Complies with POLK COUNTY FIRE CHIEFS ASSOCIATION LOCAL MUTUAL AID AGREEMENT SOG-6

**Purpose**
From time to time it may be necessary to remove patients from an area by using an emergency helicopter service (AeroMed, AirCare, etc). The purpose of this Standard Operational Guideline (SOG) is to establish a standard procedure for safe and efficient operations at the scene of an emergency when a helicopter is being utilized to assist emergency responders.

**Scope**
The scope of this guideline shall include all signatory organizations of the “Polk County Fire Chiefs Association, Local Mutual Aid Agreement,” all agencies supplying emergency medical helicopter service in Polk County and most situations in which fire personnel are working in conjunction with a helicopter type aircraft. Hereafter referred to as Polk County emergency response personnel.

**General**
Emergency helicopter services provide an indispensable health care tool for the critically ill and injured patient. When Polk County emergency response personnel participate in such an emergency medical transfer, the “Polk County Fire Chiefs Association, Local Mutual Aid Agreement,” Standard Operation Guideline, SOG-4, Incident Command System, shall be utilized. Further, helicopters (Medivacs) shall be requested in accordance with “Polk County Emergency Medical Services” helicopter procedures.

**Landing Zone**
The size of an LZ depends on the type of aircraft used by the responding service and present lighting conditions. Night flight operations usually require a larger LZ than those conducted in daylight. A good rule of thumb is to secure an area 100' x 100', which should be sufficient for either day or night and will allow even larger military helicopters to land. The surface should be flat and firm. If it is very dusty, wet it down a bit to prevent dust clouds from blinding the pilot and ground personnel. Try to avoid loose sand. The area should be free of any loose materials that might be blown into the rotors or engines. The LZ must be physically walked and inspected by ground support personnel to ensure the removal of all loose material.

The surface should have a less than 5 degree slope. The LZ should also be clear of any tall obstacles along the helicopter’s approach and departure paths.
Electric and telephone wires are a special hazard to helicopters, as they are much easier to see from the ground looking up than from a helicopter looking down into the ground clutter. Notify the pilot of the position of all wire systems. Use compass bearings such as “north of the LZ,” since left or right can be confusing.

An LZ can be marked with small, weighted cones or a flameless light source on each corner (No strobes during daylight hours). If weighted cones are used, they should be laid on their side with the tip pointing toward the center of the LZ. During night flight operations, all spotlights, floodlights and handheld flashlights should be pointed at the ground never at the helicopter. All nonessential lights should be turned off, and if vehicle lights are being used to illuminate the landing zone, they should be on low beam. Any white lights, including flash photography, can ruin a pilot’s night vision and temporarily blind him. Red or blue lights, such as flashlight wand covers, can be very helpful and do not affect night vision. Strobes and rotating warning lights are useful in locating an accident scene or LZ at night, but their use should be minimized during actual take-offs and landings.

**Landing Zone Personnel**

When deemed necessary by the Incident Commander (IC), the IC, shall establish a Landing Zone Group (or Division) and shall appoint one individual (preferably one who is knowledgeable about helicopters/aircraft) as the LZ Officer. This person will help land the aircraft and should be the only person communicating with the pilot(s). All personnel assigned to the LZ Group should wear eye and hearing protection, as well as long sleeves and pants (ideally, full bunker gear and a helmet with chin strap fastened and visor down). All loose clothing and equipment should be secured before landing the aircraft.

**LZ Officer** - is responsible for the overall operation of the LZ Group (or Division). The LZ Officer should position himself/herself away for the LZ but with full view of the LZ and LZ personnel. This will allow optimum safety and for best communications between ground crews and air crews. The LZ Officer shall appoint a minimum of two ground support personnel; one as Landing Zone Safety Officer (LZSO) and a second as Landing Zone Landing Officer (LZLO). There shall be only one LZLO. Additional LZSOs may be added as deemed necessary by the LZ Officer. All other personnel are to stay clear of the LZ. The LZ Officer is the only emergency responder permitted to communicate with the Pilot via radio. If the LZ Officer notices any circumstances or situations that may be immediately dangerous to the approaching or departing aircraft, or if the LZ Officer observes the LZSO or the LZLO using the “Abort” signal, the LZ Officer shall communicate the “Abort” signal to the Pilot via radio. (See “Abort a Landing or Take-Off”, Page 6).
LZ Safety Officer - shall be responsible for safety around the LZ. The LZSO must keep any and all personnel from approaching/entering the LZ. Polk County emergency response personnel needing to approach the aircraft must receive permission from the LZ Officer who shall receive permission from the Pilot. The LZSO must also watch for the approach of aircraft and notify the LZ Officer of any problems. If the LZSO notices any circumstances or situations that may be immediately dangerous to the approaching or departing aircraft, the LZSO must use the abort signal. (See “Abort a Landing or Take-Off”, Page 6). The LZSO is also responsible for “Rotor Safety” when the pilot, who normally assumes a position at the rear of the aircraft to provide safe operations around the tail rotor, is not in position.

LZ Landing Officer - shall be responsible for the landing and takeoff of the aircraft. The LZLO must watch the approach (and take-off) of aircraft and notify the LZ Commander of any problems. If the LZLO notices any circumstances or situations that may be immediately dangerous to the approaching or departing aircraft, the LZLO must use the abort signal. (See “Abort a Landing or Take-Off”, Page 6) The LZLO must use nationally recognized hand signals for the landing and take-off of aircraft.

Landing Zone Procedure

1. Once a helicopter request has been called by the Polk County Fire Rescue (PCFR) and the patient(s) is/are to be transported via helicopter, the Incident Commander shall designate a Landing Zone (LZ) Group or Division with an LZ Officer and an engine crew to secure an LZ as close to the scene as safety will permit. There shall be a LZ Group assigned to each LZ. The LZ Officer shall establish contact with the incoming aircraft and shall stay in contact with the pilots of the incoming aircraft, giving instructions, directions and information, until the aircraft has landed and departed the LZ.

2. The IC shall update PCFR Medic Unit(s) of the status of the aircraft and the location of the LZ.

3. The LZ Officer shall be at the LZ and shall advise and update the IC on the status of the incoming or departing aircraft. The IC should be notified of the following:
   a. The LZ is prepared
   b. The helicopter is in route
   c. The helicopter is in sight
   d. The helicopter is on the ground
   e. The patient(s) is/are loaded
f. The helicopter has departed

4. The LZ Officer shall also communicate directly with dispatch (only when necessary) and keep dispatch advised as to when the helicopter has landed and when it has departed.

5. The incoming helicopter(s) shall contact the LZ Officer as soon as possible once the aircraft(s) is/are airborne, on Disaster 15. From this time forward, only the LZ Officer shall have radio contact with the aircraft. A fire department engine with emergency warning lights on shall be staged at the LZ and shall remain at the LZ until released by the LZ Officer.

6. The LZ shall be secured for as long as the aircraft is there. This may be accomplished by fire or law enforcement personnel.

7. Polk County emergency response personnel shall observe the following safety rules:
   
a. Establish LZ Control and secure perimeter.

   b. Remove or secure all loose articles in the LZ, including personal articles (helmet, stethoscope, etc.) (See section on Landing Zone, Page 2).

   c. LZ Group shall wear full protective clothing when landing helicopters including head and eye protection.

   d. Once the helicopter has landed, **DO NOT** approach the aircraft. If your assistance is needed, the pilot or a crew member will signal you to approach.

   e. When requested to approach the helicopter, always approach in full view of the pilot (at the 10 or 2 o'clock position from the nose of the helicopter) and be sure the pilot sees you. **Never approach a helicopter from the rear.**

   f. Always slowly approach the aircraft in a crouched position and always leave the aircraft by taking the same path you took to approach the aircraft.

   g. Never run when working around an aircraft.
h. The flight crew will direct loading and unloading of patients and equipment. Only the flight crew will open and close the doors.

i. Never carry anything overhead, including IV fluids. All long objects should be carried parallel to the ground.

j. If on uneven terrain, **ALWAYS** approach and exit on the **DOWNHILL** side in view of the pilot.

k. **DO NOT** shine any type of lights at arriving or departing aircraft to include: spotlights, floodlights, headlights, hand lights, laser lights, TV camera lights etc.

**Aircraft Communications**

1. Once the aircraft is en route, it will make radio contact with the LZ Officer on the designated channel (Disaster 15).
2. The LS Officer will provide the following information to the helicopter pilot:
   a. Location of LZ
   b. Number of patients for transport
   c. Wind direction and speed
   d. Description of the LZ to include all surrounding hazards and conditions
   e. Special instructions or considerations
3. The LZ Officer will be the only ground unit in radio contact with the aircraft during the final approach and landing. The LZ Officer will advise all units to “Clear channel. No radio traffic. Aircraft landing in progress, final approach.”
4. The LZ Officer shall communicate with helicopter pilot in plain language. Avoid the use of codes.
5. The LZ Officer shall point out landmarks and obstacles, especially wires and inform the pilot of any unusual situations. (Example: A second helicopter has been requested and is in route.)
6. The LZ Officer shall notify the helicopter pilot when he/she has visual contact with the aircraft.
7. Upon completion of a safe landing/takeoff, the LZ Officer shall notify dispatch and the IC that the aircraft has landed/departed.
Landing the Helicopter

As the aircraft approaches the LZ, the LZ Officer gives the aircraft permission to land. (Example: “LZ Control to AirCare, you are in sight and clear to land.”) A helicopter pilot prefers to land into the wind. This allows the helicopter the greatest lift potential in the event of an aborted landing. The helicopter pilot will make one to three orbits around the LZ to orientate the crew to the LZ before landing the aircraft. The LZLO shall position himself/herself on the windward (upwind) side of the LZ, in the middle of the outside edge of the LZ and raise his/her arms in a “V” pattern (45 degrees off center) above their head. This gives the pilot a center line for landing the aircraft. (Light wands are ideal for this purpose.) The pilot will approach the LZLO, from the leeward (downwind) side of the LZ, descending and reducing speed. As the aircraft slows down and is approximately 10 feet off the ground, the LZLO shall lower his/her arms 45 degrees to the front, still maintaining a “V” pattern. Then the LZLO shall drop his/her arms (at moderate speed) to a position that is parallel to the ground, perpendicular to the body and maintaining the “V” pattern. The LZLO shall repeat this maneuver, with palms down, until the aircraft has touched down. At this point the LZLO will bring his hands to his/her side, take a step back, and turn and walk away from his/her position.

Helicopter Departure

The LZLO shall position himself/herself in front of the aircraft, in the middle of the outside edge of the LZ and raise his/her arms in a “V” pattern (45 degrees off center each arm) above their head. This gives the pilot the signal all is clear and ready to liftoff. When the LZLO has made eye contact with the pilot and the aircraft starts to increase engine speed, the LZLO shall lower his/her arms an additional 90 degrees to the front, still maintaining a “V” pattern (A total of 135 degrees which places the arms 45 degrees from the LZLO’s legs). Then the LZLO shall raise his/her arms (at moderate speed) to a position that is parallel to the ground and perpendicular to the body and still maintaining the “V” pattern. The LZLO shall repeat this maneuver until the aircraft has lifted off the ground (approximately 10 feet). Once the aircraft is airborne, LZLO will bring his/her hands to his/her side, and turn and walk away from the aircraft.

Abort a Landing or Take-Off

As the aircraft is landing (or has landed) ground support personnel must keep a watch on the LZ. Often hazards can develop or can be spotted at the last minute. The LZ Officer must maintain radio contact with the helicopter pilot while it is landing and taking off. In the event of a safety hazard or security breach in the LZ, the LZ Officer must transmit to the aircraft the word “ABORT” three
times (ABORT, ABORT, ABORT) and the LZLO must take one step toward the aircraft waving their arms, in a crossing fashion, vigorously over his/her head. This will cause the pilot to immediately abort the landing or abort the take-off, whichever is in progress. At any point in the landing or during the departure of an aircraft, any LZ Group (or Division) officer that sees a potential safety hazard to an aircraft are to give the “ABORT” signal and the LZ Officer shall notice the signal and announce “ABORT, ABORT, ABORT” over the radio to the flight crew. The landing or departure shall be delayed until such time as the potential safety hazard has been neutralized.