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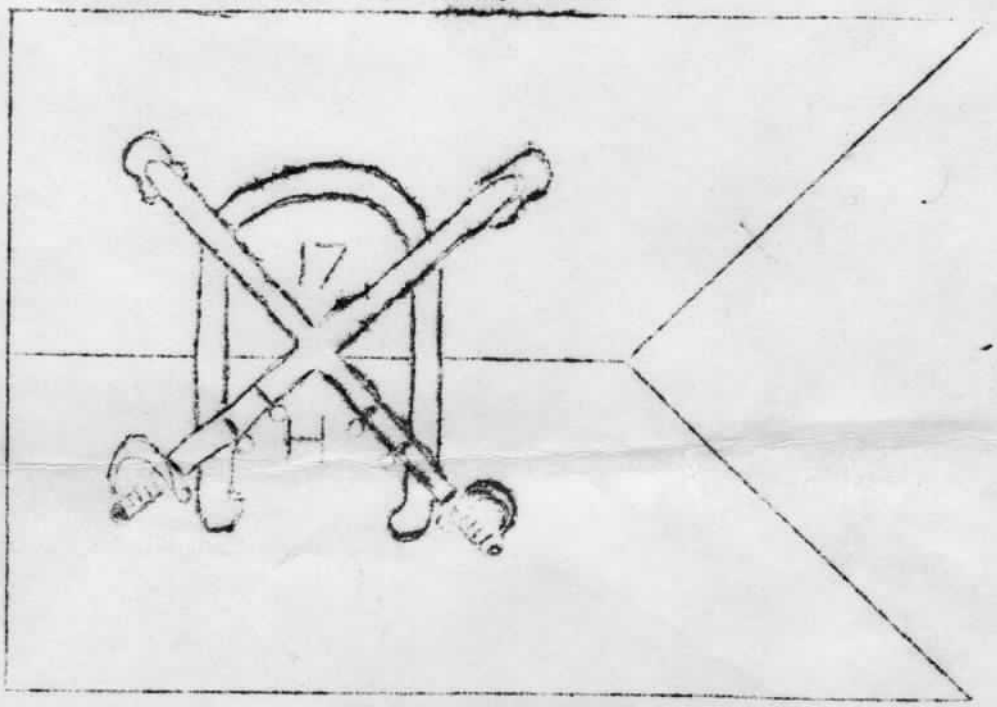

VOS NON EXCREMENTUM

TROOP H (AIR) 17th ACS
COBRA GUIDELINE
1972

THIS IS NOT AN OFFICIAL DOCUMENT

SUBJECT: GUIDELINES FOR AIR CAV EMPLOYMENT

1. General: This guide contains information which has been compiled by combat experienced aviators of TRP H (AIR) 17th ACS and is meant for use in the Central Highlands of Viet Nam.

2. Purpose: It is not intended to supersede the unit SOP but rather to provide the new aviator with information which has proven of value in performing the Air Cav combat mission.

Ronald M. Fishburn
MAJ AR
Commanding

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FORMS AND PUBLICATIONS

1. Aircraft commanders and pilots should read TM 38-750 (Aircraft Logbook Forms)
2. Prior to preflight the aircraft commander will review the aircraft logbook, noting entries on Form 2408-12, -13, -14, and -18. Discrepancies will be brought to the attention of appropriate personnel (maintenance officers, technical inspectors, and/or crewchiefs).

PREFLIGHT AND POSTFLIGHT

1. A detailed preflight and postflight will be conducted IAW TM 55-1520-221-CL prior to the first flight of the day and immediately after the last flight of the day.
2. The aircraft will not be flown for more than a four (4) hour period without a shutdown and inspection.

FLIGHT EQUIPMENT

1. Helment/visor
2. Nomex suit
3. Protective suit
4. Gloves
5. Survival vest (Radio and E&E map)
6. ID tags
7. Blood chit
8. Maps of the area of operation
9. Grease and lead pencils
10. Flashlight for night operations
11. Water and C-rations when necessary
12. Screw driver and 9/16 wrench (optional)
13. Personal weapon

RESPONSIBILITIES OF THE TEAM LEADER

1. Insures that his team meets takeoff times.
2. Makes communication checks with his team prior to takeoff.
3. Contacts tower for takeoff and landings.
4. Selects inflight routes and altitudes clear of arty and enemy anti-aircraft threats.
5. Keeps his team abreast of the mission.
6. Overall mission coordination with Air Mission Commander.
7. Selects tactics.
8. Reports all pertinent data with regular spot and situation reports.
9. Arranges late meals for his team.
10. Knows the whereabouts of each member of his team to insure timely takeoffs.
11. Instructs his team to safe all weapons systems prior to landings.
12. Provides coverage with minigun for scout: insures that the scout is within maxmium effective range of the minigun (1000 meters).

13. Brief scout prior to descent as to A. O. boundaries and intelligence and fire clearance.
14. Give scout timely guidance to insure maximum coverage of the A.O., maximum use of coverage (avoid open areas when possible), avoidance of hazards (i.e. anti-aircraft), and Coverage of areas of interest (i.e. suspected enemy locations or trails, bunkers or hootches, etc, spotted by lead aircraft).
15. Monitor forced landing areas for the scout. Lead must direct scout immediately to the nearest forced landing area.
16. Bring the sout up to altitude when a problem is encountered (e.g. commo problems, lost tally, turret inoperational, guns engaging target where scout cannot be covered).

RESPOSNSIBILITIES OF THE AIRCRAFT COMMANDER

1. Conduct a pilot briefing before takeoff.

2. Insures all weapon systems are safe prior to preflight.

3. Checks DA Forms 2408-12/-13/-14/ and -18.

4. Conducts a detailed preflight inspection.

5. Train the new pilot.

6. Stresses safety of flight.

7. Discusses the CAV mission and demonstrates flight techniques.

8. Conducts a walk around inspection before takeoffs.

9. Stresses safety when rearming and refueling.

10. Conducts a postflight after last mission of the day.

11. Critiques the mission at the end of the day.

12. Conducts a DER and HIT check and insures that it is recorded on DA Form 2408-13.

13. Insures that the new pilot understands the mission.

14. Conducts extensive training in pre and post flight procedures.

15. Monitors all radioes.

16. Makes appropriate transponder and navigational aid checks.

17. Monitors primary FM/ UHF and VHF frquencies for communication checks when starting aircraft.

18. Monitors instruments frequently during flight.

19. Monitors forced landing areas frequently during flight.

PILOT RESPONSIBILITIES

1. Sign for KAC wheel.

2. Copies missions.

3. Insures that the main rotor tiedown, grounding/safety devices have been removed prior to flight, and replaced immediately after landing.

4. Insures that ammo bay hatches, engine/transmission cowlings, and tail rotor drive covers are secured for flight.

5. Flight follows on map.

6. Assists the pilot in emergency situations.

7. Loads and rearms the turret.

8. Assists the Aircraft Commander with runup procedures.

9. Keeps the Aircraft Commander clear of hazards during hovering, takeoff, and in flight manuvers.

10. If the lead front seat keeps the action bars depressed when the scout is working, he must keep the sight reticle at least 100 meters from the scout, know the maximum effective range, and the effect of trajectory shift and bullet drop.

11. The wing front seat must stay on the map, take accurate and complete sports, inform the Aircraft Commander immediately if any doubt exists as to the location on the map.

WING SHIP RESPONSIBILITIES

1. Inform the mission leader when flight is up.

2. Obtain artillery information and relay to lead.

3. Advise flight lead on flight spacing.

4. Monitor all radioes to keep abreast of the mission in the event that the flight lead must be replaced.

5. Provide timely and effective covering fires for flight lead or other aircraft in the flight as applicable.

6. Assist team leader in coordination when mission dictates.

7. Monitor guard especially heavy arty warnings. Fly with transponder on normal 1300 mode 3.

8. Copy accurate and complete spot reports.

9. Aircraft commander checks front seat coordinates occasionally or any time doubt exists as to the accuracy of the coordinates.

10. Spot reports are in the following sequence:
    a. Time
    b. Callsign
    c. Coordinates
    d. Observation
    e. Remarks

MISSION REQUIREMENTS

Fire Mission

1. Location of friendlies, and size of perimeter within 1 kilometer.

2. Distance and direction to target.

3. Ground commanders' (American and ARVN) initials for danger close fires.

4. Continuous adjustment from Forward observer on all fires until fire for effect is given.

5. Warning when firing danger close fires. (HEADS DOWN)

6. Always use your gun target line for adjustment.

Escorts

1. Landing and takeoff direction.

2. Mission number.

3. Direction of break.

4. Friendlies.

5. Sorties.

Medivac

1. Friendlies and perimeter size

2. Enemy contact and direction of contact within last 24 hours.

3. Landing and takeoff direction.

4. Type litter, number of patients, and priority.

5. Use a common UHF frquency for air to air commo.

GUIDELINES FOR AERIAL WEAPONS EMPLOYMENT

1. Does the mission conform with the rules of engagement for armed helicopters?

2. Are the controller's instructions clear and in accordance with safe operating procedures?

3. Is the target positively identified?

4. If the target is in a populated area, has clearance to engage been confirmed?

5. Has contact been established with friendly ground elements in the general target area?

6. Are all friendlies marked and positively identified prior to the initial attack?

7. Has the safest direction of attack been selected?

8. Have friendlies been warned to take cover if the target is within 200 Meters?

9. Are friendly positions remarked prior to each firing pass?

10. Is the line of adjustment agreed upon between the grounad controller and the team leader?

11. If requested to engage atterget where the friendly forces are within the MINIMUM SAFE DISTANCE of the warhead, or 200 meters, whichever is greater, the ground commander must state, "I acknowledge and accept responsibilities for danger close fire"? Have the ground commanders' initials been obtained?

ATTACK HELICOPTER GUIDELINES

1. Know the situation.
2. Make a complete briefing to all concerned.
3. Avoid flight in the deadman's zone.
4. Avoid flight in the 180 degree tail position.
5. Avoid flight parallel to terrain features.
6. Always assume that the area is hostile.
7. Always perform a high reconnaissance.
8. Locate the friendly troops.
9. Avoid target overflight.
10. Avoid firing over the heads of friendly troops.
11. Conserve ammunition.
12. Take your time.

TARGET ATTACK

1. Proper selection of ordance to employ.
2. Team leader will insure that each aircraft in his team has been positioned to afford maximum covering fires for one another before initiating target attack.
3. Any deviation from the planned method of attack will be made clear by stating precise intentions over the air to air net.
4. Team leader will regroup his assets as soon as it becomes evident that interity has been lost.
5. Avoid breaking the minimum recommended safe altitudes when engaging anti-aircraft weapons.
6. Aircraft engaged in target attack have the right-of-way.
7. Avoid operating with light sections when in a heavy anti-aircraft environment.

ROCKET EMPLOYMENT

1. Maximum effective range 10lb rocket: 3000meters.
2. Maximum effective range 17lb rocket: 2500 meters
3. The XM 73 sight has been boresighted for -20 mils.
4. Do not move mill adjust knob if boresight is off; make write-up in book and park on boresight pad.
5. A 25-30 psi torque setting is generally sufficient for firing rockets in a normal dive.
6. An out of trim condition to the left will cause rockets to curve right (Weathervane effect).
7. An out of trim condition to the right will cause rockets to curve to left (Weathervane effect).
8. A vertical out of trim condition with:
   a. too much power will cause rockets to fall long
   b. too little power will cause rockets to fall short.
9. If aircraft fuselage is rolling left or right, rockets will tend to cross. This condition can occur when the SCAS system places an abnormal input in the roll channel. Azimuth changes to deflection and vice versa.
10. When using steep dive less power is required.
11. When using shallow dive more power is required.
12. When firing 17lb warheads combat sight setting will be approx 1000 to 1100 meters.
13. When firing 10lb warheads combat sight setting will be approx 1100 to 1200 meters.
14. An adjustment must be made after firing each pair during firing run due to the continuous reduction of the slant range and bullet drop.
15. 1000 meters is the optimum slant range for firing flechette rockets. Warhead activates approximately 1500 feet or 500 meters from the aircraft. At optimum slant range smoke should be half way between the aircraft and the target.

700m slant range: smaller Beaten zone and 100% kill probability of all standing people in Beaten zone. Higher velocity and best pentration

1000m slant range: 100mx50m Beaten zone with 50% kill probability

1400m slant range: max effective range with approximately 10% kill probability. Lower velocity and minimum penetration.

MINIMUM SAFE FIRING DISTANCES

M151 (10lb HE)	200 meters
XM229 (17lb HE)	200 meters
WHITE PHOSPHOROUS	200 meters
SMOKE	200 meters
40mm	200 meters
FLECHETTE	300 meters
C/S	300 meters
7.62mm	50 meters
20mm	100 meters

NOTE:

1. All firing distances parallel to friendlies.
2. Ground commanders' initials are required if ordnance is fired within these minimu safe distances.
3. If target engagements is other than parallel, these distances increase by 50% excent for flechette which is increased to 1000 meters.
4. Special considerations are applicable when firing C/S rockets: WIND is a contributing factor.
5. When firing CS rockets, the pilot or aircraft commander will wear a gasmask.

ENEMY WEAPONS

Type	ROF/MIN	MAX RANGE	EFF RANGE
.51 cal/12.7mm	600-800	23,000'	1000M
7.62mm/AK-47	Same M-16	8,200'	800'
7.62mm/SKS	Semi-automatic	8,200'	1,310'
57 cal/14.5mm	150	16,560'	1,300M
23mm	200	21,332 '	1,600M
37mm	80	26,250'	6,500M
30cal HMG	N/A	9,850'	1,650'
30cal lmg	N/A	8,200'	1,650'

OPERATION IN AN ANTI-AIRCRAFT ENVIRONMENT

1. Know the anti-aircraft capbility in the assigned area of operations.
2. Avoid repetitive flight paths.
3. Limit low level flight.
4. Recognize the effectiveness of enemy small arms fire below 2000 '.
5. Employ your most effective weapon against the anti-aircraft threat. the most effective weapon is the flechette rocket. A steep angle of attack has proven most effective with breaks being initiated before reaching 1,500' AGL. When flechettes are not available, point detonating rockets should be used. Often time the sound of the rocket bing fired is sufficient to momenterily suppress enemy fire.

SUSPECTED SURFACE TO AIR MISSLE (SA-7) LAUNCH

1. Turn away from missle.
2. Lower nose of the aircraft. } Allows for reduced infrared
3. Descend to low level. } signature

NOTE: Extended low level nap of the earth flight may be necessary in a heavy missle environment.
WARNING: If operating in a high anti-aircraft threat area but no SA-7's have been reported, keep your rotors in the clouds since this also reduces the IR signature. If at all possible operate between 3,000 and 5,000' AGL since you will be out of the effective range of the 51 cal and below the flak producing areas.

SUSPECTED RADAR CONTROLLED WEAPONS

1. Execute immediate 90degree turns.
2. Never maintain straight and level flight more than 30 seconds.
3. Descending turns will further reduce danger.

BASIC AIRCRAFT LOADING

To insure that weight and balance restrictions and density altitude considerations have not been exceeded, the unit has established the following basic loading policy:

Rockets	Inboard	Outboard (158)
10lb (HE/CS or flechette)	Full	Full
17lb(HE)	14	N/A

Note: If M-157 or XM-158 pods are used outboard, they may be completely filled with any type of rocket.
Do not mix unlike rockets in the same pod.
In special instances these basic loads may be waived at the discretion of the aircraft commander. M159-C and XM-200 pods inboard can support a complete load of 17lb rockets. Fuels loads should be reduced accordingly. Basic loading is a unit SOP.

Fuel	1300lb for takeoff
Turret	40mm 150-200 rounds
	7.62mm 1500-3000 rounds
20 MM	450 rounds

ORDNANCE	WEIGHT IN POUNDS
17lb rocket	27.94
10lb rocket	20.54
Motor MK 40	11,22
Fuse M423	.62
Warhead XM 229	16.10
Warhead M151	8.70
Pod XM 200	139.00
Pod M159-C	152.00
Drum for M-134	63.00
Drum XM-129	75.00
40mm 100 rds	76.00
7.62mm 200rds	130.00

Maximum wing store loading: Inboard 690
Outboard 550

Note: Rockets pods with 7 or more bad tubes will be changed.

ESCAPE AND EVASION GUIDELINES

1. Do not carry money.
2. Preflight and know how to operate your survival radio.
3. Carry your blood chit.
4. Time permitting take first aid/survival kit from aircraft.
5. Leave immediate vicinity of aircraft if in enemy territory.
(Do not move more than 500 meters from aircraft initially)
6. Destroy radios and aircraft weapons if time permits.
7. Destroy SOI and any documents which would provide the enemy a source of intellignece.
8. Avoid use of trails or heavily traveled areas.
9. Travel at night when possible.
10. If it becomes necessary to contact villagers for assistance, trust old people before young, and men before women.
11. In general follow rugged terrain. The enemy usually avoids these areas.
12. Remain calm.
13. Think positive.
14. When using the survival radis, alternate beeping for 15 seconds and listening for 15 seconds. Remeber that the battery life of the battery is approximately 36 hours after it is put in the radio. You can use other frquencies provided on the URC-68 after contact has been established on guard; it is better to change channels so you do not tie up guard frequencies. The following are the frequencies:

	UHF	FM
G	243.00	40.50
A	235.00	38.90
B	241.0	40.10
C	Left Open	Left Open

15. King Air will be on station soon after you have crashed; he has the capability of fixing your position to 10 meters and has all armed forces aviation assets to deploy. Know the Band F code and be sure to have your three questions on file in operations.

REFUELING PROCEDURES (HOT)

1. Aircraft commander insures that collective is full down and rpce trim is on.

2. A three way exchange of controls is made.

3. The pilot opens his canopy hatch, and reduces NTI RPM to 5600, if ECU is left on 6000 RPM is desireable.

4. Aircraft commander turns low RPM audio switch off, exits the aircraft, and secures rear canopy hatch.

5. Aircraft commander lowers visor, sleeves down, gloves on, flushes the fuel hose, takes a fuel sample, grounds the aircraft with grounding wires and devices provided at POL point, then he refuels.

6. After refueling, the aircraft commander secures the gas filler cap, removes all grounding devices and stows fuel fuel hose. An entry on the 2408-13 indicating the amount of fuel added and amount in the tank will be recorded.

&. Aircraft commander makes a walk around inspection of his aircraft to insure that the aircraft is ready for flight.

ADJUSTING ARTILLERY

Call for fire
- Identification
- Warning order
- Target location
- Direction (gun target line understood)
- Nature of target
- Fuse/shell
- Special requirements
- Method of adjustment

FORCED LANDING

A. Single ship
   1. May Day call
   2. Use survival radio if aircraft commo is lost.
   3. Contact OPNS, any aircraft, or any radio facility and give the following:
      a. Aircraft identification
      b. Location
      c. Status of crew
      d. Type terrain
      e. General aircraft condition
      f. Enemy activity
      g. Fuel and ammo status
      h. Weather conditions

B. Formation
   Contact team lead or other member of the flight

DOWNED AIRCRAFT PROCEDURES

It is the gun team lead's responsibility to monitor forced landing areas for the scout while working. If the scout calls going down or thinks a forced landing is imminent, the team lead must immediately vector the scout toward the nearest forced landing area and give constant adjustments as to heading and distance to L.Z. Contact downed crew immediately on guard and coordinate the extraction. If the aircraft did not make forced landing area, attempt extraction with the jungle penetrator. If extraction with the jungle penetrator is not possible, have the downed crew E&E to PZ (probably previously planned landing area). If not possible due to injuries or enemy, insert the reaction force.

NIGHT WEATHER OPERATIONS

1. Remove main rotor tiedown, bullet catcher, ground safety pins, and grounding devices.
2. Conduct a thourgh preflight.
3. Insure proper operation of flight instruments, navigation equipment, external and internal lighting, generator, inverters, defrosters, and rain removal.
4. Have necessary frquencies availible in the event night/weather emergencies are encountered.
5. Always carry a flashlight, and have it in an accessible place in the event of electrical failure.
6. Conduct a last minute walk around inspection of the aircraft prior to takeoff.
7. ITO procedures: level aircraft, set heading selector, place minature airplane approximately 2 bar widths above the horizon, use hover power plus 5 psi torque for takeoff.
8. Landings should be accomplished from front seat when the pilot has demonstrated proficiency.
9. A/S, VSI, and ALT are unreliable below 25kts IAS and 25 feet altitude.
10. Searchlight should be set 15 degrees down during night takeoffs and landings.
11. During diving manuvers the pilot should give the aircraft commander altitude, A/S, torque, angle of bank, and dive readings with altitude being the most important.
12. The aircraft commander should be on instruments during BREAKS from dives.
13. Teh aircraft commander should be on instruments and break with sufficient altitude to have wings in level flight at 1500feet AGL or above.
14. The pilot should take control of the aircraft if the aircraft commander is experiencing vertigo (attempt to verbally confirm this).

NOTE: During night landings at DA's below 7000 feet, a reduction of 11b of torque will increase the rate of descent approximately 100 feet/ minute.

15. Use Peacock for radar vectors at night. GCA's are availible and sometimes necessary.
16. Learn to employ Night Hawk, flare bird and arty illumination.

NAVIGATIONAL AIDS

1. Use FM homing when applicable.

2. When using the ADF receiver, the normal range is 150 NM. It is unreliable in electrical storms or areas of interference.

3. Make daily transponder checks with Peacock Control.

RADIO MAINTENANCE/ FREQUENCY RANGES

Aircraft radios should not be turned on until amperage has dropped to approximately 100AMPS (scramble departures are the exception to this rule). If this procedure is adherred to, aircraft radio life will be more than doubled.

Radio frquency ranges	Range NM	Powered by
FM 30.00-6995	80 NM L/S	28V DC NE Buss
UHF 225.00-399.90	50NM L/S	28V DC ESS Buss
VHF 116.00-149.975	50 Nm L/S	28V DC NE BUSS

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GENERAL INFORMATION

Fuel/Oil/ Hydraulics

	LBS/GAL
Oil	8.0
Fuel	6.5

Capacities

Engine oil	2.75 USgal	
Transmission oil	2.25 US gal	
42 gearbox	.375 US pints	
90 gearbox	.50 US pints	
Fuel (service)	247 US gal	
Aft cell	130 US gal	
Fwd cell	117 US gal	
Hydraulics systems	#1	6.0 US pints
	#2	6.6 US pints
	Reservoir	3.2 US pints
Overspeeds	NI	101.5%
	NII	6640 above 91% for 3 seconds
	NII	6750 below 91% is permissable
		6800 write up overspeed
	Rotor	339

Characteristics of the AH-1G

Lenght	52' 11 1/2"
Rotor disk dia	44!
Payload	1638.5 lbs
Cruise speed	130k/150' mph
Fuel	1,755 lbs
Average fuel consumption	630lbs/hr (loaded)
Endurance	02+15 (Excluding 30 minutes reserve)

AIR CAV TACTICS CONSIDERATIONS

1. Use the 90 degree wing position with wing high whenever possible. When working steep mountains the 180 degree may be required. The ninety degree position allows for clover leaf gun run pattern.

2. UHF will be used only by gunlead and scout when the scout is working. Lead will avoid long transmissions. If a long transmission is necessary, break the transmission up and listen to make sure the scout isn't taking fire.

3. Monitor forced landing areas for the scout and also for yourself.

4. When an aircraft in orbit other than the scout takes fire, the scout must be brought up to altitude away from the fire while the guns are either evading or suppressing fire.

5. When inserting or extracting troops, you must know the friendly locations and attempt to get prior fire clearance in the event that enemy fire is encountered.

6. When possible work the scout around open areas where he is vulnerable.

7. Avoid working near villages because there is usually little cover and the rules of engagement are strict.

8. Wing ship is usually outside the maximum effective range (1000m) of turret and should avoid firing close cover when the scout takes fire.

9. Due to low VNE (normally 150kts) with a high density altitude and gross weight, it is advisable to decelerate to 50 kts prior to turning inbound on a gun run to allow maximum time inbound without exceeding VNE. Lead gun will turn inbound immediately when the scout takes fire while most other times the lead gun will have time to set up and decelerate.

10. Right breaks should be used whenever possibleto continue the clover-leaf pattern.

11. If lead breaks left he will be between the wing and the target and cannot be covered adequately. The right break allows direct rocket fire on the target area while the outbound ship breaks. After the right break, lead can then resume a left hand orbit and cover the wing ship's break with the turret.

12. Cloverleaf pattern: