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 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. Unmanned aircraft systems may be used in counterair operations to provide intelligence, surveillance, and reconnaissance (ISR); communication relay; deception; jamming; harassment; or destruction of enemy forces and air defense systems when the situation allows.

- **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. These weapon systems may eliminate or reduce the risk of harm to friendly forces by destroying enemy systems in the air and on the ground.

- **Missile Warning Sensors.** A combination of air-, space-, and ground-based sensors may be used to provide missile launch detection and missile tracking functions. These systems provide tactical missile warning and attack assessment information to operation commanded centers.

- **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 (SOLE) to coordinate the use of special operations assets in support of the counterair mission. If not using SOF as part of the OCA plan, planners should still coordinate with the SOLE to ensure OCA operations are deconflicted from SOF personnel.
Surface fire support. Artillery and naval surface fire support may be employed in OCA operations. AOC planners should coordinate the use of these fires with the army and navy liaison elements early in the planning process.

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.

Electromagnetic warfare (EW). EW assets are frequently used to suppress enemy C2, integrated air defense systems (IADS), and other significant military use of the electromagnetic spectrum. See Annex 3-51, Electromagnetic Warfare and Electromagnetic Spectrum Operations, for detailed discussion of all aspects of EW.

Cyberspace operations. Cyberspace operations can enhance joint operations and in some cases reduce the demand for sorties. Many OCA targets such as C2, theater missiles and support infrastructure, and airfields or operating bases can be affected by cyberspace operations. Some of these techniques may be able to affect targets that are inaccessible by other means. Authorities to use cyberspace effects, rules of engagement, availability of access, and time available to generate a desired effect are some considerations planners should address.

ISR systems. ISR systems and resources provide intelligence, surveillance, reconnaissance, deception, and other effects against enemy forces and air defense systems. These activities include the use of air, space, cyberspace, and ground assets.

Surface Forces. The ability to destroy, damage, secure, and occupy key OCA and DCA targets (such as surface-to-air missile [SAM] sites) can achieve vital counterair effects.

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. 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. Precision weapons with penetration capabilities may be combined with timely intelligence to destroy aircraft on the ground, to include those in hardened shelters.

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5 Air Force language has evolved from using the term “electronic warfare” (and related terms such as “electronic attack”) to refer now to “electromagnetic warfare”. The legacy term, “electronic,” speaks to actions to attack and protect the electronic circuits associated with radios and radars. With expanded use of the electromagnetic spectrum (e.g., infrared applications, lasers, microwave and satellite communications, computers) the broader term “electromagnetic” is more technically accurate. This evolution also anticipates a similar change in joint doctrine. For more information, see Annex 3-51, Electromagnetic Warfare and Electromagnetic Spectrum Operations.
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—may degrade the enemy’s ability to generate aircraft sorties over a longer period of time.

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.

EW capabilities. Early and persistent efforts should be aimed at defeating enemy EW capabilities that could otherwise create devastating effects on friendly systems.

Missiles and support infrastructure. Destruction of ballistic, cruise, and air-to-surface missiles, launch platforms, support facilities, and infrastructure greatly limits effective missile attacks against friendly forces or territory. OCA operations seek to destroy or disable these missiles pre-launch due to the increased resources required to engage them post-launch.

DEFENSIVE COUNTERAIR

Layering mutually supporting defensive capabilities helps absorb and progressively weaken enemy attacks. The following are some of the resources and capabilities used to conduct DCA:

Fighter aircraft. Fighter aircraft use combat air patrols to ensure rapid reaction to enemy attacks and may be positioned well ahead of forces being protected. These fighters have the objective of intercepting and destroying hostile aircraft and/or missiles before they can reach their intended targets.

High-value airborne assets (HVAA). HVAA are airborne national assets which are so important that the loss of even one could seriously impact United States warfighting capabilities or provide the enemy with significant propaganda value. These assets can provide unique capabilities such as surveillance, early warning, and electromagnetic attack, while tankers extend the range and sortie duration of other assets.

Surface-to-air weapons. Effective integration of surface-to-air weapons into the DCA plan requires a reliable link with air operations and a reliable identification
process. All available surface-to-air assets in the theater of operations should be incorporated into the DCA plan and are subject to the integrated procedures, ROE, and weapons control measures directed by the area air defense commander (AADC). The AADC should be granted the necessary authority to deconflict and control engagements and to exercise real time battle management when required.

**Active air and missile defense (AMD)**

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 AMD effects usually have decentralized execution authority within the IADS 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 AMD:

- **Area Defense.** Area defense missions are conducted for the defense of a broad area. There can be more localized applications of area defense when friendly assets are dispersed over a large geographical area with defined threat boundaries.

- **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.

- **HVAA Protection.** HVAA protection may use fighter aircraft, surface, and naval fires to protect critical airborne assets.

**Passive air and missile defense**

Passive AMD entails the following types of actions:

- **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.

- **Chemical, biological, radiological, and nuclear (CBRN) 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*.

- **Camouflage, concealment, and deception.** Signature reduction measures that can “hide” or deny accuracy in locating friendly targets or target systems. These measures may be conducted continuously or in response to specific warnings. These measures may be coupled with deception measures to further complicate chances of effective enemy attacks. Camouflage, concealment, and deception includes passive countermeasures designed to reduce electronic and infrared signatures. 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: physical, electromagnetic pulse, and transient radiation. Hardening actions are usually accomplished during peacetime, but may continue throughout operations.

- **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.

- **Dispersion.** Dispersion 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, dispersion 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.

- **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.

- **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.
For details on Active and Passive AMD execution, see Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.31, *Multi-Service Tactics, Techniques, and Procedures for Air and Missile Defense.*