



CHAPTER 10

RAM-AIR PARACHUTE EMERGENCY PROCEDURES

Military free-fall airborne operations are inherently dangerous. Emergencies may occur before or during takeoff, during flight, while in free-fall, or during canopy descent. Safety considerations require that each parachutist be able to recognize an emergency situation and react accordingly.

Refresher Training

The conditioned response executed as the correct procedure for a particular emergency situation is a highly perishable skill. Refresher training should include performance oriented training with special emphasis on emergency procedures and the actions required to successfully respond to any situation. This training must be conducted prior to each MFF airborne operation. The duration of the training should be commensurate with the length of time between airborne operations and, at the very least, until each parachutist is confident in his emergency procedure skills.

Established Procedures

The procedures established by this publication in response to emergency situations have proven to be the most successful in both the MFF training and tactical environments. Any departure from these procedures may interfere with the parachutist's conditioned response. This action can lead to a delay at a critical time with the potential of causing injury or death. This publication strongly recommends that all parachutists follow these established procedures. Figures 10-1 through 10-12 depict the emergency procedures that may be used with the RAPS during emergency situations.

- Learn the location of emergency exits and how to open them.
- Secure all loose items.
- Wear helmet.
- Fasten seat belt securely.

Figure 10-1. Emergency preparations before takeoff.

- Release the brakes.
- Look left, turn left 90 degrees.
- Look right, turn right 90 degrees.
- 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 50 percent brake setting, it is uncontrollable.

NOTE: If the canopy is uncontrollable, perform cutaway procedures. Cutaway procedures are the same no matter what type of malfunction occurs.

Figure 10-2. Controllability check.

<ul style="list-style-type: none"> ● Use the rear risers to avoid other parachutists as required. Turn to the right to avoid collision. ● Release the brakes and gain control of the canopy. ● Check the canopy. ● Resolve post-opening malfunctions as required. ● If controllability of the canopy is questionable, perform a controllability check (see Figure 10-2). ● If a malfunction cannot be resolved, and if the canopy is uncontrollable, the decision to cut away must be made by 2,000 feet AGL. 	<ul style="list-style-type: none"> ● Orient yourself to the drop zone. ● Locate the other parachutists and achieve separation. ● Activate the strobe light or canopy lighting system as required. ● Maintain altitude awareness. <p>NOTE: Procedures should be done immediately after the parachute deploys.</p>
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Figure 10-3. Post-opening procedures.

JUMPMaster RESPONSIBILITY	PARACHUTIST RESPONSIBILITY
<ul style="list-style-type: none"> ● Shout "pilot chute" and try to contain the pilot chute and canopy in the aircraft. ● In UH-1 or UH-60, close opposite door. ● Unhook the reserve static line from the riser. ● Cut away main canopy and remove from container and secure. ● Secure parachutist with seat belt and continue with operation (jumper's discretion). ● If extracted, another parachutist will exit and deploy his canopy and follow and land with the extracted parachutist. 	<ul style="list-style-type: none"> ● Shout "pilot chute" and try to contain the pilot chute and canopy in the aircraft. ● Shout "pilot chute" and try to contain the pilot chute and canopy in the aircraft. ● If possible, move away from the open exits to a safe area forward in the aircraft. ● If the canopy or pilot chute is pulled outside the aircraft, exit immediately.
<p>WARNING</p> <p>If you are standing in the vicinity of an open door or ramp and you experience a premature deployment, try to contain it; if any portion of the parachute goes out of the aircraft, exit immediately to minimize or avoid serious injury.</p>	

Figure 10-4. Procedures for inadvertent pilot chute deployment inside the aircraft.

SITUATION	SIGNAL	ACTION IN AIR FORCE AIRCRAFT	ACTION IN ARMY AIRCRAFT
Crash Landing During Takeoff	<ul style="list-style-type: none"> Continuous ringing of alarm bell or verbal warning by aircrew 	<ul style="list-style-type: none"> Remain seated until aircraft stops, then exit 	<ul style="list-style-type: none"> Follow aircrew instructions Pull legs inside aircraft Remain in position Cover head with arms Clear the aircraft as soon as it stops and move well away from it Jumpmaster ensures all personnel are away from the wreckage
During Flight	<ul style="list-style-type: none"> Six short rings of alarm bell or verbal warning by aircrew 	<ul style="list-style-type: none"> If time and altitude permit, jump If not, secure seat belt Brace for impact <p>NOTE: Coordinate opening aircraft exits with the aircrew.</p>	
Emergency Bailout Below 1,000 Feet AGL	<ul style="list-style-type: none"> Six short rings of alarm bell or verbal warning by aircrew 	<ul style="list-style-type: none"> Take aircraft seats and fasten seat belts Prepare for crash landing 	<ul style="list-style-type: none"> Take aircraft seats and fasten seat belts Prepare for crash landing
1,000 to 2,000 Feet AGL	<ul style="list-style-type: none"> Three short rings of alarm bell or verbal warning by aircrew 	<ul style="list-style-type: none"> Exit at the jumpmaster's command Deploy the reserve parachute immediately Attempt to land with the other jumpers 	<ul style="list-style-type: none"> Exit at the jumpmaster's command Deploy the reserve parachute immediately Attempt to land with the other jumpers
Above 2,000 Feet AGL		<ul style="list-style-type: none"> Exit at the jumpmaster's command Deploy the main parachute after a maximum 5-second delay Attempt to land with the other jumpers 	<ul style="list-style-type: none"> Exit at the jumpmaster's command Deploy the main parachute after a maximum 5-second delay Attempt to land with the other jumpers
Ditching Over Water With Insufficient Drop Altitude	<ul style="list-style-type: none"> Verbal warning by aircrew 	<ul style="list-style-type: none"> Use available padding Remain seated Secure seat belt 	<ul style="list-style-type: none"> Pull legs inside aircraft Remain in position Cover head with arms
Order to Lighten Load	<ul style="list-style-type: none"> Verbal warning by aircrew 	<ul style="list-style-type: none"> Designated parachutist may assist jumpmaster or loadmaster in jettisoning cargo 	<ul style="list-style-type: none"> As directed by pilot
Fire in Flight	<ul style="list-style-type: none"> Verbal warning by aircrew 	<ul style="list-style-type: none"> Remove parachutists from vicinity of fire Extinguish the fire 	<ul style="list-style-type: none"> As directed by pilot

Figure 10-5. In-flight emergency procedures.

EMERGENCY	PROCEDURE
Collision on exit	<ul style="list-style-type: none"> ● Maintain your arch, gently push off the parachutist, regain your stability, check your altimeter, check the rip cords, and continue the MFF as planned.
Instability in free-fall Spinning Tumbling Entering a cloud or loss of visibility.	<ul style="list-style-type: none"> ● Arch, check your hands and feet, counter, and maintain altitude awareness. ● Arch, keep your head up, check your hands and feet, and maintain altitude awareness. ● Stop all movement and return to a stable, relaxed arch. Maintain altitude reference. Pull at prescribed altitude even if you are still in the cloud.
Accidental opening Main parachute Reserve parachute (Check the risers; also, no trailing pilot chute.) Main and reserve parachutes deploy Main deploys and reserve opens partially but does not fully inflate	<ul style="list-style-type: none"> ● Do a penetration check and continue to fly the canopy for a landing on the intended DZ. ● Cut away main canopy, do a penetration check, and continue to fly the canopy for a landing on the intended DZ. ● Activate the cutaway handle, do a penetration check, and continue to fly the canopy for a landing on the intended DZ. ● Slow the main parachute to prevent reserve deployment. Try to pull in the reserve deployment bag. Hold it between your legs. Be ready to cut away the main parachute.
Maneuvers in free-fall Collision avoidance Lost goggles	<ul style="list-style-type: none"> ● Use body turns and gliding technique to avoid other parachutists, and always look in the direction of the turn before you begin the turn. Never continue to free-fall over another parachutist's back. ● Maintain your arch. Reach up with both hands, keeping your elbows high, and find and replace the goggles. Maintain altitude awareness. <p>NOTE: If goggles will not remain in place or they separate from you, squint your eyes to see.</p>

Figure 10-6. Emergencies in free-fall.

- Observe other parachutists in free-fall.
- Activate main parachute with other parachutists at the prescribed activation altitude.
- If unable to observe other parachutists, maintain visual reference on drop zone markings and free-fall until ARR activates main parachute.

NOTE: This procedure is the same for both day and night operations.

WARNING

Activation of the main or reserve parachute above the prescribed opening altitude may cause serious injury or death to other parachutists in free-fall.

Figure 10-7. Altimeter failure or loss procedures.

MALFUNCTION	PROCEDURE
Pilot Chute Over the Nose of Canopy	<ul style="list-style-type: none"> ● Perform the post-opening procedures. ● Execute a controllability check.
Dual Main and Reserve Deployment	<ul style="list-style-type: none"> ● If both the main and reserve parachutes deploy completely, cut away the main parachute. ● If only the reserve pilot chute and bridle are deployed, attempt to contain them. ● If the reserve parachute deploys and will not fully inflate, slow the main parachute and be prepared to perform a cutaway should the reserve parachute fully inflate.
Horseshoe	<ul style="list-style-type: none"> ● Perform cutaway procedures immediately.
Bag Lock	<ul style="list-style-type: none"> ● Pull down twice on the rear risers. ● If the main parachute does not deploy, perform cutaway procedures.
Closed End Cells/ Hung Slider	<ul style="list-style-type: none"> ● Bring both toggles to the full brake position for 3-4 seconds and slowly let up the toggles to the 50 percent brake position (this procedure may be performed a maximum of two times). ● If unsuccessful, continue with the post-opening procedures (controllability check).
Premature Brake Release	<ul style="list-style-type: none"> ● Immediately release the opposite brake. ● Perform the post-opening procedures.
Broken Control Lines	<ul style="list-style-type: none"> ● Release the brakes and steer with the remaining control line. ● Continue the post-opening procedures. ● Determine the stall point at a safe altitude using the rear risers. ● Use the rear risers for landing. <p>NOTE: The rear risers may also be used for control; however, overuse may fatigue the arms.</p>
Broken Lines	<ul style="list-style-type: none"> ● Perform the post-opening procedures.
Line Twists	<ul style="list-style-type: none"> ● Reach up and separate the risers and use a kicking motion to untwist the suspension lines. <p>NOTE: Do not release brakes until line twists are cleared.</p>
Rips and/or Tears	<ul style="list-style-type: none"> ● Perform the post-opening procedures.
Tension Knots	<ul style="list-style-type: none"> ● Perform the post-opening procedures.
Floating Rip Cord	<ul style="list-style-type: none"> ● Locate the rip cord housing with the right hand. ● Locate the rip cord cable that should protrude from the housing. ● Pull the cable. ● If unsuccessful, perform cutaway procedures. <div style="text-align: center; background-color: black; color: white; padding: 5px; margin: 10px 0;"> <p>WARNING This entire action should be completed in no more than 2 seconds.</p> </div>
Hard Pull	<ul style="list-style-type: none"> ● If the pull is unsuccessful, come across with the left hand in a punching motion and push the right hand and rip cord out. ● If still unsuccessful, perform cutaway procedures.

Figure 10-8. Malfunction procedures.

MALFUNCTION	PROCEDURE
Pack Closure	<ul style="list-style-type: none"> ● Check over your shoulder again. ● If main parachute does not deploy, perform cutaway procedures.
Pilot Chute Hesitation	<ul style="list-style-type: none"> ● Check over your shoulder again. ● If main parachute does not deploy, perform cutaway procedures.

Figure 10-8. Malfunction procedures (continued).

MALFUNCTION	CUTAWAY PROCEDURE
<p>Total malfunction NOTE: A total malfunction occurs when the canopy remains in the container assembly after the ripcord has been pulled.</p> <p>Partial malfunction NOTE: A partial malfunction occurs when the container assembly opens but the canopy does not fully or properly deploy.</p>	<ul style="list-style-type: none"> ● Throw away the main rip cord. ● Look at and grab the cutaway handle. ● Look at and grab the reserve rip cord. ● Arch. ● Pull the cutaway handle. ● Pull the reserve rip cord. ● Check to ensure the reserve pilot chute has deployed. ● Perform the post-opening procedures.

Figure 10-9. Cutaway procedures.

PARACHUTE COLLISION AVOIDANCE

- Lower parachutist has the right-of-way.
- All parachutists maintain a safe vertical and horizontal separation.
- Look right, clear, turn right.

COLLISION IMMINENT

- Steer to avoid; look right, clear, turn right.
- If unable to avoid collision, spread arms and legs in an attempt to bounce off the canopy or lines.

NOTE: A 200-foot vertical and 75-foot horizontal separation is recommended for normal operations.

Figure 10-10. Recommended parachute separation.

SITUATION	HIGHER PARACHUTIST	LOWER PARACHUTIST
<p>Lower parachutist is entangled with higher parachutist, and higher parachutist has a good canopy.</p> <p>Above 2,000 feet AGL</p>	<ul style="list-style-type: none"> Attempt to clear off the lower canopy. <p>NOTE: If lower canopy is cleared, it should reinflate in 150 to 200 feet.</p>	<ul style="list-style-type: none"> If canopy cannot be cleared, check the altitude. Above 2,000 feet AGL, perform cutaway procedures.
<p>1,000 to 2,000 feet AGL</p>	<ul style="list-style-type: none"> Make every effort to control lower canopy. Be prepared to do a PLF. 	<ul style="list-style-type: none"> Perform cutaway procedures. <p>OR</p> <ul style="list-style-type: none"> Jettison equipment. Land with higher parachutist. Be prepared to do a PLF.
<p>Below 1,000 feet AGL</p>	<ul style="list-style-type: none"> Make every effort to maintain control of lower canopy. Be prepared to do a PLF. <p>NOTE: The higher parachutist should fly the final approach and land with half brakes.</p>	<ul style="list-style-type: none"> Jettison equipment. Land with higher parachutist. Be prepared to do a PLF.
<p>Both parachutists are entangled, and neither has a good canopy.</p> <p>At any altitude</p>	<ul style="list-style-type: none"> Get clear of entangled lines and cut away (altitude permitting). <div data-bbox="661 1295 1333 1455" style="background-color: black; color: white; padding: 10px; text-align: center;"> <p>WARNING</p> <p>The higher parachutist may be fatally engulfed in the canopies if the lower parachutist performs a cutaway first.</p> </div>	<ul style="list-style-type: none"> Cutaway after the higher parachutist (altitude permitting).
<ul style="list-style-type: none"> If still unsuccessful, both should deploy reserve parachutes in an attempt to slow the descent. If only one reserve parachute deploys, the parachutist with the good reserve must bring the other parachutist to the ground. If both reserves deploy, cut away from entanglement. <p>NOTE: Communication between the parachutists and altitude awareness are critical in successful disengagements.</p>		

Figure 10-11. Canopy entanglement procedures.


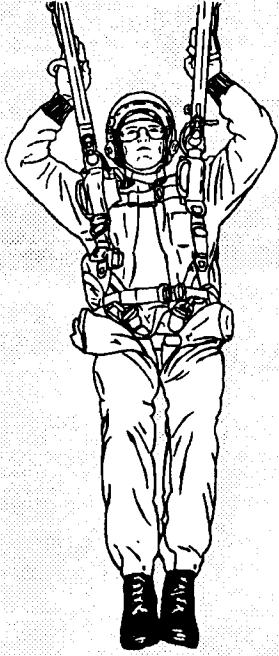

		
<p style="text-align: center;">TREES</p>	<p style="text-align: center;">WIRES</p>	<p style="text-align: center;">WATER</p>
<ul style="list-style-type: none"> ● Do not lower equipment; jettison if it was lowered. ● Turn canopy into wind. ● Brake as needed (50 percent braking position) to achieve vertical descent through the trees. ● Prepare for a PLF. ● Use forearms to protect face while passing through trees. ● If suspended, signal for assistance. <p>NOTE: Keep toggles in hands and continue to control canopy until in contact with the ground.</p> <p>NOTE: Goggles and oxygen mask provide additional face and eye protection.</p>	<ul style="list-style-type: none"> ● Throw away rip cord. ● Turn off oxygen. ● Slow canopy down. ● Avoid wires at all costs, even if a downwind landing is required. ● Streamline body while passing through the wires. ● If entangled, remain motionless until power is disconnected. ● Prepare to do a PLF after passing through the wires. ● If the parachute is entangled in the wires and contact with the ground is made, cut away from the main chute immediately and move away. <p>NOTE: If time and altitude permit, unhook the reserve static line and jettison equipment.</p>	<ul style="list-style-type: none"> ● Jettison oxygen mask and equipment. ● Unhook reserve static line. ● Unfasten chest strap and waist strap. ● Inflate flotation device if available. ● Turn canopy into the wind. ● Use brakes to slow airspeed. ● After entering water, release leg straps (as feet contact the water) and swim free of the harness. ● If being dragged in the water, cut away the main canopy. ● If trapped under the canopy, follow a seam to the edge. ● Signal for assistance using emergency devices. <p>NOTE: On entering water, be prepared for a normal landing or a PLF.</p>
<p>NOTE: Emergency landings are performed when an off-drop zone landing is unintentional. Tree and water landings may be performed intentionally for operational purposes.</p>		

Figure 10-12. Emergency landing procedures.