Forward Air Controller / Close Air Support

VERSION 1.0

CRASH CREW

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Introduction to CAS

Close Air Support is air action by fixed-wing and rotary-wing aircraft against hostile targets that are in **close proximity** to friendly forces and requires **detailed integration** of each air mission with the fire and movement of those forces.

CAS provides timely and accurate fires to **destroy, suppress, or neutralize enemy forces** and permit movement, maneuver, and control of territory. Flexible and responsive fire support allows commanders to take advantage of opportunities by **massing firepower** to maintain the momentum of an offensive action or reduce tactical risks.

Effective CAS requires **thoroughly trained personnel** with well-developed skills, effective command and control, target marking / acquisition, streamlined and flexible procedures, and appropriate ordnance. All participants in CAS must make every effort to identify friendly units and enemy forces prior to clearing fires and weapons release.

The FAC

The Forward Air Controller (FAC) is an individual who coordinates, integrates, and directs actions of combat aircraft engaged in support of ground combat operations.

The FAC is responsible for achieving the ground commander's intent, maximizing and integrating fires on the battlefield, and mitigating friendly fire. The FAC is the only individual authorized to conduct Terminal Attack Control: the authority to control the maneuver of and grant weapons release clearance to attacking aircraft.

Responsibilities

The FAC's four major responsibilities are the roles of **Stack**, **Brief**, **Mark**, and **Control**.

The **Stack** role is the responsibility to route and deconflict aircraft from other aircraft and fires, collect check-ins, and track airspace coordination measures.

The **Brief** role is the responsibility to develop and brief the situation update, build the gameplan and CAS briefs (including remarks and restrictions), collect readbacks, and verify target correlation.

The **Mark** role is the responsibility to accomplish target correlation and provide and coordinate target talk-ons and marks.

The **Control** role is the responsibility to provide terminal attack control for CAS attacks and monitor attacking aircraft to ensure compliance with restrictions.

Airspace

The FAC directs the actions of all aircraft within their assigned airspace. This is typically the local airspace in the objective area. The FAC will utilize a combination of Initial Points (IPs) and Holding Areas (HAs) to ensure friendly aircraft remain reasonably safe from other aircraft and both friendly and enemy fires.

Terminal Attack Control

The **Types** of terminal attack control are tools that give the greatest chance of accomplishing the mission while mitigating friendly fire. Type of control shall be passed as part of the gameplan before the attack

brief, but imposes no requirement on the aircraft. The Type conveys the FAC's intent on how best to mitigate risk and the need to control individual attacks.

> **Type 1**. Accomplished by visually acquiring the attacking aircraft, assessing the attack geometry, and maintaining control of individual attacks. *Type 1 should be used when assessing aircraft geometry visually is the best means available to ensure mission success and reduce the risk of fratricide.*
>
> **Type 2**. Accomplished by paying attention to other measures in place to reduce risk and maintain control of individual attacks. *The FAC must have accurate real-time targeting information, and while not required, the FAC should make every effort to visually acquire the attacking aircraft and assess attack geometry.*
>
> **Type 3**. Accomplished by paying attention to other measures in place allowing for multiple attacks within a single engagement. *The FAC must have accurate real-time targeting information, and while not required, the FAC should make every effort to visually acquire the attacking aircraft and assess attack geometry.*

The **Method of Attack** is an agreement between the FAC and aircraft regarding the aircrew's correlation requirement and is not tied to the Type of control. Correlation is the process by which the FAC coordinates and confirms that the attacking aircrew has acquired the correct target or mark. Method of attack will be passed as part of the game plan before the attack brief; either the aircraft will be required to acquire the target (BOT) or not (BOC).

> **Bomb on Target (BOT)**. Requires that the FAC's target or mark is Tally/Contact/Captured by the aircrew.
>
> **Bomb on Coordinate (BOC)**. Used when the FAC determines that the desired effects can be created against the target with CAS employing ordnance on a specified grid coordinate. An example of a BOC attack is a laser-guided weapon employed and guided by the FAC or unguided ordnance dropped from high altitude through fog or clouds.

The CAS Template

> **Routing**. Upon initial contact with the FAC, the controller should immediately advise newly arrived aircraft of other air on station, their call sign, and altitude. Each controller should, at a minimum, give "maintain" instructions in order to establish control of aircraft.
>
> > *Examples:*
> > "Proceed Nebraska 2 block 3 and report established"
> > "Maintain Wisconson 500 and below"
>
> **Check-In**. Aircraft check-in procedures establish the required flow of information between the FAC and CAS aircraft. The FAC should be directive about when they want to receive an aircraft check-in. The Check-in may be delayed, omitted, or abbreviated to increase tempo. Alternatively, an aircraft may check-in "as fragged" if the loadout and capabilities have already been briefed during the briefing stage.

Aircraft:	"_____", this is "_____"
Number and type of aircraft:	"2 by Little Birds"
Position and altitude:	"10 km north, surface to 150"
Ordnance:	"Rockets and guns"
Capabilities:	"Targeting pod, FAC(A) capable"

Situation Update. The Situation Update brief is a tool used to increase all players' situational awareness of the tactical situation. At a minimum, the following information should be included:

Threat:	General locations of surface to air threats
Enemy Situation:	General enemy disposition
Friendly Situation:	General friendly scheme of maneuver
Hazards:	Towers, weather, etc.
Remarks / Restrictions:	JTAC capabilities, intent for aircraft, etc.

Gameplan. A concise tool to inform players of the flow of the attack. For RW CAS 5-Lines, Gameplans are given as part of the attack brief. Gameplans are given in the following format:

Type of control:	"Type 1" / "Type 2" / "Type 3"
Method of attack:	"Bomb on Target" / "Bomb on Coordinate"
Ordnance requested:	"1 by Hellfire" / "rockets and guns"
Interval:	Time between attacks (if applicable)

RW CAS 5-Line. The RW CAS 5-Line is a "friendly-centric" brief used to quickly orient RW CAS assets to the target. The 5-Line assumes the RW assets have sufficient situational awareness to locate the friendlies and use them as a frame of reference to find the target.

Transmission of the brief does not imply clearance to fire.

1. **Warning Order**
2. **Friendly Location / Mark**
3. **Target Location**
4. **Target Description / Mark**
5. **Remarks / Restrictions**

The **Warning Order** informs the CAS aircrew that they are about to receive an attack brief. This should contain the gameplan and may include ordnance requested.

The **Friendly Location** should be passed using named locations or GEOREFs, and how it is marked if applicable.

The **Target Location** may be passed as a direction and distance from Line 2, TRP, GEOREF, or GRG location (or offset from either).

The **Target Description** should be descriptive enough to find the target in type, number, orientation, and degree of protection format. Further details may be passed on CAS aircraft ingress. If the target is marked, how it is marked should also be passed.

The **Remarks / Restrictions** should include information necessary for a safe and effective attack. At a minimum, this should include the ingress ("shoulder") and egress ("pull") instructions for Type 1 (i.e. "right shoulder, left pull") or Final Attack Headings (FAH) for Type 2 / 3 (i.e. "final attack heading 090 through 120").

Readbacks. At a minimum, the restrictions imposed upon the CAS aircrew must be read back to the FAC. In the case of RW CAS 5-Lines, these are the ingress ("shoulder") and egress ("pull") instructions if Type 1 or Final Attack Headings (FAH) if Type 2 / 3.

Correlation. The process by which the FAC coordinates and confirms that the attacking aircraft have acquired the correct target or mark. Correlation is required on every CAS attack.

BOC. Correlation is complete when the attacking aircraft correctly reads back the target location and restrictions (FAHs).

BOT. The FAC coordinates actions to mark the target and positions the aircraft to acquire mark and/or target. Target composition, camouflage, and concealment may make it difficult for aircrew to acquire the actual target, and employing from an offset from the mark may be sufficient to achieve the commander's intent.

Once the FAC is satisfied that the aircrew have acquired the correct target, the FAC should transmit "The _____ is your target." Aircrew should respond with TALLY (target/object), CAPTURED, or CONTACT, as appropriate. Saying "That is your target" is ambiguous and should be avoided.

Attack. The FAC must maintain awareness of the aircraft position, friendly situation, and objective area throughout the attack. By developing a mental timeline of the time it takes aircraft to transit from the HA or IP, the FAC can ensure effective integration with fire and movement.

TAD Discipline. The TAD net can become very congested. All players must use "active listening" and appropriate discipline and cadence.

Brevity. CAS players should always strive to use brevity for clearer and more concise communications.

Clearance. Once clearance requirements are met for a particular Type of control, clearance should be passed in a timely manner to allow aircrews time to prosecute the attack.

Abort. FACs shall direct CAS aircrews to abort if they are not aligned with the correct target and **must** abort them if friendly troops may be endangered.

Assess Effects. Execute reattacks or issue new gameplans/CAS briefs as necessary. The FAC must assess whether the commander's desired effects were created.

Battle Damage Assessment (BDA). BDA is used to update the enemy order of battle. BDA should be passed in the SALT format.

Size:	Number and type of equipment / personnel
Activity:	Movement direction / stationary / dug in
Location	
Time	
Remarks:	Munitions expended, observed damage (Destroyed / Neutralized / Suppressed)

Routing. FACs are responsible for providing routing instructions to aircraft as they egress. This provides safe passage for exiting aircraft and allows FACs to maintain a picture of their CAS stack and positions of assets. Routing should include a point and an altitude block that provides deconfliction with other aircraft and fires.

Planning CAS

The following details leadership's responsibilities for planning and using CAS in a mission:

Platoon Commander

The Platoon Commander is the senior ground commander of the operational area. CAS aircraft and the FAC are supporting elements. The ground commander nominates CAS targets to the FAC for prosecution, and is the ultimate authority for the use of all supporting fires in their operational area.

In certain cases, the ground commander may require air support when the FAC is not available or is no longer able to provide assistance. Aircrew executing CAS in these circumstances bear increased responsibility for the detailed integration required to minimize friendly fire.

Squad Leader (SL) / Fireteam Leader (FTL)

It is the responsibility of the SL and FTL to assess the tactical situation, accurately report target locations, request a CAS attack from the ground commander, and when requested to coordinate friendly and enemy marks for CAS aircraft.

Reporting Targets for CAS

To increase tempo in the operational area, targets should initially be plotted by marking the map with a red dot and labeling it a TRP and the time in minutes on the map clock ("TRP 47"). Once plotted, the SL / FTL should transmit the target location in the following format:

Size:	Number and type of equipment / personnel
Activity:	Movement direction / stationary / dug in
Location:	Cardinal direction and distance in meters
Time:	"Time four-seven"

If requested, the SL / FTL may be responsible for providing friendly and enemy marks. The standards for marking (and precedence) are as follows:

Friendly: GEOREF / Green Smoke / IR Strobe / Green Flare
Enemy: GEOREF / Red Smoke / Laser / Red Flare / Tracer

CAS in support of Offensive Operations will be used to destroy, disrupt, suppress, fix, or delay enemy forces. Commanders employ CAS depending on the type of operation being conducted:

a. **Movement to Contact**. CAS can be employed to provide forward and flank security. Once contact is made, employing CAS aircraft at the initial point of contact can overwhelm and force the enemy to prematurely deploy forces.

b. **Attack**. CAS can destroy critical enemy units before the enemy can concentrate or establish a defense. CAS can also help fix the enemy in place to support the movement and assault of ground forces.

c. **Exploitation**. CAS is used to sever escape routes, destroy fleeing forces, and strike unprotected enemy targets.

d. **Pursuit**. CAS can destroy the combat effectiveness of a fleeing enemy force, keeping direct pressure on the enemy to prevent them from reorganizing.

CAS in support of Defensive Operations will be used to interdict, disrupt, or delay attacking enemy forces.

a. **Support Maneuver**. CAS can complement maneuver forces as part of a combined arms spoiling attack.

b. **Support Movement**. CAS can support the movement of friendly forces between positions, augmenting protection to the front, flank, and rear of the moving force.

c. **Attack Penetration**. CAS can engage enemy units that have bypassed main battle area forces or penetrated friendly positions. **CAS participants must take special care to identify the location and movement of friendly forces to ensure that they are not subject to direct attack or weapons effects.**

Rotary Wing CAS Tactics

Following are tactics you can expect your air assets to use during CAS:

Flight Composition

Helicopters will often operate in Sections or Flights (Divisions). A Section is a group of two helicopters that operate in mutual support. A Flight (Division) is a group of three or more helicopters. Sections will often be a mix of aircraft types, such as an AH-64 and an OH-58, or an AH-1 and a UH-1. Mixed Sections provide RW CAS elements with a flexible mix of sensors, maneuverability, and firepower.

Altitudes

The following are altitude ranges for RW aircraft:

High:	Above 1,000 m AGL
Medium:	150 to 1,000 m AGL
Low:	Below 150 m AGL

En Route Tactics

En route tactics (route, altitude, and airspeed selection; terrain flight profile; and formations) allow helicopter aircrews to avoid detection or remain outside of the effective range of threats.

En route navigation tactics depend on the threat and weather. As aircrews approach the target area, they fly lower and with increased caution to move undetected by the enemy. Aircrews use **terrain flight** to prevent enemy detection. There are three terrain flight profiles:

Low-Level:	Constant altitude (30-60 m AGL) and airspeed.
Contour:	Conforms to earth and vegetation (15-30 m AGL).
NOE:	As close to ground as vegetation/obstacles permit.

In environments with small arms and RPG threats, helicopter aircrews will normally elevate in order to stay out of the effective range of the weapons (medium altitude). When transiting urban areas helicopters may elect to transition to rooftop level to minimize exposure time.

Altitudes will vary for the same operations from day to night time. In open desert, helicopters will normally decrease altitude at night to maintain visual reference with the ground. Over urban areas, helicopters will elevate high enough to avoid cultural lighting.

Attack Phase

Once the aircrew reaches the HA, the FAC issues final instructions to the flight. Aircrews select individual firing points and remain masked while awaiting the order to attack.

Specific attack tactics are the choice of the aircrews and consider the threat, target size, weather, terrain, and weapons effectiveness.

Hovering Fire is performed when the aircraft is stationary or has little forward motion. Aircrews perform hovering fire after unmasking from a defilade position or in standoff in a safe area. Aircrews maintain the hovering fire position only for **short periods** to prevent being targeted by enemy weapons. After delivering hovering fire, aircrews **remask or displace**. Hovering fire is the most effective profile for delivering precision guided munitions.

Running Fire is performed when the aircraft is in level forward flight. This adds stability and improves the accuracy of unguided ordnance. Running fire also reduces an aircrew's vulnerability to enemy weapons by providing a moving target.

Diving Fire is delivered while the aircraft is at altitude and in descending forward flight. Diving fire produces the most **accurate results** for unguided ordnance. This is often employed from helicopters operating in an overhead position or as part of a **pop attack**.

Disengagement and Egress

When a helicopter's time on station is complete, the flight will conduct a check out and egress via planned or assigned routing. RW assets may refuel and rearm at a FARP, extending their ability to provide support to ground forces.

Clearance Brevity

ABORT. Cease action / attack / event / mission.

CLEARED HOT. Type 1 and 2 clearance to release ordnance on this pass.

CLEARED TO ENGAGE. Type 3 clearance to initiate attacks within parameters imposed by FAC.

CONTINUE. Continue present maneuver (no change in clearance).

CONTINUE DRY. Continue present maneuver, release not authorized.

Marking Brevity

BLIND. No visual contact with friendly aircraft or ground position. Opposite of Visual.

VISUAL. Sighting of a friendly aircraft or ground position. Opposite of Blind.

CONTACT. Acknowledges sighting of reference point (visually / with sensor).

CAPTURED. Specified target or object has been acquired and is being tracked with a sensor.

LOOKING. Aircrew does not have object, reference point, or target in sight. Opposite of Contact.

TALLY. Sighting of a target or enemy position. Opposite of No Joy.

NO JOY. Aircrew does not have visual contact with the target. Opposite of Tally.

Laser Designator Brevity

LASER ON. Start / acknowledge laser designation.

SPOT. Acquisition of laser designation.

CEASE LASER. Discontinue lasing.

LASING. The speaker is firing the laser.

Night Infrared Brevity

SPARKLE. Mark / marking target with infrared pointer.

CEASE SPARKLE. Discontinue Sparkle activity.

CONTACT SPARKLE. Acknowledge sighting of Sparkle.

MATCH SPARKLE. Directive term for second party to overlay IR mark onto an existing mark (for correlation).

Terminology

CAS	Close Air Support
DAS	Deep Air Support
FAC	Forward Air Controller
FAC(A)	Forward Air Controller (Airborne)
TAC	Terminal Attack Control
IP	Initial Point
HA	Holding Area
BDA	Battle Damage Assessment
BOT	Bomb on Target
BOC	Bomb on Coordinate
BP	Battle Position
GEOREF	Geographic Reference Point
GRG	Gridded Reference Graphic
MANPADS	Man Portable Air Defense System
NVG	Night Vision Goggle
PGM	Precision Guided Munition
SA	Situational Awareness
TRP	Target Reference Point

Vignettes

5-Line, Type 1 Control, Bomb on Target with Mark

The FAC visually acquires a target and verifies target location. At the direction of the Platoon Commander, the FAC generates target data by marking the map with a "TRP 50" marker. One AH-6M Light, callsign Phantom 1, checks on station.

CAS: "FAC, Phantom 1."

FAC: "Phantom 1, proceed to Wisconson, surface to 450, you are the only aircraft on station, check in when able."

CAS: "Phantom 1, copy, 1 by AH-6M Light, proceeding Wisconson 450 and below, rockets and guns, targeting pod capable."

FAC: "FAC, copy, advise when ready for SITREP."

CAS: "Phantom 1, ready."

FAC: "Threat is small arms and MANPADS. Enemy personnel are digging in to the north. Friendlies are a platoon size infantry element collocated with the FAC. Weather is clear in the target area. Advise when ready for gameplan."

CAS: "Phantom 1, ready."

FAC: "5-Line, Type 1, Bomb on Target, rockets and guns. My position is checkpoint C. North 300, infantry platoon at TRP 50, marked by red smoke. Make all attacks over my right shoulder, left pull."

CAS: "Phantom 1 copies right shoulder, left pull, PUSHING."

FAC: "Phantom 1, CONTINUE"

FAC marks the target location with red smoke.

CAS: "Phantom 1, VISUAL, TALLY, IN."

FAC visually acquires attack aircraft and assesses attack geometry to ensure friendlies will be safe from expected effects and aircraft is aligned with the approved target.

FAC: "Phantom 1, CLEARED HOT."

The FAC observes weapon impacts and provides BDA to the attacking aircraft.

5-Line, Type 2 Control, Bomb on Target with Talk-On

The FAC is unable to acquire the target but receives the target (TRP 14) from a FTL that is currently in contact. The FAC will verify target location through the use of an aircraft. The FAC plans to use HA Nebraska for holding.

CAS aircraft checks in (Phantom 1 and 2), informs the FAC regarding their onboard capabilities, receives a situation update, and the following Gameplan and 5-Line.

FAC: "Phantom 1, this is FAC, proceed Nebraska surface to 1,000, advise when ready for gameplan and 5-Line."

CAS: "Phantom 1, Wilco, go with gameplan and 5-Line."

FAC: "5-Line, Type 2, Bomb on Target, 1 by Hellfire each aircraft. Friendly position is building AB7. Target at TRP 14. Two APCs, sensor talk-on. Final attack heading 1-5-0 through 2-3-0."

CAS: "Phantom 1, 1-5-0 through 2-3-0."

FAC: "Phantom 1, good readbacks, advise when ready for sensor talk-on."

CAS: "Ready."

FAC: "Phantom flight, SLEW to TRP 14. Describe what you see."

CAS: "A large T-intersection. On the southwest corner of the intersection, a two-story building."

FAC: "Phantom 1, Do you show any vehicles on the east side of the two-story building?"

CAS: "Two vehicles appear to be just off the road."

FAC: "Roger, the east vehicle is your target."

CAS: "Phantom 1, CAPTURED."

FAC: "Phantom 2, the west vehicle is your target."

CAS: "Phantom 2, CAPTURED."

FAC: "Push when ready."

CAS: "Phantom 1 and flight, PUSHING."

FAC: "Phantom 1 and flight, CONTINUE."

CAS: "Phantom 1 and flight, IN heading 1-8-0."

FAC assesses that Phantom 1 and 2 are within the final attack heading restrictions.

FAC: “Phantom 1 and flight, CLEARED HOT.”

CAS: “RIFLE, two away, ten seconds.”

CAS: “SPLASH. Two APCs destroyed.”

FAC: “Phantom 1, egress Nebraska, surface to 300. Report established.”

5-Line, Type 3 Control, Bomb on Target with Laser Hand-Off

The Platoon is in contact with a company of mechanized infantry 1 km to the north. The Platoon Commander requests CAS from the FAC. A single AH-64D (Phantom 1) is on station. The FAC decides to utilize Type 3 control against the mechanized company.

FAC: “Phantom 1, FAC, advise when ready for gameplan and 5-Line.”

CAS: “Phantom 1, ready.”

FAC: “5-Line, Type 3, Bomb on Target, Hellfire, rockets, and guns. Friendlies at phase line green. Target 1 km north in the vicinity of Frini. Mechanized company in the open, laser hand-off from my laser. Final attack headings 2-4-0 through 3-0-0 and 0-6-0 through 1-2-0.”

CAS: “Phantom 1, 2-4-0 through 3-0-0 and 0-6-0 through 1-2-0.”

FAC: “Phantom 1, good readbacks, advise when ready for laser hand-off.”

CAS: “Ready.”

FAC: “Phantom 1, STARE Friji.”

CAS: “TEN SECONDS.”

FAC: “TEN SECONDS.”

CAS: “LASER ON.”

FAC: “LASING.”

CAS: “Phantom 1, SPOT, CEASE LASER. CONTACT tactical vehicle in an open field.”

FAC: “Your pod is on the center vehicle in a formation of tactical vehicles. How many vehicles are in the field?”

CAS: “Phantom 1, five, oriented east-west, facing south.”

FAC: “Phantom 1, correct, those five vehicles are your target. CLEARED TO ENGAGE from time 45 through 55.”

CAS: “Phantom 1, COMMENCING ENGAGEMENT.”

FAC monitors progress of the mission via radio. Phantom 1 makes multiple attacks within the time window while complying with the final attack heading restrictions.

CAS: “FAC, Phantom 1, ENGAGEMENT COMPLETE. Advise when ready for BDA.”

Phantom 1 passes BDA to FAC.