

ATC Communications Handbook

Military and Civilian operations

A guide for effective radio communication between pilots and Air Traffic Control (ATC), focusing on DCS military aviation.

Disclaimer:

This handbook is **not intended for use in actual piloting situations**. It is designed solely for use in **DCS (Digital Combat Simulator)** or other similar flight simulation games. The contents of this handbook were created for simulation purposes only and do not replace or constitute official flight instruction, regulations, or guidance.

This handbook has been compiled using the following sources:

- The **FAA's Aeronautical Information Manual (AIM)** for standard ATC communications and airspace regulations.
- **ICAO Doc 4444 (PANS-ATM)** for international air traffic procedures.
- **DCS (Digital Combat Simulator) user manuals and community forums** for specific guidance related to military aircraft in the simulator.
- **NATO Brevity Code Manual** for military-specific communication brevity codes.

For real-world aviation, always refer to **certified flight instructors, official regulations, and recognized aviation authorities** for proper training and guidance. **This handbook should ABSOLUTELY NOT be used in any emergency situations.** In the event of an emergency, always follow **official procedures, training, and ATC guidance.**

"This handbook was created using publicly available records and resources. It does not and will not contain any classified military information, documents, charts, or anything of the like. All content is sourced from unclassified materials and is intended solely for educational and entertainment purposes within the context of DCS (Digital Combat Simulator). The authors of this handbook do not claim to provide any operational, tactical, or strategic insights derived from sensitive or classified sources."

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101st Iron Eagles



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Phase	Pilot Communication	ATC Response	Pilot Readback
Preflight: Clearance	"[Clearance Delivery], [Aircraft call sign], request IFR clearance to [destination] on [mission type]."	"[Aircraft call sign], cleared to [destination] as filed. Climb to [altitude], expect [higher altitude] after [time], departure frequency [frequency], squawk [code], [Aircraft call sign]."	"Cleared to [destination] as filed, climb to [altitude], departure frequency [frequency], squawk [code], [Aircraft call sign]."
Ground: Taxi	"[Ground], [Aircraft call sign], [flight of number], at [location], ready to taxi with [ATIS information]."	"[Aircraft call sign], taxi to runway [number] via [route], hold short of [runway]."	"Taxi to runway [number] via [route], hold short of [runway], [Aircraft call sign], [flight of number]."
Takeoff: Tower	"[Tower], [Aircraft call sign], [flight of number], Holding short [Runway Number] on [Taxiway], request takeoff to the [Cardinal Direction]."	"[Aircraft call sign], cleared for takeoff, runway [number]."	"Cleared for takeoff, runway [number], [Aircraft call sign], [flight of number]."
Departure: Contact	"[Departure], [Aircraft call sign], [flight of number], airborne, climbing to [altitude]."	"[Aircraft call sign], radar contact, continue climb to [altitude]."	"Continue climb to [altitude], [Aircraft call sign], [flight of number]."
En Route	"[Center], [Aircraft call sign], [flight of number], level [altitude]."	"[Aircraft call sign], roger."	None needed.
En Route: Altitude Request	"[Center], [Aircraft call sign], [flight of number], request block altitude [range] for maneuvering."	"[Aircraft call sign], block [altitude range] approved."	"Block [altitude range] approved, [Aircraft call sign], [flight of number]."
Combat Airspace Entry	"[Center], [Aircraft call sign], [flight of number], request entry into [MOA/Restricted Airspace] at [altitude]."	"[Aircraft call sign], cleared into [airspace] at [altitude]."	"Cleared into [airspace] at [altitude], [Aircraft call sign], [flight of number]."
Combat Airspace Exit	"[Center], [Aircraft call sign], [flight of number], exiting"	"[Aircraft call sign], resume own navigation."	"Resume own navigation, [Aircraft call sign]."

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Phase	Pilot Communication	ATC Response	Pilot Readback
	[MOA/Restricted Airspace], level [altitude]."		call sign], [flight of number]."
Approach	"[Approach], [Aircraft call sign], [flight of number], inbound at [altitude], request [type of approach] for runway [number]."	"[Aircraft call sign], [flight of number], expect [type of approach], runway [number]."	"Expect [type of approach], runway [number], [Aircraft call sign], [flight of number]."
Landing: Tower	"[Tower], [Aircraft call sign], [flight of number], [type of approach], runway [number]."	"[Aircraft call sign], cleared to land, runway [number]."	"Cleared to land, runway [number], [Aircraft call sign], [flight of number]."
Post-Landing: Taxi	"[Ground], [Aircraft call sign], [flight of number], clear of runway [number], request taxi to [parking/fuel]."	"[Aircraft call sign], taxi to [parking/fuel] via [route]."	"Taxi to [parking/fuel] via [route], [Aircraft call sign], [flight of number]."
Emergency: Mayday	"Mayday, Mayday, Mayday, [Aircraft call sign], [flight of number], [nature of emergency], [location], [intentions]."	ATC will assist with priority handling.	N/A (ATC will prioritize response.)
Emergency: Pan-Pan	"Pan-Pan, Pan-Pan, Pan-Pan, [Aircraft call sign], [flight of number], [nature of issue], [intentions]."	ATC will respond based on urgency.	N/A (Readback may not be needed in urgent situations.)
Uncontrolled Airport: Announce Position	"[Airport name] traffic, [Aircraft call sign], [flight of number], [position], [intention] runway [number], [Airport name]."	N/A (Self-announce at uncontrolled fields)	None needed—self-announce position.
Uncontrolled Airport: Entering Pattern	"[Airport name] traffic, [Aircraft call sign], [flight of number], entering [left/right] downwind, runway [number], [Airport name]."	N/A for uncontrolled airspace or field	None needed—self-announce pattern entry.

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Phase	Pilot Communication	ATC Response	Pilot Readback
Uncontrolled Airport: Base Leg	"[Airport name] traffic, [Aircraft call sign], [flight of number], turning base, runway [number], [Airport name]."	N/A for uncontrolled airspace or field	None needed—self-announce base turn.
Uncontrolled Airport: Final	"[Airport name] traffic, [Aircraft call sign], [flight of number], on final, runway [number], [Airport name]."	N/A for uncontrolled airspace or field	None needed—self-announce final.
Uncontrolled Airport: Departure	"[Airport name] traffic, [Aircraft call sign], [flight of number], departing runway [number] [direction of flight], [Airport name]."	N/A for uncontrolled airspace or field	None needed—self-announce departure.
Entering Controlled Airspace	"[Approach/Center], [Aircraft call sign], [flight of number], inbound from [position], [altitude], request transition through controlled airspace."	"[Aircraft call sign], cleared through airspace at [altitude]."	"Cleared through airspace at [altitude], [Aircraft call sign], [flight of number]."
Flight Following Request	"[Approach/Center], [Aircraft call sign], [flight of number], request flight following to [destination] at [altitude]."	"[Aircraft call sign], radar contact, squawk [code]."	"Radar contact, squawk [code], [Aircraft call sign], [flight of number]."

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Letter	Phonetic Word	Letter	Phonetic Word
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliett	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

Abbreviation	Meaning	Abbreviation	Meaning
ATC	Air Traffic Control	ILS	Instrument Landing System
ATIS	Automatic Terminal Info. Service	INS	Inertial Navigation System
AWACS	Airborne Warning and Control System	JTAC	Joint Terminal Attack Controller
BDA	Battle Damage Assessment	METAR	Meteorological Aerodrome Report
CAP	Combat Air Patrol	MGRS	Military Grid Reference System
CTAF	Common Traffic Advisory Frequency	NDB	Non-Directional Beacon
DME	Distance Measuring Equipment	NORDO	No Radio (aircraft without radio)
FAA	Federal Aviation Administration	NOTAM	Notice to Airmen

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Abbreviation	Meaning	Abbreviation	Meaning
FBO	Fixed Base Operator	QNH	Altimeter setting at mean sea level
FMC	Flight Management Computer	QFE	Altimeter setting at field elevation
FMS	Flight Management System	ROE	Rules of Engagement
GCA	Ground Controlled Approach	RWR	Radar Warning Receiver
HOGE	Hover Out of Ground Effect	SAM	Surface-to-Air Missile
ICAO	International Civil Aviation Organization	SAR	Search and Rescue
IFR	Instrument Flight Rules	SEAD	Suppression of Enemy Air Defenses
TACAN	Tactical Air Navigation	SOP	Standard Operating Procedure
TAS	True Airspeed	TGT	Target
TFR	Temporary Flight Restriction	TWR	Tower (Control Tower)
UHF	Ultra High Frequency	VHF	Very High Frequency
VFR	Visual Flight Rules	VOR	VHF Omnidirectional Range
VSI	Vertical Speed Indicator	CAP	Combat Air Patrol

AWACS (*Airborne Warning and Control System*):

Airborne radar used to detect and track aircraft, coordinating air defense and providing real-time intelligence to fighter jets and ground forces.

JTAC (*Joint Terminal Attack Controller*):

Directs combat aircraft in close air support (CAS) missions, ensuring accurate target engagement.

ROE (*Rules of Engagement*):

Dictates when, where, and how military force can be applied, guiding combat operations.

SEAD (*Suppression of Enemy Air Defenses*):

Missions targeting enemy air defense systems (SAMs, radar) to protect friendly aircraft.

SAR (*Search and Rescue*):

Operations to locate and assist people in distress, typically involving helicopters or specialized aircraft.

TACAN (*Tactical Air Navigation*):

Military navigation system providing aircraft positioning relative to a ground-based transmitter, often paired with civilian VOR systems.

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Code	Meaning	Code	Meaning
Affirm	Yes	Negative	No
Abort	Cancel action/mission	Bingo Fuel	Minimum fuel for safe return
Break	Perform max turn	Cleared Hot	Fire on target
Cleared to Land	Authorized to land	Cleared to Engage	Engage target
Fox One	Launch semi-active radar missile	Fox Two	Launch IR-guided missile
Fox Three	Launch active radar missile	Guns	Firing guns/cannons
Tally	Visual on target	No Joy	No visual contact
Splash	Target destroyed	Winchester	Out of ordnance
RTB	Return to base	Bandit	Confirmed enemy aircraft
Bogey	Unknown, possibly hostile aircraft	Chattermark	Use pre-briefed radio channels
Joker Fuel	Return recommended fuel level	Pop-up	Unexpected close-range enemy contact
Skosh	Low on weapons/fuel	Knock it Off	Terminate operations immediately
Picture	Request full airspace report from AWACS	Playtime	On-station time remaining
Push	Switch to designated frequency	Roger	Message received
Wilco	Will comply	Scramble	Immediate takeoff for urgent mission
Vector	Heading/direction from ATC/AWACS	Snake	Evasive maneuver
Jink	Quick evasive flight maneuver	Buster	Fly at maximum speed
Angels	Altitude in thousands of feet	Feet Wet	Over the sea
Feet Dry	Over land	Fence In/Out	Enter/Exit combat zone
Fox Mike	FM radio communication	Victor	VHF radio communication
Sweet	Systems functioning properly	Bent	Equipment malfunction

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Civilian

Field	Description	Example
Call Sign	Unique aircraft identification	N12345
Aircraft Type	Model of the aircraft	Cessna 172
Departure	Departure airport (ICAO code)	KMIA (Miami Intl)
Destination	Destination airport (ICAO code)	KLAX (Los Angeles Intl)
Route	Planned flight route (including airways or waypoints)	KMIA-BROOK-BR54-LAX
Cruise Altitude	Planned cruising altitude (in feet)	FL350 (35,000 feet)
Estimated Time	Estimated time en route (in hours and minutes)	05:30
Remarks	Any special requests, equipment, or instructions	IFR flight, jet fuel needed

Military

Field	Description	Example
Call Sign	Flight leader's call sign, number of aircraft	Viper 11, flight of four
Mission Type	Type of mission (CAP, CAS, SEAD, etc.)	Combat Air Patrol (CAP)
Departure	Departure airfield (ICAO code or military designation)	Nellis AFB
Destination	Destination airfield or station	Forward Operating Base
Route	Waypoints and significant reference points (incl. airspace)	WP1, WP2, WP3, Combat Zone
Cruise Altitude	Assigned altitude or block altitude	FL280 (28,000 feet)
Time on Target	Expected time on target (or time of engagement)	12:00 Zulu
Playtime	Time available on station	1 hour 30 minutes
Remarks	Special instructions or equipment details	SEAD support; JTAC in place

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Air Space Classes

Class	Altitude	Who Can Fly	Communication/Requirements
Class A	18,000 feet MSL and above	IFR only	ATC clearance and IFR flight plan required.
Class B	Surface to ~10,000 feet MSL	IFR and VFR	ATC clearance, Mode C transponder required. Usually surrounds large airports.
Class C	Surface to ~4,000 feet AGL	IFR and VFR	Two-way radio communication required. Surrounds medium-sized airports.
Class D	Surface to ~2,500 feet AGL	IFR and VFR	Two-way radio communication required. Surrounds smaller, towered airports.
Class E	700 feet AGL to 17,999 feet MSL	IFR and VFR	No ATC clearance for VFR, but IFR flights need clearance.
Class G	Surface to ~1,200 feet AGL	VFR only	Uncontrolled airspace, no communication with ATC required.

Explanation of Airspace Classes

- **Class A:** Reserved for high-altitude flights, **only IFR** flights are allowed. Clearance is mandatory.
- **Class B:** Surrounds the busiest airports. Both **IFR and VFR** flights are allowed, but strict clearance and transponder requirements exist.
- **Class C:** Found around medium-sized airports. Both **IFR and VFR** flights are allowed, with required communication with ATC.
 - **Class D:** Located around smaller airports with control towers. Communication is mandatory, but the airspace is less restrictive than Class B or C.
- **Class E:** Extends from either 700 feet or 1,200 feet AGL and transitions to controlled airspace above. It's primarily **uncontrolled** for **VFR** traffic.
- **Class G:** Fully **uncontrolled airspace**, typically at lower altitudes. No ATC services required or provided.

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Air Traffic Control (ATC) in Military Operations

In military aviation, **Air Traffic Control (ATC)** plays a vital role in ensuring the safe and effective coordination of aircraft, particularly in combat and tactical scenarios. Unlike civilian ATC, military controllers must manage not only the safe flow of air traffic but also the coordination of missions, airspace management during operations, and communication with **AWACS (Airborne Warning and Control System)** and **JTAC (Joint Terminal Attack Controller)**.

Roles of Military ATC Controllers

Military ATC is divided into specialized roles that coordinate various aspects of operations. Key roles include:

- **Ground Control:** Responsible for ground movements such as taxiing, holding, and departure coordination.
 - **Tower Control:** Manages aircraft within the vicinity of an airfield, ensuring safe takeoff and landing operations.
 - **Approach/Departure Control:** Coordinates the entry and exit of aircraft into controlled airspace, typically managing high-speed jets and other military aircraft.
 - **AWACS:** Provides aerial command and control by detecting, tracking, and directing aircraft during missions. AWACS controllers manage multiple aircraft simultaneously, often in combat zones.
 - **JTAC:** Coordinates close air support (CAS) operations, directing air strikes in support of ground troops. JTAC communication is critical during precision targeting missions.
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Military-Specific ATC Commands

Military ATC communication differs from civilian ATC due to the tactical nature of operations. Below are some common military-specific ATC commands:

Command	Meaning
Cleared Hot	Aircraft authorized to engage a target.
Cleared to Engage	Permission to engage enemy forces within designated parameters.
RTB (Return to Base)	Command to return to the home airfield or base.
Vector to Target	ATC or AWACS provides the heading and distance to the assigned target.
Bingo Fuel	Aircraft is low on fuel and must return to base or a designated refuel point.
Tally	Pilot has visual confirmation of a target.
No Joy	Pilot does not have visual contact with the target.
Fence In/Out	Signals that aircraft are entering or exiting combat zones. Weapons systems are activated or deactivated.
Scramble	An immediate order for aircraft to take off and intercept threats.

Communication with AWACS

AWACS (Airborne Warning and Control System) plays a crucial role in providing situational awareness to fighter pilots and bomber aircraft during missions. AWACS can manage multiple aircraft at once, offering directions and ensuring that aircraft maintain their **air-to-air** or **air-to-ground** mission profiles.

Typical AWACS Communications:

- **Check-in:** "[AWACS call sign], [flight call sign], checking in, flight of four, Angels 20."
 - **Request for Picture:** "Request picture" – a request for an airspace update or enemy locations.
 - **Engagement Authorization:** "Cleared to engage Bandit at Angels 15."
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Coordination with JTAC

JTAC (Joint Terminal Attack Controller) provides ground-based guidance to aircraft for **close air support (CAS)** missions. The JTAC coordinates with pilots to ensure that air strikes are accurate and minimize the risk to friendly forces. Communication with JTAC is particularly important when pilots are supporting troops on the ground.

JTAC Communication Example:

- **Initial Check-in:** "[JTAC call sign], this is Viper 11, flight of two F-16s, 10 miles out, 15,000 feet, ready for tasking."
- **Nine-Line Brief:** JTAC provides a 9-line brief that includes critical information such as target coordinates, friendly positions, and munitions requested.
- **Cleared Hot:** The final confirmation from the JTAC for the pilot to engage the target.

Tactical Airspace Management

In military operations, **tactical airspace management** is crucial to prevent mid-air collisions and coordinate the movement of multiple aircraft across different flight levels and areas of operation.

Restricted airspace, military operating areas (MOAs), and combat air patrol (CAP) zones are established to manage military aircraft.

- **CAP Zones:** Dedicated areas where aircraft patrol to intercept potential threats.
 - **Deconfliction:** Separation of aircraft in terms of time, altitude, or geographical position to ensure safe operation in congested airspace.
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Expanded JTAC Communications

JTACs are responsible for directing combat aircraft during **Close Air Support (CAS)** operations. They communicate with pilots to ensure accurate targeting, often working with aircraft that are supporting ground troops in active combat zones. JTAC communication is clear, concise, and follows specific formats to avoid confusion and ensure mission success.

Components of JTAC Communications

1. Initial Check-In

The pilot or flight lead checks in with the JTAC upon entering the operational area. This provides the JTAC with the aircraft type, number of aircraft, and weapons available for the mission.

Example:

- Pilot: "JTAC, this is Viper 11, flight of two F-16s, 10 miles north, 15,000 feet, armed with two GBU-12s and two AGM-65 Mavericks, ready for tasking."
 - JTAC: "Viper 11, this is Wolf 12, acknowledged, standby for 9-Line."
-

2. 9-Line Brief

The **9-Line Brief** is the standard format used to communicate **CAS target information** to pilots. This ensures that all the necessary information for delivering ordnance is conveyed in a structured manner. Each line corresponds to specific data about the target and mission.

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Here is an example of a typical 9-Line Brief:

Line	Information	Example
1	IP (Initial Point) / BP (Battle Position)	“IP Eagle” (location of the entry point for the attack)
2	Heading (Magnetic)	“Heading 180 degrees”
3	Distance (From IP/BP to target)	“5 miles”
4	Target Elevation (Feet MSL)	“Target elevation 450 feet MSL”
5	Target Description	“Infantry with vehicles in the open”
6	Target Location (Grid Coordinates)	“Grid: Bravo Delta 6231 4587”
7	Type of Marking (Smoke, Laser, etc.)	“Marked by IR laser”
8	Location of Friendly Forces	“200 meters north of target”
9	Egress Direction	“Exit west to IP Bravo”

Example JTAC Scenario

Imagine a scenario where the JTAC is on the ground with friendly forces engaging enemy armor units. The JTAC calls in an F-16 to provide close air support.

- JTAC: “Viper 11, Wolf 12, I have enemy armor in the open, 9-Line to follow.”
- Pilot: “Wolf 12, Viper 11, ready to copy.”
- JTAC: “IP Charlie, heading 090, 8 miles, target elevation 650 feet, armor in the open, grid Golf Foxtrot 7285 2938, marked by smoke, friendlies 500 meters northeast, egress to IP Delta.”
- Pilot: “Target elevation 650 feet, grid Golf Foxtrot 7285 2938, friendlies 500 meters northeast.”
- JTAC: “Readback correct, Cleared hot.”
- Pilot: “Viper 11, bombs away, shack, target destroyed.”
- JTAC: “Good hits, proceed to IP Delta.”

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Readback

The pilot must read back critical parts of the 9-Line to ensure accuracy before engaging the target. The critical elements are Lines 4, 6, and 8 (Target Elevation, Target Location, and Friendly Forces Location).

Example:

- Pilot: "Viper 11, readback: Target elevation 450 feet, Grid Bravo Delta 6231 4587, friendlies 200 meters north."
- JTAC: "Readback correct. Cleared hot."

Weapon Release and BDA

Once cleared to engage (Cleared Hot), the pilot will deploy ordnance. After the attack, the JTAC requests a Bomb\Battle Damage Assessment (BDA) to confirm the effectiveness of the strike.

Example Weapon Release Communication:

- Pilot: "Viper 11, bombs away, 30 seconds to impact."
- JTAC: "Roger, Viper 11. Call Shack."

BDA Communication:

- Pilot: "Shack, target destroyed."
- JTAC: "Good hit, good hit. Proceed with egress."

Types of Control

JTACs use different types of control depending on the mission and visibility of the target.

- Type 1 Control: Used when the JTAC needs to visually see both the aircraft and the target.
- Type 2 Control: Used when the JTAC cannot visually see the aircraft or target but coordinates the attack using other sensors (e.g., drones or radar).
- Type 3 Control: JTAC provides clearance for multiple attacks within a specified area without the need for individual clearances for each attack.

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Example JTAC Scenario

Imagine a scenario where the JTAC is on the ground with friendly forces engaging enemy armor units. The JTAC calls in an F-16 to provide close air support.

- JTAC: "Viper 11, Wolf 12, I have enemy armor in the open, 9-Line to follow."
- Pilot: "Wolf 12, Viper 11, ready to copy."
- JTAC: "IP Charlie, heading 090, 8 miles, target elevation 650 feet, armor in the open, grid Golf Foxtrot 7285 2938, marked by smoke, friendlies 500 meters northeast, egress to IP Delta."
- Pilot: "Target elevation 650 feet, grid Golf Foxtrot 7285 2938, friendlies 500 meters northeast."
- JTAC: "Readback correct, Cleared hot."
- Pilot: "Viper 11, bombs away, Shack, target destroyed."
- JTAC: "Good hits, proceed to IP Delta."

Importance of JTAC Communications

JTAC communications are critical for:

1. **Minimizing Collateral Damage:** By ensuring accuracy in target identification and weapon deployment.
2. **Coordinating Support:** Synchronizing air and ground assets for maximum combat effectiveness.
3. **Ensuring Safety of Friendly Forces:** Detailed location and egress instructions protect friendly troops and aircraft.

JTAC communication is highly structured, concise, and designed to ensure accuracy in high-stress combat environments. The 9-Line Brief provides all necessary information for pilots to effectively engage targets while maintaining the safety of friendly forces. The JTAC-pilot relationship is crucial for successful Close Air Support operations in modern military combat.

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Combat Flight Operations

Combat Flight Operations involve the coordination of offensive and defensive missions in a tactical environment. This chapter covers the various types of operations, including air-to-air and air-to-ground engagements, and how pilots communicate with other assets during missions.

Key Combat Mission Types:

1. Combat Air Patrol (CAP)

- **Objective:** Protect a specific area from enemy aircraft by flying defensive patrols.
- **Example Communication:**
 - **AWACS:** "Viper 11, resume CAP over waypoint Bravo, Angels 20."
 - **Pilot:** "Viper 11, resuming CAP over waypoint Bravo, Angels 20."

2. Close Air Support (CAS)

- **Objective:** Provide direct support to ground forces by attacking targets close to friendly troops.
- **Example Communication:**
 - **JTAC:** "Viper 11, cleared hot on the enemy armor, grid BD 6231 4587."
 - **Pilot:** "Viper 11, bombs away."

3. Suppression of Enemy Air Defenses (SEAD)

- **Objective:** Neutralize or destroy enemy air defense systems, such as SAM sites and radars.
- **Example Communication:**
 - **AWACS:** "Viper 11, SEAD mission, target enemy SAM site at grid BD 6200 4550."
 - **Pilot:** "Viper 11, Mangum on SAM site."

4. Strike Missions

- **Objective:** Attack enemy infrastructure, such as airfields, supply depots, or command centers.
- **Example Communication:**
 - **AWACS:** "Viper 11, proceed to target at grid 6300 4700, cleared to strike airfield."
 - **Pilot:** "Viper 11, on target, bombs away."

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Engagement Procedures:

- **Target Acquisition:** Pilots use sensors, AWACS, or visual contact to identify and track enemy targets.
- **Brevity Codes:** Communication during combat operations is kept short using brevity codes like Fox One, Tally, and Splash.
- **Deconfliction:** Multiple aircraft operating in the same area must avoid collisions by staying on assigned altitudes and headings.

Code	Meaning	Use
Fox One	Semi-active radar missile launched	Air-to-air (AIM-7)
Fox Two	Infrared missile launched	Air-to-air (AIM-9)
Fox Three	Active radar missile launched	Air-to-air (AIM-120)
Guns	Aircraft guns/cannons fired	Air-to-air/ground
Rifle	Air-to-ground missile launched	Air-to-ground (AGM-65)
Pickle	Bombs released	Air-to-ground
Magnum	Anti-radiation missile launched	Air-to-ground (AGM-88 HARM)
Splash	Target destroyed	Post-impact confirmation
Shack	Direct hit on target	Bombing run hit
Shotgun	Down to last weapon	Weapon status
Winchester	No ordnance remaining	Weapon status
Tally	Visual confirmation of target	Before engagement

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Flight Formations and Tactics

Flight formations are essential for maintaining tactical advantages and ensuring safe coordination between multiple aircraft during combat or routine operations. This chapter explains common military formations, their purposes, and how to effectively use them in DCS and other simulators.

Common Military Flight Formations:

1. Fingertip Formation

- **Purpose:** Used for tight formation flying and keeping visual contact with flight lead. Ideal for parade flying and pre-combat alignment.
- **Positioning:** Aircraft fly closely, with wingmen on either side of the lead in a diamond shape.
- **Example Communication:** Flight Lead "Viper 11, assume fingertip formation, heading 180."

2. Echelon Formation

- **Purpose:** Allows for quick maneuvering while keeping a good view of the airspace. Used for transitioning into combat or breaking away from enemy threats.
- **Positioning:** All aircraft are aligned diagonally behind the lead, either left or right.
- **Example Communication:** Flight Lead "Viper 11, echelon left, prepare to turn."

3. Line Abreast Formation

- **Purpose:** Provides wide coverage of an area, useful for sweeps and offensive combat engagements.
- **Positioning:** Wingmen fly parallel to the lead, allowing for simultaneous visual scanning of the airspace.
- **Example Communication:** Flight Lead "Viper 11, line abreast, sweep for targets at 20,000 feet."

4. Trail Formation

- **Purpose:** Ideal for flying through narrow valleys or in situations requiring quick responses, such as landing approaches.
- **Positioning:** Wingmen follow directly behind the flight lead in a straight line.
- **Example Communication:** Flight Lead "Viper 11, trail formation, follow my lead to the airfield."

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5. Combat Spread Formation

- **Purpose:** Provides flexibility in combat for wingmen to break away and engage enemy threats. It offers maximum tactical flexibility.
- **Positioning:** Wingmen fly far apart, ensuring maximum coverage of the airspace.
- **Example Communication:** Flight Lead "Viper 11, combat spread, maintain separation."

Tactical Considerations:

- **Wingman Responsibilities:** The wingman's role is to support the flight lead by providing additional firepower, situational awareness, and protection.
- **Defensive Maneuvers:** In combat, formations are adjusted to evade enemy missiles or aircraft. A quick transition from fingertip to combat spread or echelon can help mitigate threats.
- **Engagement Zone (EZ):** A well-coordinated formation ensures that all aircraft have overlapping zones of engagement, allowing for rapid targeting and communication.

Flight Formations ensure that pilots maintain safe positioning while maximizing tactical advantage.

Combat Flight Operations require seamless communication between AWACS, JTAC, and other pilots to execute mission objectives effectively.

Deconfliction and proper use of brevity codes are key to avoiding mid-air collisions and ensuring mission success.

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Thank You

Thank you for downloading and reading this handbook. I hope it has provided you with valuable insights and practical information for enhancing your experience in DCS or other flight simulators. This guide was created to help improve your understanding of military ATC communications, combat operations, and overall flight procedures.

This handbook is **not intended for use in actual piloting situations**. It is designed solely for use in **DCS (Digital Combat Simulator)** or other similar flight simulation games. The contents of this handbook were created for simulation purposes only and do not replace or constitute official flight instruction, regulations, or guidance.

For real-world aviation, always refer to **certified flight instructors, official regulations, and recognized aviation authorities** for proper training and guidance. **This handbook should ABSOLUTELY NOT be used in any emergency situations.** In the event of an emergency, always follow **official procedures, training, and ATC guidance.**

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