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This pamphlet implements AFD 11-4, *Aviation Service*. It contains standard briefing guides, checklists, and additional information condensed and presented for AETC personnel who operate in the parachuting, rescue, egress training, and/or operational environments. This pamphlet is provided as a guide for qualified team leaders, static line jumpmasters, and military freefall jumpmasters. These checklists and briefing guides are not training plans and do not take the place of initial and recurring training requirements. This pamphlet will be used for ground and flight operations and may be placed in the flight crew checklist binder. Only applicable chapters need to be accomplished prior to or during flight/deployments. If briefing guides or checklists are accomplished prior to conducting the flight, only items that are changed need be re-briefed. These checklists may be used in conjunction with other USAF and MAJCOM publications. This publication does not apply to Air Force Reserve Command (AFRC) and Air National Guard (ANG) units. Maintain and dispose of records created as a result of processes prescribed in this publication in accordance with AFMAN 37-139, *Records Disposition Schedule* (will become AFMAN 33-322, Volume 4). See **Attachment 1** for glossary of references and supporting information.

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Chapter 1

JUMPMaster/TEAM LEADER DUTIES GUIDE

1.1. Duties at Unit Area:

- a. Post warning, order/risk assessment.
- b. Type of deployments (static line (SL), high altitude low opening (HALO)/high altitude high opening (HAHO).
- c. Obtain drop zone (DZ) information (as required):
 - (1) Maps/charts.
 - (2) Photos.
 - (3) Surveys.
 - (4) Support available.
 - (5) Radio frequencies.
- d. Equipment requirements (mission, team, individual).
- e. Appoint jumpmaster (JM) and Oxygen Safety NCO (as required).
- f. Assign additional duties (assign aircraft/DZ videographer duties).
- g. Coordinate rigging of equipment for deployment.
- h. Coordinate joint airdrop inspection (JAI) for rigging alternate method zodiac (RAMZ)/combat rubber raiding craft (CRRC).
- h. Coordinate notice to airmen (NOTAM)/range clearances/DZ liability waivers.
- i. Complete passenger (PAX) manifest/flight orders (as required).
- j. Coordinate transportation to and from DZ.
- k. Coordinate with drop zone safety officer (DZSO) and medics (as required).
- l. Obtain forecasted weather/winds/DZ altimeter setting.
- m. Compute and plot high altitude release point (HARP)/computed airdrop release point (CARP).
- n. Attend aircrew brief (if on crew orders-must attend).
- o. Brief team members (as required).

1.2. Duties at Departure Airfield:

- a. Coordinate w/aircraft commander.
- b. Ensure show/station times are met.
- c. Complete jumpmaster aircraft inspection checklist.
- d. Check equipment rigging and security.
- e. Update team members (as required).
- f. Initiate donning of equipment (as required).
- g. Complete jumpmaster personnel inspection (JMPI) checklist on jumpers.

1.3. Duties in Flight:

- a. Coordinate with crew.
- b. Recompute HARP/CARP (as required).
- c. Receive/update release point from NAV (as required).
- d. Ensure the conduct and welfare for the team.
- e. Give time warnings/jump commands (as required).

1.4. Duties at the DZ:

- a. Account for all personnel and equipment.
- b. Assist injured personnel/coordinate medical treatment and evacuation.
- c. Coordinate transportation back to unit.
- d. For student training: Ensure videographer positioned/briefed.

Chapter 2

JUMPMaster AIRCREW BRIEF

2.1. Deployment Information:

- a. Number of aircraft involved and call signs.
- b. Type of drop (SL, HALO, HAHO).
- c. Pattern (number of passes/jump sequence).
- d. Altitude (min/max).
- e. Airspeed.
- f. Type of release (jumpmaster directed (JMD)/navigator (NAV) directed):
 - (1) For student training: DZ and release point must be visually identified.
 - (2) For nonstudent training jumps: Only release point need be visually identified.
- g. Type of exit (door/ramp).
- h. Aircraft configuration requirements.
- i. AAD procedures.

2.2. Team/Equipment Information:

- a. Number of jumpers/bundles.
- b. Call signs (team/individuals).
- c. Duty codes.
- d. Physiological technician/oxygen safety.*

2.3. Route of travel (MFF Only):*

- a. Pull altitude.
- b. Intended route of travel (show on map).
- c. Primary DZ (show on map).
- d. Alternate DZ(s) (show on map).
- e. Hazards near DZ and alternate DZs (show on map).

2.4. DZ Information (Use DZ survey):

- a. Primary/Alternate DZ (show on map):
 - (1) DZ name or UTM coordinates.
 - (2) Markings and features.
 - (3) DZ recognition symbol.
 - (4) DZ/landing zone (LZ) controller call sign (as required).
 - (5) Time over target (TOT).
 - (6) Release point.
 - (7) Mission abort time.
- b. Emergency DZs. (HAHO only/brief items from 3-4a).*

2.5. Communications (As Required):

- a. Frequency (primary/alternate).
- b. Visual signals day:
 - (1) CLEAR TO JUMP:
 - (a) Land: Target displayed.

- (b) Water: Target displayed boat circling target.
- (2) NO DROP THIS PASS:
 - (a) Land: Target removed/scrambled panels.
 - (b) Water: Boat positioned at target stationary.
- (3) JUMP CANCELLED:
 - (a) Land: Target removed replaced by block letter "X."
 - (b) Water: Target removed.
- (4) INJURED JUMPER. Land/Water: Ignite flare; use signaling devices as briefed by jumpmaster.

*Applies to freefall only.

NOTE: Air-to-ground radio communication is required for all night training parachute operations (safety). The aircraft will relay the number of jumpers to drop zone controller (DZC) on each pass for day and night parachute operations.

- c. HAHO (training only):*
 - (1) Aircraft will maintain radio contact with the team/DZSO until released.
 - (2) Aircraft will assist team/DZSO by relaying radio calls, assisting/affecting recovery.
- d. Echo Codes: All echo code messages will be preceded with the following: THIS IS AN ECHO MESSAGE.
 - (1) Alpha - negative injuries.
 - (2) Bravo - minor injuries, need medical attention.
 - (3) Charlie - serious injuries, need immediate hospitalization.
 - (4) Delta - deceased.

NOTE: The number following the echo code is the number involved.

2.6. Equipment available/required:

- a. Mission equipment (weight/personnel/RAMZ/parabundles).
- b. DZSO equipment.

2.7. Post Insertion Information (as required):

- a. Team actions on DZ/LZ (primary/alternate).
 - (1) Establish contact with aircraft.
 - (2) Relay condition of team equipment.
- b. Aircraft support required:
 - (1) Give headings to objective.
 - (2) Relay radio communications.
 - (3) Coordinate extraction (location/method/time).

2.8. Oxygen Procedures (as required – See Attachment 9, Oxygen Table):

- a. Pre-breathing.
- b. Time on oxygen.
- c. Aircraft depressurization (time).
- d. Walk around bottles (requirements).
- e. Procedures for altitude-related injury/incident.

2.9. Aircrew Emergency Procedures:

- a. Static line.
- b. MFF operations.

NOTE: Per AFI 11-2C-130V3, C-130 Operations Procedures, the aircraft loadmaster (when deployed on fixed wing aircraft) has primary responsibility for actions inside the aircraft. The Jumpmaster or Safety NCO is responsible to observe the fouled parachutist and recommend whether to retrieve or cut the parachutist free. If all parachutists have exited and there is no jumpmaster on board, this responsibility rests with the loadmaster. The recommendation is relayed, by the loadmaster, to the pilot who makes the final decision whether to retrieve or cut the parachutist free. On rotary wing aircraft or others that do not have a primary aircrew member designated, the jumpmaster will ensure detailed coordination and briefings are conducted prior to any jump/airborne/air operations.

2.10. Towed Jumper Procedures:

- a. Rotary wing aircraft:
 - (1) IMMEDIATELY stop stick/notify aircrew.
 - (2) Pilot notify DZC.
 - (3) Recover deployed static lines and d-bags.
 - (4) Pilot slowly descends to DZ/suitable landing sight.
 - (5) Aircraft establishes a hover/lowers jumper to ground.

NOTE: Unconscious jumper will not be lowered into water.

- (6) Jumpmaster unhooks jumper's static line.
- (7) Aircraft lands clear of the jumper.
- (8) Jumpmaster/DZC ascertains condition of jumper.
- (9) Evacuate as required.

WARNING: Anchor cable involved in towed parachutist incident will not be utilized until it is re-inspected and meets initial inspection and weight test criteria.

- b. Fixed wing aircraft:
 - (1) IMMEDIATELY stop stick/notify aircrew.
 - (2) Pilot notify DZC.
 - (3) Maintain deployment altitude and slow to minimum operation speed (MOS):
 - (a) If jumper is SCUBA equipped avoid flying over land.
 - (b) Without SCUBA or floatation equipment avoid flying over water.
 - (4) Identify how the jumper is towed. If towed by anything other than static line the loadmaster will attempt to free the jumper. If towed by static line, attempt retrieval.
 - (5) Loadmaster/safetyman recommends to pilot whether to retrieve or cut jumper free—aircraft commander gives clearance to cut the static line.
 - (a) All C-130 aircraft – conscious/usable reserve (indicated by tight body position with both hands on the reserve).
 1. Door tow priorities: FIRST: Retrieve; SECOND: Cut free.
 2. Ramp tow priorities: FIRST: Cut free; SECOND: Retrieve.

WARNING: Jumper with unusable reserve or who is unconscious will be retrieved.

- c. Inadvertent pilot chute deployment:
 - (1) IMMEDIATELY yell "PILOT CHUTE."
 - (2) Attempt to contain pilot chute in the aircraft.

- (3) Move away from open exits to a safe area in the aircraft.
 - (4) De-rig and secure jumper and his/her equipment.
 - (5) Exit immediately if any part of the parachute system is pulled outside of the aircraft.
 - (6) If jumper makes an unplanned exit, another jumper should deploy and follow him down, monitor his condition, relay his position to DZ controller.
- d. Malfunction/injury procedures (aircrew):
- (1) Air/ground activities directed to support jumper.
 - (2) Note and record:
 - (a) Airspeed, altitude, winds, and aircraft attitude at time of jumper's exit.
 - (b) Body position if observed.
 - (c) Track parachutist's descent.
 - (d) Any unusual circumstances.

*Applies to freefall only.

Chapter 3**LOADMASTER/FLIGHT ENGINEER DUTIES BRIEF (SL, HALO, HAHO)**

- 3.1. Keep working area clear of nonessential equipment.**
- 3.2. Type of exit (door/ramp).**
- 3.3. Assist JM (as briefed).**
- 3.4. Cabin lighting.**
- 3.5. Intercom requirements.**
- 3.6. Time warnings.**
- 3.7. H-1/H-60. Visually check that seatbelts are free from jumpers.**
- 3.8. Loadmaster/flight engineer position on jumpers exit:**
 - a. Monitor static lines as required.
 - b. Relay visual signals (course corrections, clear to jump, no drop).
- 3.9. Advise pilot of jumpers exit.**
- 3.10. Towed jumper procedures.**
- 3.11. Advise pilot of condition of jumpers (good chute or malfunction).**
- 3.12. Advise pilot when clear to turn (on helicopters recover static lines prior to giving clearance).**
- 3.13. Oxygen console turn-off procedures. ***
- 3.14. Equipment delivery.**
- 3.15. Recovery of equipment/forms completion.**

*Applies to freefall only.

Chapter 4

DROP ZONE CONTROLLER DUTIES BRIEF

4.1. Primary DZ and survey reviewed (show on map).

4.2. Alternate DZs (show on map). *

4.3. DZ controller call sign.

4.4. On station/mission ready time.

4.5. Aircraft call sign:

- a. Aircraft TOT.
- b. Type of release (ground marked release system [GMRS], CARP/HARP, JMD).
- c. Jumpers TOA/release point/flight path (HAHO).
- d. Number of passes/jumpers each pass.

4.6. Communications (type radio):

- a. Frequencies (primary/alternate). Aircraft and jumpers will not use the same frequency for inter-team communications.
- b. Block time.
- c. Initial aircraft contact procedures.
- d. Visual signals.
- e. DZ markings.

4.7. Type of drop (SL, HALO, HAHO).

4.8. Number of jumpers.

4.9. Wind limitations.

4.10. Equipment required (DZ/medical equipment per unit OI).

4.11. Night requirements (radio comm/DZ lighting).

4.12. Abort/drop-dead time.

4.13. Alternate DZ procedures (HAHO):*

- a. Maintain communications with team and drop aircraft.
- b. Follow vectors from drop aircraft to team's position.
- c. Recover personnel and equipment.

4.14. Malfunction/injury procedures:

- a. Treatment of injured takes priority over other DZ activities.
- b. Advise aircraft of jumper's status and evacuation requirements.

- c. Note surface winds, type landing, and any unusual circumstances.
- d. In the event of serious injury, or fatality the DZC will:
 - (1) Request medical/emergency assistance/evacuation as necessary.
 - (2) Notify chain of command and safety (command post may be required) per unit OI.
 - (3) Place the impact site off-limits and post a guard so the site remains undisturbed to the maximum extent without interfering with medical support.
 - (4) Photograph/video the parachutists, the impact site, and any obvious defects in the equipment, including any damage caused by the impact. Do so without disturbing the parachutist and/or equipment.
 - (5) Record where the parachutists harness or component was cut. Medical personnel will dictate the method of removal of the parachute harness. The DZC will closely observe the cutting of the harness if required for removal. Videotape if possible.
 - (6) Take immediate possession of the parachute log records. Limit access to these documents/videos to the investigation officer.
 - (7) Request medical personnel secure and preserve all clothing and equipment removed from the impact site with parachutists.
 - (8) Assume responsibility for all jump and personal equipment.
 - (9) Record the name and address of personnel who observed the incident even if they can provide no new facts to the investigation.
 - (10) Take statements from the jumpmaster, any ground observers, and other parachutists or aircraft personnel able to provide significant facts.
 - (11) Conduct a detailed component-by-component examination of all equipment after the parachutist has been evacuated.
 - (12) Sketch/photograph the whole impact site in relation to the DZ and mark the impact location of the parachutists and equipment.
 - (13) Ensure that the parachute is loosely rolled, tagged, and bagged after the on-site investigation is complete (entanglements must not be removed).
 - (14) Ensure that the aircraft is notified as soon as possible. This enables the crew to inspect the aircraft for any defects or damage that may have caused or contributed to the incident.
 - (15) Instruct all personnel at the scene to make no statements concerning the incident, and particularly statements concerning serious injury or death, to anyone not involved in the immediate incident response. Next of kin must be notified through official channels.
 - (16) Do not release anyone until directed by the on-scene commander.
 - (17) Use procedures per unit OIs for recording and reporting information.

*Applies to freefall only.

Chapter 5

TEAM MEMBER EQUIPMENT CHECKLIST (STATIC LINE)

(Used by TL/JM to inventory and inspect team member's equipment)

5.1. Parachute:

- a. Harness.
- b. Main. Serviceable - current inspection/repack dates.
 - (1) Riser's straight and connected.
 - (2) Pack tray ties/SCUBA tank ejectors snaps connected.
 - (3) Hip ejector snaps secured and closed, straps tightened/secured.
 - (4) Helicopters. Hip ejector snaps taped, except for SCUBA.
 - (5) Static line break cord tie routed through static line loop and safety pin attached to static line snap hook.
- c. Reserve. Serviceable - inspection and repack dates are current.
 - (1) Pins and cones checked.
 - (2) Pack opening band installed.
 - (3) Safety pin installed.
- d. Life preserve units (LPU) to harness (as required).

5.2. Delivery Containers (as required):

- a. Load harness - serviceable.
- b. Lowering line - attached.
- c. Floatation device- (as required).

5.3. Medical Equipment (as required):

- a. Control medications.
- b. Team.
- c. Individual.

5.4. Communications Equipment (as required/required for night):

- a. Radios. Type, quantity, and frequencies.
- b. Communication.
- c. Spare batteries.
- d. Rigged for deployment.

5.5. Mission Equipment (as required):

- a. Weapons, ammunition, and pyrotechnics.
- b. Field/mountain equipment.
- c. NVGs.

5.6. Devices (as required):

- a. Flare.
- b. Flashlight.
- c. Whistle - (required for night).

5.7. Strobe/Chemlite - on harness/SCUBA tanks (night).**5.8. Land:****5.8.1. Jump/Tree Suit - (as required).**

- a. Tree letdown webbing

5.8.2. Helmet with visor/goggles.**5.8.3. Gloves (weather appropriate).****5.8.4. Knife (as required).****5.9. Water:****5.9.1. Wetsuit/Drysuit (as required):**

- a. Jacket.
- b. Trousers.
- c. Hood.
- d. Gloves.
- e. Booties.

5.9.2. Face Mask, Fins, Snorkel, Whistle.**5.9.3. SPUDS/SCUBA Tanks - Gauged and Checked (as required):**

- a. Reserve lever up.
- b. Regulator attached.
- c. Air valve on - check regulator.

5.9.4. Buoyancy Compensator/Underwater Demolition Team (UDT) Vest/LPUs (as required).**5.9.5. ML-4 Kit (as required).****5.9.6. Divers Knife/Tool with flare attached.****5.9.7. Special Equipment (as required):**

- a. Divers watch.
- b. Depth gauge.
- c. Underwater compass.
- d. Underwater light.
- e. Shark dart.
- f. Weight belt with dive weights.

Chapter 6

TEAM MEMBER EQUIPMENT CHECKLIST (FREEFALL)

6.1. Parachute Assembly. Serviceable - Check Inspection/Repack Dates:

- a. Ripcords:
 - (1) Handles in pockets and secure.
 - (2) Cable routing and travel checked.
 - (3) Pins checked, ensure reserve cable is on left side of closing loops.
 - (4) Reserve static line routing on reserve ripcord checked.
- b. Three-ring riser assembly:
 - (1) Connections.
 - (2) Routing.
 - (3) Rings free.
 - (4) Inspect nylon-coated cable for damage.
 - (5) Inspect fabric-locking loop for damage.
 - (6) Reserve static line attached.
- c. AAD (not required for planned water deployment unless waterproof):
 - (1) Inspected/Serviceable.
 - (2) Correct setting.
- d. LPUs secured to harness (as required).
- e. Altimeter (not required for planned water jumps)

6.2. Direct Deploy Parachute Assemblies –Serviceable:

- a. Current inspection and repack dates - parachute data card must be with container.
- b. Cutaway handle:
 - (1) Ensure velcro is properly mated.
 - (2) Ensure cable at handle is NOT twisted.
 - (3) Inspect cable.
- c. Reserve ripcord handle:
 - (1) In pocket and secure.
 - (2) Check cable routing, swaged ball to pin.
 - (3) Cable continuity.
 - (4) Rigger's seal present.
- d. Three-ring riser assembly:
 - (1) Proper routing.
 - (2) Rings free.
 - (3) Locking loop not twisted.
- e. Main canopy pilot chute:
 - (1) Handle present and visible.
 - (2) Stowed in pocket and secure.
 - (3) Bridle routed and velcroed.
 - (4) Pack closing sequence.
 - (5) Pin checked.
- f. AAD:
 - (1) Set properly.

- (2) Checked.
- (3) Data card within 2-year battery date.

6.3. Delivery Containers (as required):

- a. Load harness – serviceable.
- b. Lowering line – attached (right side).
- c. Flotation device - (as required).

6.4. Medical Equipment (as required):

- a. Controlled medications.
- b. Team kit.
- c. Individual kit.

6.5. Communications Equipment (as required/required for night):

- a. Radio: Type, quantity, and frequencies.
- b. Communications check.
- c. Spare batteries.
- d. Rigged for deployment.

6.6. Oxygen Equipment (as required):

- a. Oxygen mask.
- b. CRU 60/43.
- c. Oxygen block.
- d. Portable oxygen assembly (twin 53/22).
- e. Quantity (min 1800 psi).
- f. Flow.

6.7. Mission Equipment (as required):

- a. Weapons, ammunition, and pyrotechnics.
- b. Mountain, field, water equipment.
- c. NVGs.

6.8. Signaling Devices (as required):

- a. Flare.
- b. Flashlight.
- c. Whistle.
- d. Mirror.
- e. Strobe/chemlites.

6.9. Land:**6.9.1. Individual Equipment:**

- a. Helmet.
- b. Goggles/faceplate.
- c. Jump/tree suit (as required).
- d. Altimeter.
- e. Gloves.

- f. Lighting (night only):
 - (1) Helmet.
 - (2) Harness.
 - (3) Altimeter – built in and chemlite.

6.10. Water:

6.10.1. Individual Equipment:

- a. Wetsuit/drysuit (as required).
- b. Jacket.
- c. Trousers.
- d. Hood.
- e. Gloves.
- f. Booties.
- g. Lighting (night only).
- h. Mask, fins, snorkel, and whistle.
- i. Compensator/UDT vest/LPUs (as required).
- j. ML-4 kit/survival equipment (as required).
- k. Diver's knife/tool with flare attached.
- l. Special mission equipment (as required):
- m. Diver's watch/depth gauge.
- n. Underwater compass.
- o. Underwater flashlight.
- p. Shark dart.
- q. Equipment belt.

6.11. HAHO:

6.11.1. Team Equipment:

- a. Medical kit – one minimum.
- b. Radio with guard capability – one minimum.

NOTE: Separate radios are required to communicate with the aircraft and the jumpers if frequencies are not compatible.

6.11.2. Individual Equipment:

- a. Helmet with communications.
- b. Radio.
- c. Compass on chest mount.
- d. Emergency signaling device on person (flare, mirror).
- e. Warm clothing.

6.11.3. Navigator:

- a. HAHO compass board.
- b. Map and map board.
- c. NVGs (as required).
- d. Electronic NAV/aid (as required).

6.11.4. Group Leader:

- a. Map and map board.
- b. NVGs (as required).

Chapter 7

STATIC LINE JUMPMaster BRIEFING

7.1. Administrative:

- a. Sign manifest. Ensure all jumpers are current and qualified.
- b. Crew rest and duty day limitations.
- c. Roll call:
 - (1) Remove rings, jewelry, and sharp objects.
 - (2) Safety glasses - taped/secured.
- d. Time hack.
- e. Weather forecast:
 - (1) Winds.
 - (2) Sky conditions (clouds/ceiling).
 - (3) Sunrise/sunset.
 - (4) Moonrise/moonset/percent illumination.
 - (5) Temperature (altitude/surface/water).*
 - (6) Sea state.

7.2. Situation:

- a. Personnel involved:
 - (1) JM.
 - (2) Assistant JM.
 - (3) DZSO.
 - (4) Malfunction officer.
 - (5) Primary medic.
 - (6) DZ video.
 - (7) Safety swimmers.*
- b. Jump description:
 - (1) Type of deployment.
 - (2) Drop altitude.
 - (3) Drop speed.
 - (4) Number of lifts/passes.
 - (5) Stick order.
- c. Drop zone:
 - (1) Name and location (show map).
 - (2) Marking (day/night).
 - (3) Size.
 - (4) Elevation.
 - (5) Terrain/hazards and obstacles.
 - (6) Enroute checkpoints.
 - (7) Aircraft approach heading.
 - (8) CARP.
 - (9) Desired impact point/alternate DZ.
 - (10) Assembly area/procedures.
 - (11) Emergency signals/actions.

- d. Aircraft description:
 - (1) Type of aircraft.
 - (2) Tail numbers, parking, and ramp location.
 - (3) Type of exit (door, ramp).
 - (4) Anchor line location.
 - (5) Location of JM and assistant JM/safetyman in aircraft.

7.3. Equipment:

7.3.1. Parachutes:

- a. Type (main/reserve).
- b. Characteristics (wind limitations).
- c. Static line extension requirements.
- d. LPUs (as required).*

7.3.2. Individual (land):

- a. Uniform.
- b. Boots.
- c. Helmet.
- d. Goggles.
- e. Gloves.
- f. Dog tags/ID card.
- g. Knife (as required).
- h. Signaling/lighting devices (as required).
- i. Kit bag (as required).

7.3.3. Individual (water):*

- a. Uniform/wetsuit/dry suit.
- b. Fins/fixed palms/footgear.
- c. Mask/snorkel.
- d. Flotation device.
- e. Gloves.
- f. Dog tags/ID cards.
- g. Knife.
- h. Signaling/lighting devices (as required).
- i. ML-4 kit (as required).
- j. Protect with strobe.
- k. Wrist compass.
- l. Carabiner.
- m. Alternate loading belt/harness.

7.3.4. Other equipment:

- a. Combat equipment (IAW operations order [OPORD]).
- b. Special mission equipment (IAW OPORD).
- c. SPUDS/SCUBA (as required).*
- d. RAMZ/CRRRC equipment (see [Chapter 14](#)).*

7.4. Time Schedule:

- a. Show time.
- b. Aircrew jump briefing.
- c. Equipment issue.
- d. Load equipment to vehicles.
- e. Depart area.
- f. Don equipment and JMPI.
- g. Load aircraft.
- h. Station time.
- i. Take off.
- j. Time on target (TOT).
- k. Duration of operation.
- l. Return to area.
- m. Drop dead time.

7.5. Staging Area Operations:

- a. Location (parking).
- b. Procedures:
 - (1) Unload equipment.
 - (2) Don equipment.
 - (3) JMPI.
 - (4) RAMZ/CRRC preload inspection.*
 - (5) Inspect aircraft.
- c. Load aircraft:
 - (1) Approach to aircraft.
 - (2) Load in reverse order.

7.6. In-Flight Static Line:

- a. 1,000 ft AGL pilot's command - JM gives "Unfasten Seatbelts."
- b. 20-minute warning:
 - (1) JM gives "20-minute warning."
 - (2) Jumpers don equipment.
 - (3) Drop equipment is pre-positioned.
 - (a) Static lines secured.
 - (b) Cutters armed (para-point).
 - (c) Jumpers receive equipment check.
 - (d) Cabin lighting configured.
- c. 10-minute warning (red light comes on):
 - (1) JM gives "10-minute warning."
 - (2) JM begins hand signals.
- d. 6 minute warning (as required):
 - (1) Jumpers stand up.
 - (2) Hook up.
 - (3) Check static line.
 - (4) Check equipment.
 - (5) Sound off with equipment check.
- e. 1-minute warning - green light turned ON (JMD only).

- f. 10 seconds - stand by.
- g. "Go" or "no drop"(green light CARP).

7.7. Exit Procedures:

- a. Exit location.
- b. Body position.

7.8. Aircraft Emergency Procedures:

- a. Bailout: Three short rings – prepare, with one long ring – jump.
 - (1) 0-1000 feet AGL...Seatbelts, take crash position.
 - (2) 1000-2000 feet AGL...JM controlled exit, deploy reserve.
 - (3) Above 2000 feet AGL... Hook up main, JM directs deployment.
- b. Ditching/crash landing: six short rings - prepare; one long ring just prior to impact.

WARNING: Minimum acceptable bailout altitude for static line is 400 feet AGL for fixed wing and 1,000 feet AGL for rotary wing/low speed (less than 90 KIAS) aircraft.

- c. Inadvertent reserve pilot chute deployment:
 - (1) **IMMEDIATELY** yell "PILOT CHUTE."
 - (2) Attempt to contain pilot chute in the aircraft. Move away from open exits to a safe area in the aircraft.
 - (3) De-rig and secure jumper and equipment.
 - (4) Exit immediately if any part of the parachute system is pulled outside of aircraft.
- d. Safety concerns:
 - (1) Keep movement in aircraft to a minimum.
 - (2) Monitor/guard reserve ripcord at all times.
 - (3) Stay alert - watch JM.
 - (4) Keep seatbelts on until directed to remove.
 - (5) Emergency exits are jumpmaster controlled.

7.9. Five Points of Performance:

- a. Check body position and count.
 - (1) Chin on chest, eyes open, elbows into sides.
 - (2) Hands and fingers spread over ends of reserve parachute.
 - (3) Body bent slightly forward at the waist, feet and knees together, and knees locked.
 - (4) Count to four by thousands (fixed-wing)/count to six by thousands (rotary-wing).
 - (5) If parachutist doesn't feel opening shock, activate reserve.
- b. Check canopy and gain canopy control.
 - (1) Reach up and grasp toggles/risers.
 - (2) Make a 360-degree check of canopy.
 - (3) Remove twists, grasp rear risers, apply outward pressure while bicycling legs in a direction opposite to twists.
- c. Keep a sharp lookout during descent.
 - (1) Look before turning.
 - (2) Turn right to avoid collisions.
 - (3) Lower parachutist has right of way.
 - (4) Maintain 50 feet separation in the air.
 - (5) Check up, down, and sides. If clear, release equipment.

- (6) Immediately regain canopy control.
- d. Prepare to land:
 - (1) Land:
 - (a) Lower equipment no lower than 200feet AGL.
 - (b) 100 feet AGL slip into wind or turn and hold into wind.
 - (c) Feet and knees together.
 - (d) Knees slightly bent and unlocked.
 - (e) Elbows tight into sides.
 - (f) Head and eyes toward the horizon. Turn portion of body to a 45-degree angle, exposing the portion of body, which will come in contact with the ground.
 - (2) Water:
 - (a) Activate quick release on waistband.
 - (b) Unsnap the left connector snap on reserve.
 - (c) Rotate the reserve to the right side of the parachute harness.
 - (d) Sit well back in harness.
 - (e) Activate quick ejector on chest strap.
 - (f) Turn into the wind by 100 feet AGL.
 - (g) Place hand on quick ejector on leg straps.
 - (h) Activate the ejector snaps on the leg straps, throw arms up, and arch out of the harness when entering the water.
- e. Land:
 - (1) Make a PLF using the five points of contact.
 - (a) Balls of feet.
 - (b) Calves.
 - (c) Thighs.
 - (d) Buttocks.
 - (e) Side muscle of back (pull-up muscle).
 - (2) No stand-up landings.
 - (3) If being dragged, activate canopy release.
 - (4) Maintain low profile and tactically de-rig.
 - (5) For water landings:
 - (a) When feet enter water, activate quick ejector on leg straps, and maneuver out of harness.
 - (b) Activate canopy release if being dragged.
 - (c) If trapped under the canopy, follow a seam to edge of canopy.
 - (d) Swim up drift/upwind.

7.10. Towed Jumper Procedures: *WARNING:* Do not deploy reserve while being towed. Only the loadmaster or the jumpmaster will perform towed parachutist retrieval. The jumpmaster will take directions from the loadmaster. Anchor cable involved in towed parachutist incident will not be utilized until it is reinspected and meets initial inspection and weight test criteria.

- a. Rotary wing aircraft:
 - (1) **IMMEDIATELY** stop stick/notify aircrew.
 - (2) Pilot notifies DZC.
 - (3) Recover deployed static lines and d-bags.
 - (4) Pilot slowly descends to DZ/suitable landing sight.

- (5) Aircraft establishes a hover and lowers jumper to ground.

NOTE: Unconscious jumper will not be lowered into water.

- (6) Jumpmaster unhooks jumper's static line.
- (7) Aircraft lands clear of the jumper.
- (8) Jumpmaster/DZC ascertains condition of jumper.
- (9) Evacuate as required.

b. Fixed wing aircraft:

- (1) **IMMEDIATELY** stop stick/notify aircrew.
- (2) Pilot notifies DZC.
- (3) Maintain deployment altitude and slow to MOS:
 - (a) If jumper is SCUBA equipped avoid flying over land.
 - (b) Without SCUBA or flotation equipment avoid flying over water.

(4) Identify how the jumper is towed. If towed by anything other than static line the jumpmaster/safetyman will attempt to free the jumper. If towed by static line, attempt retrieval.

- (5) Jumpmaster/safetyman recommends to pilot whether to retrieve or cut jumper free.

Aircraft commander gives clearance to cut the static line.

(a) All aircraft – conscious/usable reserve (indicated by tight body position with both hands on the reserve).

WARNING: Jumper with unusable reserve or who is unconscious will be retrieved.

1. Door tow priorities: FIRST: retrieve; SECOND: cut free.

2. Ramp tow priorities: FIRST: cut free; SECOND: retrieve.

- (6) Individual parachutist - if cut free, deploy reserve.

7.11. Emergency Procedures:

a. Total malfunction:

- (1) Assume tight airborne body position.
- (2) Look at and grasp left carrying handle with left hand and ripcord handle with right

hand.

NOTE: For center pull reserves, pull ripcord with both hands.

- (3) Turn head left or right.
- (4) Pull the reserve ripcord handle.
- (5) Discard ripcord.

b. Partial malfunction:

- (1) Return to a tight airborne body position.
- (2) Cover front of reserve with left forearm and hand to contain the parachute.
- (3) Look at and grasp ripcord handle with right hand and pull.
- (4) Discard ripcord handle.
- (5) Using both hands grab as much canopy as possible and throw down and to the right or left at about a 45-degree angle (if spinning, throw in the direction of the spin).

c. Canopy collisions:

- (1) Spread eagle and attempt to bounce off and steer clear.
- (2) If parachutist enters another's suspension line, assume the modified position of

"attention" with right hand protecting the ripcord, in hopes of exiting the same location without entanglement.

- (3) Actions upon entanglement (Do **NOT** lower equipment):

- (a) T-10 C:
1. Higher parachutist moves hand under hand down to the lower parachutist.
 2. Establish eye contact and hold each other by main lift webs.
 3. Communicate and decide type of PLF to perform upon contact with ground. Both jumpers perform PLF in opposite directions.
 4. If one canopy is inflated, do not activate reserve.
 5. If both parachutes lose lift, activate reserve parachutes.
- (b) MC1-1B/C:
1. Immediately activate reserve parachute using the down and away method.
 2. Do not attempt to climb to other parachutist.
 3. Higher jumper avoids lower upon landing.

7.12. Emergency landings:

- a. Tree landings
- (1) Attempt to avoid.
 - (2) Retain combat equipment.
 - (3) Check below, jettison combat equipment if already lowered.
 - (4) Maintain canopy control until making contact with trees.
 - (5) Rotate forearms in front of face and chest when making contact with trees.
 - (6) Prepare to execute PLF if passing through trees.
 - (7) Consider activating reserve and climbing down if hung up in trees.
- b. Wire landings:
- (1) Attempt to avoid.
 - (2) Jettison combat equipment.
 - (3) Raise arms to elbow-locked position and place palms of hands on the inside of the front set of risers. Keep feet and knees together and chin on chest.
 - (4) Push forward on front set of risers, bending at waist to initiate a rocking motion through wires.
 - (5) Prepare to do a PLF.
- c. Water unintentional (no LPUs):
- (1) Steer to avoid.
 - (2) Jettison headgear.
 - (3) Release all equipment tie downs and lower equipment, but do not jettison it.
 - (4) Activate quick release on waistband.
 - (5) Unsnap the left connector snap on reserve.
 - (6) Rotate the reserve to the right side of the parachute harness.
 - (7) Seats himself/herself well into the saddle.
 - (8) Activate quick ejector on chest strap.
 - (9) Place hands on quick ejector on leg straps.
 - (10) Activate the ejector snaps on the leg strap, throw arms up, and arch out of the harness when entering the water.
 - (11) Prepare to execute PLF if water is shallow.
 - (12) Swim upstream to avoid becoming entangled with the parachute.
- d. Water unintentional (with LPUs):

- (1) Steer to avoid.
- (2) If water is unavoidable activate LPUs.
- (3) Upon water entry, activate both canopy releases and swim away from the canopy.

7.13. Brief Risk Assessment (Per unit OI).

NOTE: *Denotes water jump procedure.

Chapter 8

FREEFALL JUMPMASTER BRIEFING

8.1. Administrative:

- a. Sign manifest. Ensure all jumpers are current and qualified.
- b. Roll call.
 - (1) Remove rings, jewelry, and sharp objects.
 - (2) Safety glasses - taped/secured.
- c. Time hack.
- d. Classification.
- e. Weather (current conditions and forecast).
 - (1) Winds.
 - (2) Sky conditions (clouds/ceiling).
 - (3) Sunrise, sunset.
 - (4) Moonrise, moonset, percent illumination.
 - (5) Temperature (altitude, surface, water).*
 - (6) Sea state.*

8.2. Situation:

- a. Personnel involved.
 - (1) JM.
 - (2) Assistant JM.
 - (3) DZSO/malfunction officer.
 - (4) Primary medic.
 - (5) Safety swimmers.*
 - (6) Oxygen NCO.
 - (7) DZ videoographer.
- b. Jump description:
 - (1) Type of deployment.
 - (2) Exit altitude/opening altitude.
 - (3) Drop speed.
 - (4) Number of lifts/passes.
 - (5) Stick order.
- c. Drop zone:
 - (1) Name and location (show map).
 - (2) Marking (day/night).
 - (3) Size.
 - (4) Elevation.
 - (5) Terrain/hazards and obstacles.
 - (6) En route checkpoints.
 - (7) Aircraft approach heading.
 - (8) HARP/CARP.
 - (9) Desired impact point/alternate DZ.
 - (10) Assembly area/procedures.
 - (11) Emergency signals/actions.

- d. Aircraft description:
 - (1) Type of aircraft.
 - (2) Tail numbers/parking, ramp location.
 - (3) Type of exit (door, ramp).
 - (4) Location of JM and assistant JM/safetyman in aircraft.

8.3. Equipment:

- a. Parachutes:
 - (1) Type (main/reserve).
 - (2) Characteristics (wind limitations).
 - (3) AAD (setting) land only.
 - (a) Minimum arming/disarming altitude.
 - (b) Notification procedures for emergency descent.
 - (4) Procedures for premature firing (same as inadvertent pilot chute deployment).
 - (5) Altimeter (setting) land only.
 - (6) LPUs (as required).*
- b. Individual (land):
 - (1) Uniform.
 - (2) Boots.
 - (3) Helmet.
 - (4) Goggles.
 - (5) Gloves.
 - (6) Dog tags/ID cards.
 - (7) Knife (as required).
 - (8) Signaling/lighting devices (as required).
 - (9) Kit bag (as required).
 - (10) Oxygen Mask (as required).
- c. Individual (water)(as required): *
 - (1) Uniform/wetsuit/drysuit.
 - (2) Fins/fixed palms/footgear.
 - (3) Mask/snorkel.
 - (4) Flotation device.
 - (5) Gloves.
 - (6) Dog tags/ID cards.
 - (7) Knife.
 - (8) Signaling/lighting devices (as required).
 - (9) ML-4 kit.
 - (10) Protect w/strobe.
 - (11) Wrist compass.
 - (12) Carabiner.
 - (13) Alternate loading belt/harness.
- d. Other equipment:
 - (1) Combat equipment (IAW OPORD).
 - (2) Oxygen equipment (as required).
 - (3) Special mission equipment (IAW OPORD).
 - (4) SPUDS (as required).

8.4. Time Schedule:

- a. Show time.
- b. Jump aircrew brief.
- c. Equipment issue/prep.
- d. Load equipment to vehicles.
- e. Depart area.
- f. Don equipment and JMPI.
- g. Load aircraft.
- h. Station time.
- i. Take off.
- j. Time on target (TOT).
- k. Duration of operation.
- l. Return to area.
- m. Drop dead time.

8.5. Staging Area Operations:

- a. Location (parking).
- b. Procedures:
 - (1) Unload equipment.
 - (2) Don equipment.
 - (3) JMPI.
 - (4) RAMZ pre-load inspection. *
 - (5) Inspect aircraft.
- c. Load aircraft.
 - (1) Approach to aircraft.
 - (2) Load in reverse order.

8.6. Actions in Aircraft:

- a. Hand signals/sequence (freefall).
 - (1) "Don helmets."
 - (2) "Seatbelts off."
 - (3) "Time warnings"/jump commands.
 - (a) 20 min - don combat equipment.
 - (b) 10 min - "winds/gusts" and "arm ARR" (safe to arm altitude).
 - (c) 2 min - "stand up" (face JM, check pins and equipment).
 - (d) 1 min - "move to the rear" (move within 1 meter of door/ramp hinge, if jumping oxygen activate bailout oxygen system and check Airox VIII flow indicator).
 - (e) 15 sec - "stand by" (return signal, move to edge of door/ramp).
 - (4) "Go."
 - (5) "Abort" (return to seats and sit down).
- b. Exit procedures:
 - (1) Exit location.
 - (2) Body position.
- c. Aircraft emergency procedures:
 - (1) Bailout freefall: three short rings - prepare; one long ring – jump.
 - (a) 0-1000 feet AGL - seatbelts, take crash position.

- (b) 1000-2000 feet AGL - JM controlled exit, immediately deploy reserve.
- (c) Above 2000 feet AGL - JM controlled exit; deploy main max five sec.

Delay.

- (2) Ditching/crash landing: six short rings-prepare; one long ring just prior to impact.
- d. Inadvertent pilot chute deployment:
 - (1) **IMMEDIATELY** yell "PILOT CHUTE."
 - (2) Attempt to contain pilot chute in the aircraft.
 - (3) Move away from open exits to a safe area in the aircraft.
 - (4) De-rig and secure jumper and his equipment.
 - (5) Exit immediately if any part of the parachute system is pulled outside of the aircraft.
- (6) If jumper makes an unplanned exit, another jumper should deploy and follow him down, monitor his condition, relay his position to DZ controller.
- e. Safety concerns:
 - (1) Keep movement in aircraft to a minimum.
 - (2) Monitor/guard ripcords.
 - (3) Stay alert - watch JM.
 - (4) Keep seatbelts on until directed to remove.
 - (5) Emergency exits are jumpmaster controlled.

8.7. MFF Emergency Procedures: NOTE: Same day review of the Freefall Emergency Procedures video (USAF 607521) is authorized in lieu of briefing items **8.7.** through **8.9.**

- a. Actions on exit:
 - (1) Collisions on exit – maintain your arch, gently push off the parachutist, regain your stability, check your altimeter, check ripcords, and continue the MFF as planned.
 - (2) Spinning - hard arch, check hands, check feet, counter, and maintain altitude awareness.
 - (3) Tumbling - hard arch, check hands, check feet, relax, and maintain altitude awareness.
 - (4) Entering a cloud/loss of visibility – stop all movement and return to a stable, relaxed arch. Maintain altitude awareness. Pull at the prescribed altitude even if you are still in the cloud. Perform good post-opening check and watch for other parachutists.
 - (5) Accidental parachute activation - determine which canopy has deployed:
 - (a) Main – Do a penetration check and continue to fly the canopy for a landing on primary/alternate DZ.
 - (b) Reserve (check risers and for no trailing pilot chute) - cut away main canopy, do a penetration check, and continue to fly the canopy for a landing on primary/alternate DZ.
 - (c) Main and reserve parachutes deploy – cut away main canopy, do a penetration check, canopy control to DZ/alternate, and utilize standard procedures for combat equipment.
 - (d) Main deploys and reserve opens partially but does not fully inflate – slow the main parachute to prevent the reserve from inflating. Try to pull in the reserve deployment bag and hold it between your legs. Be ready to cut away your main parachute.
- b. Actions in freefall:
 - (1) Objective - stay off low man's back.
 - (2) Heading - DZ terrain feature, low man.
 - (3) Stability - hard arch, air awareness, altitude awareness.

(4) Collision avoidance.

(5) Altimeter failure (day and night operations) – observe other parachutists in freefall and activate main parachute with other parachutists at the prescribed activation altitude. If unable to observe other parachutists, clear air space, wave off, and pull the main ripcord.

c. Cutaway procedures (for total or partial malfunctions).

NOTE: Once initiated, follow through to completion.

(1) Arch.

(2) Throw away main ripcord (as required).

(3) Look at and grab cutaway handle, look at and grab reserve ripcord.

(4) Arch, pull cutaway handle, pull reserve ripcord, throw away.

(5) Check to ensure reserve pilot chute has deployed.

(6) Perform post-opening procedures.

d. Post-opening procedures:

(1) Use rear risers to avoid other jumpers as required. Turn right to avoid collisions.

(2) Release brakes and gain control of the canopy.

(3) Check canopy. Maintain altitude awareness.

(4) Resolve post-opening malfunctions as required. If malfunction cannot be resolved and if canopy is uncontrollable, cut away no lower than 2,000 feet AGL.

(5) Controllability check.

NOTE: The controllability check is accomplished only when the canopy controllability is questionable.

(a) Release brakes.

(b) Look left, turn left 90 degrees, look right, turn right 90 degrees.

(c) Determine the stall point.

NOTE: If the canopy requires more than 50 percent opposite toggle to counter a turn, the canopy is uncontrollable. If the canopy stalls prior to the 50 percent brake setting, the canopy is uncontrollable. If the canopy is uncontrollable perform cutaway procedures.

(6) Check altitude/rate of descent.

(7) Activate strobe light/canopy lighting system as required.

(8) Orient yourself to drop zone.

(9) Locate other jumpers and achieve separation.

e. Total malfunctions:

(1) Floating ripcord:

(a) Locate ripcord housing with right hand.

(b) Locate ripcord cable, which should protrude from the housing.

(c) Pull cable.

(d) If unsuccessful, perform cutaway procedures.

WARNING: NO MORE THAN TWO ATTEMPTS SHOULD BE MADE TO LOCATE THE RIPCORD (THE INITIAL ATTEMPT IS THE FIRST ATTEMPT).

(2) Hard pull:

(a) If initial pull is unsuccessful, come across with left hand in a punching motion and push right hand and ripcord out.

(b) If second attempt is unsuccessful, perform cutaway procedures.

(3) Pack closure:

(a) Check over shoulder again, vigorously.

- (b) If main parachute does not deploy, perform cutaway procedures.
- f. Partial malfunctions:
- (1) Pilot chute hesitation:
 - (a) After pulling ripcord and checking over shoulder, check over shoulder again, vigorously.
 - (b) If main parachute does not deploy, perform cutaway procedures.
 - (2) Horseshoe malfunction - perform cutaway procedures immediately.
 - (3) Bag lock:
 - (a) Pull down twice on rear risers.
 - (b) If main parachute does not deploy, perform cutaway procedures.
 - (4) Streamer:
 - (a) Pull down twice on both brakes.
 - (b) If main parachute does not inflate, perform cutaway procedures.
 - (5) Snivels:
 - (a) Pull down twice on both brakes.
 - (b) If main parachute does not inflate, perform cutaway procedures.
 - (6) Riser separation - perform cutaway procedures.
 - (7) Hung slider and/or closed end cells:
 - (a) Bring both toggles to full brake position for three to four seconds and then let toggles up slowly (let up on the toggles to the 50% brake position). This process may be repeated a maximum of TWO times.
 - (b) If unsuccessful, continue with post-opening procedures (controllability check).
 - (8) Premature brake release:
 - (a) Immediately release the opposite brake.
 - (b) Perform post-opening procedures.
 - (9) Broken control lines:
 - (a) Release brakes and steer with remaining control line.
 - (b) Continue with post-opening procedures.
 - (c) Determine stall point at a safe altitude using rear risers.
 - (d) Use rear risers for landing.

NOTE: Rear risers may also be used for control. However, overuse may fatigue arms.

- (10) Broken lines. Perform post-opening procedures.
- (11) Line twists. Reach up and separate risers and use a kicking motion to untwist suspension lines.

NOTE: Do not release the brakes until twists are cleared.

- (12) Rips, and/or tears. Perform post-opening procedures.
- (13) Tension knots. Perform post-opening procedures.
- (14) Pilot chute over the nose:
 - (a) Perform post-opening procedures.
 - (b) Perform a dynamic stall.
 - (c) Execute a controllability check.
- (15) Combinations. Perform post-opening procedures.
- (16) Dual main and reserve deployment:

- (a) If both main and reserve parachutes deploy completely (ensure good reserve deployment and canopy separation before cut away) cut away main parachute.
 - (b) If only reserve pilot chute and bridle are deployed, attempt to contain them.
 - (c) If reserve parachute deploys and will not fully inflate, slow main parachute.
- Be prepared to perform a cutaway should reserve parachute fully inflate.

(17) Canopy entanglements:

- (a) Parachute collision avoidance:
 - 1. Lower parachutist has right of way.
 - 2. Maintain a safe vertical and horizontal separation.

NOTE: 200 feet vertical and 75 feet horizontal separation is recommended for normal operations.

- (b) Collision imminent:
 - 1. Steer to avoid, look right, clear, turn right.
 - 2. Spread arms and legs in an attempt to bounce off canopy/lines.

(c) Entanglement occurs. Lower parachutist entangled with higher parachutist, and higher parachutist has a good canopy.

NOTE: Communication between parachutists and altitude awareness is critical in successful disengagements.

- 1. Entanglement above 2,000 feet AGL:
 - a. Higher parachutist attempts to clear of lower canopy.
 - b. If canopy cannot be cleared:
 - aa. Check altitude.
 - bb. At or above 2,000 feet AGL, lower parachutist per-

forms cutaway procedures.

NOTE: If the lower canopy is cleared, it should re-inflate in 150 to 200 feet.

2. Entanglement between 1,000-2,000 feet AGL. Lower parachutist has two options:

- a. Perform cutaway procedures.
- b. If lower parachutist does not want to cut away:
 - aa. Higher parachutist makes every effort to maintain
 - bb. Lower parachutist must jettison equipment.
 - cc. Land with higher.
 - c. Both parachutists must be prepared to do a PLF.

control of lower parachutist's canopy.

- 3. Both parachutists entangled and neither has a good canopy:

aa. Higher parachutist must clear himself of entangled lines and cut away, altitude permitting.

bb. Lower parachutist should cut away after higher parachutist, altitude permitting.

WARNING: The higher parachutist may be fatally engulfed in the canopies if the lower parachutist performs a cutaway first.

cc. If still unsuccessful, both should deploy their reserve parachutes in an attempt to slow descent.

dd. If only one reserve parachute deploys, parachutist with the good reserve must bring other parachutist to ground.

ee. If both reserve canopies deploy, cut away from entanglement.

(18) Emergency landings:

(a) Trees.

1. Do not lower equipment. Jettison if lowered.
2. Turn canopy into wind.
3. Brake as needed to achieve a vertical descent into the trees.
4. Prepare for a PLF.
5. Use forearms to protect face while passing through trees.

NOTE: Goggles and an oxygen mask provide additional face and eye protection when worn.

6. If suspended, signal for assistance.

(b) Wires:

1. Avoid at all costs, even if a downwind landing is required.
2. Streamline body while passing through wires.
3. If entangled in wires, remain motionless until power is disconnected

do not allow anybody to touch you.

4. Prepare to do a PLF after passing through wires.
5. If parachute is entangled in wires and contact is made with ground,

cut away from main parachute or get out of harness (reserve parachute) immediately and move away.

NOTE: If time and altitude permit, throw away the main ripcord, disconnect RSL, and jettison equipment.

(c) Water:

1. Jettison, helmet, oxygen mask, and equipment.
2. Unhook reserve static line.
3. Unfasten chest strap and waist strap.
4. Inflate flotation device if available.
5. Turn canopy into wind.
6. Use brakes to slow air speed.
7. Release leg straps as feet contact the water and swim free of harness.
8. If dragged in water, cut away from main canopy.
9. If trapped under canopy, follow a seam to edge of canopy.

8.8. Canopy Control:

- a. Half method to target (altitude/half distance to target).
- b. Brakes.
- c. Holding.
- d. Running.
- e. Crabbing while holding/running.

8.9. Prepare to Land:

- a. Follow low man's established traffic pattern.
- b. Lower rucksack on final (200-500 feet).
- c. No 360-degree turns.
- d. S-turn/brakes to lose altitude.

- e. Flared landing.

8.10. After Landing (Land):

- a. Collapse canopy.
- b. Move to assembly area.

8.11. After Landing (Water):

- a. Collapse canopy.
- b. Inflate LPU on waist strap/activate chemlites (as required).
- c. Swim to assembly area.

8.12. Actions at Assembly Area. As unit OPORD/standard operating procedures (SOP) require.

8.13. Grouping Exercises:

- a. Exit together.
- b. Freefall together.
- c. Gain adequate separation.
- d. Open together.
- e. Canopy control.
- f. Land together.
- g. Recover equipment.

8.14. Oxygen Operations:

- a. No sleeping on console.
- b. Continuous observation of jumpmaster.
- c. Actions at time warnings - return oxygen check signal/attach equipment as required.
- d. Actions at jump commands:
 - (1) Stand up - stand facing jumpmaster, check pins, check O2 gauge of man in front/rear, secure goggles, remain close to console.
 - (2) Move to the rear – turn on O2, disconnect from console, attempt to replace hose, do not step on hoses, and move to rear.

8.15. Brief Risk Assessment (per unit OI).

NOTE: *Denotes water jump procedure.

Chapter 9

JUMPMaster AIRCRAFT INSPECTION CHECKLIST

9.1. Maintenance Status. Check maintenance records or with flight engineer/loadmaster.

9.2. Aircraft Exterior:

- a. No projections, secure or remove anything which could interfere with jumpers exit.
- b. No sharp objects.

9.3. Aircraft Interior:

- a. Seats and safety belts.
- b. Jump caution light.
- c. Cabin lighting (as required).
- d. Jump doors.
 - (1) No sharp or protruding edges.
 - (2) Security of jump doors and platforms.
 - (3) Air deflectors.
- e. Floors:
 - (1) Clean.
 - (2) Excess equipment stored.
 - (3) Rollers removed or reversed.
- f. Oxygen equipment:
 - (1) Secured.
 - (2) Operational.
 - (3) Walk around bottles.
- g. Anchor line cable system (as required):
 - (1) Cable secured.
 - (2) Support brackets secured.
 - (3) Cable (no breaks or frays).
- h. Static line retriever system:
 - (1) Operational.
 - (2) Cables secured.
 - (3) Retriever bar or tie-down strap available for use.

9.4. Contract Aircraft Inspection. Use the same criteria, where applicable, for inspecting exterior and interior of aircraft.

Chapter 10

STATIC LINE JUMPMaster PERSONNEL INSPECTION CHECKLIST (COMPLETE ON ALL JUMPERS PRIOR TO DEPLOYMENT)

NOTE: Items **10.1.** through **10.16.** may be completed prior to boarding. If jumpers de-configure, re-accomplish the entire checklist.

10.1. Helmet - On/Secured.

10.2. Goggles/Visor/Facemask (as required). **NOTE:** Sunglasses of any type are not authorized.

10.3. SCUBA Regulator (as required).

- a. Air flow checked.
- b. Hose routed and secured.

10.4. Risers - Connected and Secured.

10.5. Weapon (as required) – Checked: (**NOTE:** Recommend use of the M-1950, or similar, weapons container to further protect rifles during static line operations. Use of the M-1950 is currently not authorized for freefall operations.)

- a. Secured on jumper's left.
- b. Barrel pointed down, ties secured.
- c. Carrying handle forward.
- d. Waistband through carrying handle.
- e. Chest strap through sling.
- f. Excess sling S-folded and taped.
- g. Magazine installed and taped.
- h. Weapon selector on "Safe."

10.6. Chest Strap and Ejector Snap - Secured and Closed.

10.7. Flotation device (as required).

10.8. Waistband - Secured with Quick Release.

10.9. Reserve - Secured, Ripcord Handle Clear and Safety Pin Installed.

10.10. Equipment Load/Harness – Checked:

- a. Secured outboard on reserve D-rings.
- b. Harness snug under and against reserve.
- c. Quick release configured (H-harness).
- d. Lowering line attached/secured/stowed/Lt side.

10.11. Leg Strap and Ejector Snaps - Secured and Closed.

10.12. Kit bag (as required).

10.13. Static Line:

- a. Snap hook/safety pin.
- b. Check routing/serviceability.
- c. Closing loops/tie.

10.14. Pack Tray/Ejector Snaps (tape as required).

10.15. Diagonal/Horizontal Back Straps.

10.16. Saddle.

10.17. ML-4 kit (as required) - Secured and Lanyard Attached.

10.18. Load Bearing Equipment (LBE).

10.19. Knife with FLARE (as required) - Secured.

10.20. Whistle (as required).

10.21. Radio (as required).

10.22. Strobe Light/Chemlite (as required) - Secured.

Chapter 11

FREEFALL JUMPMaster PERSONNEL INSPECTION CHECKLIST (COMPLETE ON ALL JUMPERS PRIOR TO DEPLOYMENT)

11.1. HALO/HAHO - Individual Equipment:

- a. Helmet/goggles/visor - on and secure.

NOTE: Tinted lenses of any type are not authorized during oxygen deployments.

- b. Oxygen (as required).
 - (1) Mask.
 - (2) Hoses.
 - (3) Connectors.
 - (4) Airox VIII.
 - (5) Bottle assembly.
 - (6) Flow.
- c. Harness – check for proper fit.
- d. Right riser.
- e. Right 3-ring assembly.
- f. Right main canopy release cable and cable housing.
- g. Main ripcord assembly.
- h. Cutaway handle (main canopy release ripcord).
- i. Chest strap.
- j. Weapon (as required).
 - (1) Secured on jumper's left.
 - (2) Barrel pointed down, ties secured.
 - (3) Carrying handle forward.
 - (4) Waist band through carrying handle.
 - (5) Chest strap through sling.
 - (6) Excess sling S-folded and taped.
 - (7) Magazine installed and taped.
 - (8) Weapon selector on "safe."
- k. Reserve ripcord.
- l. Left riser.
- m. Left 3- ring assembly.
- n. Left main canopy release cable and cable housing.
- o. Reserve static line.
- p. Left main lift web.
- q. Equipment load/harness (as required)
 - (1) Secured outboard on reserve D-rings.
 - (2) Harness snug under and against reserve.
 - (3) Quick release configured (H-harness).
 - (4) Lowering line attached/secured/stowed/right side.
- r. Right main lift web.
- s. Waistband and waistband extension.
- t. Right/left leg straps.
- u. Altimeter.

- v. Reserve ripcord cable (routing, pins).
- w. Main container (proper closing sequence; bottom, left, right, top).
- x. Main ripcord routing/pins.
- y. AAD (properly connected/setting).
- z. Kit bag (as required).
- aa. Jumpsuit/wetsuit (as required).
- bb. Gloves.
- cc. SCUBA equipment (as required).
 - (1) Air flow -checked.
 - (2) Fins, mask, snorkel, and knife checked.
- dd. Flotation device (as required).
- ee. Radio (as required).
- ff. Lighting - chemlite/strobe properly attached to helmet.
- gg. Emergency signaling device – secure.

11.2. HAHO Only - Individual Equipment:

- a. Helmet with communications.
- b. Compass.
- c. Radio on, frequency set.
- d. NVGs (as required).

11.3. Direct Deploy Parachute Assemblies:

- a. Front of jumper:
 - (1) Proper fit.
 - (2) Right riser straight and connected.
 - (3) Right 3-ring, canopy-locking loop **NOT** twisted.
 - (4) Right cutaway cable in stowage flute of riser.
 - (5) Cutaway handle seated properly.
 - (6) Chest strap through friction adapter.
 - (7) Reserve ripcord handle in pocket.
 - (8) Cutaway handle seated properly.
 - (9) Right leg strap tight.
 - (10) Left riser straight and connected.
 - (11) Left 3-ring, canopy locking loop **NOT** twisted.
 - (12) Left cutaway cable in stowage flute of riser.
 - (13) Reserve static line (RSL) attached if present.
 - (14) Reserve ripcord cable routing (swaged ball to pin).
 - (15) Left leg strap tight.
 - (16) Altimeter.
- b. Back of jumper.
 - (1) AAD check on and proper set.

WARNING: If the AAD is not visible, the jumpmaster **MUST** see the jumper's AAD prior to donning the parachute. If the jumpmaster has not seen the jumper's AAD, the jumper **WILL** take off the parachute to allow the jumpmaster to perform a check on the AAD.

- (2) Reserve pins with rigger seal present.
- (3) Closing loops.

- (4) Proper pack closing sequence.
 - (5) Main pilot chute handle visible. Jumpmaster will have jumper reach for and check its location during JMPI.
 - (6) Pilot chute stowed properly.
 - (7) Bridle routing checked and stowed properly.
 - (8) Main parachute pin checked.
- c. Flotation (as required).

Chapter 12

DEPLOYMENT GUIDE

(**NOTE:** Used as a guide, not a required briefing item.)

12.1. Jumpmaster Signals/Actions in Aircraft (brief as required).

12.2. Prior to Takeoff:

- a. Don parachutes/equipment when instructed by JM.
- b. PRICE check.
- c. JM gives "don helmets."

12.3. In-Flight Freefall:

- a. 1,000 ft AGL pilot's command. JM gives "unfasten seatbelts."
- b. 20-minute warning:
 - (1) JM gives "20-minute warning."
 - (2) Jumpers don equipment.
 - (3) Drop equipment is pre-positioned.
 - (a) Static lines secured.
 - (b) Cutters armed (para-point).
 - (c) Jumpers receive equipment check.
 - (d) Oxygen NCO gives "oxygen check" (as required).
 - (e) Cabin lighting configured.
- c. 10-minute warning (red light comes on):
 - (1) JM gives "10-minute warning."
 - (2) JM gives "arm AAD" (at least 2,500 feet above activation altitude).
 - (3) Jumpers perform "pin check."
 - (4) Jumpers perform radio checks (as required).
 - (5) JM gives "don oxygen mask" (as required).
 - (6) Jumpers perform "oxygen check" (as required).
- d. 2-minute warning:
 - (1) JM gives "stand up."
 - (2) Jumpers perform "pin check."
 - (3) Jumpers activate chemlite/altimeter light (as required).
 - (4) Jumpers locate bailout bottle on/off switch and console hose connection (as required).
- e. 1-minute warning:
 - (1) JM gives "move to the rear."
 - (2) Jumpers turn on bailout bottle and disconnect from console (as required oxygen safety assists jumpers).
 - (3) Jumpers move to rear of aircraft.
- f. 15 seconds:
 - (1) JM gives "standby."
 - (2) Jumpers relay "standby" signal and move to within 1 meter of the jump exit. Jumpers wait for "Go" or "No Drop."

12.4. In-flight Static Line:

- a. 1,000 ft AGL pilot's command. JM gives "unfasten seatbelts."
- b. 20-minute warning:
 - (1) JM gives "20-minute warning."
 - (2) Jumpers don equipment.
 - (3) Drop equipment is pre-positioned.
 - (a) Static lines secured.
 - (b) Cutters armed (para-point).
 - (c) Jumpers receive equipment check.
 - (d) Cabin lighting configured.
- c. 10-minute warning (red light comes on):
 - (1) JM gives "10-minute warning."
 - (2) JM begins hand signals.
- d. 6-minute warning (as required):
 - (1) Jumpers stand up.
 - (2) Hook up.
 - (3) Check static line.
 - (4) Check equipment.
 - (5) Sound off with equipment check.
- e. 1-minute warning: green light turned ON (JMD only).
- f. 10 seconds: stand by.
- g. "Go" or "No drop"(green light CARP).

Chapter 13

OXYGEN NCO DUTIES/BRIEF

(Brief for Oxygen Deployment Only)

13.1. Duties:

- a. Ensure each aircraft has one untacked spare oxygen mask and one spare portable oxygen assembly (twin 53, 22 etc).
- b. Ensure all jumpers have required oxygen equipment prior to jumpmaster team brief.
- c. Inspect console for oxygen quantity and operation IAW FM 31-19, Chapter 7.
- d. Inspect console and hoses for leaks.
- e. Ensure availability of hoses/stations for each jumper and an extra long hose for JM.
- f. Secure console, recharging assembly, and oxygen K-bottle on the aircraft:
 - (1) Ensure console position allows each jumper to sit.
 - (2) Ensure console, recharging assembly, and K-bottle does not block jumpers' path to the jump exit.
 - (3) Check console for proper operation.
- g. Assist jumpers with connections to oxygen supply.
- h. Check jumpers' portable oxygen assembly for quantity and ensure the switch is in the "Off" position.
- i. Assist jumpers with PRICE check.
- j. Duties in flight:
 - (1) Periodically check console for proper operation, pressure, and check jumpers for signs of hypoxia and hyperventilation.

NOTE: Jumpers will remain awake and alert. Only clear eye protection may be worn in order to detect dilated pupils and/or drowsiness.

- (2) At 20-minute warning, oxygen safety will check jumpers' portable oxygen assembly for quantity and ensure the switch is in the "Off" position.
- (3) On JM command, oxygen safety will assist jumpers with turning on their portable oxygen assembly and disconnect from the console. Oxygen safety will receive a "thumbs up" from each jumper prior to them moving to the rear of the aircraft.
- (4) In the event of oxygen-related sickness/difficulty, the oxygen safety will assist the jumper and land with the aircraft.
- (5) Oxygen safety will ensure console is turned off prior to exiting aircraft (if possible have static oxygen safety).

13.2. Oxygen Jump Briefing:

- a. Oxygen safety, JM, or physiological technician with connecting/disconnecting oxygen equipment, and will monitor all jumpers throughout the flight.
- b. Jumpers will go on oxygen at _____ MSL/Time.
- c. Jumpers will remain on oxygen until _____ MSL/Time.
- d. Pre-breathing is required for _____ minutes.
- e. Once on oxygen, jumpers will use hand signals or radio communications.
 - (1) Thumbs up _____ "OK."

(2) Arms out, palms down _____ "equipment or physiological problem, need assistance."

f. Oxygen checks are not limited to time warnings; they are performed at the discretion of the oxygen safety, JM, or physiological technician.

g. Jumpers will stay alert and keep their eyes on the JM. Jumpers will not sleep or close their eyes. Only clear eye protection may be worn. Be aware of altitude sickness.

h. Hyperventilation:

(1) Causes. Fear, apprehension, excitement, pressure breathing, and hypoxia.

(2) Symptoms. Tingling muscle spasms hot and cold sensations, visual impairment, dizziness, and unconsciousness.

(3) Treatment. Ensure oxygen lever is on, check all connections, maintain normal breathing rate, and descend below 10,000 ft MSL if required.

i. Hypoxia:

(1) Cause. Oxygen deficiency in blood stream/tissue.

(2) Symptoms. Air hunger, apprehension, fatigue, nausea, headaches, dizziness, hot and cold flashes, euphoria, belligerence, blurred vision, tunnel vision, numbness, tingling, hyperventilation, and muscle coordination problems.

(3) Treatment. Ensure oxygen lever is on, check all connections, maintain normal breathing rate and descend below 10,000 feet MSL if required.

13.3. Oxygen Jump Briefing Above 18,000 feet MSL: (*NOTE: Jump operations at or above 25,000 feet MSL require a waiver IAW AFI 11-409, High Altitude Airdrop Mission Support Program.*)

a. Decompression sickness occurs above 18,000 ft MSL (can occur at any altitude).

b. Decompression sickness types:

(1) Bends. Pain in the joints. Mild at onset, becoming deep and penetrating, and progressing to intolerable in severity.

(2) Chokes. Burning sensation under sternum, pain becoming stabbing, accentuated by deep inhalation, uncontrollable desire to cough, and a sensation of suffocation.

(3) CNS Disorders. Dull headaches, flashing and/or flickering of light, blind spots partial paralysis, loss of speech or orientation, vertigo, and delirium.

(4) Parasthesia. Mild, itchy skin rash. Usually resembles poison oak/ivy.

c. Prevention and treatment:

(1) Ensure prebreathing times are adhered to, check equipment, perform PRICE check, and monitor jumpers throughout the flight.

(2) Descend and land if jumper experiences any aforementioned symptoms.

(3) Notify flight surgeon and evacuate patient to hyperbaric chamber for treatment as required.

Chapter 14**RAMZ EQUIPMENT CHECKLIST****14.1. Parachutes:**

- a. Type (main/reserve).
- b. Characteristics (wind limitations).
- c. FF-2 (setting) land only.
- d. Altimeter (setting) land only.
- e. LPUs (extra single bladder for RAMZ training).

14.2. Individual (land):

- a. Uniform.
- b. Boots.
- c. Helmet.
- d. Goggles.
- e. Gloves.
- f. Dog tags.
- g. Knife.
- h. Signaling/lighting devices (as required).
- i. Kit bag.
- j. Oxygen mask.

14.3. Individual (water):*

- a. Uniform/wetsuit/dry suit.
- b. Fins/footgear.
- c. Mask/snorkel.
- d. Flotation device.
- e. Gloves.
- f. Dog tags.
- g. Knife.
- h. Signaling/lighting devices (as required).
- i. ML-4 kit.
- j. Protect w/strobe.
- k. Wrist compass.
- l. Carabiner.
- m. Alternate loading belt/harness.

14.4. Other Equipment:

- a. Combat equipment (IAW OPORD).
- b. Oxygen equipment (as required).
- c. Special mission equipment (IAW OPORD).
- d. SPUDS.
- e. RAMZ equipment.
 - (1) RAMZ/CRRC.
 - (2) Fuel drop kit.

- (3) Medical drop kit.
- (4) Resupply drop kit.
- (5) Rollers.
- (6) RAMZ JM kit.
- (7) J-1 spotter chutes.
- (8) MK-6 flares w/bands.
- (9) Static line clevis (stop).
- (10) Type 8 material (for gate).
- (11) Chemlites - 6 green and 2 red (night).
- (12) SDU-5E strobe (night).
- (13) DD Form 1387-2 (completed).

JOHN A. NEUBAUER, Colonel, USAF
Deputy Director of Operations

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 11-2C-130V3, *C-130 Operations Procedures*
AFI 11-409, *High Altitude Airdrop Mission Support*
AFI 11-410, *Personnel Parachute Operations*
AFI 37-139, *Records Disposition Schedule*

Abbreviations and Acronyms

CARP—computed airdrop release point
CRRC—combat rubber raiding craft
DZ—drop zone
DZC—drop zone controller
DZSO—drop zone safety officer
GMRS—ground marked release system
HARP—high altitude release point
HAHO—high altitude high opening
HALO—high altitude low opening
JAI—joint airdrop inspection
JM—jumpmaster
JMD—jumpmaster directed
JMPI—jumpmaster personnel inspection
LPU—life preserver unit
LZ—landing zone
MFF—military freefall
MOS—minimum-operating speed
MSL—mean sea level
NAV—navigator
NOTAM—notice to airmen
OPORD—operations order
PAX—passengers
RAMZ—rigging alternate method zodiac

SL—static line

SOP—standard operating procedures

TOT—time over target

UDT—underwater demolition team

Attachment 2

WIND/SEA PREDICTION CHART

Wind Velocity (Knots)	Wind Avg Force (Beaufort)	Wave Height (Feet)	Sea Indications	Sea State
0	0	0	Like mirror.	0
Calm 1 – 3	1	0.05	Ripples with appearance of scales.	0
Light Air 4 – 6	2	0.18	Small wavelets; crests have glassy appearance but do not break.	1
Light Breeze 7 – 10	3	0.6	Large wavelets; crests begin to break; scattered whitecaps.	2
Gentle Breeze 11 – 16	4	2.0	Small waves, becoming longer. Fairly frequent whitecaps	3
Moderate Breeze 17 – 21	5	4.3	Moderate waves, taking a pronounced long form; many whitecaps.	4

Wind Velocity (Knots)	Wind Avg Force (Beaufort)	Wave Height (Feet)	Sea Indications	Sea State
Fresh Breeze 22 – 27	6	8.2	Large waves begin to form; white foam crests more extensive; some spray.	5
Strong Breeze 28 – 33	7	14	Sea heaps up, white foam from breaking waves blown in streaks along direction of waves.	6
Moderate Gale 34 – 40	8	30	Moderately high waves of greater length; crests break into spindrift; foam blown in well marked streaks in direction of wind.	7
Fresh Gale 41 – 47	9	36	High waves. Dense streaks of foam; sea begins to roll; spray affects visibility.	8
Strong Gale 48 – 55	10	52	Very high waves with overhanging crests; foam in great patches blown in dense white streaks. Whole surface of the sea takes on a white appearance. Visibility- affected.	9

Wind Velocity (Knots)	Wind Avg Force (Beaufort)	Wave Height (Feet)	Sea Indications	Sea State
Storm 56 – 63	11	64	Exceptionally high waves (64 feet). Sea is covered with long white patches of foam Edges of wave crests are blown into froth. Visibility seri. Ously affected. waves (64 feet). Sea	9.1
Violent Storm (Hurricane) 64 – 136+	12-17	80 (est.)	Air filled with foam (80+ ft). Sea is white. Visibility very seriously affected.	9.2

Attachment 3

OXYGEN REQUIREMENTS FOR PARACHUTISTS

The lower density of oxygen at high altitude causes many physiological problems. For this reason, MFF parachutists and aircrews need supplemental oxygen. AFI 11-409, Table 2.1, also outlines these requirements. The following table briefly describes the requirements.

DEPLOYMENT ALTITUDE	ON BOARD AIR	HALO OPERATIONS	HAHO OPERATIONS
Below 10,000 feet MSL	None	None	None
At or above 10,000 feet MSL	Supplemental oxygen at normal when unpressurized flight exceeds 30 minutes.	None	None
Below 13,000 feet MSL <i>(Note 1)</i>			
At or above 13,000 feet MSL	Supplemental oxygen at normal before ascending through 10,000 feet MSL or cabin altitude.	Supplemental oxygen at normal from 1-minute warning until canopy deployment below 10,000 feet MSL.	Supplemental oxygen at normal until descent below 10,000 feet MSL.
Below 18,000 feet MSL <i>(Notes 1 and 2)</i>			
At or above 18,000 feet MSL	Prebreathe the supplemental oxygen at 100% for 30 minutes.	Supplemental oxygen at normal from 1-minute warning until canopy deployment below 10,000 feet MSL.	Supplemental oxygen at normal from 1-minute warning until descent below 10,000 feet MSL.
Below 25,000 feet MSL <i>(Notes 1 and 2)</i>			
At or above 25,000 feet MSL	Prebreathe supplemental oxygen at 100% for 30 minutes HALO 45 minutes HAHO.		
Below 30,000 feet MSL <i>(Notes 1 and 2)</i>			
At or above 30,000 feet MSL	Prebreathe supplemental oxygen at 100% for 60 minutes.		

DEPLOYMENT ALTITUDE	ON BOARD AIR	HALO OPERATIONS	HAHO OPERATIONS
Below 35,000 feet MSL <i>(Notes 1 and 2)</i>			
At or above 35,000 feet MSL	Prebreathe supplemental oxygen at 100% for 75 minutes.	Supplemental oxygen at 100% from 1-minute warning until free-fall below 35,000 feet MSL. Supplemental oxygen at normal from below 35,000 feet MSL until canopy deployment below 10,000 feet MSL.	Supplemental oxygen at 100% from 1-minute warning until freefall below 35,000 feet MSL. Supplemental oxygen at normal from below 35,000 feet MSL until canopy descent is below 10,000 feet MSL.
Below 35,000 feet MSL <i>(Notes 1 and 2)</i>			

NOTES:

1. Supplemental oxygen means each parachutist will have his own oxygen mask and regulator.
2. All prebreathing will be conducted at or below 10,000 feet MSL or 10,000 feet MSL cabin altitude.

Attachment 4

CONVERSION TABLES

STANDARD MEASURES

A. Temperature:

1. Celsius to Fahrenheit-- $(C \times 9/5) + 32 = F$
2. Fahrenheit to Celsius-- $(F - 32) \times 5/9 = C$

B. Length/Distances:

- | | |
|--|-------------------------|
| 1. Yards x 3 = Feet | Feet x .333 = Yards |
| 2. Millimeters (MM) x 0.03937 = Inches | Inches x 25.40 = MM |
| 3. MM x 0.00328 = Feet | Feet x 304.80 = MM |
| 4. MM x 0.00109 = Yards | Yards x 914.40 = MM |
| 5. Centimeters (CM) x 0.8937 = Inches | Inches x 2.54 = CM |
| 6. CM x 0.0328 = Feet | Feet x 30.48 = CM |
| 7. CM x 0.0109 = Yards | Yards x 91.44 = CM |
| 8. Meters x 39.37 = Inches | Inches x 0.024 = Meters |
| 9. Meters x 3.28 = Feet | Feet x .3048 = Meters |
| 10. Meters x 1.094 = Yards | Yards x 0.914 = Meters |
| 11. Statute Miles (SM) x 5280 = Feet | Feet x .000189 = SM |
| 12. SM x 1760 = Yards | Yards x .000567 = SM |
| 13. Nautical Miles (NM) x 6080 = Feet | Feet x .000164 = NM |
| 14. SM x .8684 = NM | NM x 1.151 = SM |
| 15. Kilometers (KM) x 0.62 = Miles | Miles x 1.609 = KM |

C. Area:

- | | |
|-------------------------------------|----------------------------------|
| 1. Sq MM x 0.00155 = Sq Inch | Sq Inch x 645.16 = Sq MM |
| 2. Sq MM x 0.155 = Sq Inch | Sq Inch x 6.452 = Sq Centimeters |
| 3. Sq Meters x 1550.0 = Sq Inch | Sq Inch x 0.00065 = Sq Meters |
| 4. Sq Meters x 10.746 = Sq Feet | Sq Feet x 0.093 = Sq Meters |
| 5. Sq Meters x 1.196 = Sq Yards | Sq Yards x 0.836 = Sq Meters |
| 6. Sq Kilometers x 0.386 = Sq Miles | Sq Miles x 2.59 = Sq Kilometers |

D. Meter/Feet Conversion:

1. To get feet, **multiply** meters by 3.28
2. To get meters, **divide** by 3.28
3. Meters/Feet Conversion Table

METERS	FEET	METERS	FEET	METERS	FEET	METERS	FEET
25	82	425	1394	825	2706	1225	4018
50	164	450	1476	850	2788	1250	4100
75	246	475	1558	875	2870	1275	4182
100	328	500	1640	900	2952	1300	1264
125	410	525	1722	925	3034	1325	4346

METERS	FEET	METERS	FEET	METERS	FEET	METERS	FEET
150	492	550	1804	950	3116	1350	4428
175	574	575	1886	975	3198	1375	4510
200	656	600	1968	1000	3280	1400	4592
225	738	625	2050	1025	3362	1425	4674
250	820	650	2132	1050	3444	1450	4756
275	902	675	2214	1075	3526	1475	4838
300	984	700	2296	1100	3608	1500	4920
325	1066	725	2378	1125	3690	1525	5002
350	1148	750	2460	1150	3772	1550	5084
375	1230	775	2548	1175	3852	1575	5166
400	1312	800	2624	1200	3936	1600	5248

SPEED CONVERSIONS - MILES PER HOUR/KNOTS (MPH/KTS)

- A. To get KTS, **multiply** MPH x .8684 = KTS
- B. To get MPH, **multiply** KTS x 1.151 = MPH
- C. Speed conversion table:

MPH	KTS	MPH	KTS	MPH	KTS	MPH	KTS
01 - 0.9		13 - 11.3		26 - 22.6		38 - 33.0	
02 - 1.7		14 - 12.2		27 - 23.4		39 - 33.9	
03 - 2.6		15 - 13.0		28 - 24.3		40 - 34.7	
04 - 3.5		16 - 13.9		29 - 25.2		41 - 35.6	
05 - 4.3		17 - 14.8		30 - 26.1		42 - 36.5	
06 - 5.2		18 - 15.6		31 - 26.9		43 - 37.3	
07 - 6.1		19 - 16.5		32 - 27.8		44 - 38.2	
08 - 6.9		20 - 17.4		33 - 28.7		45 - 39.1	
09 - 7.8		21 - 18.2		34 - 29.5		46 - 39.9	
10 - 8.7		22 - 19.1		35 - 30.4		47 - 40.8	
11 - 9.6		23 - 20.0		36 - 31.3		48 - 41.7	
12 - 10.4		24 - 20.8		37 - 32.1		49 - 42.6	
		25 - 21.7				50 - 43.4	

SPEED AND TIME CONVERSIONS.

NOTE: The following tables can be used to figure the number of minutes and seconds that it will take a fighter to go from the IP to the target at speeds (G/S).

- A. Aircraft speed (knots):

NM per	MIN	8nm	9nm	10nm	11nm	12nm	13nm	14nm	15nm
300	5	1:36	1:48	2:00	2:12	2:24	2:36	2:48	3:00
360	6	1:20	1:40	1:40	1:50	2:00	2:10	2:20	2:30
420	7	1:09	1:17	1:26	1:34	1:43	1:51	2:00	2:09
450	7.5	1:04	1:12	1:20	1:28	1:36	1:44	1:52	2:00
480	8	1:00	1:08	1:15	1:23	1:30	1:38	1:45	1:53
510	8.5	:57	1:04	1:11	1:18	1:25	1:32	1:39	1:46
540	9	:53	1:00	1:07	1:13	1:20	1:27	1:33	1:40

B. CAS aircraft run-in speeds:

A/C	A/S (knots)
A-10	300-350
AV-8B	420-480
F-16	480-540
F/A-18	480-520

ODOMETER DISTANCE:

1/10=528 feet	6/10=3168 feet
2/10=1056 feet	7/10=3696 feet
3/10=1584 feet	8/10=4224 feet
4/10=2112 feet	9/10=4752 feet
5/10=2640 feet	1 Mile=5280 feet

Attachment 5

HALO HARP COMPUTATION CHART

WEATHER CONDITIONS

1. DATE: _____
2. LINE: _____
3. JM's NAME: _____
4. OBTAIN A WX REPORT AT A MINIMUM PREDICTED WINDS AND AIRCRAFT ALTITUDE SETTING (within 100NM of intended drop zone)
 - A. WX STATION PHONE #: _____ OR _____
 1. CEILING: _____
 2. VISIBILITY: _____
 3. ILLUMINATION %: _____
 4. ALTITUDE TEMPERATURE: _____
 5. SURFACE TEMPERATURE: _____
 6. CHANGE OF PRECIPITATION: _____
 7. A/C ALT. SETTING: _____
 8. DAF/ELEV: _____
 9. DZ ELEV: _____
5. ARR SETTING: _____ ALT SETTING: _____

	WINDS	DIRECTION	VELOCITY	FFD AVERAGE
24	_____	_____		
22	_____	_____	DIR _____ - _____ = _____	
20	_____	_____		
18	_____	_____	VEL _____ - _____ = _____	
16	_____	_____		
14	_____	_____		
12	_____	_____	CD AVERAGE	
10	_____	_____		
9	_____	_____	DIR _____ - _____ = _____	
8	_____	_____		
7	_____	_____	VEL _____ - _____ = _____	
6	_____	_____		
5	_____	_____	A/C TRACK: _____	
4	_____	_____		
3	_____	_____		
2	_____	_____		
1	_____	_____		
S	_____	_____		

D = KAV

FFD = 3 X _____ X _____ = _____ METERS/DEGREES

CD = 25 X _____ X _____ = _____ METERS/DEGREES

PLOTTING

1. FROM THE DIP: _____ / _____ = OP
2. FROM THE OP: _____ / _____ = PRP
3. FROM THE PRP 300M (FT) BACK INTO DIR OF FLIGHT = HARP
4. HARP COORDINATES: _____

NOTE: Wind readings are taken every 1,000 ft. for CD and every 2,000 ft. for FFD.

Attachment 6

HAHO HARP COMPUTATION CHART
 JUMPMaster WORKSHEET HAHO

WEATHER CONDITIONS

1. DATE: _____
2. LINE: _____
3. JM's NAME: _____
4. OBTAIN A WX REPORT AT A MINIMUM PREDICTED WINDS AND AIRCRAFT ALTITUDE-
 TER SETTING (within 100NM of intended drop zone)
 - A. WX STATION PHONE #: _____ OR _____
 1. CEILING: _____
 2. VISIBILITY: _____
 3. ILLUMINATION %: _____
 4. ALTITUDE TEMPERATURE: _____
 5. SURFACE TEMPERATURE: _____
 6. CHANGE OF PRECIPITATION: _____
 7. A/C ALT. SETTING: _____
 8. DAF/ELEV: _____
 9. DZ ELEV: _____
5. ARR SETTING: _____ ALT SETTING: _____

WINDS	DIRECTION	VELOCITY	CD AVERAGE
24	_____	_____	
22	_____	_____	DIR _____ - _____ = _____
20	_____	_____	
18	_____	_____	VEL _____ - _____ = _____
16	_____	_____	
14	_____	_____	
12	_____	_____	D = KAV
10	_____	_____	
9	_____	_____	$D = (A - SF) \times (20.8 + V)$
8	_____	_____	K
7	_____	_____	
6	_____	_____	
5	_____	_____	
4	_____	_____	$D = (-) \times (20.8 =)$
3	_____	_____	K
2	_____	_____	
1	_____	_____	D = _____ NM X 1.85 = _____ KM
S	_____	_____	

DISPERSION/FT=1/2 THE NUMBER OF JUMPERS X 50 = _____ + 300M FT= _____

PLOTTING

1. FROM THE DIP: _____ / _____ = OP
2. FROM THE PRP 300M (FT) BACK INTO DIR OF FLIGHT = HARP
3. HARP COORDINATES: _____
4. MAGNETIC AZMITUTH TO DZ/DIP _____

K-CONSTANTS FOR HAHOs

K-48 MC-4/5, MTVS, MTI-XX, XS, XR, SS, HAPPS, GQ360/PB11

K-60 MTI-S, UNIT 111

K-66 MT1, STRATO CLOUD

K-75 AERIAL BUNDLE 150-299 LBS

K-80 AERIAL BUNDLE 300-500 LBS

ALWAYS USE THE K FACTOR FOR THE LOWEST PERFORMING PARACHUTE TO BE UTILIZED.

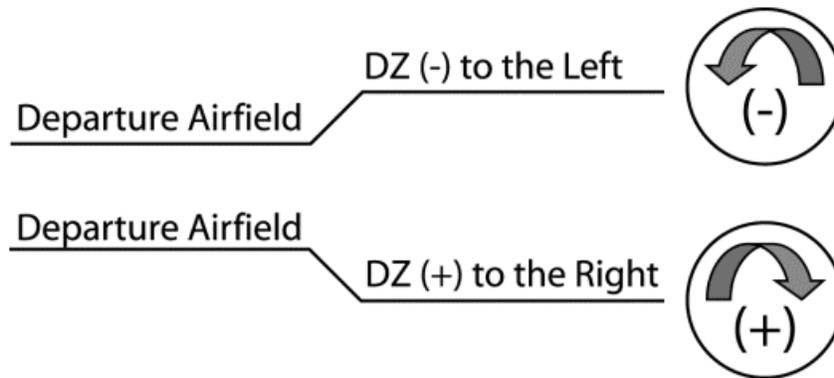
Attachment 7

FF-2 COMPUTATIONS

1. Obtain the forecasted aircraft altimeter setting within 100 miles of the drop zone.
2. Place the **black line** with arrow over the altimeter setting.
3. **Add** the drop zone field elevation (in MSL) to the arr activation altitude (in AGL). This equals your (MSL) activation altitude.
4. Place the cursor with **red line** over the (MSL) activation altitude.
5. Read the millibar setting:
Always round millibars down.*
This equals activation altitude up.*
6. Notify jumpers of setting.

Altimeter computations/settings

***NOTE:** When going from lower to higher – move the altimeter arrow **BACK** the difference. If going from higher to lower, move the altimeter arrow **FORWARD** the difference.



Departure airfield elevation and DZ elevation difference: +/- _____ feet

Wrist altimeter setting: +/- _____ feet

Attachment 8

MISSION EQUIPMENT REQUIREMENTS

This checklist contains a list of minimum equipment required for training flights or operational missions. Additional equipment may be carried on board as determined by the NCOIC.

	QTY/ACFT
1. TRAINING FLIGHTS - Fixed-Wing Aircraft:	
a. Pararescue Medical Kit	1
b. Mission Equipment	As Required
2. TRAINING FLIGHTS - Rotary-Wing Aircraft:	
a. Pararescue Medical Kit	1
b. MAST Trousers	1
c. Backboard (KED)	1
d. Oxygen Unit ("IOX)	1
e. Mission Equipment	As Required
3. ALERT/OPERATIONAL MISSION - Fixed-Wing Aircraft:	
a. Medical Equipment	
(1) Pararescue Medical Kit	2
(2) Accessory Kit	1
(3) Backboard (KED)	1
(4) Oxygen Unit (AVIOX)	1
(5) Medications Box	2
b. Jump Equipment	
(1) Parachute, Static Line, Main	2
(2) Parachute, Reserve	2
(3) SCUBA Tanks, Jump	2 sets
(4) LPUA	2 pr
(5) ML-4 Kit	2
(6) Spotter Chute with Weights	3
(7) Mark-6, Mod 0	4
(8) Suspension Bands	6
(9) Streamers, Wind	6
(10) Chemlites	10
(11) Strobe Light, SDU-5E	4
(12) A-3, Aviator Bag	2
(13) H-Harness or Red Ball	2
(14) Lowering Line	2
(15) Tree Letdown Tape	2
(16) Cargo Net	1
(17) Cargo Chute - G-13	1
(18) Cargo Chute - G-8	1

- | | | |
|----|---|-------------|
| c. | Field Equipment (Packed in deployable container) | |
| | (1) Tent, Mountain, Four-Man | 1 |
| | (2) Sleeping Bag w/Ground Pad | 2 |
| | (3) Stove, Cooking | 1 |
| | (4) Cook Set | 1 |
| | (5) Lantern, Battery or Fuel | 1 |
| | (6) Fuel | As Required |
| | (7) Water, Emergency | 2 gal. |
| | (8) Rations (MRE, Canned) | For 3 days |
| | (9) Axe, Handl | |
| | (10) Entrenching Tool | 1 |
| | (11) 550 Cord | 50 ft. |
| d. | Mountain Rescue Equipment | As Required |
| e. | Communications Equipment | |
| | (1) Radio (PRC-113) with spare batteries | 1 |
| | (2) Radio (HF, SATCOM) with spare batteries | As required |
| f. | Water Mission Equipment | |
| | (1) MA-1 Kit | As required |
| | (2) RAMZ (If team is qualified) | |
| g. | Individual Team Member Equipment | |
| | (1) Field Gear for Climate (in a backpack) | 1 Set |
| | (2) Extreme Cold Weather Gear | 1 set |
| | (3) SCUBA Gear (IAW Chapter 8) | 1 Set |
| | (4) Jump Gear (IAW Chapter 8) | 1 set |
| | (5) Survival Vest | 1 |
| | (6) Special Mission Equipment | As Required |
| | (7) LBE - Configured IAW unit policy | 1 |
| 4. | ALERT/OPERATIONAL MISSION - ROTARY WING | |
| a. | Medical Equipment: | |
| | (1) Medical Kit | 1 |
| | (2) IR Kit | 1 |
| | (3) Accessory Kit | 1 |
| | (4) Medications Box | 1 |
| | (5) KED Board | 1 |
| | (6) AVIOX with 4 spare O2 cylinders | 1 |
| b. | Individual Equipment | |
| | (1) Field Gear for Climate (In a back pack) | 1 |
| | (2) LBE -Configured IAW Unit Policy | 1 |
| | (3) Survival Vest | 1 |
| | (4) SCUBA Gear -(As required for FF swimmer deployment) | |
| c. | Special Mission Equipment | |
| | (1) Mountain Rescue Equipment | As Required |
| | (2) Past Rope | As Required |

(3)	Rope Ladder	As Required
(4)	ZODIAK	As Required
(5)	Combat Load (GAU-5, 9MM, etc.)	As Required
(6)	Communications Equipment (PRC -113)	As Required

NOTE: Additional equipment is required when team size is greater than two personnel.