplementary BCL to speed "expeditious attack of surface targets of opportunity" between the BCL and the more distant FSCL as Marine doctrine defined it. A typical BCL extended 18.6 [kilometers] out from the FLOT—roughly the range of [155] mm artillery. Air strikes short of this line were typically Type I, II, or III CAS calling for varying degrees of control. Beyond the battlefield coordination line, the "kill boxes" could be opened more easily, and the DASC was able to put its brisk procedures into play…. All levels monitored the air requests and intervened only to stop them. The DASC was collocated with [the fire support coordination center], who updated the ground picture as the DASC personnel worked the air picture…. The Marines used procedural control with aircraft checking in at control points to give route headings which the DASC controller cross-referenced…. Aircrews quickly caught on to the fact that the DASC could give them targets fast…. Soon the flow of coalition strike sorties, planned and unplanned, far exceeded anything the Marine air planners thought the JAOC would give them.

—Dr. Rebecca Grant,
"Marine Air in the Mainstream," Air Force Magazine, June 2004

Resulting from the OIF FSCL placement beyond organic fires capabilities, the Marine Corps utilized a supplemental fire support coordination measure (FSCM) for the Marine-controlled AO, called a battlefield coordination line (BCL). The BCL facilitates the expeditious attack of ground targets of opportunity between the BCL and the too-far-away, OIF-like, FSCL. Unlike the FSCL, the BCL is used by the Marine Corps to help delineate CAS and deep air support, which is a Marine term that includes AI procedures. Because the BCL is set at the maximum range of organic tube artillery, any sorties flown short of the BCL are typically designated as CAS. This allows counterland airpower to attack ground targets beyond the BCL using minimal coordination procedures with ground forces.

Kill Box.

Purpose. A kill box is a three-dimensional FSCM, normally built through the combined use of a FSCM (for the ground) and an airspace coordinating measure (ACM) (for the air), used to facilitate the integration of fires. A kill box is a measure, not a mission. Kill boxes are established to support interdiction efforts as part of the JFC's joint targeting process. Kill boxes allow lethal attack against surface targets without further coordination with the establishing commander and without the requirement for terminal attack control. When used to integrate air-to-surface and subsurface/surface-to-surface indirect fires, the kill box will have appropriate restrictions. These restrictions provide a three-dimensional block of airspace in which participating aircraft are deconflicted from friendly surface fires. The restrictive measures also prevent nonparticipating aircraft and maneuver forces from entering the kill box. The objective is to reduce the coordination required to fulfill support requirements with maximum flexibility (permissive attributes), while preventing friendly fire incidents (restrictive attributes). Fires executed in a kill box should comply with ROE and law of war targeting constraints; designation of a kill box is not authorization to fire indiscriminately into the area.

Establishment. Supported component commanders establish a kill box in consultation with superior, subordinate, supporting, and affected commanders. Requirements for kill boxes and other control measures are determined using normal component targeting and planning processes and are established and approved by commanders or their designated staff. Information about the type, effective time, duration, and other attributes will be published and disseminated using existing voice and digital C2 systems. Component commanders, acting on JFC authority, establish and adjust kill boxes within their AO/JOA in consultation with higher, subordinate, supporting, and affected commanders. For an in-depth discussion, see Air Force Tactics, Techniques, and Procedures (TTP) 3-2.59, *Multi-Service TTP for Kill Box.*

Kill box C2. The AOC is the air component commander's primary element for planning, coordinating, and employing air component controlled kill boxes consistent with the JFC's intent. Regardless of the component requesting the use of a kill box, because all kill boxes are established to conduct AI, all components coordinate with the AOC prior to entering or engaging targets in a kill box. This is normally done through the various liaison elements attached to the AOC, (e.g., the battlefield coordination detachment ,

the naval and amphibious liaison element, the Marine liaison element, and the SOLE). Once a target nomination results in an allocation of air assets to perform AI, the kill box is established through coordination with the airspace control authority's airspace team and the applicable land or maritime component commander. The resulting airspace coordinating measure and FSCM is promulgated to the JFC's forces via the airspace control order. Through the air tasking order, the AOC tasks airpower to enter and engage targets in kill boxes, in support of Service/component target nominations, without further coordination with other components.

C2 of airpower in these situations is conducted through the TACS previously discussed. For kill boxes and the resulting AI or strike coordination and reconnaissance (SCAR) missions that are short of the FSCL, the air component's AI or SCAR missions will check in with the ASOC. This is because the ASOC is normally the airspace control element of the TACS, responsible for all air component operations short of the FSCL, including, but not limited to, CAS and AI. The AOC maintains responsibility for AI and CAS, via airborne or ground-based TACS elements, for the airspace control of those air component missions that are beyond the FSCL.

A kill box is an FSCM that may contain other measures within its boundaries (e.g., no-fire areas, restricted operating zones, and airspace coordination areas). Restrictive FSCMs (those FSCMs established to safeguard friendly forces) will always have priority over the permissive FSCM (established to facilitate killing a target) when established within a kill box.