

TROOP LEADING PROCEDURES

1. Troop Leading Procedures (TLP) help leaders organize their efforts in planning and executing the mission. The steps are: receipt of the mission, issue a Warning Order, make a tentative plan, initiate movement, conduct reconnaissance, complete the plan, issue the complete order, and supervise pre-combat checks, inspections, rehearsals, and mission execution. These steps are not always conducted sequentially and leaders should maximize the available time by simultaneously executing as many as the TLPs as possible.
2. **Receive the mission:** Immediately after receiving a mission, the company commander/air mission commander should conduct a confirmation brief to the Higher HQs that issued the order ensuring all have a shared understand of the mission. At a minimum a confirmation brief should consist of the following:
 - A. The higher commander's intent, mission, and concept of operations.
 - B. Subordinate unit's specified tasks and associated purposes.
 - C. The relationship between mission and other units in the operation.
3. **Issue a Warning Order:** The Commander/AMCs should understand, visualize and describe the type of operation, the mission's purpose and end-state, the general location of the operation, the initial timeline (mission planning, any movement, reconnaissance and/or mission execution), and prioritize PCC/PCIs to the key leaders/planning team. The WARNO should include as much information as available and as time permits.
4. **Make a Tentative Plan:** Leaders should gather and consider key information for use in making a tentative plan, update the information continuously and refine the plan as needed. Use this plan as the starting point for coordination, reconnaissance and movement instructions and consider the factors of METT-TC while planning. Planning cells are designed to help the Commander/AMC solve the tactical problem and produce the products necessary to complete and organize the OPORD/ Air Mission Brief (AMB). The number of personnel available for mission planning will determine the number of individuals assigned to a cell.
5. **Initiate Movement:** As required, including but not limited to LNO/Flight Lead/ AMC link-up, supported/supporting/adjacent unit face-to-face coordination, fighter-management adjustments, aircraft mission/ armament/ ASE configurations, PCCs, action on contact rehearsals, and forward positioning of A/C or UAS assets.
6. **Conduct recon:** As required, including but not limited to Map, Satellite, photo recon, UAS Recon, or manned recon (PZs, LZs, FARPs, HAs, OPs, BPs, ABFs, EAs). Consider OPSEC when developing recon plan.
7. **Complete the plan:** Finalize the products, wargame and adjust the plan as required. Ask the "what if" or "what is the worst thing that can happen" questions throughout the process and then mitigate the risk/adjust the plan as required/able.
8. **Issue the Plan:** The CDR/AMC will normally conduct the ACB/OPORD and cover the essential actions necessary to accomplish the mission.
9. **Supervise:** PCC/PCI. In general, the Pilot -in Command conducts Pre-Combat Checks (PCC) while Air Mission Commanders, Platoon Leaders, and Commanders conduct Pre-Combat Inspections (PCI). Pre-Combat Checks (PCC) should begin with the previous missions post-flight/ after operations actions.

WARNING ORDER

1. Situation:

ENEMY:

- Composition / Disposition (SITTEMP)
- Enemy Order of Battle/ Capabilities / Limitations
- Weather / Terrain (MCOO)

FRIENDLY:

- Mission / Intent (2 levels up) and Adjacent units
- Other aviation units operating in the area

2. Your Unit's Probable Mission:

- CDR/AMC Intent:

3. Changes to Task Organization:

4. Overall Concept of the Operation (orient to the map and known graphics)

- Preliminary Timeline:
- Earliest Time of Movement:

5. Planning Guidance:

6. Mission Oriented preparations/Pre-Combat Checks:

7. Coordination/ Reconnaissance required/ initial Requests For Information (RFIs):

PLANNING CELLS

1. The duties and responsibilities for each planning cell are generally described in this section.

COMPANY/ TROOP PLANNING CELLS		
Cell	PRIMARY ACTION OFFICER	SECONDARY ACTION OFFICER
Enemy/ Weather		
Friendly/ Maneuver		
Flight Coordination/ Contingencies		
Sustainment Support		
Command and Signal/ Rehearsal		

2. **Enemy/ Weather cell:** The enemy/weather cell determines the enemy situation, COA, and threat systems. This cell serves, in conjunction with the maneuver cell to understand the enemy and environment enabling our formation to gain a position of advantage over the enemy force or position our formation in the most survivable locations throughout the mission. This cell should contain a PL, IP and an AMSO.
3. **Friendly/ Maneuver cell:** The Friendly/Maneuver cell performs liaison duties between the higher headquarters/supported units, attends Battalion level updates/briefs as required, and is overall responsible for mission planning. The maneuver cell should contain the Commander, AMC, and lead mission planner at a minimum. This cell is responsible for the scheme of maneuver (flight routes, actions on the objective, etc), the scheme of fires (integration of fire support/ Close Air Support/ Electronic Warfare, and Cyber) and the EXCHECK.
4. **Flight Coordination/ Contingencies cell.** The Flight Coordination/ Contingencies cell is concerned with contingencies in the event they are required for the mission. It develops the coordinating instructions for the mission, the IIMC Plan, analyzes SPINS, and determines downed aircraft procedures. This cell should contain the ASO and an IP when available.
5. **Sustainment cell:** The Sustainment Cell evaluates, coordinates, and confirms aircraft readiness for mission, the availability of FARPs, all Classes of supply required/available for the mission, and the medical treatment facilities in the pertinent area of operations. This cell should contain a PL and MTP if available.
6. **Command and Signal Cell:** The Command and Signal Cell is responsible for ensuring the formation has the pertinent communication information required to execute the mission. Additionally, this cell prepares the necessary communications equipment and the rehearsal as directed by the Commander/AMC. This cell will contain the company/troop COMSEC Officer when available.

PLANNING CELL: ENEMY/ WEATHER

Composition (PL, IP, AMSO) POC:	Status	Suspense
Enemy Forces. Composition, Disposition, and Strength (Key weapon systems)		
Recent Significant Actions		
Current SITTEMP (Enemy Locations and Capabilities including known EW and ADA systems)		
Most likely course of action (MLCOA)		
Most dangerous course of action (MDCOA)		
Produce Engagement Area/ LZ/ OBJ with Enemy Order of Battle sketch		
Determine ASE settings / TTPs for EW / ADA		
FCR - Scheme, Terrain Sensitivity, RFI		
APR-39 / AVR-2		
CMWS Flare combo		
Obtain weather briefing/ forecast		
Departure, En route, EA / OBJ, Return Weather (Consider Ceilings, Visibility, Wind, Altimeter, Temperature, PA, BMNT, Sunrise, Sunset, EENT, EO, Moonrise, Moonset, %Illumination, IR Crossover, Dew point, SIGMETS, AIRMETS for current and forecast conditions)		
Determine terrain and weather effects on enemy and friendly force/ A/C systems		
MCOO / OCOKA		
Identify/post Hazards to flight		
NOTAMs		
Coordinate With Other Cells and address multi/dissimilar aircraft considerations through-out planning		

PLANNING CELL: FRIENDLY/ MANEUVER

Composition (CDR, UAS PL, AMC/FL) POC:	Status	Suspense
Situation / Friendly forces Composition, and Disposition		
Recent Actions		
Current SITTEMP (Friendly Locations)		
One level higher mission		
One level higher commander's intent		
Adjacent unit missions (air & ground tactical plans)		
Supported unit (s) missions		
Other aviation units missions		
Attachments Detachments		
Mission – When (Date/Time), Who (unit), What (operation/tactical task), Where, Why (purpose).		
Commander's intent (Purpose, Key Tasks, End-state, Success Criteria, CCIR)		
Concept of the operation		
Scheme of Maneuver (Include tempo (hasty/deliberate) and focus for each phase (terrain/enemy/friendly force) as well as Relief on Station, Battle Handover, immediate extraction, MSN abort (go/no-go) concept/ considerations, min force requirement, maximum allowable mission delay		
TAA -Aircraft Departure Plan, Radio Calls, Security (NAIs to observe)		
Address Multi/dissimilar aircraft considerations		
Movement, Air Corridors/ Primary Routes, Altitudes, Airspeeds, Lighting, Mode of Flight, Formations, Passage Points, Coordination, Obstacles, Actions on Contact, Alternate Routes, UAS ROZ, Launch and recovery points		
Holding Areas - Location (s), Occupation, Security		
PZ and LZ considerations (mission, size, location, long axis, obstacles, # A/C, landing direction, slope, avenues of approach/departure, shadows, surface, vulnerabilities, Winds, Visibility, Temps, PA		

PLANNING CELL: FRIENDLY/ MANEUVER Cont.		
Composition (CDR, UAS PL, AMC/ FL) POC:	Status	Suspense
Transition to Maneuver based on threat, RP, transition to traveling, traveling over-watch, bounding over-watch, establish checkpoints, Ops, NAIs, phase lines and security plan to enable maneuver		
Engagement Area development, Observation Positions, Combat Positions, Attack by Fire / Support by Fire Positions, Battle Positions (Primary and Alternate) considering:		
Target Priorities/ Weaponing		
Fire Distribution and Control (TRP, Quadrants, Fire Patterns, Target Array, Sectors, PFZ)		
Combat Position Considerations and security		
Determine Type of Attack (Phased, Continuous, Maximum Destruction)		
Bypass Criteria/ Break Contact Criteria		
MSN Success/Abort criteria		
Integrate Fire Support plan to enable maneuver Coordinate with FSO / obtain fire support overlay / Post on the CP map		
Determine Fire support assets available/ control authority/ priority of fires		
Scheme of Fires, Position Areas, Target list and fire support coordination measures, NFAs/RFAs		
Communication plan - nets, call signs, frequencies, laser codes, etc.		
Availability of CAS – Control authority/ priority, call signs, Data/video nets, frequencies, laser codes, payload		
Scheme of EW, Cyber effects (times/locations of effects)		
Develop TRPs and nominate Targets ISO scheme of maneuver and mission (Indirect, CAS, EW, Cyber) and submit to FSO/ Higher HQ		
UAS Scheme of Maneuver:		
Develop/ Determine Launch/Recovery sites, times, Routes, ROZ, ACAs, OP, NAIs, TAIs, Handovers, FREQs, Laser Codes, Data Links, Target Hand-over, Battle Hand-overs.		
Ensure AMB is complete		

PLANNING CELL: FLIGHT COORDINATION/ CONTINGENCIES		
Composition (IP, ASO) POC:	Status	Suspense
Obtain AMPS products from higher HQ CP		
Coordinate with all other cells and address multi/dissimilar aircraft considerations through-out planning		
ICW the maneuver cell, Plan and verify primary and alternate routes, SPs, CPs, PPs, RPs, LZs/PZs, OPs, DPPs, EA, OBJ, TRPs, etc. for graphics and AMPS. Ensure base routes are available for the AMB.		
Determine CLIII (fuel) requirements (Takeoff & bingo are min. recommended calculations)		
Obtain weather brief / NOTAMS / ACO / ATO/ PPR		
Prepare AMPS mission load		
Generate generic PPCs for Mission Design Series and environmental conditions.		
Prepare MRAW		
Develop IIMC plan		
Prepare/ADJ flight management plan		
Consolidate/ Produce mission products		
Load standard mission PCMCIA		
Develop/ refine timeline		
Coordinating instructions		

PLANNING CELL: SUSTAINMENT

Composition (MTP, PL, PSG) POC:	Status	Suspense
Confirm aircraft readiness for mission – (A/C hours available, avionics, armament, ASE, UAS)		
Confirm/Complete required maintenance		
Ensure required aircraft + bump A/C are PMD complete, ready, fueled and armed		
Determine/Verify CL I, CL III, CL V, CL VIII, CL IX requirements and configurations		
Determine/plot available FARP locations		
Determine/plot available medical facilities Level I, II, III/ and resources/ assets available/ required		
Coordinate with other Cells		

PLANNING CELL: COMMUNICATIONS/ REHEARSAL

Composition (Commo OIC) POC:	Status	Suspense
Obtain COMSEC fills for higher HQ and Fill unit SKL		
Obtain pertinent communication information from OPOD / Higher HQ		
Update all Company COMSEC devices		
Ensure all aircraft radios are keyed		
Update and prepare communication card		
Obtain rehearsal guidance from Commander/AMC for type of rehearsal: <ul style="list-style-type: none"> -Full rehearsal using all personnel and aircraft (Optimum) -Key leader -Terrain model (Standard) -Sand table -Map (Acceptable if time constrained) -Radio/CPOF -Back brief 		
Obtain and post MSN graphics and prepare rehearsal: <ul style="list-style-type: none"> -Mark grid reference -Mark linear control measures: (boundaries, PLs, LOA, LD, FSCL, CPL) -Represent all key terrain -Mark locations of AAs, FARPs, HAs, LZs, PZs -Mark primary and alternate routes including SPs, CPs, PPs, and RPs -Mark TRPs, TAIs, NAIs, EAs, DPPs -Mark significant enemy: (major units, targeted unit, ADA) 		
Coordinate with all cells and address multi/dissimilar aircraft considerations through-out planning		

MISSION BACK BRIEF

1. After some initial analysis and planning, the company commander/air mission commander should conduct a back-brief to explain how they intend to accomplish their mission. At a minimum the back-brief to the higher HQ should include the following:
 - A. Subordinate unit's graphics (so higher staff can establish a common operating picture and de-conflict with higher/adjacent units as necessary).
 - B. An explanation of the Commander's/air mission commander's assumptions, task organization, mission statement, and concept of operation.
 - C. A detailed discussion/description of actions at critical points in the mission (Passage of Lines, on OBJ), and assessed mission risk.
 - D. Requests for any additional resources or graphics changes, such as an execution checklist, or EXCHECK .
2. Units should establish a timeline as soon as possible and using the reverse planning process to sequence critical events. It is critical to consider fighter management when developing the timeline. Reverse planning checklist on the next page:

PLANNING TIMELINE

EVENT	Local/ZULU Start / Stop	Remarks
Receive the mission		
Issue Warning Order		
Planning / IPC / MSN Analysis		
Planning/ AMCM/ COA-D		
Planning/ Wargame		
Product Production		
AMB / OPORD Brief		
ACB / OPORD Brief,		
Combined Arms Mission		
Mission Rehearsal		
PREFLIGHT/ PCCs/ PCIs		
Update Brief		
(T) COMMO CHECK		
(T) Takeoff Time		
(T) SP/LD Time		
Objective, Mission, H-Hour, or Time on Target		
(T) ROS/ BHO/ End of MSN		
(T) After Operations Maintenance		
(T) Debrief		
(T) AAR		

AMCM (COA-D) CHECKLIST Page 1 of 2

Roll Call:	
Supported Unit:	Supporting Unit:
ENEMY SITUATION (MLCOA, MDCOA):	
FRIENDLY SITUATION:	
Weather/Illum for INFIL: EXFIL:	Weather Decision: Go Or Abort Time/ Method:
AATF MSN: End-state:	Key Tasks:
Concept of Operation (GTP)	COA Sketch/Mission Graphics
H-Hour: Total Force to Move: - Minimum force to move:(1st lift/ 2 nd lift): - Type of equipment to move # of Aircraft and Type: # of seats required per aircraft: - Doors Open/Closed: - Internal/external max weight expected: - Identify NET, NLT, and delay time for MSN: - Anyspecial equipment required in aircraft: - Priority equipment/personnel (bumpplan):	
PZ Operations: - PZ NAME: - Location/Frequency (PACE)/Call sign: - Description (Size, Surface): - Markings Far/Near (Day/Night): - Approach/Departure Direction: - Landing Direction: - Security (weapons control status): - PAX and equipment location: - Hot or Cold Load (right/left/both doors): - Static Load Training (where and when): - Hazards (Wires, Brownout, etc):	(Attach Diagram/Image): - BUMP Plan:
Route overview/Estimated Time En route: - Areas to Avoid: - Time/Check point calls requested: - DOORS (Open/Closed):	
LZ Operations: Primary HLZs: - Location: - Frequency/Call sign: - Time/Event Driven: - Land formation and heading (go around): - Suitability/Hazards: - Markings Far/Near (Day/Night): - Weapon control status: - Troop Offload (Left/Right/Both):	-Attach Imagery and TADPOLE Diagrams - Hot/Cold (conditions check/ method/time): - Immediate/Emergency EXFIL plan/ signal:
ALTERNATE LZs: - Location: - Frequency/Call sign: - Land formation and heading (go around): - Description: - Suitability/Hazards: - Markings Far/Near (Day/Night): - Weapon control status: - Troop Offload (Left/Right/Both): - Trigger for use:	

AMCM (COA-D) CHECKLIST Page 2 of 2

Laager Plan (Loc, REDCON, Comms)	
Deception Plan: False Insertions	
ATK/ RECON/ ORGANIC UAS: - # Type aircraft: - Task and purpose: - Munitions requested: - Call sign/ voice/ Data frequencies:	- COA Sketch - RP/ABFs/BPs/NAIs/TAIs/TRPs/ EAs/GRG: - Airspace Deconfliction Measures: - Ground target marking methods:
ISR/UAS Requested/Approved Internal (CAB/BCT/DIV UAS Available) -Task and Purpose: - Call Sign/Voice/Data Freqs: - MIRC Address/ BFT URN: - Re-trans Required (YES / NO)	- Time on Station/ MSN window: - NAIs/ROZs/Corridors - Airspace Deconfliction Measures: - Ground target marking methods:
Airspace Coordination/Control (CAS/ RW/UAS/ISR)	
FIRE SUPPORT: - SEAD/ Pre-AASLT Fires: - Close Air Support Requested/ Approved:	
MEDEVAC/CASEVAC Procedures:	
Service and support: FARP Plan (Lift/ Attack)	
CONTINGENCIES: - Max mission delay time: - Wx (Min, Max, Delay): - Key leader locations/BUMP info: - Abort Criteria (INFIL) - Detection/ Compromise/Contact (En-route, Objective): - No COMM:	CONTINGENCIES: - No EW/CAS/CAP/AWT: - En route Fallen Angel (Downed Aircraft): - PZ Fallen Angel (Downed Aircraft):- Ground Exfil Plan/ NLT: - Emergency Resupply: - No Comms Extraction: (visual signal, NLT time): - Emergency Extraction (signal, brevity, location):
Command and Signal: AATFC: GFC: AMC: FLT LEAD:	ABN: CAN: CMD: SER INT PZ/LZ: SPARE: COMSEC (current/change over time):
Proposed Timeline: (ACB, rehearsals, static load, commex, update briefs, weather call, H-Hour, EXFIL, debrief):	

ROUTE PLANNING CONSIDERATIONS

1. One-way flight routes are preferred whenever possible to mitigate risk.
2. Two-way flight routes are de-conflicted by time and/or altitude separation.
3. Key elements to consider when planning a flight route include:
 - A. When using maps 1:100,000 and below use KM, and 1:250,000 and above use NM.
 - B. Always plan alternate ingress and egress flight routes.
 - C. Locate the SP 3 to 8 kilometers from the PZs, TAA, HA.
 - D. Locate the RP 3 to 8 kilometers from the ABF, SBF, OPs, Check Points, LZs (consider primary and alternate, contingency, or emergency).
 - E. Use prominent, designated terrain features located along the flight route that facilitate navigation, control of speed, and control of en-route fires as air control points (ACPs).
 - F. Select routes that are as short as possible, tactically sound, and conducive to successful navigation.
 - G. Routes should avoid brightly lit areas and population centers, however consider potential enemy ambushes along predictable obvious routes.
 - H. If possible, select a route with terrain and vegetation that permit masking to limit exposure to enemy observation, direct fire weapons, and radar acquisition.
 - I. Consider deception legs. We must assume we are under constant surveillance and weigh the value of deception with risk and the cost in fuel, flight time, and additional turns.
 - J. Avoid turns in the route which exceed 60 degrees especially if sling loads are involved.
 - K. Ensure routes are at least two kilometers wide.
 - L. Ensure the heading to the RP is within 30 degrees of the LZ landing direction.
 - M. Serial separation depends on METT-C, however it should not be less than 1 Minute for Blackhawks and 3 Minutes for Chinooks off-loading vehicles. There is no standard separation for Attack Aircraft (METT-C).
 - N. Flight routes should avoid known or suspected enemy air defenses.
 - O. Flight routes must support both primary and alternate LZs. Each LZ should lie within a 30-degree arc from the RP.
 - P. When transitioning from movement to maneuver, planners should establish checkpoints, observation points, or phase-lines to control movement and enable navigation to the support by fire position, attack by fire position, battle position, and/or the security or reconnaissance objective. Additionally, planning should consider movement techniques (traveling, traveling over-watch, bounding or bounding over-watch).

PLANNING GRAPHICS/ COMMON SYMBOLOGY

1. Planning Graphics and Common Symbology will be IAW with ADRP 1-02, Terms and Military Symbols.
2. Frequently used map marking as listed below. ADRP 1-02, contains additional map symbols.
3. Navigation Markings Mission plotter, NSN 6605-00-766-6901, may be used. Orient the markings with the course direction.



Landing Zone (LZ)/ A geographic area used to drop off troops or equipment

Pick-up Zone (PZ) A geographic area used to pick up troops or equipment.

Land \pm 50 meters of the ground tactical commanders intended landing point.

Land \pm 30 seconds from the air movement table touchdown time.

Land \pm 15 degrees from the planned landing heading

Start Point (SP)/ Well-defined point on the ground where a route begins.



Choose a point 3-8 KM from the departure point aligned within 30 Degree arc of course. SP quality is more important than distance and azimuth.

Release Point (RP) Well-defined point on the ground where a route ends

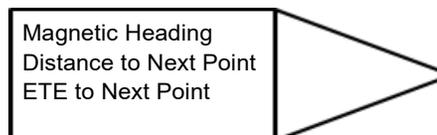
Choose a point 3-8 KM from the landing zone and within 30 degrees from the landing zone heading. The importance of a good RP cannot be over emphasized.

Air Control Point (ACP) A prominent designated terrain feature located along the flight route that facilitates navigation, control of speed, and control of en route fires.



Choose a point 5-20 KM apart with barriers that funnel to or signal over flight.

Navigation Information Box (NIB) Place the NIB to the left or right of the course line adjacent to the associated checkpoint.



PLANNING GRAPHICS/ COMMON SYMBOLOGY



Course Line – A solid line that connects the well-defined points or prominent terrain features chosen for the route. If the course heading is variable, use a dashed line.

- 1) Left Side Tick Marks – The distance tick marks will vary in intervals of 10 KM, 5 KM, and 1 KM apart. The tick mark intervals will decrease as the course line approaches the next checkpoint. The tick mark labels will indicate distance remaining to the next checkpoint.
- 2) Right Side Tick Marks – The time tick marks will vary in intervals of 10 minutes, 5 minutes, and 1 minute. The tick mark intervals will decrease as the course line approaches the next check point. The tick mark labels will indicate elapsed time or time remaining from takeoff and/or the last checkpoint passed.
- 3) Time Used along the flight route to facilitate navigation, control speed, and control en route fires. Indicate additional time for acceleration or deceleration on the TDH card to enable accurate triple-checks.
- 4) Hard Time “00:00:00” – For time driven missions (H-hour).
- 5) Soft Times “0000” – For items such as preflight time.
- 6) Elapsed Times “00+00+00” – Used for event driven missions.
- 7) Intermediate Times “00:00:00” – To ensure all arrive on time.

ROUTE PLANNING

1. **Navigation Planning.** Planners will confirm the accuracy of all times, distances, headings, and coordinates. Suggest using three different people to verify the accuracy.
 - A. Ensure all times are within ± 2 seconds.
 - B. Ensure distances are within ± 300 meters or 0.2 NM.
 - C. Ensure headings are within ± 2 degrees.
 - D. Ensure coordinates are within ± 300 meters for military grid reference system (MGRS) or ± 20 seconds for Latitude and Longitude.
2. **Hazard Markings** are marked with red ink at least 5 kilometers either side of the selected course in case in-flight deviation becomes necessary. Mark antennas with altitude if available. Use parenthesis around AGL altitudes.

Wires

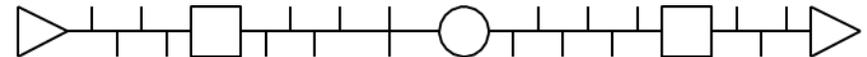


Antennas and
Towers

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3. The example below illustrates how symbols are combined and plotted on the map.



4. **Navigation Standards.** If multiple maps are used, number them and mark the top of the map with an up arrow for quick orientation in the cockpit. Avoid planning route segments that require heading changes of more than 60 degrees (especially critical during NVG/multi-ship operations).

Release Point/ Passage Point

1. A release point (RP) is a location on a route or a well defined point on the ground where a route ends where marching elements (formation designed for movement) are released from centralized control. This is the point where aviation elements transition from formation flight designed for efficient movement, to a formation and technique designed to maneuver the preponderance of its combat power in a manner and direction where the commander believes they will effectively make contact with the enemy or to enable individual aircraft/ elements to effectively maneuver to the OBJ, OP, BP, ABF, SBF, LZ, PZ, ROZ, etc.
2. Release points are driven by the friendly force mission, or the enemy situation. An aviation formation will transition/travel on an uncontested air-corridor or route (if they can safely move with or without SEAD) to an RP in vicinity of an OBJ, OP, BP, ABF, SBF, LZ, PZ, ROZ, etc. In this case a RP is typically identified approximately 3-8 KMs out within 30 degrees of the intended landing/ mission orientation (OP/BP).
3. Planners/ AMCs must consider the point that SEAD, terrain, rate of march, or other enablers can not mitigate the likely enemy contact (Direct fire, EW, Indirect fire) and establish a release point to transition from movement in a formation flight to maneuvering the formation tactically. The planners/AMC should consider METT-TC when determining the maneuver technique (traveling, traveling over-watch, bounding, or bounding over-watch and the maneuver formation (staggered, echelon, trail, teams, etc.) that best mitigates the risk of enemy contact.
4. Planners/ AMCs must also consider the threat and how/when to minimize the electronic signals the formation is emitting. RP/PP could be a good control measure to trigger formations to implement/reduce electronic signal restrictions. Specific considerations on limiting/allowing the use of communication systems (voice, digital messages), Radar emissions (FCR, RFI, and radar altimeters), and lighting (overt/covert).
5. For Attack aircraft, the RP represents a transition point for aircrews to transition from en-route operations and prepare for engagement actions prior to the arrival at the firing position. Upon arrival at the RP flight lead will slow, and the flight will change formation to teams of the briefed number. Each aircraft will confirm navigation/fly to information, execute attack formation, individual aircraft spacing and team spacing, execute communication plan as required, confirm video recording and source, set TSD to attack phase, select scale, and select ACQ source as appropriate, select appropriate weapons, confirm Weapons Systems ARMED. This is usually the point where the formation transitions to the appropriate movement technique. It is important to consider how to maneuver, what control measures are required to enable maneuver, and the security considerations while maneuvering. Specifically, what movement techniques (traveling, traveling over- watch, bounding or bounding over-watch) checkpoints, observation points, or phase-lines to control movement and enable navigation as well as what NAIs to observe and who is responsible for observing them while maneuvering.
6. A passage point is a specifically designated place where the passing units will pass through the stationary unit. It is an important coordination measure that enables ground maneuver, artillery, ADA, and aviation forces to reduce fratricide risks and facilitate mission command. Planners should consider selecting a point that is easily identifiable and use near and far recognition signals (IFF turn on/turn-off lines, aircraft lighting signals, BFT, radio comms, etc.) to reduce the risk of fratricide.

LZ/PZ Selection

1. When considering LZ or PZ selection (both primary, alternate, contingency and emergency), planners and reconnaissance elements should determine the if the LZ/PZ will facilitate the supported unit's ability to accomplish the **mission**, meeting the commander's intent for **location** or distance from the objective, and the force required to provide **security** during the assault/mission. Consider alternate LZs along the direct of flight or forward of the primary LZ, contingency LZ outside of enemy small arms fire, and emergency LZ a terrain feature away potentially requiring an adjustment to the ground tactical plan.
2. Additionally, the technical characteristics considered for LZ/PZs include the type of **Landing formations** the LZ supports, **Obstacles and hazards** in the landing area and vicinity, **Number and type of aircraft** the LZ/PZ can support, the **Ground slope** of the landing area, **Load suitability, Approach and departure** directions, **Size** of the available landing area, **Surface conditions** (including brown-out, white-out, impact of smoke), **Vulnerability** (of direct, indirect, EW, and visual contact with the enemy).
 - A. UH60: min 60m separation between A/C (Light or Heavy PZ)
 - B. CH47: min 100m separation between A/C (Light PZ)
 - C. CH47: min 200m separation between loads (Heavy PZ (250m Night))
 - D. AH64: min 60m separation between A/C

Note: Avoid dirt strips and note surface conditions such as dust, snow, obstacles may dictate larger PZ/LZs. The type of landing formations (Staggered, Abeam or Trail) or landing one at a time may mitigate it. A trail formation is the least desirable due to lack of visual references with the lead aircraft and high power requirements.

- Note: External load consider hookup team's equipment, exit direction, location, load positioning and aircraft maneuver areas. Subsequent drops of external loads or pallets will require a significant amount of additional space in the LZ.**
3. Finally planners or reconnaissance elements should assess the impacts of the weather conditions including **Ceiling and visibility, Density altitude** and **Winds** when considering primary and alternate LZ or PZ selection and the type of formation (ie. where the dust cloud or debris drift).
 4. As part of the landing plan planners should consider a single HLZ to simplify control, concentrate supporting fires and reconnaissance, improve security on subsequent lifts, mass combat power, and reduce fratricide risk; or multiple HLZs to reduce the risk of concentrating the entire assaulting force in one location, to force the enemy to fight in multiple directions, to enable a rapid dispersal of ground elements to accomplish tasks in separate areas, and as part of the deception plan/ operational security.
 5. The landing plan and formation must address door gunner fires to reduce the risk of fratricide, and address security requirements from RP to the LZ including assigning NAIs focused on confirming or denying the enemy most dangerous COA, most likely COA, or to orient door gunners, scouts, attack elements, UAS, and other enablers on where the formation is most vulnerable. The landing plan should also address contingencies including, go-arounds, enemy contact, Hot/Cold LZ/PZ, frustrated loads or maintenance malfunctions in the LZ/PZ, etc.

Holding Area Operations

1. A Holding Area (HA) is the last covered and concealed position prior to the objective that is occupied for short periods of time. HA occupation and location is based on METT-TC and is generally used to reduce the time required to execute movement or maneuver to a position of advantage. Holding Area operations reduces reaction time required by forward positioning elements, allows more time for reconnaissance, and/or the synchronization of enablers.
2. Security considerations, and tactical/technical triggers will drive the decision for HA location.
3. Consider the following:
 - A. Approximately 10 KM behind the RP but must consider enemy contact (visual, direct and indirect at a minimum).
 - B. Occupy HAs for less than 10 minutes, if more time is required select multiple/ alternate Has to conduct survivability moves.
 - C. Consider avenues of approach and departure, environmental considerations (dust signature, audible signature), and flight profiles that minimize exposure to enemy forces.
 - D. Establish 360-degree security and maintain contact with wingman.
 - E. Maintain REDCON 1 or RECON 2.
 - F. Maintain communications with Higher HQ.
 - G. As a technique, the lead aircraft should land at 10-11 O'clock (if 12 O'clock is the planned takeoff direction (into the wind); additional aircraft will position as necessary to maintain 360-degree security.



Occupy a BP/ABF/SBF/OP/FP

1. When considering a BP/ABF/SBF/OP/FP the crew/planners should select positions based on the **nature** of the target or recon objective, **obstacles** that limit engagements or observation, **range** to target/ recon objective, that support **multiple** positions for survivability moves, and **area** to maneuver.
2. From the firing positions or individual OPs, the crew/planners should consider the following:
 - A. **Background.** Terrain masking to ensure the A/C is not silhouetted.
 - B. **Range.** The kill zone should be within the last one-third of the weapon's range for aircraft survivability (within the minimum and maximum effective range of the selected weapon system, and should be outside the enemy's maximum effective range).
 - C. **Target altitude.** The firing position should be level with or higher than the target area, if possible.
 - D. **Sun or full moon.** The sun/moon behind or to the side of the A/C.
 - E. **Shadow.** Position should be within an area covered by sun shadow, moon shadow, or artificially produced shadow.
 - F. **Concealment.** Terrain, man-made objects or vegetation around the firing area should be sufficient for the helicopter to remain masked.
 - G. **Rotor wash.** Position should avoid or reduce the visual signature caused by the effect of rotor wash.
 - H. **Maneuver area.** Position should permit concealed entry and exit and obstacle avoidance (think evasive and emergency procedure maneuvers).
 - I. **Fields of fire.** The target/EA/OBJ must be visible.
3. Additionally, planners/crews should select firing positions and observation posts that can provide adequate observation across the width and depth of the Engagement Areas, Objectives, NAIs (named areas of interest), TAIs (target areas of interest), that are mutually supportive to ensure effective communications, enhance security, and to enable target/reconnaissance handovers.
4. When occupying a BP/ABF/SBF/OP/FP the crew/staff should consider METT-TC when determining if the formation should set left stack right, or set right stack left. To simplify things, it is preferred to **set left, stack right** if the conditions permit, however give special consideration to aircraft performance considerations (PPC, power available, ETFs etc), winds, acoustics, rotor wash, local security requirements, and fields of fire before deciding how to occupy a position.
5. When occupying a BP/ABF/SBF/OP/FP the crew/staff should assign local security tasks including the assignment of NAIs focused on confirming or denying the enemy most dangerous COA, most likely COA, or to orient on where the formation is most vulnerable in order to protect the force and enable mission success.

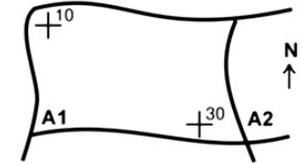
Engagement Area Development

- An engagement area (EA) is an area where the commander intends to contain and destroy an enemy force with the massed effects of all available weapons and supporting systems. Additionally, a target area of interest (TAI) is the geographical area where high-value targets can be acquired and engaged by friendly forces. The distinction between a TAI and an EA is the ability of friendly forces to contain and mass effects against the enemy. From an aviation stand point, EA development principle considerations apply to both with potentially less time the enemy is in the TAI and the less enablers or obstacles available to shape the enemy actions.
- The Battalion or TF is responsible for planning EAs, where as the company conducts direct fire planning. The EA development process:
 - Intelligence preparation of the battlefield:** Define the operation environment (Describe environmental effects, Evaluate the threat, Determine threat courses of action). At a minimum, the following questions should be answered: where is the enemy currently located, Where is the enemy going? Where can we best engage the enemy? When will the enemy be there? What weapons systems do the enemy have that can affect our unit?
 - Select the ground for the attack.** Decide where, and when to attack the enemy understand the mission and Commander's intent or purpose, key tasks, and end state of the mission. Determine the Concept of the operation, how to deceive the enemy, the support/sustainment priorities, the timeline, and give order and rehearsal guidance.
 - Integrate the EA.** This step is how the commander intends to contain and destroy an enemy force with the massed fires of all available weapons. Consider: Enemy avenues of approach, Enemy rate of advance, Key terrain that gives the advantage for specific avenues of approach, What formation the enemy will use, and at what point will they likely change formation, Expected range to engagement, Maximum effective range of friendly weapons systems (direct and indirect), When the enemy will begin counter-engagements, Maximum effective range of enemy weapons systems (direct and indirect), Where is the dead space in the EA, and how it will be covered? The planners must integrate the use of artillery, CAS, UAS, and mortars to shape the OE for the direct fire fight.
 - Direct fire planning.** The plan should concentrate focus on long range targets, minimize exposure but have the best success rate, and engage the priority targets first. The following principles should be taken into consideration: Mass fires, Leaders must control fires (triggers or fire commands), Crews must understand fire plan, Focus fires, Distribute fires (closest TRPs, quadrants, fire patterns (frontal or in depth), target array, priority fire zones, or sectors), Shift fires, and Rehearse the fire plan.
- Standard unit fire command: Alert, Weapon or ammunition, Target description, Orientation. Execution. Example: **"Gun 2, contact T80 in the open, 360 degrees, 5000m, fire when ready."**

Direct Fire Planning

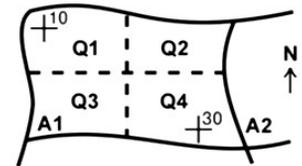
1. Closest TRP

Commanders may establish TRPs using man-made structures, terrain features, enemy formations, or artificial illumination. TRPs should be easily recognizable, as well as easy to locate in the EA when directing or shifting fires.



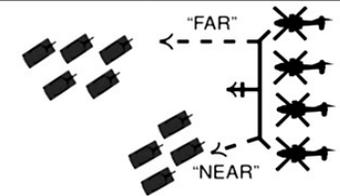
2. Quadrants

Commanders may divide the EA into quadrants. Using recognizable terrain features or man-made structures, fires can be directed or shifted quickly by using the assigned quadrant name.



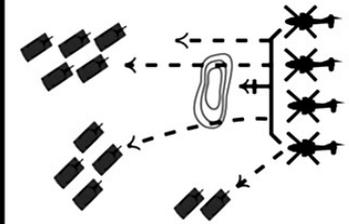
3. Fire Patterns

Fire patterns are enemy-oriented methods of engagement where the focus and distribution of fires are determined by the enemy's formations or location. Fire patterns are *frontal* and *depth*, and can be used to direct and shift fires quickly. The commander directs "near, far, left, or right" when directing or shifting fires.



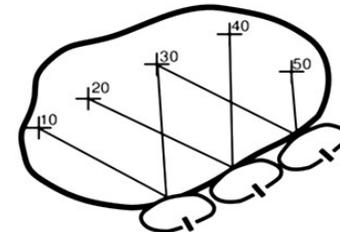
4. Target Array

Focusing fires on the enemy target array is a technique where the commander issues specific portions of the formation for engagement. For this technique to be successful, definable portions of the target array must be observed by the commander and the firing crews, particularly during the shifting of fires.



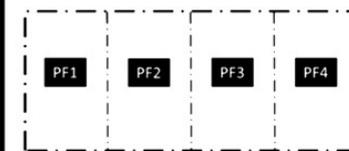
5. Sectors

Using broad sectors for companies or teams ensures overlapping fires throughout the EA. This technique requires careful direct fire planning to prevent target overkill in the complementary sectors. The battalion must select the trigger mechanism to initiate the fires. This is critical with sectors because all fires may not begin simultaneously.



6. Priority Fire Zones

Commanders may divide the EA into priority fire zones. This method uses the aircraft software to overlay designated fire zones on the moving map display.



RECON/SECURITY

1. **Reconnaissance** missions/operations are undertaken to obtain accurate and timely information about the enemy activities and resources, or the area of operations (meteorological, hydrographic or geographic characteristics) to support the commander's situational awareness and decision making processes. The forms of reconnaissance include zone, area, and route reconnaissance, as well as reconnaissance in force (RIF).
2. **Area reconnaissance** – A form of reconnaissance that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area.
3. **Zone reconnaissance** – A form of reconnaissance that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries.
4. **Route reconnaissance** – A directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route.
5. **Reconnaissance in force** – A deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information.
6. The fundamentals of reconnaissance include:
 - A. **Ensure continuous reconnaissance.**
 - B. **Do not keep reconnaissance assets in reserve.**
 - C. **Orient on the reconnaissance objective.**
 - D. **Report all information rapidly and accurately.**
 - E. **Retain the freedom of maneuver.**
 - F. **Gain and maintain enemy contact.**
 - G. **Develop the situation rapidly.**
6. Commander should provide guidance on Focus, Tempo, Engagement/disengagement criteria and Displacement criteria.
7. Security operations are those operations undertaken by a commander to provide early and accurate warning of enemy operations, to develop the situation, and to provide the force being protected with time and maneuver space.
8. Army Aviation performs security missions/operations (**screen, guard, cover, area, and local security**) to preserve friendly forces combat power of and provide information about the enemy.
9. The fundamentals of security provide a framework for security operations:
 - A. **Provide early and accurate warning**
 - B. **Provide reaction time and maneuver space.**
 - C. **Orient on the protected force, area, or facility.**
 - D. **Perform continuous reconnaissance.**
 - E. **Maintain enemy contact.**
10. Commander should provide guidance on Focus, Tempo of security, Engagement/disengagement criteria and Displacement criteria.

UAS PLANNING CONSIDERATIONS

Mission:	<ul style="list-style-type: none"> - Establish liaison with the Supported Ground Unit early. - Determine mission configuration based on mission task and purpose in support of ground units. - Coordinate airspace requests if mission requires adjustments to the approved Unit Airspace Plan. - Develop a UAS communications relay plan based on unit priority. - Integrate UAS into the combined arms rehearsal. - Publish required frequencies, laser codes, OSRVT CUCS ID. - Develop and publish dynamic re-tasking procedures for MUM-T
Enemy:	<ul style="list-style-type: none"> - Capabilities to detect visually or acoustically UAS operations - Counter UAS capabilities (flight, exploitation/interdiction of data links, and ground control stations - Electronic warfare - Operations in a GPS denied environment - Enemy situation surrounding NAIs, routes and loiter points
Weather effects	<p>Note: Considerations have to be made for the entire UAS, (UA, GCS, sensors) for launch, throughout the duration of the mission, and for recovery.</p> <ul style="list-style-type: none"> - Wind effects - Precipitation - Temperature impacts to the aircraft, sensors and ground equipment <p>(UAS can provide real time weather data including temp, precipitation, clouds, winds and visibility to augment forecasted weather)</p>
Terrain:	<ul style="list-style-type: none"> - Surrounding terrain impacts on line of sight - Selection of airfields for launch and recovery sites - GCS locations for mission support - Requirements for communications relay - Impacts to MUM-T remote hellfire engagements
Time:	<ul style="list-style-type: none"> - Available mission time for different manned and unmanned aircraft - Establish readiness levels required to launch an aircraft - Emplacement time required for different UAS
Troops/ Equipment Available	<ul style="list-style-type: none"> - BAE capability of the supported unit to properly integrate manned and unmanned aviation systems. Does the unit have a 150U assigned? If no, consider providing an LNO from one of the UAS units - Joint ISR platforms relevant to the supported AO
Civilian Factors:	<ul style="list-style-type: none"> - Downed aircraft recovery - Civil affairs planning

STANDARD NAMING CONVENTION

- Standard Naming Convention is utilized if not previously selected by the supported unit or written in AOR specific procedures.

Control Measure/ Product	Designation	Example
Air Axis	Weapons	Axis Axe
Air Control Point	Numbers	ACP 1
Air Corridor	Jewels	Sapphire
Area of Operations	Unit Nicknames	AO Strike
Assembly Area	Male Names	AA Steve
Attack Position	Female Names	AP Linda
Axis of Advance	Tools	Axis Hammer
Attack by Fire Position	Numbers	ABF 2
Checkpoint	Numbers	CP 1
Contact Point	Letters	CP A
Engagement Area	Violent Action Verbs	EA Kill
EXCHECK	US City Names	Atlanta
FARP	Gas Stations	FARP Shell
FOB, LSA	Battles	FOB Alamo
LZ, DZ	Birds	LZ Owl
Link-up Point	Numbers	LUP 1
Objective	Ground Animals	OBJ Bear
Passage Lane	Tire Companies	Lane Good-year
Passage Point	Numbers	PP 1
Phase Line	States	PL Texas
PZ	Trees	PZ Elm
Routes (Air)	Celestial Bodies	Route Mercury
Routes (Ground)	Automobiles	Route Honda

Minimum Products/ Information Distributed/ Issued

1. **Task organization:** crew and A/C assignments (Preferably posted on commo card)
2. **Maps/ graphics** (Friendly maneuver graphics, RFLs, NAIs, Fire Support PAAs and control measures; Known/ Templated enemy locations, hazards, primary and alternate routes, airspace control measures, Contact Points, and FARPs)
3. CDRs Intent
4. CCIR
5. Scheme of maneuver
6. Timeline/ EX-Check
7. TDH cards
8. EA/OBJ Sketch
9. Fire Support Plan (PAA/TRPs)
10. NAI/TAI Card (s)
11. LZ/PZ Diagrams
12. Tadpole diagram. (UH/CH)
13. FARP Sketch (s)
14. Bump Plan
15. IIMC plan
16. PPC/Fuel data
17. ACO/ATO/SPINS information (downed aircraft and personnel recovery plan)
18. Commo Card (s) with supported/supporting unit commo information
19. Mission Risk Assessment

LEVEL	RESPONSE TIME	ENG	APU	WPNS	COMMO	STATUS
1	IMMEDIATE TAKE OFF	100%	OFF	INITIALIZED	MSN FREQs	READY FOR TAKEOFF
				SAFE AND CLEAR		
				SAFE AND CLEAR		
2	15 MINUTES	OFF	ON	INITIALIZED	MSN FREQs/ INTERNAL	CREW AT OR IN AIRCRAFT
				INSTALLED		
				INSTALLED		
3	30 MINUTES	OFF	OFF	SYS OFF/ Ammo loaded	MANPACK/ MBIT-TER/ crew at aircraft, in CP, or TOC	CREW ON STANDBY WITH COMMS
				INSTALLED		
				INSTALLED		
4	1 HOUR	OFF	OFF	SYS OFF/ Ammo loaded	CO. FM	A/C PRE- FLIGHT CREWS BRIEFED and rehearsed
				INSTALLED		
				INSTALLED		
5	>1 HOURS	OFF	OFF	SYS OFF/ Ammo loaded	ON CALL BY HIGHER HQ	Maintenance
				INSTALLED		Fighter Management
				INSTALLED		MSN Planning

RISK MANAGEMENT

- All planning cells should incorporate risk management into the planning process with the purpose of identifying risks and implementing control measures. Use the five steps of risk management: Identify hazards, assess hazards, develop controls and make a risk decision, implement controls, and supervise and evaluate. CDRs/AMC/MBOs/Planners need to understand their crews and equipment capabilities, the mission, the enemy, and the environment in order to properly assess and mitigate the residual risk.

EXPERIENCE: Crew selection is the best method of mitigating overall mission risk and is accomplished by matching crew capabilities with mission requirements

Typical Command and Risk Approval Level

Low Risk Missions	Company/Troop Commander
Medium Risk Missions	Battalion/Squadron/ Task Force Commander
High Risk Missions	Aviation Brigade Commander
Extremely High Risk Missions	First General Officer in the chain of command

* Refer to local policy or operations order for guidance/ authority

FIGHTER MANAGEMENT

Time Period	Duty Period	DA Form 2408-12 Hours
1 DAY/ Defined 24 Hour Period	12 Hours	8 Hours - Day (SR-SS)
	*14 Hours	7 Hours - ANY Combination Day, Night, NVD (MAX 6.0), Hood, Instrument, or Weather
	**25 Hours	6 Hours - NVD
		3 Hours - CBRN (MOPP 3 or 4)
14 Days	196* / 224**	74 Flight Hours
30 Days	420* / 480**	100 Hours ₁ 110 Hours ₂

* Standard duty for Mission Ready crews (e.g. QRF).

** Standard duty period for MEDEVAC/ QRF/ PR.

- The crewmember is required to be evaluated by the flight surgeon prior to flying through the 14/30 duty day limit, 74 hours in a 14 day period limit, and 100 hours in a 30 day period.
- BDE Commander approval is required to exceed 110 hours. Task Force Commanders must submit a request for extensions to exceed the 110 hour 30 day limit and the crewmember must receive another DD 2992 from the flight surgeon.

NOTE 1: The table above applies to aircraft; however, flight simulator hours performed prior to aircraft flight in the same duty period are cumulative and count as if the actual flight duty is in the aircraft.

NOTE 2: Commanders who have continuous stand-by support requirements (MEDEVAC, QRF, PR, etc.) will use the following guidelines.

a. The PC of the crew will manage the duty period of aircrews that maintain a continuous, 14 hr/24 hr mission - ready posture. The primary duties of those crews will be directly related to the planning, preparation, and execution of that mission.

b. Sufficient accommodations for rest, meals, and isolation away from other unit activities will be provided to the crews.

c. Training flights for mission ready crews will be managed in such a way so they will not jeopardize aircrew response time or prevent mission accomplishment due to inadequate fighter management.

NOTE 3: If a crewmember remains between 100 and 110 hours, then he/she must be re-evaluated by a flight surgeon every 14 days to continue performing flight duties.

NOTE 4: The following ranks, O-4 and above, W-4 and above, E-8 and above, in BN/BDE Staff or Special Staff positions will manage their own fighter management duty periods. Those individuals above will adhere to all Fighter Management policy requirements 24 hours prior to assuming flight duties. This is intended to allow those individuals to perform their critical primary duties, but mandate suitable rest prior to assumption of flight duties.

NOTE 5: Company commanders can add 2 hours of duty to the duty period, not to exceed 14 hours, and one additional flight hour. BN/SQDN/TF commanders can add 2 hours of duty to the duty period, not to exceed 16 hours, and one additional flight hour. The BDE commander can designate duty and flight hours as necessary on a case by case basis.

DUTY HOUR MAXIMUMS (Non Crew Members)

TIME PERIOD	DUTY PERIOD
24 Hours	14 Hours
14 Days	224**
30 Days	480**

Extensions will be considered on a case-by-case basis.

TIME HACK

DATE/TIME

OPORD NAME/ NUMBER:

MAP REFERENCES, IMAGERY, PUBS, PACKET INVENTORY:

TASK ORGANIZATION: Include Aircraft (Primary and Spare), parking, call-signs, crew assignments, chalk order as required.

1. SITUATION

a. Terrain:

b. Enemy Forces:

(1) Strength (Ground/Air/ADA):

(2) Composition:

(3) Disposition:

(4) Location:

(5) Previous actions:

(6) Probable courses of action (MLCOA/MDCOA):

c. Friendly Forces.

(1) Higher (mission, location and intent: air and ground):

(2) Adjacent (air and ground):

(3) Supported unit(s) and location:

(4) Other aviation elements in the area of operations (incl flight routes):

(5) Attachments and Detachments:

d. Weather:

(1) Current weather and light data for mission:

(2) Forecast weather for mission:

(3) Special environmental considerations or hazards. (IR Crossover / Time):

(4) Published weather minimums for operations:

(5) NOTAMs:

(6) PPC (all MDS)

2. MISSION (Who, What, When, Where, Why, & How)

a. Commander's Intent

(1) Purpose of the mission.

(2) Key tasks to be accomplished.

(3) End state – Success criteria (friendly, enemy , terrain, civilians)

BRIEFINGS/ REHEARSALS/ AAR

3. EXECUTION:

a. **Concept of Operation.** Brief description in chronological order of how the mission is to be accomplished/how all units will be employed (address Ground and Aviation formations).

b. **Scheme of Maneuver** (Detailed description of how all units are to execute the mission (address dissimilar aircraft considerations)).

- (1) Identify main and supporting efforts.
- (2) Describe Flight coordination/execution from parking, line-up, departure, en route, actions on OBJ, egress.
 - Parking, line-up, link-up, Air routes/corridors, ACPs, SPs, route names, rally points, Passage Points, ASE turn-on/off points
 - Traffic patterns: (FARPs, AAs, HAs, other):
 - Mode of flight, airspeed, altitude, formation, and separation for each leg
 - Movement/ Maneuver techniques and formations for Ingress / occupation of OPs, HAs, BPs, LZ/PZ, ROZ, etc./ Egress.
 - Go arounds
- (3) Describe Actions on the Objective/ Ingress / Egress ABF/SBF positions, PZ/LZs, OPs, etc.
- (4) Weapons status and Method of fire control.
- (5) Use of Laser and designation procedures.
- (6) Distribution of fires.
- (7) Method of direct/indirect fire control.
- (8) Engagement/Disengagement and Bypass criteria.
 - Ingress, Mission/Objective Area, and Egress.
- (9) Battle Handover/ROS.
- (10) Egress plan. Route, Possible Follow-On (CASEVAC / EXFIL), ETA, Parking, Weapons Safe Procedures

c. **Scheme of Fires (FA/CAS/ADA/EW/Cyber):**

- (1) Field Artillery. (Location / Priority):
- (2) Suppression of enemy air defenses (On Call, TOT, Immediate):
- (3) JAAT/CAS. (#/ location/ control):
- (4) ADA. (Locations, control status / Control measures):
- (5) Target Priorities/responsibilities (HPTL/AGM/TRPs):
- (6) Fire Support Coordination Measures. (Permissive / Restrictive):
- (7) Obstacles that support our plan:
- (8) Deception plan:
- (9) Hazards and risk mitigation controls.

f. Tasks to Subordinate Units.

- (1) List all units and state missions/tasks and purposes to be accomplished.
- (2) Include all flight related tasks: Flight Plan, update weather brief, PPCs, MRAW, update NOTAMs, Primary Navigation and timing, Backup Navigation and timing, Lighting, Transponder, backup Transponder, Coordination/Communication with ATC, PZ Control, Sector calls, Air-to-Air, flight following, in flight weather updates, airport advisory calls, Ground Force, CAS, MEDEVAC, Fires, ADA, Adjacent Units, and Higher HQ, security tasks (front, flank, rear), Fence in/out calls, debrief.
- (3) Include organization for combat if not clear in task organization include attachments/detachments:

g. Coordinating Instructions.

- (1) CCIR Commander's Critical Information Requirements:
 - Priority Intelligence Requirements (PIR)
 - Essential Elements of Friendly Information (EEFI)
 - Friendly Force Information Requirements (FFIR)
- (2) Timeline (APU, comm check, taxi / line-up, takeoff, MSN/H-hr)
- (3) Ammunition configuration by aircraft and type
- (4) Tempo
- (5) Bypass criteria
- (6) Actions on Contact (En route, OBJ, Egress):
- (7) Engagement Area / Target Priority:
- (8) Contingencies: (Bump Plan, Abort Criteria including min force requirements, # of aircraft and Point of no return, Lost Visual Contact, Lead Changes, Lame Duck, Fallen Angel):
- (9) IIMC breakup procedures (consider dissimilar aircraft type, PPC, Loads, by phase/ RTE/ location as applicable):
 - Base Altitude, Airspeed, Recovery procedure
- (10) Aircraft in-flight emergency procedures to recovery
- (11) Test Fire Plan:
- (12) Crew endurance:
- (13) CBRN/MOPP condition for the mission
- (14) ROE
- (15) Go/No-go criteria

- (17) Downed-pilot procedures (Pickup points, times, and signals)
- (18) Fighter management
- (19) MRAW/ additional Hazards and risk mitigation controls.

4. SUSTAINMENT**a. Sustainment.**

- (1) Class I. (Subsistence ration cycle):
- (2) Locations Hot/Cold times for of FARPs (priority of use/ Holding Areas, any restrictions):
 - Ingress/egress routes, traffic pattern.
 - Ammo availability/priority.
- (3) Alternate FARP contingency plan and Emergency Class III and Class V resupply points.
- (4) Class III/ IX. (Packaged POL and Repair parts):
- (5) Other Classes of supply:
- (6) Water point and trash point:

b. Services and Transportation.

- (1) Location, method of contact, and capabilities of Maintenance Contact Team
- (2) Location, method of contact, and capabilities of Contact Teams Forward positioned
- (3) Downed aircraft recovery team capabilities, method of contact, and location.
- (4) EPW procedures, handling guidance, and collection points

c. Medical and Personnel Services.

- (1) Location of pertinent Ambulance exchange points, Level I (aid stations), Level II and III Medical treatment facilities:
- (2) Air-ground medical evacuation procedures:
- (3) Field sanitation:
- (4) Decontamination site:

d. Special mission-equipment and mission-essential equipment.**5.COMMAND AND SIGNAL****a. Command.**

- (1) Succession of command:
- (2) Location: Main, Tac, CTCP, Mobile CP:
- (3) Proposed Assembly Area locations/ Scatter Plan:
- (4) AATF CMDR, GTC, AMC, Flight/Serial Leads

b. Signal.

- (1) SOI (Signal operation instructions) in effect: Time period:
- (2) Secure radios, HAVE QUICK, Tactical Data NETS and instructions:
 - Commo Card/ FREQs:
 - Julian Date
- (3) IFF. Turn-on and turn-off lines (Who is responsible):
 - Modes/Codes:
- (4) Challenge and password / Brevity words / Other non-standard signals used:
- (5) DTC mission (s) to be loaded
- (6) Tactical beacons and other NAVAIDS:
- (7) Applicable ACO/Airspace /Flight following procedures.
- (8) Applicable CSAR SPINS data.
- (9) Lost commo procedures.
- (10) Communications responsibilities
- (11) Laser codes/ assignments
- (12) Video frequencies
- (13) Link 16 Frequencies
- (14) GPS reliability/ jamming plan

REHEARSAL(S): TIME, TYPE, LOCATION, Required Attendees.

Questions & Confirmation Brief.

AASLT Considerations for OPORD/ AMB

1. **The AASLT OPORD/AMB will follow the same format with the addition of the following products and discussion during the scheme of maneuver.**
2. The Six Basic AMB Documents for and AASLT:
 - a. The air movement table (AMT).
 - b. The tadpole diagram.
 - c. The communications card.
 - d. The PZ diagram (one for each PZ).
 - e. Route cards for every ingress and egress route on the AASLT
 - f. The LZ diagram (one for each primary and alternate LZ).
3. **The scheme of maneuver will address the Staging and loading plans: (PZ diagrams, Tadpole diagram)**
 - a. LIGHT/HEAVY
 - b. Name / Number
 - c. Location (grid)
 - d. Load Time
 - e. Take Off Time
 - f. Markings
 - g. Control
 - h. Call Signs / Freqs
 - i. Landing Formation
 - j. Heading
 - k. Hazards / Go Around
 - l. Emergency touchdown point(s)
 - m. Supported Unit Bump Plan
 - n. PZ Arrival Time
 - o. Update Brief / Face to Face (time and location)
4. **The Scheme of maneuver the address the Air Movement Plan (air movement table).**
 - a. Routes / Corridors. (ROUTE CARD)
 - b. Ingress Primary / alternate
 - c. Egress Primary / alternate/ Other
 - d. Enroute Hazards
 - e. Abort Criteria
 - Weather
 - Aircraft available
 - Time
 - Mission Essential combat power
 - Mission criticality

AASLT Considerations for OPORD/ AMB

- f. En route formation / rotor separation / angle / airspeeds
 - g. Deception measures / false insertions
 - h. Air Movement Table.
 - i. Cargo Doors
 - j. External Lighting
 - k. ROZ Locations
5. **The scheme of maneuver will address the Landing Plan (LZ Diagrams)**
 - a. PRI ALT PRI ALT
 - b. Name / number
 - c. Location (grid)
 - d. Landing Times per AMT
 - e. Markings
 - f. Control
 - g. Call sign / Freq
 - h. LDG formation / direction
 - i. LZ abort criteria. Based on GTC guidance
 - j. Go arounds. Flight/single ship
 - k. Departure plan and air movement to the TAA/FARP etc.
 - l. Laager Plan
 - Name / Location
 - Time/REDCON status
 - Security Plan
 - Scatter Plan
 - Call Forward Plan
 - Extraction Plan
 - Detainee Transport Plan
 6. **The scheme of maneuver will address the ground tactical plan and provide an overall operations sketch describing the operation. This enables situational understanding and increases mission success while reducing the risk of fratricide.**

**The execution checklist, permits brief, informative radio transmissions on crowded nets. A draft checklist will be available at the TF rehearsal, with the final version distributed before execution.

**If the mission involves a FARP or laager area/site, sketches of each should be included as a document of the AMB and should be in the knee board packet.

**The AATF staff should include fire support coordination measures and a GTP overlay in the AMB packet.

REHEARSALS

1. Mission Rehearsals: Rehearsals enable crews and units to visualize in time and space the mission and sequence of events, and practice expected actions to improve performance during execution. The rehearsal also provides an opportunity to fine tune synchronization and rehearse mission contingencies.
2. Units should conduct rehearsals at echelon focusing on different actions or contingencies.
3. Recommended crew drill rehearsal focused on improving individual aircrew actions:
 - A. React to Direct Fire
 - B. React to IDF at PZ/ LZ, FARP
 - C. IIMC
 - D. Downed Aircraft Evasion
 - E. Cold Load Training/ Rehearsal
4. Recommended Flight rehearsals focused on improving and synchronizing the flights actions:
 - A. IIMC as a Flight
 - B. Go arounds/ ALT LZ
 - C. Fire Control/Distribution
 - D. Downed Aircraft
 - E. React to contact (En route and at OBJ (EW/Direct Fire))
 - F. Lost Commo
 - G. Bump Plan
5. Recommended Unit rehearsals focused on improving and synchronizing the actions:
 - A. Back brief
 - B. Combined Arms Rehearsal
 - C. Fires Rehearsal
 - D. Sustainment Rehearsal
 - E. PZ rehearsal
 - F. External loads (review emergency procedures, hook-up procedures, frustrated load actions and bump plan)

REHEARSALS (Cont.)

6. There are varying techniques for rehearsals including Radio/Network, Map, Terrain Model, Reduced force, Full Dress and various methods including the Box, Belt, or Avenue in Depth. Leaders must consider the time available, complexity of the mission and operational security when selecting a type, technique, and method. At a minimum consider using the Box method focused on the decisive point, OBJ, or critical event. Units should leverage technology available (TTVS, Google Earth, other digital visualization means) to maneuver from RP inbound to the OBJ and actions on. Additionally, terrain model must be of sufficient size to accommodate a walk through especially of the OBJ area. All crews will come to the rehearsal fully briefed and prepared to talk through their duties.
 7. When speaking at rehearsals; Leaders/representatives should address:
 - A. Call Sign
 - B. Composition/Slant
 - C. Describe location, task, and purpose
 - D. Describe reports To and on what Frequency
 - E. Prepared to answer, or respond to an enemy reaction
- Example: "Pegasus 16, 3xAH64s; Maneuvers from PL Blue to OP 34 oriented on NAI's 34 and 35 Reporting on FH301 "Bulldog XRAY, Pegasus 16 is set at OP34, Negative contact NAIs 34 and 35"."**
- Example: "STETSON 26, is 4xUH60s and 2 CH47s; Departing FARP SHELL for LZ XRAY and Reporting on FH301 "Bulldog XRAY, STETSON 26 is New York"**
8. A PZ Rehearsal may be conducted in the actual PZ or as part of the Combined Arms Rehearsal Sustainment, or TF Rehearsal. If not in the actual PZ, the PZ layout on the terrain model must be of sufficient size to accommodate a walk through. The PZ update is normally run by the XO. Attendees:
 - A. Serial commanders and flight leads
 - B. AMC or designated representative
 - C. PZ OICs
 - D. Crisis Action Team (CAT) NCOIC.
 - E. Minimum items to be rehearsed:
 - F. Pax entry/exit (review load/bump procedures and ensure flight crews have current bump plan in their mission packets)

AFTER ACTION REVIEW (AAR)

1. Restate mission objectives with mission, enemy, terrain and weather, troop and support available, time available and civil considerations (METT-TC).
2. Conduct review for each mission segment:
 - a. Restate planned actions/interactions for the segment.
 - b. What actually happened?
 - (1) Each crewmember states in own words.
 - (2) Discuss impacts of crew coordination requirements, aircraft/equipment operation, tactics, commander's intent, and soforth.
 - c. What was right or wrong about what happened?
 - (1) Each crewmember states in own words.
 - (2) Explore causative factors for both favorable and unfavorable events.
 - (3) Discuss crew coordination strengths and weaknesses in dealing with each event.
 - d. What must be done differently the next time?
 - (1) Each crewmember states in own words.
 - (2) Identify improvements required in the areas of team relations, mission planning, workload distribution and prioritization, information exchange, and cross-monitoring of performance.
 - e. What are the lessons learned?
 - (1) Each crewmember states in own words.
 - (2) Are changes necessary to:
 - (a) Crew coordination techniques?
 - (b) Flying techniques?
 - (c) Standing operating procedures?
 - (d) Doctrine, ATM, or TMs?
3. Effect of segment actions and interactions on the overall mission.
 - a. Each crewmember states in own words.
 - b. Lessons learned.
 - (1) Individual level.
 - (2) Crew level.
 - (3) Unit level.
4. Advise unit operations of significant lessons learned.

POST MISSION DEBRIEF COLLECTION PLAN

1. **Purpose:** To establish standard debriefing procedures. Pilot debriefs are the main source of aviation intelligence collection for the S2 section while deployed. Ensuring attention to detail and thoroughness are maintained is of the utmost importance.
2. **Items required:** Pilots will bring to the S2 section the following:
 - A. Removable Multi Media (RMM/PCMCIA)
 - B. Named Areas of Interest Kneeboard (NAIs)
 - C. Notes taken during flight to include grid locations, times, ammunition expenditures, and observations during flight.
 - D. Digital camera with any reconnaissance photos taken during flight.
3. **Procedure:** Post flight all aircrews will report immediately to the S2 section for debriefing. Aircrews will bring all required documents and equipment for the S2 section to begin post mission analysis. Aircrew will go through each NAI with the S2 personnel while cross referencing grids and times written during flight to include previously reported SPOT Reports. Upon completion of post mission debrief the pilot and S2 personnel will review the RMM footage in conjunction with the pilot debriefs. This review will ensure a seamless collection of relevant intelligence data in order to process and push information through the appropriate channels to agencies of concern.
4. The local release authority under any circumstances for CAB gun video engagement footage, training or otherwise, is the CAB Commander unless specified otherwise. Non-kinetic video release authority during combat operations is delegated to the Task Force commander for certain events, such as reconnaissance ISO future combat operations. Further delegation is not permitted.

MISSION PREPARATION AND EXECUTION

COMMUNICATION CHECKS

1. Aircraft Communication (Commo) Checks. Initial Commo checks provide the CDR/AMC/serial commander with an assessment of communications capabilities prior to flight. PCs must report any changes to comms capabilities immediately to the CDR/AMC.
 - A. Perform the communication check as follows (utilizing VHF/ UHF to troubleshoot).
 - B. Before the commo check is initiated individual crews should set all radios to GPS time and check SATCOM, HF, and Digital Comms (i.e. BFT, JVMF, Video Data Link), with the Command Post.
 - C. Lead initiates the commo check using at the briefed time (secure and FH).
 - (a) FM1 (“Lead on FM 1”)
 - (b) UHF (“Lead on Uniform”)
 - (c) VHF (“Lead on Victor”)
 - (d) FM2 (“Lead on FM 2...and is Green on SATCOM, Digital, and BFT”)
 - (e) Subsequent Chalks Respond in order i.e. (“1-2 on FM 1”) etc.
 - D. If the subsequent chalk does not respond within 10 seconds, the next chalk continues the commo check.
 - E. Lead announces commo check complete or directs troubleshooting as required and the AMC reassigns duties based on radio status as required.

EXPERIENCE- Good units routinely conduct rotor stables, post operations maintenance, and assign crew members to aircraft. This instills pride and ownership and allows an understanding of aircraft capabilities/deficiencies.

RADIO	NET	REMARKS
FM1	BN/BDE	CAN or BN CMD, supported unit, LZ/PZ, etc.
UHF	CO/TM	BU internal or ABN (UHF common with AH, CH, UH, and CAS
VHF	ATC / FLT FOLLOW	ATC/ CTAF
FM2	CO/TM	Primary company / team internal / IDM traffic
HF	BN/BDE CMD	Remain BN CMD NET. Can be used for CAN on SC.
BFT	BN/BDE CMD	Used for text messaging with BN TOC

AIRCRAFT LIGHTING

1. Aircraft lighting will vary by time, location, and aircraft. Lighting configurations will be briefed during the ACB and determined by regulations, mission requirements, environmental, tactical, and risk mitigation considerations.
2. When maintenance support is required, place position lights to "flash bright." AH will place anti-collision lights to opposite position (i.e., at night use white, during the day use red).

EXPERIENCE – Use of lights can be beneficial in certain scenarios, e.g. lost visual contact procedures, in-flight link up, passage of lines.

LINE UP, TAXI, AND TAKE OFF

1. If Taxi and line-up is possible:
 - A. Lead set in a position that allows separation for minimum power take offs, and at LEAD's discretion, orient as necessary to observe the flight.
 - B. All other aircraft will orient in the take off direction in the briefed formation.
 - C. In **REVERSE** chalk order report when **REDCON 1**.
 - D. When **LEAD** reports "**REDCON 1**", the flight is ready for take off.
 - E. Lead will take off on time, unless dictated otherwise (AMC/ATC, etc.).
 - F. Lead will provide a minimum 5 seconds warning prior to departure.
 - G. Any Aircraft not able to make take off time will advise lead (by exception).
 - H. All A/C must maintain visual contact with the A/C ahead of them in the flight.
 - I. Lead will take off and smoothly accelerate to 60 KIAS, climbing < 500fpm, and use ½ standard rate turns unless briefed otherwise.
 - J. When the flight is formed, Trail will call "**SADDLE, # of aircraft in flight and FENCE OUT**" as a reminder to the formation.
 - K. Once a flight, Lead will transition the flight to mission profile as briefed.
2. When lineup is not possible aircraft can execute two forms of take off, simultaneous take off from different locations or a Take-Off-When-Ready-In-Chalk-Order (TOWRICO). Both forms of takeoff require an in-flight link-up.
3. For simultaneous departures from different locations aircraft report **REDCON 1** in **REVERSE** chalk order.
 - A. After **LEAD** reports the flight is **REDCON 1**, Lead will take off on time, unless dictated otherwise (AMC/ATC, etc.).
 - B. Lead will provide a minimum 5 seconds warning prior to departure.
 - C. **LEAD** will depart and Call "**1-1 is CLEAR**" when the aircraft is up and out of its position. Lead will depart to the SP at **60 KIAS** or as briefed.
 - D. Subsequent aircraft will depart with a **5-second** separation or as environmental conditions permit. Each aircraft will call clear ie. "**1-2 is CLEAR**". All aircraft should maintain visual contact with the aircraft ahead of them if possible and will follow the briefed route accelerating to join the flight. By exception, aircraft not able to make take off time will advise lead.
 - E. As aircraft close within 10 rotor disks, adjust closure rate to <10 KIAS above the briefed airspeed. Do not fixate on the preceding chalk. Close on a parallel course, so that if the rate of closure is misjudged, the aircraft will overshoot to the side avoiding a collision.

LINE UP, TAXI, AND TAKE OFF

- F. At ten rotor disks separation announce “**CHALK # CLOSING.**” The preceding aircraft acknowledges the **CLOSING** call by responding with “**ROGER, CHALK # is CLOSING**” and then display briefed formation lighting. When trail aircraft has closed with the formation it will announce “**SADDLE with # in flight and FENCE OUT.**” Lead will acknowledge the “**SADDLE**” call and accelerate to the briefed en route airspeed.
4. **TOWRICO** departures are typically utilized after insertion of troops in a high threat environment. The purpose is the expeditious departure of aircraft /personnel from LZ’s minimizing exposure of aircraft to the enemy.
- A. To execute a TOWRICO departure, the aircraft, in chalk order will take-off when ready and announce “**CHALK # is CLEAR**” after reaching an altitude and/or position to observe other departing aircraft. After the previous CHALK reports clear, subsequent chalks will depart similarly in chalk order.
5. “**LAME DUCK**” procedures: During a **TOWRICO** departure, if an aircraft experiences any delays it can put all subsequent aircraft at risk. Any aircraft experiencing significant delays (1 minute or as briefed) will announce chalk position and “**LAME DUCK.**”
- A. The LAME DUCK aircraft now becomes the trail aircraft.
- B. All aircraft will join the flight following the procedures previously discussed: Close on a parallel course until within 10 rotor disks, adjust closure rate to <10 KIAS above the briefed airspeed. Announce “**CHALK # CLOSING**” when at 10 rotor disks. Preceding aircraft acknowledges the **CLOSING** call by responding with “**ROGER, CHALK # CLOSING**” and then display briefed formation lighting. When trail aircraft has closed with the formation it will announce “**SADDLE with # in flight and FENCE OUT.**” Lead will acknowledge the “**SADDLE**” call and accelerates as briefed.
- C. When LAME DUCK procedures are executed, the AMC will decide if the LAME DUCK aircraft assumes TRAIL duties or if the flight is reconfigured.
7. **Level off Checks.** After Departure or Arrival the Trail aircraft will announce “**Fence out/ In**” (also referred to as Combat Checks) and all crews will ensure the aircraft is configured for the mission as briefed.
- A. Flight crews will conduct individual WAILRM Fence-out posture as follows:
- W – Weapons armed / safe as required
 - A – ASE set as desired
 - I – IFF / Transponder mode on as briefed
 - L – Lighting as briefed
 - R – Recorder on
 - M – MPD / MFD / EDM configured

FORMATIONS

1. **Formations.** Formation types will be IAW 3-04.
- A. All aircraft Rotor disk separation is based on METT-TC considerations. Definitions for briefing purposes: Tight = 1-2 disk separation, Close = 3-5 separation, Loose = 6-10, and Extended which is greater than 10 rotor disk.

Standard Rotor Disk Separation

Conditions	En route	RP Inbound	Landings	Outbound SP
Day	3 Disks	2 Disks	1 Disks	2 Disks
Night / NVG	3 Disks	3 Disks	2 Disks	3 Disks

NOTE: Consider actions on Enemy (direct fire and radar) contact, evasive maneuvers, and terrain when selecting rotor disk separation.

- B. Rotor disk separation is based on the aircraft type in the formation with the largest rotor diameter.
- C. Escort aircraft (AH) must remain close enough to the escorted aircraft to engage threats within the maximum effective range of the weapon system used.
- D. For AH consider 300-500 meters separation while maneuvering in open terrain (100-300 meters in dense terrain) to maintain FOV optimized for the small arms threat area and to maximum effective range of the weapon system.
2. **Hazard/Traffic Avoidance:** Every effort should be made to use Map underlays in the cockpit that have the hazards plotted on them. All aircraft in a flight have the responsibility to announce obstacles to the flight if deemed a hazard. If Aircraft Traffic is a hazard, the crewmember first seeing another aircraft that may pose a mid-air threat will call it out. If the Pilot on the controls cannot find the traffic and it becomes a real threat, the other crewmember should take the controls for avoidance and announce, “I have the controls, avoiding bird two o’clock, our level.” If the traffic alert comes from another aircraft in the flight. That aircraft should announce “Break Left / Right” or Climb/ Descend” to avoid the traffic. Consider identifying obstacles that are not along the route of flight but may impact evasive maneuvers. It is not necessary for the entire flight to acknowledge every obstacle, only if deemed a HAZARD and asked to acknowledge.

Ground-based wires or towers hazard classifications:

Alpha: >100’ **Bravo:** 50’-100’ **Charlie:** <50’

Example: “Lead this is trail, call contact on Alpha Wires 500 meters 12 o’clock”.

Example: “1-1 this is 1-2, there is a Bravo antenna on the NE corner of the LZ”.

“1-2 this is 1-1, I see the antenna, sliding right.”

FORMATION CHANGES

1. Formation Changes announced by LEAD or directed by the AMC.
 - A. LEAD announces "At my command execute _____(formation), acknowledge."
 - B. All aircraft acknowledge in CHALK order.
 - C. LEAD announces "Execute (Formation)."
 - D. Flight moves to new formation IAW ACB or as directed by FlightLead/AMC.
 - E. Trail announces "SADDLE" once flight is in the new formation.
 2. A lead change will be initiated by the lead aircraft announcing "**LEAD CHANGE Right or Left**" on the internal frequency indicating request for lead change and which side of the formation Lead intends to exit. All chalks will acknowledge in chalk order.
 - A. Aircraft departing the flight makes a heading change of 30-90 degrees and departs the formation. He maneuvers the aircraft to a minimum of 8 rotor disks to the announced side (clear side).
 - B. The subsequent chalk will advise when the former lead has attained the proper separation. At that time, the former lead will adjust his flight path to parallel the formation and reduce airspeed by 10 KIAS. As each aircraft in formation passes, they announce Chalk number and "CLEAR" (e.g. "Chalk 3 CLEAR").
 - C. **In most cases requiring a lead change, the former lead will assume trail position within the flight.** If it is determined the former lead aircraft requires constant observation (due to a malfunction, etc.) the AMC will direct position within the flight. The Subsequent A/C will increase to a minimum of 10 rotor disks of separation and reduce 10 KIAS. Subsequent aircraft will Call the former lead "Clear to rejoin" the formation in the position in front of subsequent aircraft allowing the former lead to rejoin the flight.
 - D. Once complete, the trail aircraft will announce "**SADDLE # of A/C in flight**"
- NOTE: Aircraft assume the duties associated with the new chalk position.**
- NOTE: Tactical lead change procedure will be IAW the appropriate ATM and based on METT-TC. However, it is recommended that when able, all formation changes, other than a necessary lead change, be made on the ground.**
3. Airspeed Changes as Follows:
 - A. Lead calls "Accelerating to _____kts" or "Slowing to _____kts, acknowledge."
 - B. Flight acknowledges in dash order.
 - C. Lead executes new speed upon receipt of last aircrafts acknowledgement.

INFLIGHT LINK-UP

1. The purpose of an in-flight link up is to assist in the establishment of a specific flight formation. An in-flight link up can be utilized in an emergency situation and also as a function of mission planning, e.g. following an "infil" that required crews to Take Off When Ready in Chalk Order, also known as TOWRICO.
- NOTE: During an in-flight link up it is important that crews utilize all digital equipment / tools IOT gain and maintain situational awareness of the location of other aircraft (i.e. TSD, FCR, PP request, BFT, TACAN, etc).**
- A. The AMC will establish a common link-up point. Preferably an ACP on the route.
 - B. AMC will establish an arrival sequence at the link-up point.
 - C. AMC will determine the base altitude, airspeed, and lighting for the first aircraft to reach the link-up point. It is preferred the aircraft continue on the route at airspeed that allows the other aircraft to join the flight.
 - D. If it is determined aircraft must hold at an ACP, they will hold on the far side of the ACP (consider threat). Subsequent aircraft will not proceed past the ACP until they are able to safely join the flight. The threat will determine the altitude to arrive at the link-up point (ACP) consider an altitude separation of >200' above the preceding aircraft's altitude...but again the threat may prevent this from being a viable means to link-up.
 - E. As A/C approaches the formation, they will announce their arrival and Chalk #.
 - F. Once established visual contact, aircraft will descend to the briefed base altitude for the holding pattern.
 - G. When the trail aircraft has closed with the formation, it will announce, "SADDLE." Lead will acknowledge the "SADDLE" and accelerate to normal en route airspeed.
 - H. Aircraft will depart the holding pattern in Chalk order per the AMC's guidance.

LZ / PZ ARRIVAL PROCEDURES

1. Flight Lead will make minimal adjustments to airspeed RP inbound. Flight Lead will not excessively accelerate or decelerate just to meet the time line (TOT). Remember RP to the LZ is when the aircraft are most vulnerable.
2. Door guns will be employed in accordance with the briefed weapons status and rules of engagement. Focus on specific NAls.
3. Its important to limit communications especially from RP inbound to unimproved or dusty LZs, allowing crews to focus on the landing.
4. No / limited comms unless executing a contingency i.e. "Go Around" "Taking Fire" etc.
5. Go-around Procedures: The AMC will plan and brief the go around procedures in detail considering the threat, formation type, obstacles, hazards, routes, minimum force required on the objective, and time between serials.
 - A. A flight go-around will occur when Flight Lead or AMC determines that the formation approach must be aborted, and announces "**Flight go-around**" on flight internal. All aircraft will follow lead.
 - B. An individual Aircraft go-around can occur if an individual aircrew determines it is unsafe to continue the approach. The Individual aircrew will announce, "**Chalk # go-around and direction**" on the flight internal. Subsequent aircraft in the flight may follow the go-around aircraft or land IAW the procedures as briefed in the OPORD. The Aircraft executing the "go-around" will land behind the last aircraft in the LZ and assume that chalk position or land in the assigned chalk position IAW the procedures briefed.

STANDARD WEAPON CONTROL MEASURES

1. Air Mission Commander is responsible for weapons release and weapon system status, and can delegate authority to each Pilot-In-Command (PC) in accordance with the established rules of engagement as well as directed engagement and bypass criteria. None of these supersede the right to self defense.

Weapons Control Status	Engagement Criteria
Weapons Hold	Do not fire except in self-defense.
Weapons Tight	PC Fires only at targets positively identified as hostile in accordance with established rules of engagement as well as directed engagement and bypass criteria.
Weapons Free	PC may engage any target not positively identified as friendly in accordance with established rules of engagement as well as directed engagement and bypass criteria.

2. Standard Aircraft Weapons Status:

Weapons Status	Definition
Armed	Weapon systems Armed or Weapon Action Switch activated. The 240H weapon is manned, ammunition is in the feed tray, cover is closed with the bolt locked fully to the rear and weapon safety selector is on FIRE when firing and on SAFE when not firing.
Loaded	Weapon Action Switch deactivated/ Weapon systems loaded and weapons on Safe. The M240H weapon is manned, ammunition is in the feed tray, cover is closed with the bolt forward, and weapon selector is on FIRE.
Stowed	The M240H is stowed, ammunition in the feed tray, cover is closed with bolt forward, and weapon selector is on FIRE.
Clear	Weapon systems downloaded and Safe. The M240H is stowed, chamber is visually cleared of rounds, bolt is locked to the rear, weapon selector is on SAFE, and there are no rounds in the feed tray.

MISSION CONTINGENCIES

ACTIONS ON CONTACT

1. Actions on Contact. As briefed and/or per appropriate ATM including the following minimum considerations as detailed below.
 - A. **CONDUCT EVASIVE MANEUVERS AS REQUIRED.** Flights will conduct evasive Maneuvers based of the type of enemy contact (Direct fire, EW/Radar, indirect fire contact, etc). Mission planning, briefings, and rehearsals will address break contact actions and consider the size of formations, mission profile, concealment available, type of threat systems.
 - B. **IMMEDIATE SUPPRESSION IF ABLE.** Depending on the threat location, range, ROE, weapons status and mission; Flights should immediately suppress the threat enabling the formation to break contact. In a multi-ship flight it is important to announce actions to the flight, so all aircrews don't get target fixated potentially causing a mid-air collision, fratricide, or unnecessarily expend ammunition.
 - C. **DEPLOY TO COVER OR MANEUVER OUT OF CONTACT.** Flights should maneuver in a manner that prevents the threat from maintaining contact and deploy to an area that provides cover or concealment leveraging ASE as applicable.
 - D. **DEVELOP THE SITUATION AND DECIDE ON A COURSE OF ACTION.** Considering the threat, ROE, By-Pass, engagement, and displacement criteria, the AMC should select a COA and execute. If available the AMC should leverage Indirect fires to enable maneuver and execute the COA.
 - E. **REPORT RAPIDLY AND ACCURATELY.** As time permits the AMC should report the contact and the COA. Additionally the AMC should consider the impacts to the mission timeline, SEAD, TOT etc and report/ request adjustments.
2. Common Terminology will include the following:
 - A. **OBSERVING FIRE.** Enemy ground fire observed, but not an immediate threat to formation. "*OBSERVING FIRE 11 o'clock.*"
 - B. **TAKING FIRE.** Enemy ground fire observed, and is an immediate threat to formation. "*TAKING FIRE 2 o'clock.*"
 - C. **SUPPRESSING.** Immediate suppressive fire to protect the aircraft and crew. Used in conjunction with **TAKING FIRE.** "*TAKING FIRE 10 o'clock, SUPPRESSING.*"
 - D. **ENGAGING.** Effective fire with the intent of killing the enemy. Primarily used by ATTACK Aircraft. "*Contact, ENGAGING.*"
 - E. **BREAK.** Immediate action command to perform a maneuver to deviate from the present ground track and/or altitude and will be followed by "*LEFT*" or "*RIGHT.*" "*BREAK LEFT/ RIGHT*"

Example "TAKING FIRE 2 O'CLOCK, SUPPRESSING, AND BREAKING LEFT." Aircrews should leverage/employ ASE equipment as appropriate.

LOST COMMO

1. Lost Communication Procedures

- A. A thorough PACE (Primary, Alternate, Contingency, and Emergency) and recovery plan will be briefed for all multi-ship flights. Aircraft experiencing lost communications will follow the appropriate procedure based on chalk position in formation. However, if lost communication is verified they should execute the following procedures:

NOTE: For mixed MDS missions, lost commo lighting procedures must be discussed in detail at the aircrew brief prior to mission execution.

- B. Aircraft experiencing lost communication will apply the appropriate visual signal.

LOST COMMUNICATIONS VISUAL SIGNALS			
	AH64	CH47	UH60
DAY	RED STROBE	FLASH VISUAL POSITION	
NIGHT	WHITE STROBE	FLASH VISUAL/ IR LANDING LIGHT OR WHITE FLASHLIGHT	

- C. Adjacent or trail aircraft then maneuvers to be clearly seen by the preceding Chalk while maintaining 3-disk (5-disk at night) minimum separation.
- D. Aircraft experiencing lost communication will continue to apply the appropriate visual signal until acknowledged.
- E. Aircraft receiving the visual signal will acknowledge by responding with its own Lost Commo visual signal.
- F. Unless otherwise briefed, aircraft remain in Chalk order. Aircraft experiencing Lost Commo must remain in visual contact with an unaffected aircraft. If necessary, Chalk position changes will be made on the ground at the next secure landing location.
- G. AMC reassigns communications duties as necessary. An assessment whether to continue or abort the mission will be made by the AMC. If the mission is aborted the flight departs on the briefed return route in briefed formation.
- H. If lead has lost commo, conduct a lead change after receiving the lost commo acknowledgement. For flights of 3 or more trail will decelerate and allow spacing for the former lead to join as the second to last aircraft in the flight.

IIMC

1. Inadvertent IMC (IIMC) Procedures:

Note: Effective IIMC procedures are the result of detailed planning and disciplined execution. Multi-ship IIMC is especially hazardous and must be thoroughly covered during ACBs.

2. Consider the following when developing an IIMC recovery procedure.
- A. Minimum safe altitudes.
- B. Consider individual aircraft performance and rate of climb limitations. Account for all types of aircraft in the flight, status of De-Ice equipment, ETFs, etc.
- C. Obstacles when determining base heading (Terrain, Enemy, PAAs, EAs, etc).
- D. Number of aircraft and formation type.
- E. Formation break-up procedure to provide aircraft separation.
- F. Recovery facilities and IFR infrastructure available, NAVAIDs, RADAR, etc.
- G. Communications procedures during the emergency.
- H. **Base Altitude:** This is the lowest altitude that provides obstacle clearance. If able add 1000' (2000' mountainous) to the elevation of the highest terrain or obstacle in AO. Base altitudes may change between checkpoints. If able, use the highest/worst case altitude for simplicity. All altitudes will be adjusted in reference to the base altitude.
- I. **Base Heading:** This is leads heading flown to avoid obstacles or leads heading when encountering IMC with no obstacles.
- J. **Base airspeed:** Use when aircraft separation cannot be made by heading changes. An example would be a flight conducting operations within a confined mountainous environment. This is the target airspeed of the lead aircraft during a climb, not the initial airspeed at IIMC. The lead aircraft may have to accelerate to achieve the base airspeed. All other airspeeds will be adjusted in reference to base airspeed.
- K. **Stack-Up / Stack- Down:** This describes how aircraft are separated from front to rear. In a stack-up lead is at the lowest altitude and trail the highest. In a stack-down lead is at the highest altitude and trail the lowest. Pre-mission planning will dictate which procedure is utilized.
- L. Breakup procedure: Include on the IIMC diagram in the mission packet.
- M. Standard heading adjustment will be base ± 10 degrees times chalk # to the clear side of the formation.
- N. Standard altitude adjustment will be base ± 500 feet for subsequent chalks.

IIMC CONT.

- O. Any aircraft entering IIMC will announce “**Chalk #, is IMC, heading, altitude, airspeed and altimeter setting**” and execute the procedure for their assigned chalk IAW the IIMC diagram.
- P. Any aircraft that can safely remain VMC will do so (**DON'T SCUD RUN** or conduct aggressive maneuvers to prevent from going IIMC).
- Q. Lead IIMC aircraft will make an emergency radio call on guard and squawk emergency.
- R. For operations in restricted terrain that will not allow aircraft to separate with heading changes the standard airspeed adjustment will be base:
 - (1) -10 KIAS for subsequent chawks.
 - (2) Altitude adjustments will be ± 500 from base.
- S. Recovery procedures: Aircraft control and disciplined procedures are the priority in the initial stage of IIMC. Once all IIMC aircraft have arrived at their assigned altitude and/or airspeed (speed separation type recovery) they will check-in with flight lead with call sign, altitude, airspeed and fuel state in chalk order. “1-2, is 6500’, at 100 kts with 1+20 of fuel”
- T. Once the flight has vertical separation, flight lead will prioritize and coordinate aircraft moving to the recovery airfield or LZ. All other aircraft maintain radio discipline and follow ATC and Flight lead/ AMC instructions. If published procedures are available, the flight proceeds IAW those procedures. If published procedures are not available, lead makes the initial request to ATC for recovery.
- U. Single aircraft entering IIMC will perform the immediate action steps IAW the appropriate ATM and follow the basic recovery procedure above.
- V. Flights experiencing poor weather and/or visibility shall slow down to give the flight more reaction time. Crews must not compromise safe rotor disk separation in times of low visibility. If properly equipped, crews should give consideration to INTENTIONAL IMC if proceeding visually poses a greater risk to safety

LOST VISUAL CONTACT

1. In the event aircrews lose visual contact with each other they are to perform the following steps in order to regain contact:
 - A. Utilize all digital equipment / tools IOT gain and maintain situational awareness of the location of other aircraft (i.e. TSD, FCR, PPrequest, BFT, TACAN, etc).
 - B. Verbally announce loss of visual contact on the internal frequency, e.g. “**Flight, 1-3 lost visual contact with 1-2**”.
 - C. Aircraft with which visual contact has been lost will announce heading, indicated airspeed, MSL altitude, distance and bearing from a common reference point (such as a planned CP or WP), and display appropriate trail aircraft lighting.
 - D. Aircraft that has lost visual contact will decelerates to 10 KIAS less than the airspeed announced by the preceding aircraft and coordinate altitude deconfliction by climbing 200’ above or descending 200’ below the announced altitude (pending on initial altitude deviance). Ensure consideration of threat environment when choosing Altitude deviation.

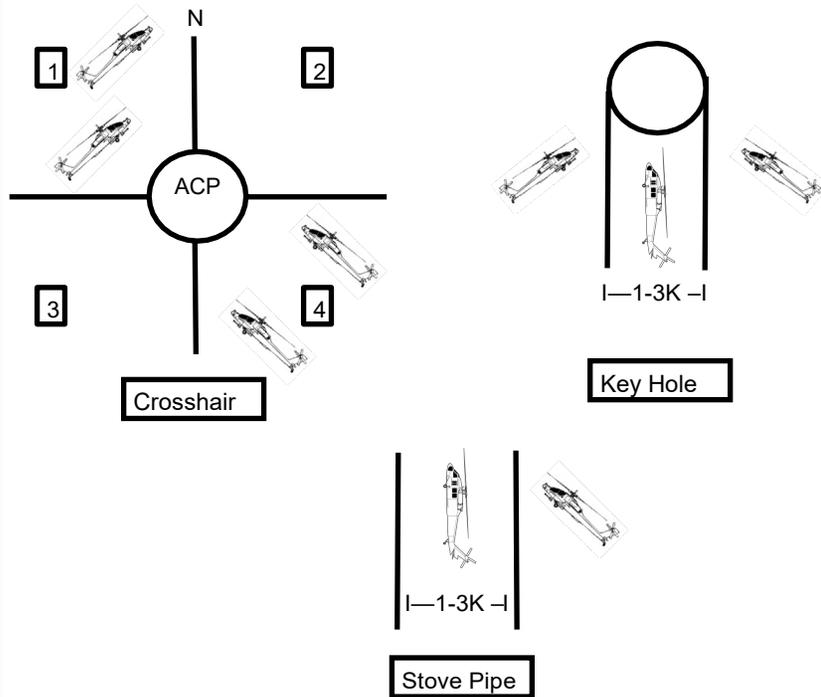
NOTE: The immediate action of airspeed and altitude separation is intended to minimize in flight collision potential while contact is being re-established.

- E. Subsequent aircraft follow the aircraft initiating lost visual contact procedures, maintaining visual contact with aircraft to their front and assist with re-establishing formation visual contact.
- F. Once visual contact is regained, accelerate to an airspeed not more than 10 knots greater than the airspeed announced by the preceding aircraft to rejoin the formation and announce “closing.”
- G. Aircraft with which visual contact has been lost will then return to the correct assigned altitude and display appropriate lighting.
- H. When join-up is complete, trail aircraft announces “**SADDLE**”.
- I. If unable to regain visual contact, continue the mission as two flights while maintaining radio contact, and link-up on the ground at the next pickup or landing zone.

NOTE: The majority of lost visual contact situations occur when the lead aircraft is lost in lights or clutter. The AMC may elect to adjust/increase the en route altitude to minimize these effects. If the flight elects to “stack down” to minimize the ground light or clutter effects, the PC/AMC must announce, brief, and ensure that no aircraft in the formation is forced below the minimum safe en route altitude for hazard, obstacle, and terrain avoidance.

AIRSPACE DECONFLICTION

1. Airspace Deconflation: When flights or individual aircraft are operating around an objective, the AMC will plan or hastily establish deconflation measures to safely facilitate and control multiple aircraft moving in a relatively small area. Vertical and lateral deconflation is the preferred, however AMCs will consider METT-TC and establish the appropriate control measures for the mission. AMC's can select the CROSSHAIR, KEYHOLE, STOVEPIPE, or other control measures to deconflate the airspace.
2. When the threat allows, vertical deconflation between aircraft or flights converging on an objective/ operating in proximity to each other will be 500'.
3. Lateral deconflation is best accomplished using terrain features or graphic control measures. When flights or individual aircraft are operating around an objective and establish graphical control measures do not provide adequate separation, the CROSSHAIR sector numbering system is preferred.
4. CROSSHAIR: The CROSSHAIR method is a cross formed by two intersecting lines that pass through the designated ACP, a known point, or a grid location. The lines of the cross are oriented magnetic east-west and magnetic north-south and unless stated differently and the lines extend for 2 km from the center. This cross breaks the surrounding airspace into four numbered sectors. Sector 1 is northwest, 2 northeast, 3 southwest and 4 southeast of the ACP, known point, or grid. AH-64 aircrew may "drop" a priority fire zone (PFZ) utilizing the target reference point (TRP) method on their tactical situation display (TSD) for real time display.



DOWNED AIRCREW ACTIONS

1. Select a suitable extraction site based on the tactical situation. Establish initial contact on UHF guard on the CSEL radio IAW current SPINS. Subsequently, switch to preset "A" frequency (SAR-A).
2. Be prepared to transmit your location in reference to the "SARDOT" IAW current SPINS.
3. Be prepared to give threat warnings to inbound rescue aircraft.
4. Be prepared to provide Forward Air Control for attack helicopters or TACAIR.
5. Be prepared to authenticate IAW current SPINS and / or mask your location.
6. Be prepared to Escape and Evade the crash site and find a suitable hide location if rescue assets are not immediately available.
7. Following an emergency landing, the crew must immediately determine the security of the area. If secure and the aircraft can be safely recovered, remain with the aircraft, establish communication on aircraft radios or CSEL radio, and coordinate aircraft / personnel recovery efforts.

Note: Aircraft and survival kits provide necessary shelter. If the APU of the aircraft is still operational, limited weapon security is available with ground override (AH) selected on. If the area is hostile and capture is possible, the following immediate evasion action steps and responsibilities must be executed:

Pilot / Co-Pilot

1. Zeroize ASE / Radios if equipped
2. Secure Sensitive Items

As Briefed:

1. Coordinate security and aircraft sterilization of ASE equipment.
2. Utilize CSEL radio data and voice to request immediate extraction.

Note: If immediate extraction is not possible, initiate CSEL IMM, establish essential sensitive item accountability (NVGs, Weapons, Evasion Bag(s), and CSEL radios), and immediately depart the area in order to execute the briefed EPA.

BUDDY EXTRACTION PROCEDURES

1. As a last-resort, immediate extraction platform when other means are unavailable. The intent is to extract survivors from the hostile area quickly, en route to the closest secure area whether it be a TAA, concentration of a friendly ground force, or LZ to cross-load into a UH / CH aircraft (if this COA is necessary, coordinate as quickly as possible). Crew awareness of weather conditions and airspeed are essential to prevent injury to the survivors.
2. **UH/CH Procedures:** Recovered Individuals will become passengers on the lift aircraft and assume a seats in posture if seats are available.
3. **AH64 Procedures:** When possible, non-crewmembers should be attached on the EFAB in front of either the #1 or #2 NGB. Placement in a crew station should only occur when necessary due to an unconscious survivor. Maximum airspeed to be utilized during extraction is 60 KTAS. AWT personnel: (CPG on #1 side, PLT on #2 side) Crewmembers will climb on the EFAB and attach by looping the Safety Restraint Tether (SRT) through a step / hand hold (do not use a "no step" handle) and clip the SRT back onto itself or the air warrior vest. Within the limits of the SRT, the crewmember will sit and slide as far aft on the EFAB or wing as possible. The most secure position is on the wing, back against the L / R 200 panel and shoulder between the NGB fairing and transmission. Foot bracing against the wing pylon "If Installed" will provide additional stability.
4. Non-aircrew personnel: CPG will exit and assist attaching survivors to the aircraft. This includes securing or leaving any loose items that could be entangled on any part of the aircraft (NGB, rotors, or landing gear) during flight. Ensure that passengers are aware of the turning rotors and will not stand on the wing or EFAB until the aircraft has been completely shut down or until assisted by the CPG upon landing. Time permitting, remove the CPG and / or PLT's Air Warrior vest (s) for survivor use. Attachment should be with a D-ring harness, crewmember vest, or, as a last resort, a Riggers Belt looped under the survivor's arms onto the handles as mentioned above. Only unconscious personnel should be placed in the front seat.
5. Once secured, survivors should give a thumbs up (day) or vertical light movement (night) to signal he / she is ready for takeoff. When able, the CPG will fly the aircraft allowing the PLT to monitor the survivors.

SCATTER PLAN

1. An emergency displacement or break contact plan should be part of the assembly area security plan and should be established prior to occupation of a new assembly area.
EXPERIENCE – Units should be ready displace relatively quickly when threats of Enemy UAS, Long Range Artillery fires, or Special Purpose Forces dictate a survivability move.
2. Displacement plans will consist of the initial departure direction, routes, altitudes, comms plan, and sequence for leaving the assembly area, as well as the location of holding areas, and alternate assembly areas. Areas to which the unit will displace must be coordinated through higher headquarters.
3. Task Force should refine and update the displacement plan NLT 12 hours after TAA occupation.
4. Once established in the assembly area, the unit should conduct a rehearsal of the displacement plan. Each CP should maintain a sketch of the emergency displacement plan.
5. Execution of Displacement Plan. **"SCATTER", "SCATTER, SCATTER".**
6. Crew should monitor the TF CMD NET for specific commands and enemy updates from the Task Force.
7. Aircraft should depart in teams/ flights of at least two when possible. For survivability, it may be necessary for aircraft to depart single-ship and flight crews may have to remain in their individual fighting positions until the immediate threat has passed before executing the displacement.
8. When ready to depart, transmit call sign and direction of takeoff based on the displacement plan.
9. Upon departing the assembly area, move to the designated displacement site, conduct a reconnaissance, and establish security and report established.
10. Arrival Procedures. Upon arrival to the displacement site the aircraft will be parked as tactically as possible. Maximum consideration should be given to providing effective fields of fire for security. The senior ranking PC or AMC present will determine appropriate REDCON level. The priority of considerations for establishing REDCON level and security are outlined below.
 - A. Enemy situation and likely avenues of approach.
 - B. Concealment.
 - C. Suitable ingress and egress routes.
 - D. Commo Plan and Termination of the Displacement Plan.
11. The TF will determine end of mission criteria
12. Aircraft that are airborne at the termination of the scatter plan will continue to their designated loiter ACP and hold until cleared back into the TAA either individually or as a flight via the TF CMD NET.

LIFT SPECIFIC MISSION CARDS

UH-60 CREW BRIEF

1. **Mission overview.**
2. **Flight plan, NOTAMs, MRAW.**
3. Weather (departure, en route, destination, and void time).
4. Flight route (Altitudes, Airspeeds, Formations, Terrain/Hazards, Weapon status per leg).
5. Airspace surveillance procedures.
6. Required Items: (Personal, Professional, Survival Gear)
7. **Crew actions, duties, and responsibilities.**
 - A. Transfer of flight controls.
 - B. Two challenge rule.
 - C. Aircrew coordination principles with supporting qualities:**
 - (P1) Communicate effectively and timely
 - (Q1) Announce and acknowledge decisions and actions.
 - (Q2) Ensure that statements and directives are clear and timely.
 - (Q3) Be explicit.
 - (P2) Sustain a climate of ready and prompt assistance
 - (P3) Effectively manage, coordinate, and prioritize planned actions, unexpected events, and workload distribution.
 - (Q4) Direct assistance.
 - (Q5) Prioritize actions and equitably distribute workload.
 - (P4) Provide situational aircraft control, obstacle avoidance, & mission advisories.
 - (Q6) Maintain situational awareness.
 - (Q7) Manage mission changes and updates.
 - (Q8) Offer Assistance
8. **Pilot on the Controls:**
 - A. Fly the aircraft with primary focus outside when VMC, inside when IMC.
 - B. Avoid traffic obstacles and announce deviations.
 - C. Monitor/ Cross check navigation, communications and A/C systems as appropriate.
 - D. Monitor/transmit on radios as directed by the PC.
9. **Pilot not on the controls**
 - A. Assist in traffic and obstacle avoidance.
 - B. Manage radio network presets and set transponder.
 - C. Navigate.
 - D. Copy clearances, automatic terminal information service (ATIS), and other Info
 - E. Cross check systems and/or instruments and monitor aircraft performance.

UH-60 CREW BRIEF

- F. Read and complete checklist items as required.
- G. Set/adjust pages/switches and systems as required.
- H. Complete (Before takeoff/ landing checks and verify brake setting)
- I. Identify landing area and be prepared to make landing

10. Crew Chief/ Assigned Crewmembers

- A. Pax brief
- B. Secure pax/ cargo (restraint criteria met)
- C. Announce obstacles and traffic (inside 2-3 sec)
- D. Announce when enter/ exit aircraft
- E. Weapons brief (weapon status, terminology, REVIEW ROE)

11. Emergency Actions

- A. Pilot on the controls fly aircraft (airspeed/ alt/ landing area/ verify PCL movement)
- B. Other pilot Analyze (reset master caution/ announce lights/ announce actions/ radio calls)
- C. Crew Chief (secure and assist pax/verify landing area suitable/ verify PCL movement)

12. Emergency Egress (Check on each other on your way out)

- A. Immediate exit parameters (fire/ fuel/ water/ threat)
- B. Exit locations
- C. Link up points (upwind/ strobe/ whistle/ WHERE)
- D. Emergency engine shutdown (check crew)
- E. Over water (point of reference/ LPU inflation, HEEDs use/ weak swimmers)

13. Emergency Egress in Combat

- A. EPA (evasion plan of action/ Comsec/Weapons/First Aid/Security)
- B. SAR letter, number and word
- C. CAPP's (downed aviator pickup points)
- D. RAMROD
- E. SAR DOT (location)
- F. ISOPREP information

14. NIGHT/ NVG and LASER CONSIDERATIONS

- A. Required aircraft lighting (internal and external)
- B. Light signals/ Spare NVG's/ Lost contact
- C. Scanning sectors
- D. NVG Failure (announce seat position and status, talk terrain flight, low altitude, landing, use of landing light)
- E. Use of Lasers discuss: type, hazards, employment/ marking techniques for threat, hazards, targets and target handovers

15. IMC crew duties.

- A. Inadvertent IMC.
- B. During IFR operations.
 - (1) Instrument Takeoff (ITO)/note takeoff time.
 - (2) Level off check.
 - (3) Calculate and monitor times for holding and approaches.
 - (4) Approach/holding brief.
 - (5) When on approach, P watch for airfield.
 - (6) On breakout and landing environment in sight, notify P*
 - (7) Be prepared to direct the P* for the missed approach procedure
 - (8) Navigation programming.

UH-60 CREW BRIEF

16. EXTERNAL LOAD CONSIDERATIONS

- A. Equipment, cargo hook and load certifications

- Hookup and Enroute procedures

- A. ICS switch off (P* and CE required)
- B. Arming switch – armed <300'/ safe> 300'
- C. Pilot call altitude and torque
- D. Clear concise commo (1 direction / command at a time)
- E. Emergency go left (if terrain allows)
- F. Oscillations (reduce a/s, shallow bank or both)

- Arrival

- A. Pilot (PI) releases load (do not allow clevis to drop on load)
- B. Two challenge rule (manual release)
- C. Prepare for brown out or white out
- D. Monitor drift (M119 critical)

17. FIRE BUCKET

- A. Bucket Inspected? Set capacity for (70/80/90/100%) verify with PPC
- B. Review ext load hook-up procedures
- C. Review AWR and SOP procedures (airspeeds full/ empty and drop altitudes)
- D. Hazards (dip location, fire site, enroute/other aircraft)
- E. Initial Plan of Attack on the Fire
- F. Commo plan
- G. Emergency Procedures
- H. Conduct ACB with other fire bucket crews (radio or prior to flight)

18. FRIES

- A. Review and verify time calls (10MIN-6MIN-30SEC)
- B. Review hand and arm signals
- C. Brief approach alt, speed, heading and decel angle at approach point
- D. Location, size, and description of LZ
- E. Who will deploy/ jettison ropes (FRM #1 roper or CE)
- F. Confirm you have commo with FRM
- G. Review E.P's for (enroute, hung rope, drift, early departure and **NO COMMS** with FRM)

19. HELOCAST

- A. Review timing and hand and arm signals (10-6-3-1 min, 30 and 5 sec calls)
- B. Review frequencies/ callsigns/ locations (safety boat/ medics/diver etc.)
- C. Release command (verbal, smoke, light)
- D. Abort signals (no commo D/NVG ground or aircraft directed)
- E. Cast altitude/ airspeed (10' max/ 10kts max)
- F. Cast heading/ Cast zone makings and hazards (buoys/ chem-lights)/ 1st pass no drop
- G. Aircraft emergencies (caster actions)

20. SPIES

- A. Review timing and hand and arm signals
- B. Who will deploy/ jettison rope (SPIES master on order of PC)
- C. Commo plan to include no commo plan
- D. LZ/PZ location, altitude and obstacles/ release point/ approach speed and heading
- E. EP's (enroute, drift, early departure, tangled rope)

UH-60 CREW BRIEF

21. PARADROP

- A. Review timing and hand and arm signals (6min-4min, 30 and 10 sec calls)
- B. Review commo plan

- Hung Jumper

- A. Remain over DZ, slow airspeed and land ASAP from a hover

- Open Chute in Aircraft

- A. CE secure chute

- Emergency Procedures

- A. Static jump jumpers stay with aircraft
- B. HAHO or HALO jumpers depart if above predetermined altitude or remain with aircraft DISENGAGE AUTOMATIC CHUTE OPENING DEVICE

22. **Special Mission Equipment:** NVGs/ HUD, Monkey Harness, SKL, Sling set, LPU, Rafts, HEEDs Bottle, O2, E/E Bag, SPIES and FRIES, Fire Bucket, Release pendants, Headsets

23. ANALYSIS of the AIRCRAFT

- A. Publications (Current/Required)
- B. Log Book and Laptop checked (Red X, inspection status)
- C. Pre flight status
- D. **IFF** (MODE IV LOADED, CHECK MODE ½ currents #'s)
- E. **COMSEC LOADED** (KY-100, KY-58's, SINCARS, GPS, HAVEQUICK, ARC-220)

24. **Risk mitigation/considerations.**

25. **Questions, comments, and acknowledgment of the briefing.**

26. **Conduct walk around.**

UH-60 CREW BRIEF

AFMS/CEFS Operation

1. CEFS Emergency procedures.
 - a. Single Engine Considerations.
 - b. Tank location effects on emergency egress procedures
 - c. Jettison procedures, limitations, and cartridge malfunction
 - d. Fire in Flight
2. Operating limits, include MIN altitude restrictions
3. Maneuver limits due to configuration and A/C GWT, including airspeed, bank angle, and power management.
4. Fuel transfer operations and asymmetrical loading
5. Weapons employment parameters.

Hot Refuel Procedures

1. Tail Wheel – LOCK.
2. Parking Brake – SET.
3. TACAN – RCV only. **M**
4. JVMF – IDM EMCON ON. **M**
5. Transponder – STBY.
6. CMWS – safe, Safety pin in.
7. Weapons System – Clear & Stow.
8. Helmet visors– DOWN.
9. Passengers at Marshaling Area.
10. Doors & Gunners Windows – CLOSED.
11. Amor Panel—CLOSED.
12. Fire Guard – Posted.
13. Position Lights – (METT-TC)
14. Anti-collision Lights – OFF.
15. Landing and Search Lights – OFF.
16. Monitor Refueling.
17. Upon completion of refueling operations. Verify Refuel and complete steps in reverse.

CH-47 CREW BRIEF

1. Crew introduction/qualifications/currency

2. Required items: reading card file, publications, identification (ID) tags, ALSE, personnel equipment, data cards, and mission equipment

3. Mission overview

- a. Flight route
- b. Time line
- c. Notices to airmen (NOTAMs)
- d. Air Coordination Order (ACO)

4. Weather (departure, en route, destination, and void time)

5. Tactical considerations

- a. Rules of engagement (ROE)
- b. Weapon engagement rules, weapon control status
- c. Spins and evasion plan

6. External load operation

7. Multi-aircraft operations

- a. Formation types
- b. Altitude (s)
- c. Airspeed (s) (RP, Cruise, and SP)
- d. Aircraft lighting
- e. Lead change procedures.
- f. Lost communications procedures.
- g. Loss of visual contact procedures/In-flight link up/Rally points
- h. Actions on contact
- i. IIMC
- j. Downed A/C (Personnel recovery, CSAR)

CH-47 CREW BRIEF

8. Airspace surveillance procedures/visual sectors/third pilot duties

9. Analysis of the aircraft

- a. Logbook and preflight deficiencies
- b. Performance planning
 - (1) Comparison of computed and takeoff fuel
 - (2) Single-engine (SE) capability—max rate of climb IAS, min/max SE IAS, Validation Factor, Go/No-Go TQ and HVR TQ
 - (3) Re-computation of performance planning card (PPC)
- c. Mission deviations required based on aircraft analysis

10. Crew actions, duties, and responsibilities

- a. Transfer of flight controls and two challenge rule
- b. Emergency actions
 - (1) Actions to be performed by pilot on the controls (P*), pilot not on the controls (P), and nonrated crewmember (NCM)
 - (2) Emergency equipment / first aid kits / survival kits / evasion and escape kits
 - (3) Egress procedures and rendezvous point
 - (4) Inadvertent instrument meteorological conditions (IIMC)
 - (5) Night vision goggle (NVG) failure
 - (6) Mission considerations. Current Threat, emergency squawk communication, zeroize equipment, disable aircraft, collect/destroy classified materials, weapons security
- c. Crew Coordination

11. General crew duties

- a. Pilot on the controls (P*)
 - (1) Fly the aircraft — primary focus outside when VMC inside when IMC
 - (2) Avoid traffic and obstacles
 - (3) Crosscheck systems and instruments
 - (4) Monitor/transmit on radios as directed by the pilot in command
- b. Pilot not on the controls (P) (**Mission Manager**)

CH-47 CREW BRIEF

- (1) Perform mission management duties IAW ATM
- (2) Assist in traffic and obstacle avoidance
- (2) Tune radios and set transponder
- (3) Navigate
- (4) Copy clearances, ATIS, and other information
- (5) Crosscheck systems and instruments
- (6) Monitor/transmit on radios as directed by the PC
- (7) Read and complete checklist items as required
- (8) Announce when focused inside or outside the aircraft

c. Flight engineer (FE), Crew Chief (CE), Medic (MO) and other assigned crewmembers

- (1) Complete passenger brief
- (2) Secure passengers and cargo
- (3) Assist in traffic and obstacle clearance
- (4) Perform other duties assigned by the PC

12. Risk assessment considerations

13. Crew-level after action review—time and location

14. Crewmember questions, comments, and acknowledgment of mission briefing

CH-47 NCM BRIEF

1. Crew introduction/qualifications/Currency

2. Required Items

- A. Reading card file, proper serviceable uniform, identification (ID) tags, ALSE gear, flashlight, and mission equipment.

3. Mission Overview

- B. Briefly explain general mission/type of training being conducted. Review flight routes with all NCMs.

4. Constant

- A. The FE is responsible for ensuring all NCM are briefed on their duties.
- B. A Safety Harness WILL be worn and secured to 5k or 10k tie down ring at all times.
- C. Seat Belt WILL be worn at all times (AFCS Off/Terrain Flight/Roll-On Landing) unless it interferes with crew duties.

5. Commo Failure

- A. NCM with Commo Failure will get the Attention of another NCM and signal Commo Failure by “Tapping the top of their flight helmet” and work to restore Comms.
- B. At No Time throughout the flight will Two Clicks on the ICS be used to signal Commo Failure.

6. Aircraft Run Up, Shut Down, and Post Flight Duties

- A. At a minimum, the following duties will be discussed and divided up by the FE amongst crewmembers
 - (1) Avionics Fan
 - (2) Maintenance Panel
 - (3) Cargo Hooks check
 - (4) Pitot/Yaw port Heat
 - (5) Exterior Lighting
 - (6) Flight Control Travel and Hydraulics Check
 - (7) DECU/ECU Check
 - (8) Droops Stops
 - (9) Engine Start/Stop
 - (10) Hot/Cold Refuel
- B. No crewmember will move towards, stand beneath, or sit beneath engines and/or APU (if operating) during ECL transitions or reversionary checks.

CH-47 NCM BRIEF

7. Taxiing and Airspace Surveillance Procedures

- A. ALL NCMs are Responsible for Obstacle Avoidance, maintaining Airspace Surveillance and using proper Crew Coordination.
- B. Clearance calls are made in proper sequence and direction of flight, **Left** then **Right**, **Aft** then **Fwd**. (e.g. "**Nose clear left, Tail clear right**")
- C. Normal airspace surveillance sectors
 - (1) AFT NCM (Ramp) – 6 O'clock to the 10 O'clock
 - (2) FWD NCM (Cabin Door) – 2 O'clock to the 6 O'clock
 - (3) Gunner/Additional NCM – as assigned by the FE

8. PAT Check Procedures

- A. Ramp
- B. Cabin door

9. Cruise Check (Ramp and Cabin Check)

- A. ALL ramp and cabin checks **WILL BE** Conducted with clear visor down and using a white flashlight.
- B. Ramp
 - Check Ramp to FWD of Utility Hatch Door
 - Will check Ramp to AFT of ERFS tank when installed
- C. Cabin Door
 - (1) Check FWD cabin area to AFT of Utility Hatch Door
 - (2) Will check FWD cabin area to AFT of ERFS tank when installed
 - (3) Announce "**Ramp and Cabin Check Complete all Systems Normal**" (Deficiency if applicable) Amount of fuel in ERFS II tank (If Installed)

10. Tactical Flight

- A. Landing area reconnaissance
 - (1) Announce drift, altitude, dust/snow calls are primarily made by the cabin door
- B. Slope operations
- C. Pinnacle/Ridgeline operations
- D. Confined area and roll-on landing
 - (1) Cabin door will announce when crossing final barriers
- E. Terrain flight deceleration
 - (1) Cabin door will clear the rear of the aircraft

CH-47 NCM BRIEF

11. External load operations

- A. Brief all duties as per "external load checklist"

12. Internal Load and Passenger Operations

- A. All NCM
 - (1) Responsible for the proper securing of Cargo
 - (2) Will ensure passengers are seated and seat belts are fastened before takeoff .
- B. Ramp
 - (1) Will conduct passenger count and relay to PC
- C. Cabin Door, Gunner, or Additional NCM
 - (1) Will conduct second passenger count and relay any differences to PC.

13. Emergency Actions and Egress Procedures

- A. Ramp duties
- B. Cabin door duties
- C. Gunner/Additional NCM duties
- D. Exit and Rally Points
- E. Downed Aircraft Procedures

14. Combat Operations

- A. Rules of engagement
- B. Weapons status
- C. Weapons malfunctions
- D. Weapons clearing procedures

15. Aircrew questions, comments, and acknowledgement of the brief.

CH/UH PASSENGER BRIEFING

1. **Crew Introduction**
2. **Personnel**
 - a. Equipment
 - b. Proper Uniform
 - c. ID Tags
 - d. Hearing Protection
 - e. ALSE / Survival - LPU, HEEDS, Rafts
 - f. Weapons- Magazines-OUT: Weapons cleared, pointed down.
Magazines-IN: Safeties ON, weapons pointed down.
3. **Flight Data / Mission**
 - a. Weather
 - b. Mission –Time / event calls
4. **Aircraft Procedures**
 - a. Normal Procedures
 - (1) No smoking on or w/in 50' to include use of heating devices
 - (2) Entry / Exit of the Aircraft
 - (a) Do not approach from the front aircraft. Rotors may drop to a dangerous height. Load from rear @ 90 degree angle CH
 - (b) Hydraulic lines and electrical wires
 - (c) Slippery floors
 - (3) Seating / Seat Belts
 - (4) Chalk CDR / LDR seat position and ICS availability
 - (5) Movement in the Aircraft
 - (6) ICS Failure
 - (7) Ground / Hot Refueling – Marshaling Points
 - (8) Security of Equipment
 - b. Emergency Procedures
 - (1) Actions During Emergency
 - (a) Follow directions of the crew
 - (2) Exits / Rally Points

CH/UH PASSENGER BRIEFING

- (a) Ramp, Cabin door, and windows
 - (b) Clock position – 50 meters
- (3) Emergency Equipment
 - (a) Fire extinguisher
 - (b) First aid kits
 - (c) Escape axe
 - (d) Rafts and LPUs
 - (e) All weather kits
- c. Emergency Landing / Ditching
 - (1) Signal
 - (a) 3 bells – prepared for crash landing **CH**
 - (b) 1 sustained bell – just prior to impact **CH**
 - (2) Crash position
 - (3) Overland - Fire / No fire
 - (4) Over water - Controlled ditching / Uncontrolled ditching

EXTERNAL LOAD CHECKLIST

1. Nonrated crewmember (NCM) – Duties
 - a. NCM calling load will have radios OFF and winch/hoist control grip secured and positioned within reach
 - b. Advise load in sight
 - c. Direct P* over load (no more than two directions at a time)
 - d. Advise when load is hooked
 - e. Advise when hook-up team is clear and direction
 - f. Advise when load is clear to come up
 - g. Advise when sling (s) are tight
 - h. Advise load height during takeoff from the ground to 10 feet in 1-foot increments
 - i. Monitor load in flight
 - J. The NCM will call the load height from 10 feet to the ground and from the ground to 10 feet in 1 foot increments. The NCM will call the load height above highest obstacle (AHO) on takeoff/approach at 100 feet, 75 feet, 50 feet, 25 feet, 20 feet, 15 feet and 10 feet
2. Hook authority
 - a. Normal Scenario – Rests with pilot in command (PC), but the load is typically released by the NCM.
 - b. Emergency Situation – Rests with PC. PC will determine when the load will be jettisoned based on aircraft performance. The NCM at the load must jettison the load if it will endanger the crew or aircraft. Load jettisons will be announced to the aircrew
3. Internal communications system (ICS) failure between rated crewmembers
 - a. RCM and NCM (two challenge)
 - b. Before load is hooked/slack in sling – NCM opens hook with normal release
 - c. After slings tight/load is airborne – NCM with communication will notify crew and call the load down. NCM with communication will have the pilot on the controls release the load normally
 - d. Between pilots – Pilot with communication takes flight controls
4. Aircrew questions, comments, and acknowledgement of the brief

EXTERNAL LOAD CHECKLIST

5. Items to be briefed at the PZ/LZ Prior to hookup.
 - a. Determine takeoff gross weight, single-engine capability, and verify Go/No-Go and validation factor.
 - b. **CH** The P* **will announce** any DAFCS modes to be used and the NCM calling will acknowledge the DAFCS modes to be used during the hookup and drop-off phases
 - b. Pilot not on the controls (P) – Duties
 - (1) **ARM** the cargo hook master switch
 - (2) Turn OFF radio monitor control knob for pilot on the controls (P*) if required
 - (3) **CH** EMCOM – As Required
 - (4) Inform P* before reaching limits
 - (5) Perform hover power check and before takeoff check
 - (6) Cargo hook master switch:
 - (a) OFF/(SAFE) **UH** above 200/(300 **UH**) feet AHO and best single engine (SE) airspeed
 - (b) ARMED below 200/(300 **UH**) feet AHO or best SE airspeed
 - (7) The pilot not on the controls (P) will back-up the NCM calling the load using the radar altimeter
 - c. Aircrew questions, comments, and acknowledgement of the brief

HOIST OPERATIONS CHECKLIST (Internal)

1. Hoist Preflight per -10
2. Extraction Devices Inspected
3. Power On Hoist Checks IAW -10/CL
4. Common Terminology / Acft vs Load / Cable
5. En route Phase: (5 min Out)
 - Hoist Control Panel Switch – OFF
 - Verify Performance Considerations for OGE
 - P* and HO ICS pin switches as required
 - HO/HR repositions in cabin
 - HO Ensures circuit breaker—In
 - HO/HR Conducts 1st set of Buddy Checks
 - P Master Power—ON
 - HO – “All indications, talking on the pendant”
 - HO booms hoist over the HR “Booming hoist out to secure HR/load”
 - HO cables hook to secure HR/load “Cabling out to secure MO/load”
 - HO Secures HR/load to hoist – “Conducting 2nd set of buddy checks”
6. Operation Phase: (1 min Out)
 - HO – “Booming Load out”
 - HO – “Load is positioned outside the cabin door”
 - HO – Advises obstacles clear and helps position A/C over the Hoisting site.
 - HO – confirm with P* he is at a stable hover
 - P* – “Stable Hover, clear to Cable out”
 - HO – “Cabling out” (All calls IAW TSP)
7. Recovery Phase: (1 min out or when HR is ready for extraction)
 - P* – Advises “1 minute out” (If aircraft departed)
 - P* and HO ICS switches as required
 - HO – “BUDDY CHECKS COMPLETE” (CE re-checks self-prior to opening door if door was closed)
 - HO – “Booming hoist out” (if hoist was boomed back in)
8. Departure Phase (when HR/patients are back in cabin)
 - HO – Inform P* “clear to fly away”
 - ICS Comm. pin switches as desired
 - P – “Master power to the hoist off”
 - Hoist search light OFF if used
10. Emergency Procedures: Will be per –10 and applicable Operator’s and Crewmember’s Checklist.

HOIST OPERATIONS CHECKLIST (External)

1. Hoist Preflight per -10
2. Extraction Devices Inspected
3. Power On Hoist Checks IAW -10/CL
4. Common Terminology / Acft vs Load / Cable
5. En route Phase: (5 min Out)
 - Hoist Control Panel Switch – OFF
 - Verify Performance Considerations for OGE
 - P* and HO ICS pin switches as required
 - HO/HR – Move seat to the full back position
 - HO – “Test Arm Switch” to “ARM”
 - HO/HR – “ECS OFF” if equipped with ECS
 - HO/HR – “Maneuvering inside the cabin”
 - HO – Ensure circuit breaker is in
 - HO – Conducts 1st set of BUDDY CHECKS
 - P – Master power to the Hoist — On
6. Operational Phase: (1 min out)
 - HO– Cables out to secure load
 - HO/HR conduct 2nd set of Buddy Checks
 - HO positions load outside cabin door
 - P* advises “Stable hover, clear to cable out”
7. Recovery Phase: (1 min out or when HR is ready for extraction)
 - P* – Advises “1 minute out” (If aircraft departed)
 - P* and HO ICS switches as required
 - HO – “BUDDY CHECKS COMPLETE” (CE re-checks self- prior to opening door if door was closed)
 - P* – “Stable Hover, clear to Cable out”
8. Departure Phase (when HR/patients are back in cabin)
 - HO – Inform P* “clear to fly away”
 - ICS Comm. pin switches as desired
 - P – “Master power to the hoist off”
 - Hoist search light OFF if used
9. Emergency Procedures: Will be per –10 and applicable Operator’s and Crewmember’s Checklist.

LCLA BRIEF

1. Crew introduction
2. Confirm # of loads, passes, and # out each pass
3. Current weather, wind
4. Timing – notification
 - a. **10 minute** – Verbal
 - b. **6 minute** – Verbal, unstrap loads
 - c. **3 minute** – Verbal, position ramp
 - d. **1 minute** – Verbal
 - e. **30 seconds** – Stand by
 - f. **PC** – Execute
5. Racetrack patterns – left or right
6. Drop altitudes – 150' – 300' AGL
7. Drop airspeed – 80 – 110 knots. 90 knots optimal
8. Drop Zone azimuth
9. Drop zone marking
10. Drop heading – correct for winds
11. Drop zone obstacles/description/grid
12. Radio frequencies and call signs
13. Airspace coordination – (NOTAM published)
14. First pass – wind dummy or streamer
15. Location of DZSO and wind meter
16. Abort signal with or w/o comms – day and night
17. Lost comms between DZSO and aircraft
18. Landing zone markings
19. Road guards/military police – as required
20. Emergency procedures

LCLA PREFLIGHT CHECKLIST

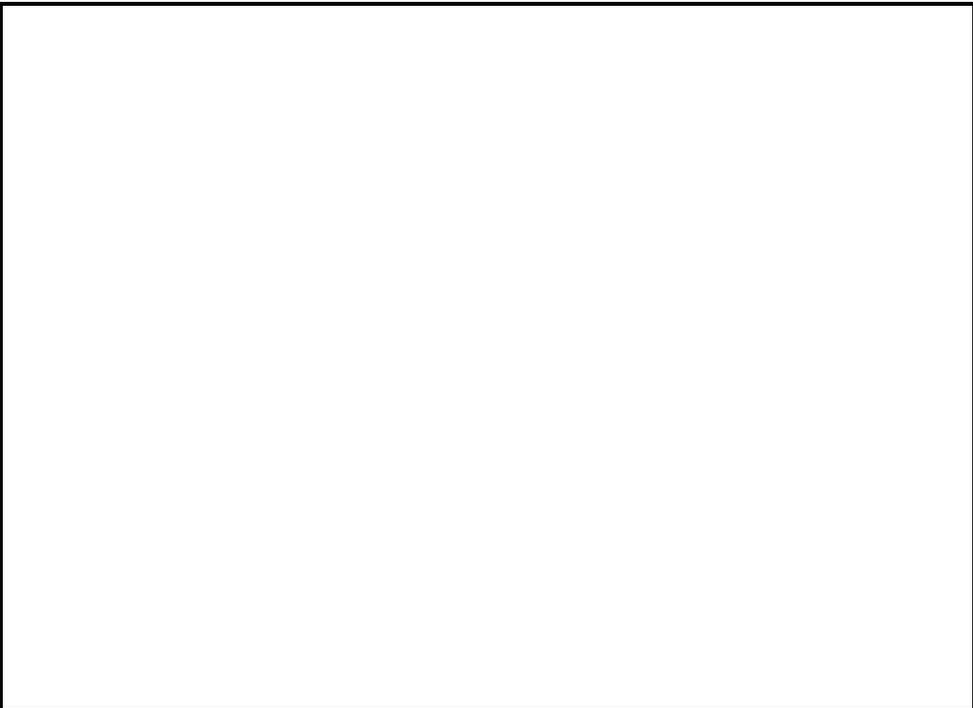
1. Static line cable – installed, not frayed, safetied, does not sag more than 6 inches
2. Seats – as required
3. Seat belts – as required
4. Ramp extensions – removed
5. Ramp area – free of oil and hydraulic fluid
6. Troop warn alarm and lights – check during run-up
7. Operational transponder – check during run-up
8. Headsets and restraining harness – minimum of 2 operational and worn by JM and safety
9. Radios – minimum of 2 operational. 1 will be FM
10. Protruding and sharp objects – check in/around ramp. Either remove or stow. Tape and wrap all sharp edges
11. Cargo hook access door – check closed and secure
12. ICS boxes – check operation during run-up
13. HICHS/COOLS ramp rollers – installed
14. All cargo and equipment – rigged/secured IAW appropriate procedures (-10, FM 3-05.211, FM 3-05.220)
15. Internal lights – check operation (night flight only)
16. Flotation (over water ops) and emergency equipment stow, secure, and readily available.

DROP ALTITUDE AND AIRSPEED LIMITATIONS

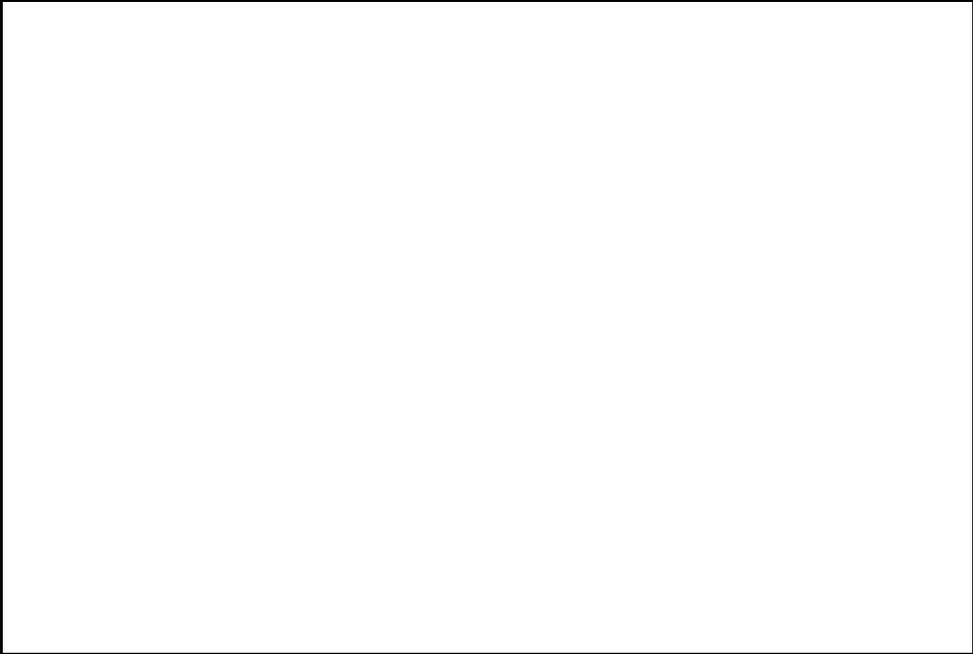
Min – 150' AGL

Max – 300' AGL

Airspeed - Not less than 80 knots or greater than 110 knots. Optimal speed is 90 knots



AH64 SPECIFIC MISSION CARDS



AH-64 CREW BRIEFING

1. Mission overview.
2. Flight plan.
3. Weather (departure, en route, destination, and void time).
4. Flight route.
5. Airspace surveillance procedures (Task 1026).
6. Required items.
 - a. Personal.
 - b. Professional.
 - c. Survival/flight gear.
7. Crew actions, duties, and responsibilities.
 - a. Transfer of flight controls.
 - b. Two challenge rule.
 - c. Aircrew coordination principles with supporting qualities:
 - (P1) Communicate effectively and timely.
 - (Q1) Announce and acknowledge decisions and actions.
 - (Q2) Ensure that statements and directives are clear and timely.
 - (Q3) Be explicit.
 - (P2) Sustain a climate of ready and prompt assistance.
 - (P3) Effectively manage, coordinate, and prioritize planned actions, unexpected events, and workload distribution.
 - (Q4) Direct assistance.
 - (Q5) Prioritize actions and equitably distribute workload.
 - (P4) Provide situational aircraft control, obstacle avoidance, and mission advisories.
 - (Q6) Maintain situational awareness.
 - (Q7) Manage mission changes and updates.
 - (Q8) Offer assistance.
8. Emergency actions.
 - a. Dual engine failure.
 - b. Dual hydraulic (HYD) failure/emergency hydraulic button.
 - c. Fuel per square inch (PSI) engine (ENG) 1 and 2.
 - d. Engine failure OGE hover.
 - e. Loss of tail rotor.
 - f. Nr droop.
 - g. Single engine malfunctions without single engine capability.
 - h. Actions to be performed by P* and P.
 - i. Portable fire extinguisher.
 - j. First aid kits.
 - k. Egress procedures and rendezvous point.
 - l. Canopy jettison (JETT).
 - m. Emergency stores JETT.
 - n. Power level manipulation.
 - o. CHOP button.
 - p. Engine and APU fire buttons/extinguishing bottles.

AH-64 CREW BRIEFING

- q. Loss of intercommunication system (ICS)/communications interface unit (CIU).
- r. Unusual attitude recovery.
- s. Simulated emergencies.
- t. Power level manipulation

9. General crew duties.

- a. P*.
 - (1) Fly the aircraft with primary focus outside when VMC, inside when IMC.
 - (2) Avoid traffic obstacles.
 - (3) Cross check HMD symbology/flight page, messages, limitation timers/limiting indications, torque/target, wind velocity/direction, and engine/system pages as appropriate.
 - (4) Monitor/transmit on radios as directed by the PC.
- b. P.
 - (1) Assist in traffic and obstacle avoidance.
 - (2) Manage radio network presets and set transponder.
 - (3) Navigate.
 - (4) Copy clearances, automatic terminal information service (ATIS), and other information.
 - (5) Cross check MPD pages (ENG/SYS, PERF, FLT) and/or instruments (PLT).
 - (6) Monitor/transmit on radios as directed by the PC.
 - (7) Read and complete checklist items as required.
 - (8) Set/adjust pages/switches and systems as required.
 - (a) Internal/back seat (BS) external lighting.
 - (b) Anti-ice/de-ice systems.
 - (c) Other systems/switches as required.

10. Both pilots.

- a. MPD/video select (VSEL)/acquisition (ACQ)/setting considerations.
- b. Weapon/weapon system (WPN), FCR, and ASE considerations (as applicable).
- c. Monitor radios.
- d. Monitor aircraft performance.
- e. Monitor each other
- f. Announce when focused inside for more than 4 seconds (VMC) or as appropriate to the current and briefed situation.

11. IMC crew duties.

- a. Inadvertent IMC.
- b. During IFR operations.
 - (1) Instrument Takeoff (ITO)/note takeoff time.
 - (2) Level off check.
 - (3) Calculate and monitor times for holding and approaches.
 - (4) Approach/holding brief.
 - (5) When on approach, P watch for airfield.
 - (6) On breakout and landing environment in sight, notify P* and if directed by the PC land the aircraft.
 - (7) Be prepared to direct the P* for the missed approach procedure, if required.
 - (8) Navigation programming.

AH-64 CREW BRIEFING

12. Analysis of the aircraft.

- a. Logbook and preflight deficiencies.
- b. Performance planning (approved software, performance planning card (PPC), aircraft PERF page).
 - (1) Engine/aircraft torque factors (ETF/ATF)/turbine gas temperature (TGT) limiter Settings and cockpit indications.
 - (2) Recomputation of PPC, if necessary.
 - (3) Go/NO-GO data.
 - (4) Single engine (SE) capability-MIN/MAX SE true air speed (TAS).
 - (5) Fuel requirements.
 - (6) Performance limitations/restrictions.
- c. Mission deviations required based on mission analysis.

13. Tail wheel lock/unlock.

14. Refuel/Rearm procedures.

15. Fighter management.

16. Risk mitigation/considerations.

17. Crewmembers' questions, comments, and acknowledgment of the briefing.

18. Conduct walk around.

MISSION CARDS

JULIAN CALENDAR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	32	60	91	121	152	182	213	244	274	305	335
2	2	33	61	92	122	153	183	214	245	275	306	336
3	3	34	62	93	123	154	184	215	246	276	307	337
4	4	35	63	94	124	155	185	216	247	277	308	338
5	5	36	64	95	125	156	186	217	248	278	309	339
6	6	37	65	96	126	157	187	218	249	279	310	340
7	7	38	66	97	127	158	188	219	250	280	311	341
8	8	39	67	98	128	159	189	220	251	281	312	342
9	9	40	68	99	129	160	190	221	252	282	313	343
10	10	41	69	100	130	161	191	222	253	283	314	344
11	11	42	70	101	131	162	192	223	254	284	315	345
12	12	43	71	102	132	163	193	224	255	285	316	346
13	13	44	72	103	133	164	194	225	256	286	317	347
14	14	45	73	104	134	165	195	226	257	287	318	348
15	15	46	74	105	135	166	196	227	258	288	319	349
16	16	47	75	106	136	167	197	228	259	289	320	350
17	17	48	76	107	137	168	198	229	260	290	321	351
18	18	49	77	108	138	169	199	230	261	291	322	352
19	19	50	78	109	139	170	200	231	262	292	323	353
20	20	51	79	110	140	171	201	232	263	293	324	354
21	21	52	80	111	141	172	202	233	264	294	325	355
22	22	53	81	112	142	173	203	234	265	295	326	356
23	23	54	82	113	143	174	204	235	266	296	327	357
24	24	55	83	114	144	175	205	236	267	297	328	358
25	25	56	84	115	145	176	206	237	268	298	329	359
26	26	57	85	116	146	177	207	238	269	299	330	360
27	27	58	86	117	147	178	208	239	270	300	331	361
28	28	59	87	118	148	179	209	240	271	301	332	362
29	29		88	119	149	180	210	241	272	302	333	363
30	30		89	120	150	181	211	242	273	303	334	364
31	31		90		151		212	243		304		365

PCC/PCI CHECKLIST

Check/Inspection	Completed	Check/Inspection	Completed
1. Aircraft Keys		16. Seasonal Survival Kit/ Personal Go-Bag	
2. Logbook reviewed		17. Reading Card File	
3. Pre-flight Inspection		18. Mission Brief / Risk Assessment	
4. Flight gear w/body armor		19. Valid/updated WX Brief	
5. Pre-mission planning		20. ISOPREP (review)	
6. Mission Packet / Map / Products/ Graphics		21. EPA (review)	
7. SKL – Radio Crypto – Net Variables		22. NOTAMS/SPINS/ ATO/ACO Review	
8. Transponders		23. Dual Crew-member/ pilot walk around	
9. DTM/DTC or PCM/CIA loaded		24. Digital media recording device	
10. Survival Radio/CSEL		25. Other special mission equipment	
11. Weapons/Ammo loaded		26. Air Crew Brief	
12. Verify fuel on board / aux		27. Aircraft run-up	
13. Individual weapon / ammunition		28. Aircraft Commo Check	
14. NVG w/ spare and extra batteries / HUD/COPS		29. Aircraft Test Fire	
15. IZLID/GCP		30. Spare Aircraft (static, cranking or flying)	

CALL SIGNS

ELEMENT	SUFFIX	ELEMENT	SUFFIX
CDR	06	HQ PLT IP	60
CSM/1SG	07	1 ST PLT IP	10
CCWO	08	2 ND PLT IP	20
XO	05	3 ^D PLT IP	30
S1	01	4th PLT IP	40
S2	02	1 ST PLT MAINT/AMO	12
S3	03	2 ND PLT MAINT	22
S4	04	3 ^D PLT MAINT	32
S6	09	4th PLT MAINT	42
		1 ST PLT PL	16
SIP	00	2 ND PLT PL	26
ASO	99	3 ^D PLT PL	36
TACOPS 1	98	4th PLT PL	46
TACOPS 2	97	1 ST PLT PSG	17
MASTER GUNNER	96	2 ND PLT PSG	27
FSO	95	3 ^D PLT PSG	37
FLIGHT SURGEON	94	4th PLT PSG	47
BAMO	92	CP1 (Mobile CMD Post)	MIKE
EW	91	CP2 (TAC CMD Post)	TANGO
FLT OPS	90	ALOC (Combat Trains CMD Post)	ALPHA
3/5 PL LDR	56	TOC (Main CP Post)	X-RAY

BREVITY

The intent is to speak concisely enabling a rapid understanding.

Term	Definition
ALPHA	Beginning mission
ANGELS	X000's ft MSL
BINGO	Aircraft requires fuel
CHECK NAV	Off course
CHERUBS	X00's ft AGL
CLOSING	Approaching 10 rotor disks
FALLEN ANGEL	Downed aircraft
FARM	Fuel/Ammo/Rockets/ Missiles status report
FENCE OUT/IN	Reminder for Battle Checks or Before Landing Checks
HOLLYWOOD	Video recording ON
RIFLE	FRIENDLY air-to-surface missile launch.
SADDLE	Flight is formed. Include the # of A/C
SUNSHINE	Illuminating a target with artificial illumination.
TOWRICO	Takeoff when ready in chalk order
UP	A/C call sign is in the Air
WINCHESTER	No ordnance remaining.
ZULU	End of Mission

BREVITY	
Marking Brevity Terms	
Term	Definition
BLIND	No visual contact with FRIENDLY aircraft / ground position. Opposite of VISUAL.
VISUAL	Sighting of a FRIENDLY aircraft or ground position. Opposite of BLIND.
CONTACT	Acknowledges sighting a specified reference point (either visually or via sensor).
LOOKING	The aircrew does not have the ground object, reference point, or target in sight (opposite of CONTACT).
NO JOY	Aircrew does not have visual contact with the TARGET / BANDIT. Opposite of TALLY.
Laser Brevity Terms	
Term	Definition
TEN SECONDS	Standby for LASER ON call in approximately 10 seconds
LASER ON	Start or acknowledge laser designation.
SHIFT (direction/ track number)	Shift laser / infrared / radar / device energy / aimpoint. Note: This can be used to shift from the offset position onto the target. It is also used during multi-aircraft attack to shift laser energy or target assignments.
SPOT	1. Acquisition of laser designation. 2. The platform is laser spot tracker (LST) capable.
CEASE (See note)	Cease (activity). Discontinue stated activity; e.g., CEASE BUZZER, CEASE LASER, CEASE SPARKLE, etc.
DEAD EYE	The laser designator system is inoperative
NEGATIVE LASER	Laser energy has not been acquired.
LASING	The speaker is firing the laser.
REMOTE	Request for launching a platform to provide laser guided munitions. Reverse of BUDDY LASE.

BREVITY	
Laser Brevity Terms	
Term	Definition
STARE (with laser code and reference point) (See note)	Cue the laser spot search / tracker function on the specified laser code in relation to the specified reference point. Reference point may include the following: Steer point, geographic reference (GEOREF), bearing and range, or data link point.
Night Infrared Close Air Support Brevity Terms	
Term	Definition
SPARKLE	1. Mark / marking a target by infrared (IR) pointer. 2. The platform is capable to infrared point. The joint terminal attack controller (JTAC) marks the target with an IR pointer. Can be initiated by a JTAC or aircrew. The proper aircrew response is CONTACT SPARKLE or NO JOY.
SNAKE	Oscillate an IR pointer in a figure eight about a target. Call made by exception for the JTAC to oscillate the IR beam on the target. This aids in distinguishing the friendly position from the target, verifies the aircrew is looking at the proper IR pointer and can aid in acquiring the IR energy. The proper aircrew response is CONTACT SPARKLE, STEADY, or NO JOY.
PULSE (See note 2)	Illuminate / illuminating a position with flashing IR energy. The JTAC uses the pulse mode available on some IR pointers. It can be initiated by a JTAC or aircrew. May be used by a JTAC to emphasize that an enemy position is being illuminated by flashing IR energy, which is often used to identify friendly positions. The proper aircrew response is CONTACT SPARKLE, STEADY, or NO JOY.
STEADY	Stop oscillation of an IR pointer. The JTAC steadies the beam after a SNAKE or PULSE call. This can aid in verifying that the aircrew is looking at the proper IR pointer.

BREVITY

Video Down Link Brevity Terms

Term	Definition
CHECK CAPTURE	The target appears to be no longer tracked by the sensor. (This is an informative call from a video downlink (VDL) operator to a pilot or sensor operator that the target appears to be no longer tracked by a full-motion video source).
CHECK FOCUS	The sensor image appears to be out of focus. (This is an informative call from a VDL operator to a pilot or sensor operator that the full-motion video image appears to be out of focus).
DECLUTTER	An authoritative request for the pilot or operator to remove targeting symbology to allow the user to see a better picture of the target area (minimize on-screen graphics to prevent an object of interest from being obscured. For sensors with multilevel declutter capability, it is indicated as level 1, 2, 3, etc.).
HANDSHAKE	A video data link is established. Opposite of HOLLOW. (VDL operator communications to indicate a good full motion video signal and data to VDL).
HOLLOW	1. Any data link message not received. 2. A lost video data link. The opposite of HANDSHAKE. (Lost full-motion video signal or data to VDL. VDL screen freezes or is not updating. If the picture is not rotating or slant range is not changing, these are indicators of not updating). 3. (Expect) HOLLOW: A condition likely will exist that limits video data link reception (e.g., maneuvers or terrain). An informative call from the pilot or sensor operator to VDL operator that a condition likely will exist that limits VDL reception.
SET	1. Set (or have set) a particular speed. May be indicated in knots or Mach. 2. No longer slewing sensor and awaiting further updates. 3. Overwatch aircraft is in position. (Informative call from pilot or sensor operator to VDL operator indicating no longer slewing the full-motion video source and waiting for further updates).

BREVITY

Video Down Link Brevity Terms

Term	Definition
SHADOW	Follow the indicated target.
SLEW	Move the sensor in the direction indicated (usually accompanied with a unit of measure). For example, "SLEW left one-half screen." ((LEFT / RIGHT / UP / DOWN or CLOCK POSITION and DISTANCE ¼ SCREEN, ½ SCREEN, FULL SCREEN) Directive call from a VDL operator to a pilot or sensor operator to slew the full-motion video source a given direction and distance.)
SWITCH CAMERA	Switch full-motion video to electro-optical (EO) or infrared (IR). (Request from a VDL operator to a pilot or sensor operator to switch the full-motion video to EO or IR).
SWITCH POLARITY	Switch IR polarity to black hot or white hot.
ZOOM (IN / OUT)	Increase / decrease the sensor's focal length. (Request from a VDL operator to change the full-motion video field of view (FOV).
Sensor Tasking Brevity Terms	
Term	Definition
(Target / object) CAPTURED	Specified surface target or object has been acquired and is being tracked with an onboard sensor.
TRACK	This is a directive call assigning responsibility to maintain sensors / visual awareness on a defined object or area.
DROP(PING)	Stop / stopping monitoring of a specified emitter / target / group and resume / resuming search responsibilities. This is a directive call to discontinue sensor / visual track responsibility.
STATUS	A call from the joint terminal attack controller requesting the aircrew update the activity of the track responsibility or requested label.
SQUIRTER	A ground-borne object of interest departing the objective area.

FARP INSPECTION CHECKLIST (1 of 4)

FARP:	Yes	No
1. Are daily logs being kept on Aqua-Glo testing?		
2. Is a monthly fuel filter effective tests conducted and is there a log?		
3. Date of last fuel sample taken? Is it current?		
4. Are the berm liners the correct size for the bags being used?		
5. Are the berm liners securely fasted at the top of all berms?		
6. Are the berm liners free of tears and worn spots?		
7. Does the bag have the date of its inspection stenciled on it?		
8. Is the date stenciled on the side of the last filter separator filter changed		
Safety equipment		
9. Are the fire extinguishers present for each pump assembly and one for		
10. Is sufficient water available to wet fuel soaked clothes before removal?		
11. Are spark proof flashlights (chemical lights) available for night opera-		
12. Are all applicable signs (no smoking, danger, restricted area, emergen-		
13. Are grounding rods emplaced at the filter separators and fuel dispens-		
14. Do grounding rods emplaced conform to specifications in FM 10-67-1?		
Nozzles and hoses		
15. Does the nozzle have proper bonding device for operations?		
16. Are both CCR and open-port nozzles available for use?		
17. Are dust cover serviceable and being used for the nozzles?		
18. Has the system been turned on and tested at normal operating pres-		

FARP INSPECTION CHECKLIST (2 of 4)

Continued:	Yes	No
Does the site layout ensure proper space between aircraft refueling points in accordance with FM 10-67-1 with Min distance rotor hub-to-rotor hub? <ul style="list-style-type: none"> • CH-47: side by side 180 ft. nose to tail 140 ft. • UH-1, UH-60, AH-1, AH-64: 100 ft. • AH-64 and all other light aircraft: side by side 150 ft. 		
20. Are the dispensing hoses configured in a curved pattern?		
21. Do the hoses show signs of blistering, saturation, nicks, or cuts?		
22. Are the hoses and nozzles clean and free of dirt?		
23. Are the 100-mesh nozzle screens clean?		
Aircraft control and equipment		
24. Is the parking area for the fuel dispensing point clearly marked?		
25. Is an air traffic controller or pathfinder at each FOB?		
26. Does the FARP have two-way radio communication before and after refueling operations with aircraft and the control tower?		
27. Is the FARP set up for night operations (light sets or chemical lights) and are supplies on hand?		
Site preparation		
28. Has the area (fuel system supply point, FARP) been cleared of debris?		
29. Does the layout ensure proper spacing between aircraft?		
30. Are vehicles combat parked, allowing for a timely exit?		
31. Does the FARP take advantage if buildings and existing structures?		
32. Are drip pans placed at each dispensing point?		
33. Are sufficient personnel assigned to the equipment?		
34. Has the complete system been checked for proper operation, pressure, and leaks?		

FARP INSPECTION CHECKLIST (3 of 4)

Site operations:	Yes	No
35. Is there an established communication means to control traffic at the		
36. Are passengers disembarked and escorted to a marshalling area		
37. Are ground guides being used for the aircraft when appropriate?		
38. Are aircraft either pointed in a safe direction during refueling or is ar-		
39. Are the aircraft properly grounded before they are refueled?		
40. Are the nozzles bonded to the aircraft before the refueling cap is		
41. Are the dust caps replaced after each refueling and then hung on the		
42. Are grounding cables attached to the ground rods when not in use?		
43. Are tank vehicle operations done correctly IAW appropriate TMs?		
44. Are personnel familiar with emergency fire and rescue procedures?		
45. Are refueling personnel familiar with procedures for fuel spills? Is		
46. Are spill kits at each refueling point and by all pumps?		
47. Is a copy of the SOP available and POL personnel familiar with its contents (including a plan for emptying the berms in the event of precipita-		
48. Are measures in place to facilitate reconstitution and recovery of		
49. Are personnel using proper PPE (gloves, goggles, hearing protection)		
50. Are material data sheets on site? <input type="checkbox"/> 50k bags <input type="checkbox"/> 20k bags <input type="checkbox"/> 10k bags <input type="checkbox"/> Elbows <input type="checkbox"/> T-valves <input type="checkbox"/> Tri-Max fire extinguisher <input type="checkbox"/> 20 lb fire extinguisher <input type="checkbox"/> 4-in by  hoses <input type="checkbox"/> 4-in by 35-ft hoses <input type="checkbox"/> 4-in by 50-ft hoses <input type="checkbox"/> CCR nozzles <input type="checkbox"/> D1		

FARP INSPECTION CHECKLIST (4 of 4)

350-GPM pump (NSN 4320-01-259-5956)	Yes	No
<input type="checkbox"/> Wheel mounted <input type="checkbox"/> Skit mounted		
51. Are operators licensed to operate the 350-GPM pump?		
52. Is the appropriate TM present?		
53*. Is the operator preventative maintenance checks and services being conducted daily and are deficiencies being annotated on DA Form 5988-E (Equipment Inspection Maintenance Worksheet) or DA Form 2404 (Equipment Inspection and Maintenance Worksheet)?		
54*. Does the FARP NCOIC maintain at the minimum one copy of the DA Form 5988-E or 2404 for each piece of equipment?		
55*. Does the maintenance support unit track 350-GPM pump by The Army Maintenance Management System?		
56*. Does the NCOIC have point of contact information for their maintenance support unit (point of contact for breakdowns)?		
57*. Is unit level maintenance being conducted?		
58*. Are service packets being maintained?		
59*. Are the quick supply store (QSS) parts (service parts and repair parts) on hand?		
60*. Are the authorized stockage list parts stocked and well organized?		
61*. Are the QSS parts for the 350-GPM pump easy to locate?		
62*. Are repair and service parts being ordered during the services and properly tracked?		
63*. Are hard to find parts being fabricated or procured through logistics personnel?		
64*. Are parts received being installed in a timely manner?		
65*. Are needed serviced parts on hand for 20-level maintenance (oil and fuel filters)?		
66*. Are the needed repair parts or QSS being maintained at supporting maintenance units?		
67*. Are there any replacement or backup 350-GPM pumps available if the primary pumps fail?		
68. Is the equipment properly grounded?		

*These items will be checked against DA Form 5988-E or DA Form 2404. Items will not keep the FARP from becoming operational.

ELEMENTS OF A CALL FOR FIRE

First Transmission

1. **Observer Identification (ID).** (Call Sign)
2. **Warning Order.** (Adjust Fire; Fire For Effect; Immediate Suppression; Immediate Smoke; SEAD; Suppress; Mark; Adjust Fire / Polar; Adjust Fire / Shift)

" _____ "
 (Insert the known point or target number)

Second Transmission

3. **Target Location.** (Can be given in three ways: Grid, Polar Plot, or Shift from a known point).

Third Transmission

4. **Target Description.** (Brief but accurate statement describing the target)
5. **Method of Engagement.** (Danger Close, High Angle, Ammunition Type Requested, Mark)
6. **Method of Fire and Control.** (At My Command, Cannot Observe, Time on Target)

ELEMENTS OF AN ADJUST FIRE MSN (GRID)

1. **Observer:** " _____ this is _____, Adjust Fire, Over"
 (FDC Call Sign) (Observer Call Sign)
2. **"Grid _____, Over"**
 (Minimum 6-digits)
3. **Target Description:** " _____ "
 (Target Description, Size, Activity)
4. **Method of Engagement** (optional): (Danger Close, Mark, High Angle, Ammo / Fuze Type)
5. **Method of Fire and Control** (optional): (At My Command, Time on Target, Request Splash, Request TOF, Request Ordinate Altitude Information)
6. **"Over"**
 FDC may challenge after they read back the above.
 The observer should be prepared to authenticate.

REMOTE HELLFIRE REQUEST

Designator	" _____ this _____ remote hellfire, over."
	" _____ this _____ remote hellfire, out."
Designator	"(#) _____ (TGT) stationary in the open, over."
	"(#) _____ (TGT) stationary in the open, out."
Designator	"1 MSL, LOAL, Code __, Grid _____ or IDM TGT# _____ LTL _____ °, Range _____ m, Alt. _____ ft, over."
	"1 MSL, LOAL, Code __, Grid _____ or IDM TGT# _____ LTL _____ °, Range _____ m, Alt. _____ ft, out."
	"Accept (or Reject), over."
Designator	"Accept (or Reject), out."
	"Ready, time of flight _____ seconds, over."
Designator	"Ready, time of flight _____ seconds, out."
Designator	"Fire, over"
	"Rifle Away, Over."
Designator	"Rifle Away, Out" (Shooter fires)
Designator	"End of mission, (#) _____ (TGT) destroyed, Grid _____ or IDM TGT# _____, over."
	"End of mission, (#) _____ (TGT) destroyed, Grid _____ or IDM TGT# _____, out."
NOTE:	Designating aircraft should "Designate" the target until impact or for 20 seconds beyond the expected missile time on target.

CAS AIRCRAFT CHECK IN

Aircraft Transmits to Controller

Aircraft: “ _____, this is _____ ”
(Controller Call Sign) (Aircraft Call Sign)

Identification / Mission Number: “ _____ ”

Note: Authentication (Initiated by the net control agency) and appropriate response suggested here. The brief may be abbreviated for brevity / security (“as fragged” or “with exception”)

Number and Type of Aircraft: “ _____ ”

Position and Altitude: “ _____ ”

Ordnance: “ _____ ”
(Fusing, Laser Code)

Playtime or time on station “ _____ ”

Capabilities: “ _____ ”
(FAC(A), type of sensors, Link-16, VDL code, SITREPs on board, map version or GRGs, UAS lost link procedures / route)

Abort Code: “ _____ ”

Notes: Flight lead will establish abort code. JTAC can brief abort code to follow-on aircraft. Abort code may not be applicable during secure communications.

*Optional entry.

For additional aircraft / sensor capabilities, see Appendix A, Capabilities and Communication Equipment.

GAME PLAN AND 9-LINE CAS BRIEF

Do not transmit line numbers. Units of measure are standard unless briefed. Lines 4, 6, and restrictions are mandatory readback (*). JTAC may request additional readback

JTAC: “ _____, Advise when ready for game plan.”

JTAC: “This will be a Type (1, 2, or 3) Control, MOA, effects desired / ordnance, interval, advise when ready for 9-line.”

1. IP / BP: “ _____ ”

2. Heading: “ _____ ”
(Degrees Magnetic, IP / BP-to-Target)

Offset: “ _____ ”
(Left / Right, when required)

3. Distance: “ _____ ”
(IP-to-target in nautical miles, BP-to-target in meters)

4*. Target Elevation: “ _____ ”
(In feet MSL)

5. Target Description: “ _____ ”

6*. Target Location: “ _____ ”
(latitude and longitude or grid coordinates, or offsets or visual)

7. Type Mark: “ _____ ” Code: “ _____ ”
(WP, Laser, IR, Beacon) (Actual Laser Code)

8. Location of Friendlies: “ _____ ”
(From target, cardinal direction and distance in meters)

9. “Egress: _____ ”

Remarks / *restrictions:

Laser to target line (LTL) / pointer target line (PTL)

Desired type and number of ordnance or weapons effects (if not previously coordinated).

Surface-to-air threat, location, and type of SEAD.

Additional remarks (e.g., gun-to-target line, weather, hazards, friendly marks).

Additional calls requested.

*Final attack headings or attack direction.

*Airspace coordination areas (ACAs).

*Danger close and initials (if applicable).

*Time over target (TOT) / time to target (TTT).

*Post launch abort restrictions (if applicable)

Note: For off-axis weapons, weapon final attack heading may differ from aircraft heading at the time of release. Aircrew should inform JTAC when this occurs, and ensure that weapon FAHs comply with restrictions given.

ROTARY-WING CAS 5-LINE BRIEF

1. Observer / Warning Order / Game Plan

“ _____, _____, 5-line,
 (aircraft call sign) (JTAC call sign)
 Type (1, 2, or 3) control, MOA (BOC or BOT), (ordnance requested).”

2. Friendly location / mark

“My position _____, marked by _____”
 (target reference point, grid, etc.) (VS-17, beacon, IR strobe, etc.)

3. Target location

“Target location, _____”
 (magnetic bearing and range in meters, target reference point, grid, etc.)

4. Target description / mark

“ _____, marked by _____.”
 (target description) (infrared marker, tracer, etc.)

5. Remarks / *Restrictions:

- *Final attack headings
- *Laser target line (LTL) or pointer target line (PTL)
- Surface-to-air threat, location, and type of SEAD
- *Airspace coordination areas (ACA)s
- *Danger close and initials
- Additional calls requested
- Additional remarks (gun target line (GTL), weather, hazards, friendly mark)
- *Time on target (TOT) / time to target (TTT)
- *Post launch abort coordination and considerations

Note: The rotary-wing CAS 5-Line should be passed as one transmission. If the restrictions portion is lengthy, it may be a separate transmission.

Legend:

- BOC—bomb on coordinate
- JTAC—joint terminal attack controller BOT—bomb on target MOA—method of attack
- IR—infrared SEAD—suppression of enemy air defenses

Note: Transmission of this brief is NOT clearance to fire. The aircrew must receive weapons release authorization, as per JP 3-09.3. Correlation is required for all attacks.

BHO CHECKLIST

TEAM ENROUTE (PHASE 1)

A. COMMO CHECK-IN (ON STATION TM/PLT/ CO/TRP'S FREQ)

B. TIME UNTIL ARRIVAL (ETA)

D. ENEMY ACTIVITY ENCOUNTERED ENROUTE

E. CURRENT STATUS OF THE FARP / CURRENT ALTIMETER SETTING

F. WEATHER UPDATE

TEAM ON STATION (PHASE 2)

A. CURRENT LOCATION OF TEAM (FARM)

B. RECOMMENDED INGRESS ROUTE

C. DECONFLICTION MEASURES (ALTITUDE, TERRAIN, DISTANCE, ETC)

D. ENEMY SIGACTS/ LOCATIONS / COMPOSITION/ RFI TGT AND RLWR ACTIVITY

E. FRIENDLY SITUATION—FRONT LINE TRACE, COMPOSITION CALLSIGN AND FREQUENCIES. (GRID, GRG, PASSAGE POINTS, ETC) AS NECESSARY

F. RELEVANT PREVIOUS ENGAGEMENT LOCATIONS (GRID, KP, ETC)

H. MISSION CHANGES (Tasks/ Timelines)

I. FIRE SUPPORT/CAS/ISR—PRIORITY OF FIRES, CAS / UAV'S ON STATION, NFA'S, CFL, ROZ'S, TCDL/FREQS AS NECESSARY

J. WEATHER/ ENVIRON UPDATE (WIND, SMOKE, OBSCURANTS, ETC.) & FLIGHT HAZARDS

L. REMARKS: CIVILIANS, STRUCTURES ON THE BATTLEFIELD

VISUAL TALK ON BETWEEN INBOUND AND OUTBOUND TEAM (PHASE 3)

A. VISUAL TALK-ON OF ITEMS D, E, AND F FROM PHASE 2.

HAND SHAKE BETWEEN INBOUND AND OUTBOUND TEAMS (PHASE 4)

A. ARRIVING TEAM ESTABLISH COMMUNICATIONS WITH GFC

B. ARRIVING TEAM RECEIVES BATTLESPACE UPDATE FROM GFC

C. DEPARTING TEAM MONITORS RADIO TRAFFIC BETWEEN ARRIVING TEAM AND GFC AND CONFIRMS / CLARIFY GFC UPDATE

D. BHO COMPLETE

LZ/PZ ARRIVAL/UPDATE BRIEF:

1. **Attack** or **UAS** element conducting LZ security will provide an LZ update brief to the Lift/ MEDEVAC element prior to the release point if the LZ was not planned and briefed or if there are significant changes. The security team will determine criticality of the information, based off, security considerations, time available, and familiarity of the LZ and will brief by exception.

LZ/PZ Update Brief

* **Line 1:** Security element location/ Air-space Deconfliction measure (Separate by Altitude, Terrain feature, graphic control measure, or "as briefed")

* **Line 2:** Enemy Update (LZ HOT/ COLD): Greatest Potential Threat/ SIGACTs

* **Line 3:** Friendly Unit Frequency/ Call

Sign / Location /Markings

CAS or indirect fire in progress

Line 4: Approach & departure directions.

Line 5: Landing formation and door load.

Line 6: Surface Conditions/Hazards:

- Altitude/Temp
- Obstacles
- Winds
- Slope
- Dust/Snow

Line 7: Ceilings/ Visibility

Line 8: LZ Markings

Line 9: Remarks

* Minimum Information required.

INSTRUMENT CHECKS:

BEFORE ITO CHECKS

1. Weather Void Time – Check.
2. Go/No-Go Fuel – Check.
3. **NAV1** or **NAV2** Select - As required.
4. Heading / Course – As required.
5. **SFD** – As required.
6. **ENG INLET / PITOT HEAT** – As required.
7. Take-Off Time – Note.
8. ITO Take-Off Power – Announce.

LEVEL OFF CHECK

1. **OAT** – Check (+5 C and Below).
2. **ENG INLET / PITOT HEAT** – As required.
3. Flight Instruments – As required.
4. **NAV1 / NAV2 / ADF** Set – As required.
5. **A/C** Systems – Check.
6. Cruise Torque – Note.
7. Climb Torque vs PERF Page actual DE MAX TQ - Note
8. Fuel Check – Initiate.
9. Avionics Set - As required.
10. Searchlight Off - As required.

HOLDING BRIEF

1. **NAV1 / NAV2 / ADF** Set – As required.
2. Entry Procedure – Brief.
3. Inbound Course – Brief.
4. Outbound Heading – Brief.
5. Direction of Turns – Brief.
6. EFC Time – Note.

PRE-APPROACH CHECK >10 Miles from Airport

1. Obtain ATIS - Review Instrument Approach Procedure.
2. (Confirm ability to execute complete procedure thru MAP.)
3. **NAV1 / NAV2 / ADF** – Tune and Identify.
4. Avionics Set – Tune Radios as required.
5. BARO/Radar Altimeter – Set as required.
6. Searchlight – On
7. Complete Before Landing Check.

INSTRUMENT APPROACH BRIEF (IAP): Big 6)

1. Type and Name of Instrument Approach.
2. Final Approach Course - INST Page verify Course/Heading.
3. MDA / DA – FLT Page verify if correct.

FARP CARD

FARP" "					N ↑
OBJECTIVE:					N ↑
MGRS GRID:					
LAT LONG:					
ALT:					
Hot Time:			Ammo Available:		
Cold Time:			Fuel Avail/ Restrictions:		
CALL SIGN	FREQ	FORMATION	LAND DIR	GO AROUND	T/O DIR
WEAPONS STATUS:		DOORS:		FORMATION:	
		LOAD:			
		REMARKS (MARKINGS, HAZARDS, ETC):			
HA: _____			V: _____ # _____		

LZ CARD

LZ " "					N ↑
OBJECTIVE:					N ↑
MGRS GRID:					
LAT LONG:					
ALT:					
Hot Time:			Ammo Available:		
Cold Time:			Fuel Avail/ Restrictions:		
CALL SIGN	FREQ	FORMATION	LAND DIR	GO AROUND	T/O DIR
WEAPONS STATUS:		DOORS:		FORMATION:	
		LOAD:			
		REMARKS (MARKINGS, HAZARDS, ETC):			
LZ: _____					V: _____ # _____

HA CARD

HA / Parking Plan "		N 
OBJECTIVE:		
MGRS GRID:		
LAT LONG:		
ALT:		

CALL SIGN	FREQ	FORMATION	LAND DIR	GO AROUND	T/O DIR
		DOORS:			FORMATION:
WEAPONS STATUS:		LOAD:			
REMARKS (MARKINGS, HAZARDS, ETC):					
HA:				V:	#

IIMC CARD

IIMC CARD					
				CHALK/GUN 1	
				HDG: STRAIGHT	
				ALT:	
				AIRSPEED:	
				CHALK/GUN 2	
				HDG L / R 20 DEG	
				ALT:	
				AIRSPEED:	
				CHALK/GUN 3	
				HDG L / R 30 DEG	
				ALT:	
				AIRSPEED:	
				CHALK/GUN 4	
				HDG L / R 40 DEG	
				ALT:	
				AIRSPEED:	
				CHALK/GUN 5	
				HDG L / R 50 DEG	
				ALT:	
				AIRSPEED:	
"Call Sign __, "is IMC", Heading __, ALT: __, A/S __, Altimeter __"					
WPT	Base Altitude	A/C FREQ/ C/S	NAVAID FREQ	MDA / DH	Recover Approach
IIMC CARD					V #

NAI/TAI	PIR/SIR	SPOT Report
NAI/TAI # GRID TGT #		S: A: L: T: W:

SPOT REPORT	Call for Fire	BDA
S: A: L: T: W:	WARNO: TGT L: TGT D/M/C: MTO:	TGT #: P #: TM:
S: A: L: T: W:	WARNO: TGT L: TGT D/M/C: MTO:	TGT #: P #: TM:
S: A: L: T: W:	WARNO: TGT L: TGT D/M/C: MTO:	TGT #: P #: TM:
S: A: L: T: W:	WARNO: TGT L: TGT D/M/C: MTO:	TGT #: P #: TM:
S: Size; A: Activity; L: Location; T: Time; W: What we are doing:	TGT L: Location D/M/C: Description/Method/ Control MTO: Message to OBS	Stored TGT #: Picture #: Tape Mark:

REPORTS

FARM REPORT (Voice)

F– Fuel Remaining
A– Ammo
R– Rockets
M– Missiles

SPOT REPORT FORMAT

S– Size
A– Activity
L– Location
T– Time
W– What you are doing about it

IED/UXO REPORT FORMAT:

LINE 1– DATE/TIME (When Item was discovered)

LINE 2– REPORT ACTIVITY AND LOCATION (Unit and grid location of IED/UXO)

LINE 3– CONTACT METHOD (C/S, Frequency of ground unit)

LINE 4– TYPE OF IED/ORDNANCE (Describe IED and whether it was dropped, projected, placed, or thrown. Give the number of IEDs if more than one is discovered.

LINE 5– NBC CONTAMINATION (If any, specify)

LINE 6– TARGET/RESOURCES THREATENED (Personnel, whether they be coalition, civilian, etc. or equipment, facilities, or other assets that may be destroyed or damaged.

LINE 7– IMPACT OF MISSION (Short description of current tactical situation and how the IED/UXO affects the status of the mission)

LINE 8– PROTECTIVE MEASURES/EVACUATION (Any measures taken to protect or evacuate personnel and equipment in the area)

LINE 9– RECOMMENDED PRIORITY (Immediate, Indirect, Minor, No threat)

ROUTE REPORT [ROUTEREP]

GENERAL INSTRUCTIONS: Use to report results of route reconnaissance.

Reference: FM 3-34, FM 3-20.98, and FM 5-34.

LINE 1 – DATE AND TIME _____ (DTG)

LINE 2 – UNIT _____
(unit making report)

LINE 3 – RECON TIME _____
(DTG start and completion of recon)

LINE 4 – RECON ROUTE _____
(route reconned)

LINE 5 – TRAFFICABILITY _____
(trafficability of route)

LINE 6 – BUILT-UP AREAS _____
(built-up areas along route and grid coordinates)

LINE 7 – LATERAL ROUTES _____
(lateral routes reconned and results)

LINE 8 – BRIDGE CLASS _____
(bridge classification report and grid coordinates)

LINE 9 – FORDS _____
(fords and crossing site and grid coordinates)

LINE 10 – BYPASSES _____
(overpasses, underpasses, and culverts grid coordinates)

LINE 11 – OBSTACLES _____
(UTM or six-digit grid coordinate with MGRS grid zone designator of all obstacles, minefields, or contaminated areas)

LINE 12 – ENEMY _____
(enemy activity that can influence route or grid coordinates)

LINE 13 – NARRATIVE _____
(free text for additional information required for report clarification)

LINE 14 – AUTHENTICATION _____
(report authentication)

BRIDGE REPORT [BRIDGEREP]

GENERAL INSTRUCTIONS: Use to report nature and condition of bridge, overpass, culvert, underpass, or tunnel.

Reference: FM 3-34.

LINE 1 – DATE AND TIME _____

LINE 2 – UNIT _____
(unit making report)

LINE 3 – TYPE BRIDGE AND LOCATION _____
(type of bridge and UTM or six-digit grid coordinate with MGRS)

LINE 4 – WIDTH _____
(width of highway)

LINE 5 – RESTRICTIONS _____
(height restrictions)

LINE 6 – LENGTH AND SPANS _____
(length of bridge and number of spans)

LINE 7 – CLASS _____
(computed classification)

LINE 8 – BYPASS LOCATION _____
(UTM or six-digit grid coordinate with MGRS)

LINE 9 – NARRATIVE _____
(free text for additional information required for report clarification)

LINE 10 – AUTHENTICATION _____
(report authentication)

MEACONING, INTRUSION, JAMMING, AND INTERFACE (MIJI)

GENERAL INSTRUCTIONS: Use to share MIJI incidents in a timely manner of tactical MIJI information including electro-optic interference.

LINE 1 – DATE AND TIME _____(DTG)

LINE 2 – UNIT _____
(unit making report)

LINE 3 – INTERFERENCE _____
(strength and characteristics)

LINE 4 – LOCATION _____
(UTM or six-digit grid coordinate with MGRS grid zone designator of incident)

LINE 5 – ON TIME _____
(start DTG)

LINE 6 – OFF TIME _____
(end DTG)

LINE 7 – EFFECTS _____
(operations or equipment affected)

LINE 8 – FREQUENCY _____
(frequency or frequency range affected)

LINE 9 – NARRATIVE _____
(free text for additional information required for report clarification)

LINE 10 – AUTHENTICATION _____
(report authentication)

ON SCENE COMMANDER CHECKLIST

1. **Security**
 - A. AWT establish 4km Security Zone
 - B. Inner Ring A/C maintains security of crash site
 - C. Outer Ring A/C focus on enemy / IDF teams moving into area
2. **Communications**
 - A. Contact Battle Space TF HQ and inform of FALLEN ANGEL
 - i. P – SATCOM
 - ii. A – BFT
 - iii. C – Nearest Ground Force (to relay to TF TOC)
 - iv. E – Guard (nearest aircraft to relay to TF TOC)
 - A. Contact CAS assets and establish overhead coverage
 - B. Inner Ring A/C controls Fallen Angel freq (FM)
 - C. Outer Ring A/C controls ROZ freq (UHF)
 - D. Establish comms with adjacent / surviving ground units
3. **Control**
 - A. Battle Space TF HQ is Command & Control for AWT
 - B. ROZ “**TF NAME**” 4km ROZ to 3000ft AGL over crash site
 - C. Identify / Establish 1 Pri / 1 Alt HLZ for MEDEVAC / security forces
 - D. BPT Brief :
 - i. Grid
 - ii. Altitude
 - iii. Wind
 - iv. Heading and Route to HLZ
 - v. Enemy Situation
4. **MEDEVAC / CASEVAC**
 - A. BPT relay 9-Line to MEDEVAC while en route
 - B. Provide FLT course to Primary / Alternate HLZ
 - C. BPT to conduct hasty HLZ brief to include
 - i. Obstacles
 - ii. Wreckage
 - iii. Dust/Slope
 - iv. Enemy Contact
5. **Ground Security Forces**
 - A. Confirm briefed freqs prior to exiting the A/C
 - B. Distance and direction to site prior to exiting A/C
6. **Assessment Team**
 - A. Brief extraction time IOT coordinate LIFT/SECURITY in place
7. **Recovery / Destruction**
 - A. Brief all controlled detonations
 - B. Brief sling / recovery rigs complete
 - C. Before and after pictures of site from all directions.

DOWNED AIRCRAFT “FALLEN ANGEL REPORT”

Initial Report	
1	Location and Type of Aircraft
2	Injuries
3	Reason Aircraft Went Down
Follow-Up Report	
4	Aircraft Tail Number
5	DTG Aircraft Went Down
6	Crash Site: Sierra = Secure November= Not Secure
7	Call sign of Downed Aircraft
8	Personnel:
a	Number on Board
b	Number of WIA/KIA/MIA
c	Number “Perched” = At Site
d	Number “Flown the Coop” = E&Eing
9	Aircraft Status
a	Damage Assessment
b	COMSEC Status
10	Threat Situation at Site
11	Call Sign of Sender
12	Remarks

NINE LINE MEDEVAC REQUEST

Line	Item	Explanation
1	Location of Pickup	Encrypt the grid coordinates
2	Radio frequency, call sign, and suffix (if used)	Call sign and suffix may be transmitted in the clear
3	Number of patients by precedence	A - Urgent B - Surgery C - Priority D - Routine E - Convenience
4	Special equipment required	A - None B - Hoist C - Extraction Equipment D - Ventilator
5	Number of patients by type	L + Number of patients (Litter) A + Number of Patients (Ambulatory)
6	Security of pickup site	N - No Enemy in area P - Possible enemy in area, use caution E - Enemy in area, approach with caution X - Enemy in area, armed escort required
7	Method of marking pickup site	A - Panels B - Pyrotechnic signal C - Smoke signal D - None E - Other
8	Patient nationality and status	A - US military B - US Citizen C - Non-US military D - Non-US citizen E - Enemy prisoner of war
9	Chemical, biological, radiological, nuclear (CBRN)	C - Chemical B - Biological R - Radiological N - Nuclear
ZMIST	Zap number - Patient Information (name, initials, last 4 of their Social Security Number, etc.) Mechanism of Injury - gunshot wound (GSW), improvised explosive device (IED), stab wound, etc. Injury Sustained (i.e., laceration, break, etc.) and location (i.e., head, leg, etc.) Symptoms and Signs - Conscious, breathing, pulse, etc. Treatment Given - Tourniquet, immobilization, pain relief, etc.	

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