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

AIR REFUELING—A CRITICAL ENABLER

Air refueling is a key part of most air component operations and extends the range, payload, and endurance of counterland assets, whether US Air Force, other Service, or allied nation forces, thereby increasing their effectiveness. In some cases, counterland missions would not be possible at all without air refueling capability. Air refueling is a key enabler to initial force deployment as well, since most counterland aircraft lack the range to deploy directly to or from the combat theater on their own.

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 usually tradeoffs involved in deciding which weapons to employ against specific targets, and availability is often a factor. Proper knowledge of the munitions available at each air base, carrier battle group, etc., along with their weapons resupply capability, is vital. Those munitions with the greatest potential for accuracy, destructiveness, or standoff range are often in the shortest supply. Targeteers and weaponeers should keep in mind factors such as anticipated length of the operation, munitions needs of the various operation or campaign phases, and tradeoffs of each weapons type when making munitions recommendations.

Air Refueling

Tanker aircraft are a force multiplier that enhances, or in some cases enables, counterland operations by allowing access to a wider range of targets and payloads. On-station times will be increased for AI and CAS missions, providing decreased response times and increasing the counterland effects on the enemy. One of the key tasks for air tasking order (ATO) production teams is to optimize use of the 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.

While technically a support asset, air refueling has become such an integrated part of counterland force packaging that it would be difficult to imagine operating without the enhanced capabilities it provides. For example, enemy antiship 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.

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. The product of this phase is the joint integrated prioritized target list. Annex 3-60, *Targeting*, provides information on air planning and the targeting process.

Some targets require special care/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.

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 attacking a particular target based on hardening, defenses, etc., 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 marshalling 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 different approach than fixed targets, whether attacking actual enemy combat forces or their fielded support. 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 air operations center (AOC) employs a dynamic targeting 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 harder to identify with onboard sensors and may be more hardened against weapons effects, but their fixed nature makes target location easier and simplifies targeting by weapons such as global positioning system (GPS)-aided bombs or missiles.

Environmental factors need consideration during target development. Target area environmental conditions include terrain features, adverse weather, time of day or night, humidity and temperature effects, solar activity, and active or passive defense

measures (such as smoke and camouflage). These may act to conceal targets, reduce visibility, and degrade weapon systems and overall counterland capabilities. Lunar illumination and weather conditions can drastically affect the ability of onboard sensors to both locate and identify targets. Terrain features may restrict target acquisition in some bandwidths, thus requiring specialized weapons, sensors, and tactics. The flexibility of different sensors and munitions that allow use of optical; near and far spectrum infrared; radar; and GPS for target acquisition, marking, and weapons guidance gives the counterland planner many options to counter the natural and artificial obstacles to success. However, the flexibility of these same sensors and weapons may be limited depending on environment conditions.

During the target development phase, planners should coordinate with other organizations and components to prevent friendly fire incidents, minimize collateral damage, and avoid providing a propaganda advantage for the enemy. Extensive coordination is required with the surface component and special operations liaison element to facilitate this phase. Examples of operations requiring this level of coordination are personnel recovery and information operations, to include public affairs.

The joint force special operations component commander deconflicts special operations through the JFC and with the other component commanders to avoid fratricide. AOC personnel should work through the battlefield coordination detachment (BCD) and the air support operation center (ASOC) to ensure that air component targeting is coordinated with and deconflicted from land component operations. Careful crafting and placement of fire support coordination measures can facilitate.

Urban Considerations

Air Force doctrine applies to the range of military operations, as appropriate, from stability, security, transition, and reconstruction operations to major operations and campaigns. Doctrine outlined in JP 3-06, *Joint Urban Considerations,* 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 (to include targeting as well as 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 will be time-consuming to prevent fratricide 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 for employment.

Collateral damage in cities or towns represents great risk that must be considered and minimized. One real, alleged, or staged collateral damage or fratricide event can have strategic impact, affecting ROE, special instructions, host nation restrictions on operations, etc. Planners should integrate public affairs and military information support operations into counterland operations from strategy development through mission execution. Public information planners should be involved early in the process to mitigate negative events and leverage successes during counterland operations. 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 the operation is a military necessity and whether the potential collateral damage outweighs the importance of the operation.

Close air support (CAS) is difficult when supporting house-to-house ground fighting, where the task of locating and identifying friendly positions may prove highly demanding. Locating the enemy targets is also more difficult 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. When operating in urban environments, aircrews should give extra attention to the axis of attack and target designation; the problem may be similar to attacking enemy forces in steep mountainous terrain. 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 greatly depending on whether the enemy can be attacked in the open versus inside buildings, requiring both patience and flexibility for mission success. When performing CAS in an urban environment, 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 accuracy and wide range of

onboard sensors. The AC-130 and unmanned aircraft (UA)[16] have been useful in urban environments, where extended loiter times are often necessary to pinpoint target sets in close proximity to civilians and civilian objects.[17]

Weaponeering and Allocation

Weaponeering is defined as the process of determining the quantity of a specific type of lethal or nonlethal means required to create a desired effect on a given target.[18] Weaponeering considers such things as the desired effects against the target (both direct weapons effects and indirect desired outcomes), target vulnerability, delivery accuracy, damage criteria, and weapon reliability. Targeting personnel quantify the expected results of lethal and nonlethal weapons employment against prioritized targets to produce desired 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 weapons/fuse settings for dynamic targets. The latter capability is especially important for CAS and on-call air interdiction, 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 and targets against the apportionment priorities. After allocation, the master air attack plan is created that matches assets against AI and strategic targets. Following allocation, the distribution process matches CAS assets against support requests, which should be planned by the ASOC in conjunction with ground force planning. The final step of the process is the actual ATO production, which packages the attacking and supporting assets to achieve optimum effect against the enemy.

AI targets nominated by the surface component are not often presented in the standardized basic encyclopedia number designation, which is another reason to retain flexibility in counterland planning. If the surface 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; the BCD can help with this task. Instead of concern over a particular enemy unit, the surface component may have a certain geographic area of concern to its scheme of maneuver. In this case, the friendly

[16] 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.
[17] See AFTTP 3-2.29, *Aviation Urban Operations*.
[18] JP 3-60, *Joint Targeting*.

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 targeting, especially for ground-nominated targets. Attacks against large ground forces are most effective when prioritized targeting guidance is included in the nomination, such as artillery first, armor second, etc. When possible, however, air support can be most effective when the surface component specifies mission-type orders or 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.” The air-ground system works best when the surface component requests overall operational area effects, rather than specific targets, providing greater flexibility to the air component to analyze the enemy force for proper airpower targeting.

Before the actual ATO is put into production, justified changes to targets and targeting priority can be incorporated. Once the ATO is put into final production, approved changes are typically passed on to the 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 much repackaging of counterland missions. This allows for a relatively simple retargeting of a given flight or strike package 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 locations are not available, airborne or ground alert may be appropriate. This is the most common method employed for CAS where there is typically not a pre-identified target prior to mission execution. Airborne alert AI can be used to provide up-to-the-minute flexibility, where final targeting guidance comes from offboard sources such as Joint Surveillance Target Attack Radar System or unmanned aircraft. Airborne alert missions should only be planned when lucrative targets are likely to exist, otherwise the missions will be wasted. The “push” system of providing preplanned backup targets for both CAS and AI alleviates this problem to some extent; this procedure gives each mission a fixed target of some military value in case the primary target fails to materialize.
