BASIC PLANNING CONSIDERATIONS

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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

[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

[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.
