



ANNEX 3-01 COUNTERAIR OPERATIONS

EXECUTION CONSIDERATIONS

Last Updated: 18 August 2014

During the ongoing battle rhythm, weapon systems are matched to specific targets to carry out tasks. The types of air assets employed and the target sets affected differ between [offensive counterair](#) (OCA) and [defensive counterair](#) (DCA).

Offensive Counterair

The effectiveness of OCA operations depends on the availability of certain resources. System capabilities are influenced by the situation, threats, weather, and available intelligence. The following are some of the resources and capabilities used to conduct OCA:

- ★ **Aircraft.** Fighter and bomber aircraft provide the bulk of the weapon systems for OCA operations. Other types of aircraft and weapon systems are often critical enablers of counterair operations (e.g., electronic attack, electronic protection, and air refueling aircraft). Unmanned Aerial Systems may be used in counterair operations to provide ISR, communication relay, deception, jamming, harassment, or destruction of enemy forces and air defense systems. These systems may be automated or remotely operated/piloted. They provide valuable intelligence to friendly forces and may now be used to attack some targets either too dangerous or risky for manned aircraft or where manned aircraft are not present or available to respond. They may also be used to help provide persistent air presence over enemy forces in situations where this may have important psychological effects upon an adversary (as part of OCA or other operations) if synergistically tasked to help provide persistent presence over adversary forces. Most UAS do not maneuver well against threats, nor do they carry countermeasures, so they will normally operate effectively only in low-threat environments.
- ★ **Command and control systems.** Command and control (C2) systems enhance OCA operations by providing early warning, intelligence, identification, and targeting data, as well as C2 of friendly forces.
- ★ **Electronic warfare** assets are frequently the most vital to any effective operation to suppress enemy C2, integrated air defenses (IADS), and other significant military use of the electromagnetic spectrum. See Annex 3-51, [Electronic Warfare Operations](#), for detailed discussion of all aspects of electronic warfare.

- ✦ **Information operations and cyberspace operations.** [Information operations](#) (IO) and [cyberspace operations](#) can greatly enhance joint operations, in some cases reducing the demand for sorties. Many OCA targets such as C2, theater missiles and support infrastructure, and airfields/operating bases can be affected by various IO and cyber techniques (such as network attack operations). Some of these techniques are able to affect targets that may be inaccessible by other means.
- ✦ **ISR systems.** Intelligence, surveillance, and reconnaissance (ISR) systems and resources may be used in counterair operations to provide intelligence, surveillance, reconnaissance, deception, and other effects against enemy forces and air defense systems. These activities include the use of airborne, space-borne, cyberspace, and ground (e.g., human intelligence) assets.
- ✦ **Missiles.** These weapons include surface-to-surface, air-to-surface, and air-to-air missiles, as well as air-, land-, and sea-launched cruise missiles. Many of these weapons have long ranges and some have very quick reaction times. These weapon systems can eliminate or reduce the risk of harm to friendly forces by destroying enemy systems in the air and on the ground.
- ✦ **Special operations forces.** [Special operations forces](#) (SOF) can conduct direct action missions, special reconnaissance, and provide terminal guidance for attacks against valuable enemy targets. Planners in the [air operations center](#) (AOC) coordinate with the special operations liaison element to coordinate the use of special operations assets in support of the counterair mission.
- ✦ **Surface fire support.** Artillery and naval surface fire support may be employed in OCA operations. With the proper coordination, this may be a very effective way to destroy enemy targets while minimizing risk to friendly forces.
- ✦ **Surface Forces.** The ability to destroy, damage, secure, and occupy key OCA and DCA systems (such as SAM sites), as well as the lethality of supporting surface fires, can achieve vital counterair effects. Israel used this synergy to attain air superiority during the 1973 Yom Kippur War. After the Normandy breakout in World War II, advancing Allied troops denied the enemy airbases while acquiring those for friendly OCA and counterland efforts.

OCA target sets are those which directly or indirectly challenge control of the air. Ideally, OCA concentrates on degrading the capabilities of these targets as close to their source as possible (e.g., aircraft on airfields, theater missiles and SAMs in storage). Otherwise, OCA missions seek and attack targets whenever and wherever they can be found: on the ground, in the air, or at sea. The following are representative OCA target sets, and do not reflect the full spectrum of potential OCA employment:

- ✦ **Aircraft.** This category includes enemy fixed-wing, rotary-wing, and unmanned aircraft. In some situations, aircraft on the ground are the most lucrative targets for OCA operations. Precision weapons with penetration capabilities may be combined

with timely intelligence to destroy aircraft on the ground regardless of enemy sheltering or hardening efforts.

- ✦ **Airfields and operating bases.** Damaging runways or taxiways may prevent use of an airfield for short periods. Destruction of support facilities—hangars, shelters, maintenance facilities, fuels—degrades the enemy’s ability to generate aircraft sorties. CBRN weapons and materials may be stored at these locations to be loaded onto aircraft.
- ✦ **Air defense systems.** Disruption or destruction of enemy IADS and the personnel who control, maintain, and operate them may render those systems ineffective against friendly forces.
- ✦ **C2 systems.** C2 systems are critical to the effective employment of forces and integration of IADS and should be given a high priority during OCA targeting. Intelligence-gathering, warning, and control systems, including ground-controlled intercept, early warning, acquisition, and other sensors, together with their supporting facilities, form integral parts of an IADS. Destruction or nonlethal disruption of such systems may substantially reduce the enemy’s capability to detect, react, and bring forces to bear against friendly forces.
- ✦ **Electronic warfare capabilities.** Left unhindered, enemy electronic warfare (EW) operations could have devastating effects on friendly C2 systems. Early and persistent efforts should be aimed at defeating enemy EW capabilities.
- ✦ **Missiles and support infrastructure.** “Missiles” refers to ballistic, cruise, and air-to-surface vehicles. Missiles may pose a significant threat to friendly forces. These missiles may possess conventional as well as CBRN capabilities. OCA operations seek to destroy or disable these missiles before they are launched. Destruction of missiles, launch platforms, support facilities, and infrastructure greatly limits effective missile attacks against friendly forces or territory.

Defensive Counterair

No single defensive system is impregnable. Therefore, the most effective use of defensive assets is a defense-in-depth approach, or the “layering” of mutually supporting defensive positions designed to absorb and progressively weaken enemy attacks. When working in unison, the limitations and advantages of some assets are balanced by the limitations and advantages of other assets. Some of the primary assets used in conducting active air defense missions are discussed below:

- ✦ **Armed helicopters.** Armed helicopters may conduct limited DCA operations when required. C2 relationships with armed helicopters performing DCA missions will be determined by the Joint Force Commander. Armed helicopters can engage targets such as enemy helicopters, battlefield air defenses, and other targets within their combat range.

- ★ **Fighter aircraft.** Fighter aircraft are used to accomplish any of the air defense missions, with the objective of intercepting and destroying hostile missiles and aircraft before they can reach their intended targets. These aircraft use combat air patrols to ensure rapid reaction to enemy attacks and may be positioned well ahead of forces being protected.
- ★ **High value airborne assets (HVAA).** HVAA are assets that are in high demand, but in limited supply. For example, ISR assets provide surveillance, early warning and identification capability. Other assets, such as the EA-6B aircraft, can provide electronic attack and protection, while tankers are required to extend the range and/or sortie duration of other airborne assets.
- ★ **Surface-to-air weapons.** Surface-to-air weapons effectiveness requires a highly reliable link with air operations and a reliable identification process. This process must preclude engagement of friendly aircraft and unnecessary expenditure of valuable resources. All available surface-to-air defense assets in the theater of operations are incorporated into the overall DCA plan and are subject to the integrated procedures, ROE, and weapons control measures directed by the AADC. The AADC should be granted the necessary authority to deconflict and control engagements and to exercise real time battle management when required.

Active defense missions. With respect to DCA, it is better to speak in terms of types of missions assigned rather than types of targets, since these will be fleeting and will differ from situation to situation. Units employed to create air defense effects usually have decentralized execution authority and the necessary latitude in the detailed planning and coordination of assigned DCA tasks. The following types of missions are most closely associated with active air defense operations:

- ★ **Area Defense.** Area defense missions are conducted for the defense of a broad area using a combination of weapon systems. There can be more localized applications of area defense when friendly assets are dispersed over a large geographical area with defined threat boundaries.
- ★ **HVAA Protection.** HVAA protection uses fighter aircraft to protect critical airborne theater assets.
- ★ **Point Defense.** Point defense missions are conducted for the protection of a limited area, normally in defense of the vital elements of friendly forces and installations.
- ★ **Self-Defense.** Self-defense is conducted by friendly forces to defend themselves against direct attack or threat of attack through the use of organic weapons and systems. Inherent to all ROE and weapon control procedures is the right of self-defense.

Passive defense entails the following actions:

- ★ **Chemical, biological, radiological, and nuclear defensive elements.** CBRN elements are made up of contamination avoidance, protection, and contamination control. Contamination avoidance measures include covering critical assets, remaining inside facilities during attacks, detecting and identifying contaminated areas, and avoiding those areas. Protection includes such things as collective protection facilities and individual protective equipment. Contamination control is standard disease prevention and control measures, contaminated waste management, and decontamination procedures. For further details on CBRN defense, see Annex 3-40, [Counter Weapons of Mass Destruction \(WMD\) Operations](#).
- ★ **Detection and warning systems.** Timely detection and warning of air and missile threats provide maximum reaction time for friendly forces to seek shelter or take other appropriate action against enemy attacks. Missile warning is especially vital to friendly forces considering the compressed timelines for detection and warning of missiles.
- ★ **Dispersal.** Dispersal complicates the enemy's ability to locate and target friendly assets by spreading them out and bringing them together in concentration only at the time and place of our choosing. Combined with mobility and deception, dispersal increases uncertainty as to whether a location is occupied or will remain occupied. It forces the enemy to search more locations, requiring more resources and time.
- ★ **Electronic and Infrared Countermeasures.** Electronic and infrared countermeasures are measures possessed by individual aircraft or systems that typically attempt to defeat enemy weapons during their track or guidance phase. Onboard systems are often a prerequisite for aircraft to conduct missions.
- ★ **Hardening.** Valuable assets and their shelters are hardened to protect against hostile attacks. Hardening actions are usually accomplished during peacetime, but may continue throughout operations.
- ★ **Mobility.** Mobility is the capability to easily move from one location to another and is facilitated by keeping a small footprint. Frequent movement of units, inside the enemy's decision cycle, can be of critical importance. Mobility reduces vulnerability and increases survivability of friendly assets by complicating enemy surveillance, reconnaissance, and targeting.
- ★ **Reconstitution.** This capability provides for the rapid repair of damage resulting from enemy attacks and the return of damaged units to a desired level of combat readiness. Reconstitution includes the ability to repair valuable assets such as airfields, communications, warning and surveillance systems, and to restore essential services such as power, water, and fuel supplies.

- ★ **Redundancy.** Duplication of critical capabilities keeps vital systems functioning even when critical nodes are destroyed or damaged. Redundancy includes dual, contingency, or back-up capabilities which can assume primary mission functions, in whole or in part, upon failure or degradation of the primary system.
 - ★ **Stealth and Low Observable (LO) technology.** Stealth and LO technologies are those measures, normally designed into a weapon system, which attempt to hide or minimize the likelihood of detecting its presence during mission execution, or reduce the vulnerability to enemy threat systems.
-