



Standard Operating Guideline	
SOG Name:	Landing Zone for Helicopter Operations
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Standard:	DRAFT--TBD
Guideline Owner:	Non-Emergency Operations
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PURPOSE:

This document establishes guidelines for Dothan Fire Department (DFD) personnel when conducting helicopter operations. The goal is to ensure coordination between agencies resulting in effective incident scene management while maintaining the safety of all emergency personnel.

A. LANDING_ZONE_OPERATIONS

SECTION 1

The Landing Zone (LZ) will be selected with consideration given to the surface area and the surrounding obstacles that surround the intended landing site.

The Landing Zone should be a clear and unobstructed area (at least 100x100 feet) of a reasonable hard surface, **No Mud**. Surfaces should be prepared by clearing of all unsecured object higher than the knee and ensuring that a clear path to load victims is established as soon as possible.

The Landing Zone should be at least 200 to 300 feet from the incident to prevent noise and flying debris hazards for responders at scene.

Pick a site that has a clear lane for the helicopter to approach, land, and depart the scene with consideration given to weather, wind, and flight path. A clear path for landing and takeoff should extend 500 feet out from the landing site in 2 directions. Landing and takeoff will be into a wind or crosswind. A downwind landing or takeoff is extremely hazardous.

SECTION 2

Landing markings are used by ground personnel to assist pilots in the safe landing of aircrafts.

Day Markings: Marking a landing zone for day operations is simply a matter of arranging a material that will represent a “square” in either lights or a suitable contrasting and visible color (See Addendum 1). International orange will be the most readily visible from altitude during daylight hours. Lights are hard to distinguish during the day so the use of orange panels or weighted cones is recommended.

Night Markings: Military and Civilian helicopters may have different requirements based upon the type of aircraft responding. The LZ Group Supervisor must contact the responding aircraft to ensure that requirements are appropriate. All military and almost all civilian helicopters use night vision and could be endangered by bright lights, headlights, or emergency lights. **CONTACT THE RESPONDING AIRCRAFT** to determine LZ markings. If aircraft are not

equipped with night vision, refer to Addendum 1 for the proper deployment of red/orange lights to mark the LZ.

B. LANDING ZONE GROUP RESPONSIBILITIES

1. The Landing Zone Group Supervisor must establish a safe landing site.
 - Ensure wind direction and weather is received from communications.
 - Ensure “LZ” is set up with regards to wind direction and obstacles.
 - Ensure “LZ” is clear of any debris that could possibly fly up into aircraft or scene personnel.
 - Communicates with responding aircraft to ensure “LZ” is properly marked and inspected

The “LZ” Group Supervisor has an enormous responsibility. This sector is responsible for the safety of the ground personnel that will be working around the helicopter and assure accountability for the personnel that will be accompanying a patient in the aircraft. They will be required to communicate with the Incident Commander, or the Operations Section Chief depending on the magnitude of the incident, and possibly the aircraft. An understanding of weather, map reading, communications, and possible emergency procedures of helicopters may be required (See Addendum 2).

2. A Safety Officer must account for, and ensure, the safety of all personnel that are assisting with the incident.
 - Identify personnel that will be required to ride in with patient if appropriate medical chain of authority cannot be met by arriving aircrew.
 - Report to IC when “LZ” is set up, inspected, and personnel are identified to assist in transport and ready receive aircraft.

3. Ground Crew Team Members

Ground operations around a helicopter are considered high risk operations. All Ground Crew Team Members must be constantly aware of the hazards associated with noise, flying debris, and rotating blades. All Ground Crew Team Members must receive a thorough briefing on hazards, individual responsibilities/tasks and safety procedures prior to beginning Ground Crew duties. All Ground Crew Team members must be familiar with the nationally approved hand signals for aviation. (See Addendum 3)

Ground operations can be divided into two categories: Day Operations and Night Operations.

- The following procedures must be used for daylight operations:
 - During the day, approach the helicopter only when directed by a helicopter crew member. Eye contact with the pilot is the preferred method, using very basic hand signals.
 - Patients will be secured on a backboard and covered by a sheet or blanket with all loose ends tucked in and secured.
 - Emergency personnel that are carrying victims to helicopter should be prepared to encounter high levels of dust and noise. Eye and ear protection will be worn prior to entry into landing zone area with operating helicopter.
 - Emergency personnel will carry victims to helicopter at the direction of air crew and assist in loading until relieved by aircrew member.
 - A paramedic will be identified prior to loading patient on the helicopter in case of necessity of having to supply a member to ride in.
 - If possible, provide patient with eye and hearing protection.
 - When approaching the helicopter, walk slowly and deliberately.
 - When the Dothan Fire Department provides a paramedic for transportation, the appropriate Battalion Chief will make arrangements to return member(s) to their assigned station.

- The following procedures must be used for nighttime operations, in addition to daylight procedures:
 - Do not shine a flashlight at the helicopter.
 - Be much more diligent at night due to decreased visibility.
 - Plan an approach route to the “LZ” site that will accommodate equipment, personnel, and vehicles that will be involved in operations around the helicopter. Attempt to provide some type of clearly visible markings. Blue or green Chem-Lights will work if placed on the ground to make a path to the “LZ.”

C. HELICOPTER LANDINGS AT EMERGENCY SCENES

An engine company should be assigned to the LZ Group should be made if adequate personnel will be required to assist in clearing, setting up, and inspecting the landing area. Additional responsibilities will include but are not limited to:

1. Paramedic to Ride In.
2. Ground Signals. (See Addendum 3)
3. Litter carriers
4. Standby emergency personnel.

At least two personnel must be on standby in full structural PPE ready during takeoff and landing in turnout gear positioned at the pumper ready to respond in the case of a helicopter emergency.

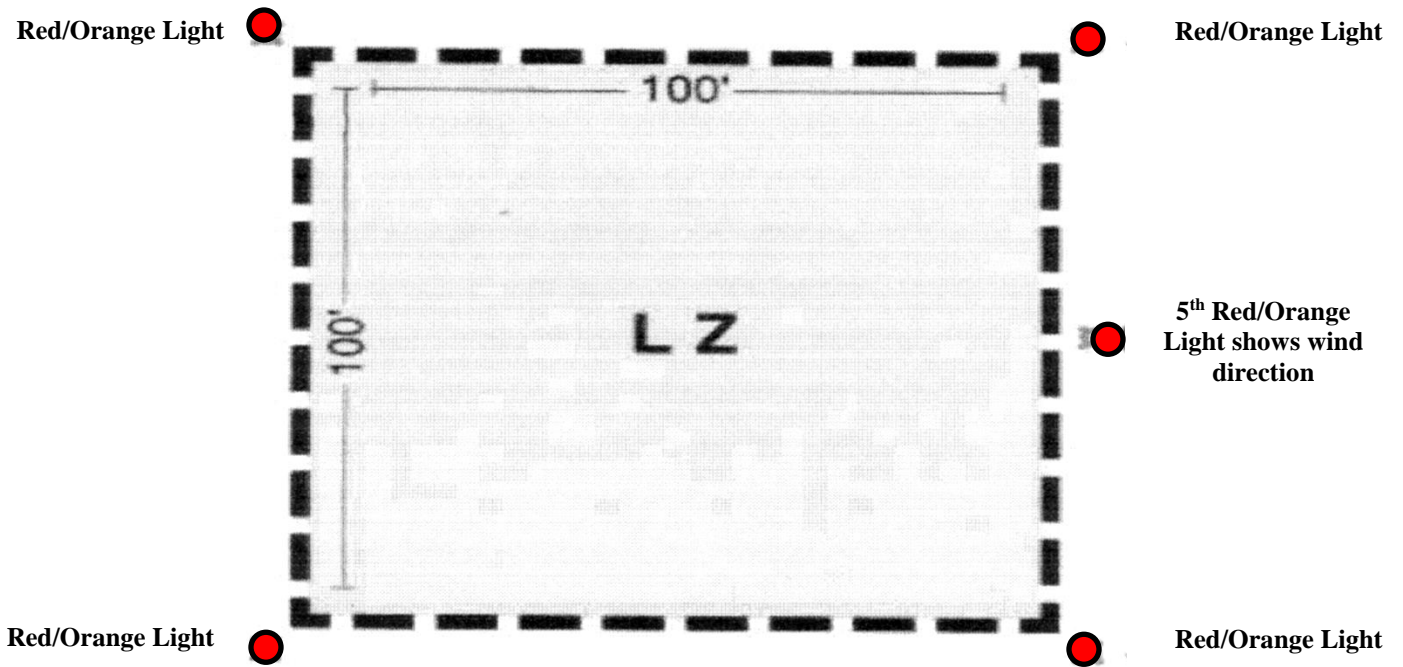
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Larry H. Williams, Jr.

Fire Chief

DOTHAN FIRE DEPARTMENT

APPENDUM 1
LANDING ZONE DIAGRAM



ADDENDUM 2**AVIATION WEATHER, MAP READING, COMMUNICATIONS, AND HELICOPTER EMERGENCY PROCEDURES.**

For ground personnel to effectively work with pilots and crewmembers of aircraft, it is important to use common terminology and have an awareness of basic aviation weather, map reading, radio communications, and helicopter emergency procedures.

- **Aviation Weather.**

Aircraft are limited in landing at off airport sites by visibility and cloud ceilings. A pilot's ability to see and avoid obstacles in his flight path and in or around a landing area is severely limited as visibility and ceilings decrease. MAST from Ft Rucker can attempt to launch if predominate weather is forecast to be at or above ½ mile visibility and clear of clouds for day operations.

Night operations require 3 miles visibility and the helicopter must be able to remain at least 500 ft below the clouds and still have altitude to maneuver and avoid obstacles. Reference for this is the Army Regulation 95-1 and the Federal Aviation Regulations 91.155. With weather reports being based from the Dothan Airport or Ft Rucker, different conditions can exist at a landing area that are quite different from what is forecast or reported from these sites. The Pilot In Command will have the final authority on any flight where weather is questionable.

- **Radio Communication.**

Communication with aircraft is essential to coordinate activities in the Landing Zone, report hazards, and to advise the crew of patient's condition. Typically, all communication will be clear voice and our current communication procedures are compatible with generally accepted communication for aviation. Currently, communication with aircraft will be through Communications Center relay.

- **Map Reading.**

Clear and concise descriptions and directions will need to be transmitted to the pilots before the aircraft arrives on scene. Attempt to use major highways and large landmarks as references to enable the aircrew to accurately locate the landing area. Attempt with as much accuracy as possible to give compass headings and distances from landmarks if landing area is not located at scene

- **Helicopter Emergency Procedures.**

In the event of an accident involving a helicopter, it is imperative that ground personnel be aware of several hazards. Depending on the severity of the crash sequence, the aircraft has the potential of striking the ground with enough force to allow the components of the rotor system to strike the ground. This has the effect of disintegrating these components into small parts that travel great distance with sufficient energy to injure and kill ground personnel. Stay clear of the crash site until all debris has stopped flying and the helicopter has come to rest. It is possible for a helicopter to complete a crash sequence and still have the engines running as well as electrical power still working. In the event the crew is not able to accomplish an emergency shut down, the ground crew will have to accomplish this to be able to safely remove the occupants. Steps to

accomplish this will have to be addressed in aircraft specific training as various types of aircrafts have components of the engine and electrical systems in different locations throughout the aircraft. However, attempt to accomplish these items before rescue of occupants is made.

1. Foam the fuel spill
2. Shut off fuel supply valve in the cockpit
3. Remove Battery connections

In the event of access to the cockpit being unattainable, a water or foam stream can be applied to the engine intake to ensure that it has ceased to run. Do this from the nose of the aircraft and ensure that both sides are clear of personnel before applying foam to a running engine. The engine can disintegrate if stopped from high RPM abruptly. If this occurs, another flying debris hazard is created.

**DOTHAN FIRE DEPARTMENT
NATIONAL AIRCRAFT HANDSIGNALS
ADDENDUM 3**



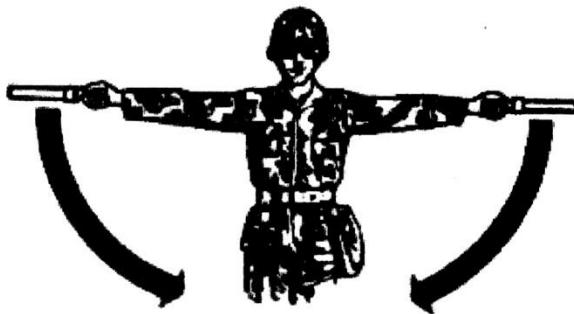
ASSUME GUIDANCE

Arms extended up with palms outward.



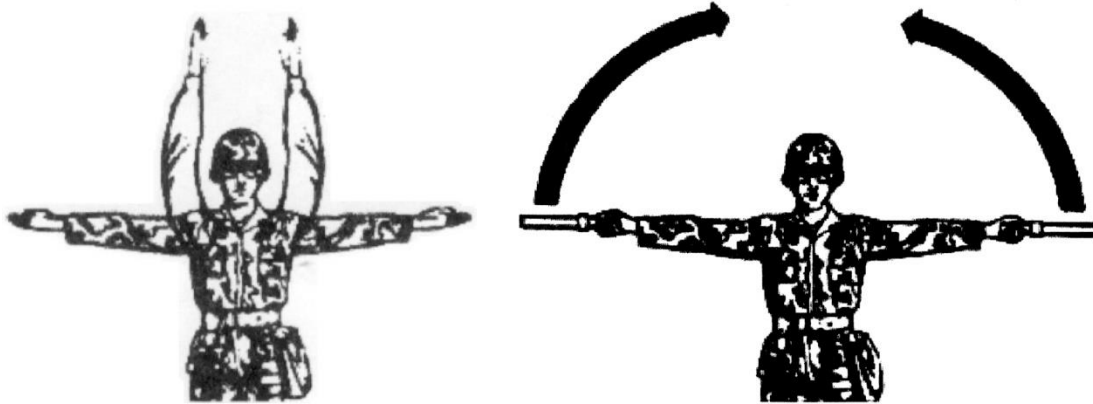
HOVER

Arms extended horizontally sideways, palms facing down.



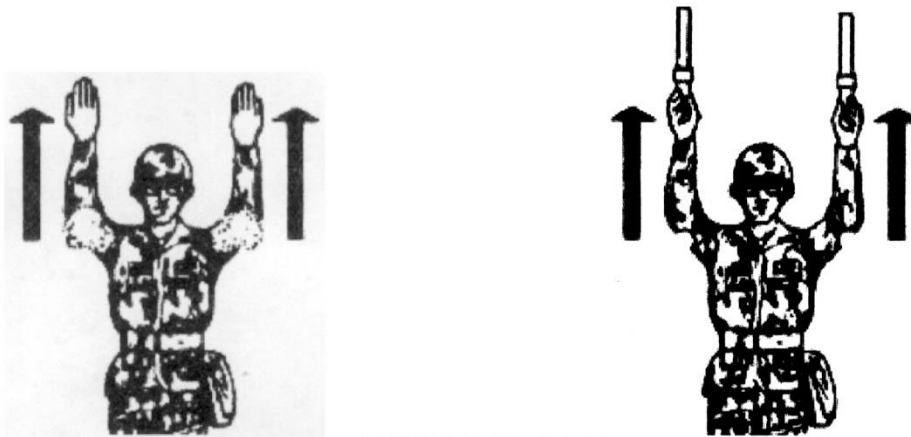
MOVE DOWNWARD

Arms extended horizontally sideways, beckoning downwards,
With palms turned down.



MOVE UPWARDS

Arms extended horizontally sideways, beckoning upwards, with palms up.



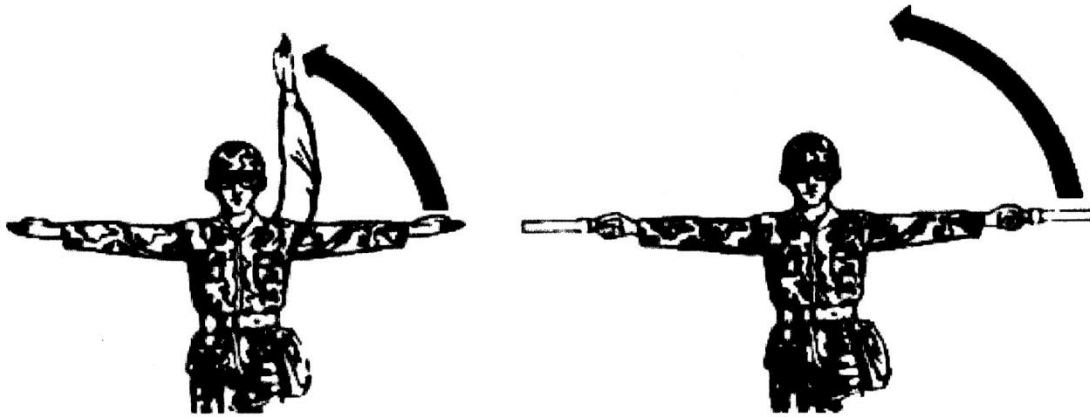
MOVE FORWARD

Arms a little aside, palms facing backwards and Repeatedly move upward and backward from shoulder height.



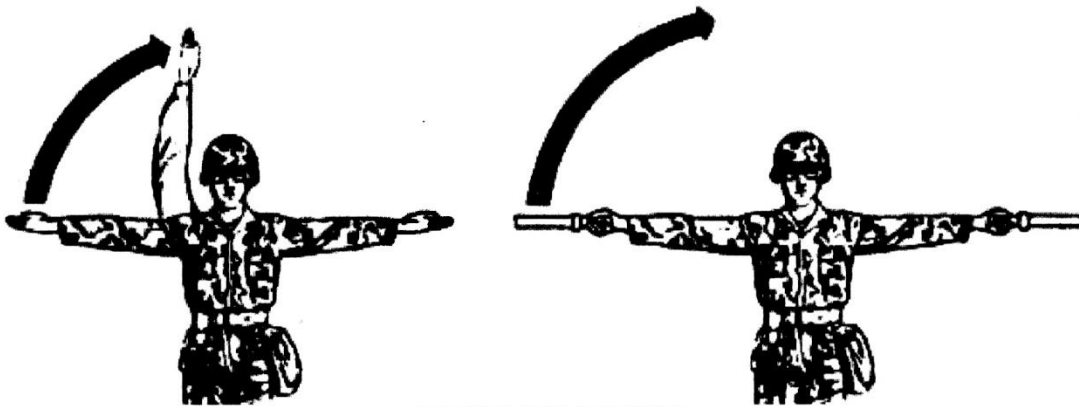
MOVE BACKWARDS

Arms by sides, palms facing forward, arms swept Forward and upward repeatedly to shoulder height.



MOVE TO LEFT

Right arm extended horizontally sideways in direction of movement and other arm
Swung overhead in same direction in a repeating movement



MOVE TO RIGHT

Left arm extended horizontally sideways in direction of movement and other arm
Swung overhead in same direction in a repeating movement.



LAND

Crossed and extended downwards in front of the body.



WAVE-OFF – DO NOT LAND
Cross arms repeatedly overhead.