3.1.5.1 Aircraft Operations

	YOUR ORGANIZATION STANDARD OPERATING PROCEDURES/GUIDELINES
TITLE: Aircraft Operations	**SECTION/TOPIC:** Special Operations
NUMBER: 3.1.5.1	**ISSUE DATE:**
	REVISED DATE:
PREPARED BY: X Preparer	**APPROVED BY:** X Approver
These SOPs/SOGs are based on FEMA guidelines FA-197	

1.0 POLICY REFERENCE

CFR	
NFPA	
NIMS	

2.0 PURPOSE

This standard operating procedure/guideline addresses procedures for using department-owned aircraft in emergency operations: qualifications of personnel, care and maintenance of aircraft, requests for air support, operating aircraft, use of special equipment.

3.0 SCOPE

This SOP/SOG pertains to all personnel in this organization.

Several public and private helicopter services are available for various purposes, including emergency medical transportation, rescue from inaccessible locations, aerial reconnaissance of emergency scenes, brush firefighting, and emergency transportation of personnel and/or equipment. The agencies involved in these services and available for emergencies are:
Air Evac
Life Net
City Police Department
Native Air
Department of Public Safety

City Police Department
Sheriff's Department
State Army National Guard
Television Stations Channels 3, 5, 10, 12, 15
Air Services International

4.0 DEFINITIONS

These definitions are pertinent to this SOP/SOG.

5.0 PROCEDURES/GUIDELINES & INFORMATION

5.1 Procedures for using Department-Owned Aircraft in Emergency Operations:

PROCEDURES
Each agency's operating procedures, along with equipment and training limitations, present different operational capabilities. Command should request the type of helicopter and pilot support needed for a particular situation. Information on each agency is maintained in the CAD system.

Fire personnel should not fly with pilots or in aircraft that have not been approved and appropriately carded. If Command has a concern about the ability of the pilot or the overall safety of the operation, Command should stop the operation immediately.

EMERGENCY MEDICAL TRANSPORTATION
Helicopter transportation is available for patients within city areas, when time and distance affect ground transportation time. When sufficient ambulances are unavailable, or when patients are in locations inaccessible to ground units, helicopter transportation should be considered.

Med-Evac helicopters are capable of carrying; only one Immediate patient. Additional helicopters should be requested for incidents involving multiple Immediate patients. These aircraft are not approved for Technical Rescue air operations.

DPS helicopters are capable of carrying one patient only. DPS helicopter pilots must be advised of a litter patient prior to taking off or landing so that the interior of the helicopter can be put in proper configuration to accommodate the patient.

Helicopter medical transportation should be considered for -- Immediate trauma patients requiring urgent surgery, patients requiring specialized treatment (OB, pediatric, burns, neurological.) or any other patient Medical Control deems necessary.

AERIAL RECONNAISSANCE

Aerial observation may be desirable to assist Command in complex situations. This has proven extremely effective in brush firefighting, complex structural fires involving difficult access, high-rise fires, and for tracking direction and distance of air contamination at haz mat fires. Helicopters may be requested to place a fire department observer overhead with communications to Command.

Helicopters belonging to television stations and other media aircraft have been requested to avoid interference with ground operations. The same rules apply to landing in the incident area as apply to any other helicopters.
News station helicopters may be requested to provide assistance at incidents. Most news station helicopters have the capability to communicate on fire channels.

During major incidents, Command may request to have the surrounding airspace restricted to avoid interference with emergency operations. The request must be made to the FAA Flight Service Station. (Contact information is maintained in CAD file). News helicopters may or may not be restricted from this space at the discretion of command. News helicopters are not approved for use in technical
rescue (SPECIAL USE) operations except as aerial observers.

TRANSPORTATION OF PERSONNEL AND/OR EQUIPMENT
Helicopters may be requested for transportation of personnel and/or equipment urgently needed at the scene of an emergency, particularly when distance is a factor. The request for assistance should include the number of personnel and the weight and volume of equipment to be transported.

Helicopters may also be used to transport personnel and equipment to the top of a high-rise building or across difficult terrain for firefighting purposes. An appropriately sized landing zone should be identified in close proximity to the staging area, with enough space and separation to provide for safe operations.

BRUSH FIREFIGHTING
Two methods of brush firefighting are available using helicopters. The City Police Air Unit has the ability to put two Bambi Buckets in service and are available to respond to brush fires to provide aerial water drop capability.

The City Police Department has the ability to put one Bambi Bucket in service.

The City Fire Department currently has four buoy wall tanks. City2 Fire Department has one buoy wall. The buoy wall tanks will hold either 3,000 or 4,000 gallons of water.

The Bambi Buckets can hold from 67 to 96 gallons of water, depending on air temperature and humidity and may be filled from a canal, buoy wall tank, or any other body of water that is available.

All drop instructions and reporting effectiveness of drops will be relayed to pilot by Command or an individual designated by Command. All personnel will remain clear of the drop zone.

NOTE: Helicopters with full buckets are prohibited from flying over occupied structures or traffic. Roadways must be closed or structures evacuated if no other flight path can be used.

BUOY WALL SET UP

The engine company assigned to the landing zone sector will assist the water tender driver with set up and filling the buoy wall tank. The buoy wall must be set up in a large flat area clear of overhead obstruction. Place one or two salvage covers on the ground to protect the bottom of the tank. Buoy wall tanks fill from the bottom only. Start filling the tank slowly after approximately one foot of water is in the tank the flow rate can be increased. Foam concentrate can be added to the tank when it is about one foot from the top.

NOTE: Apparatus must be kept at least 150' to the side of the flight path of helicopters dipping the tank.

CONTRACT HELICOPTER SERVICES

This service is provided by contract with the City Fire Department and involves an hourly charge for service. These helicopters can drop approximately 120 gallons of water on each pass over the fire. The drop can be directed on one spot or along a running pass.
One or more helicopters may be requested for the operation. Average flying time per fuel load is 1-1/2 to two hours and a refueling vehicle can be dispatched to the scene.
An engine company shall be assigned to control the landing zone. A supply line shall be laid from a hydrant and two 1-1/2 inch lines shall be extended. Lines are to refill belly tanks, wet down area, and to provide fire protection.

Crews will approach the helicopter only after making eye contact with the pilot and the pilot has to refill and re-arm belly tank. All refilling is done from the right side of the aircraft.

Crews will approach and withdraw along the same path; to front of the aircraft within 45 degrees. When the crew is clear and off to the sides, the landing zone officer will signal the pilot for take-off.

All drop instructions and reporting effectiveness of drops will be relayed to pilot by Command or an individual designated by Command. All personnel will remain clear of the drop zone.

RESCUE

Helicopters are particularly suited for physical rescue of persons stranded in inaccessible locations. Depending on the location of the victim, a helicopter may be useful in removing the victim or placing rescue personnel in a position to reach the victim.

Technical Rescue Team personnel, along with proper helicopter agency, should be considered for access to particularly difficult locations. The risk of using helicopters and placing rescue personnel in dangerous situations must be weighed against the urgency of the rescue situation. These considerations may be critical during hours of darkness or poor flying weather.

SPECIAL USE

"Special Use" of helicopters are activities that require pilots and rescuers to use certified technical rescue skills to affect the rescue of a patient or patients that are in critical condition or life-threatening situations. These are high-risk operations that can pose a serious threat to the life safety of both patients and rescuers.

The following are considered "Special Use" helicopters operations:

1. External load (slingloads, longlines, water bucket, etc.)
2. Hover sites (low-level hovering)
3. Helicopter rappelling (insertions and extraction's)
4. Flights conducted below 500 feet above ground level (AGL)
5. Helicopter operations around a fire perimeter
6. Single skid landings
7. Any takeoff or landing requiring special pilot technique due to terrain, obstacles, or surface condition.

Any "Special Use" of helicopters during rescue operations will require a Technical Rescue Sector to be established by Command. It shall be the responsibility of the Technical Rescue Sector officer to establish and coordinate the rescue plan with the appropriate pilots and Fire Command.

"Special Use" helicopter operations shall only be performed by certified City Police Department pilots and City Fire Department Technical Rescue Technicians. Prior to initiating any rescue operation that required the "Special Use" of a helicopter, a risk benefit analysis will be completed by Technical Sector Officer (T.S.O), City PD pilot, and Command. The "Special Use" operation will only continue if this analysis determines the patient to be in critical condition, or a lifethreatening situation exist for the patient(s) or rescuers.

HELICOPTER LOAD CALCULATION

Any "Special Use" of helicopters during rescue operations will require proper load calculations to be completed. Prior to initiating a rescue the pilot will perform a power check. After landing, the pilot will meet with the Technical Rescue Sector officer or a representative; together they will complete and sign the helicopter load calculation form. *The load calculation form will be required for both internal and external loads.*

The load calculation form will be retained by Technical Rescue Sector officer and submitted with the T.R.T. rescue report.

The pilot will insure that proper loading procedures are followed. All helicopters will be flown within the center-of-gravity envelope and gross weight limitations.

COMMUNICATIONS

Air-to-ground communications shall be used whenever possible to give landing instructions to approaching helicopters. Dispatch will coordinate the establishment of air-to-ground communications.

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he pilot of a helicopter approaching the scene will advise Dispatch when ready to communicate with ground units. Dispatch will assign the radio channel to be used and advise Command of the identity of the helicopter. Direct air-to-ground communications shall then be established between the helicopter and Landing Zone personnel. Personnel in the landing area should have direct communications with the pilot before landing.

When helicopters are actively engaged in operations at the scene of an incident, Command should assign all helicopter communications to a separate radio channel and designate a person to work exclusively with this channel.

“Special Use” operations require a designated radio channel that is clear of any other traffic.

NOTE: National Guard helicopters have no direct communications capability with fire department ground units. Landing instructions must be given by hand signals.

Helicopters will not land in the incident area without first making contact with ground units. If unable to make contact on an assigned channel, the arriving helicopter shall circle or hover in the vicinity until contact is established.

Helicopters may be directed to land via hand or light signals when radio communication proves unfeasible. Landings shall not be made in proximity to the incident without positive contact (radios or hand signals).

FIREBIRD

Firebird is the designation for a helicopter operating under the direction of the City Fire Department. This includes City Police helicopters providing aerial reconnaissance, brush firefighting operations, transportation, or special use operations.

The designations "Firebird 1,2,3" etc., will be used to identify different helicopters in use on any one incident. City Police Department helicopter designation is Falcon. Falcon 3 & 4 have the same capabilities as Firebird.

Ranger 41

Ranger 41 is the designation for the helicopter operating under the direction of the Department of Public Safety. This unit is staffed with 1 DPS officer/pilot, 1 DPS officer/paramedic, and 1 City Fire paramedic. R-41 has capabilities for emergency medical transportation and aerial reconnaissance transportation of manpower and equipment.

LANDING ZONES

The selection of an appropriate landing zone is of critical importance in all field situations. A suitable landing area must be located and identified for the pilot. **Should anything become unsafe during the approach of any helicopter during landing operations instruct the pilot to GO AROUND three times.**

Command will assign personnel to select and identify a landing zone. The assigned personnel shall have a portable radio, eye protection, ear protection, high-visibility safety vests. All personnel assigned to the landing zone operation shall be on the designated landing zone radio frequency. Engine companies are more suitable for this assignment.

The landing zone must be relatively flat and free of obstructions for an area of at least 100' x 100' for each helicopter. All spectators, vehicle traffic (including emergency vehicles) and animals must be kept a minimum of 200' away from the landing zone. In the center of the landing zone, a 60' x 60' "touch down" area shall be identified with appropriate visual markers. The individual communicating with the pilot shall stand at the front right corner (as seen by the pilot) of the touch down area. A visual check should be made for overhead wires, poles, towers, and similar obstructions. Any obstructions noted must be communicated to the pilot before he/she is committed. The pilot can then assess the obstruction.

"Special Use" landing zones are defined as any landing zone where the pilot cannot land and shut down power to the aircraft. "Special Use" landing zones are technical by nature and shall be staffed by members of the Technical Rescue Team at both the base and off-site landing zones.

The approach and departure paths (into the wind) must be free of obstructions. For heavily loaded helicopters (i.e., water drop), the clear path should extend at least 100 yards in each direction.

Approach and departure paths should not pass over a treatment area, Command Post, or other activity areas where noise and rotor wash will cause problems.

The landing zone should be located at least 100 yards from other activity areas.

The landing zone and surrounding area must be free of small objects which can be blown around by rotor wash. Check for metal objects and secure loose clothing or blankets.

Avoid dusty locations if possible. If the landing area is dusty, wet down the area with a hose line before landing.

Once a helicopter has landed the pilot may elect to shut down for added safety in the landing zone.

While the helicopter is on the ground, whether running or not, a "tail guard" shall be stationed 50 to 100 feet from the tail rotor to keep the area secured. **At no time shall personnel pass behind the body of the helicopter and the tail rotor.**
Radio contact and the landing zone shall be maintained for two to three minutes after departure of the helicopter in case an in-flight emergency is experienced and the helicopter needs to return to the landing zone.

HELICOPTER SAFETY FACTORS

- Approach and depart helicopter from the front or 45 degrees from the front, in a crouching position; remain in view of the pilot.
- Establish eye contact with pilot or observer before approaching if rotors are moving.
- Do not approach helicopter after landing until pilot or observer signals approval to approach aircraft.
- Approach and depart in pilot's or observer's field of vision (never towards the tail rotor).
- At no time will personnel approach the tail area of any helicopter.
- Landing zone personnel shall use eye protection or helmet face shields and ear protection. Helmet chinstraps shall be tightened securely.
- Use a chinstrap or secure hardhat when working around main rotor.
- Keep landing areas clear of loose articles that may "fly" in the rotor down wash.
- Provide wind indicators for take-off and landings; back to the wind, arms extended in front of body.
- Beware of rotor wash. Small objects and clothing (caps, jackets, etc.) can be blown around easily. Do not grab or chase articles blown off by the rotor wash.
- Be aware the spotlights used to illuminate obstructions can blind the pilot. Extreme caution should be used. Only use spotlights to illuminate the bottom of poles. Do not shine upward.
- Fasten seat belt upon entering helicopter and leave buckled until pilot signals to exit. Fasten seat belt behind you before leaving.
- Use the door latches as instructed; caution should be exercised around moving parts or Plexiglas.
- Do not throw items from the helicopter.
- Carry tools horizontally and below waist level, never upright or over shoulder.
- Secure items internally and externally on the helicopter.
- Provide pilot with accurate weights and types of baggage.
- Stage patients waiting to be loaded at least 150 feet away. Secure sheets and blankets and cover eyes during landing.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
PPE consists of clothing and equipment that provide protection to an individual in a hazardous environment.

All fire personnel and crew members will wear the following PPE when operating in or on the helicopter.

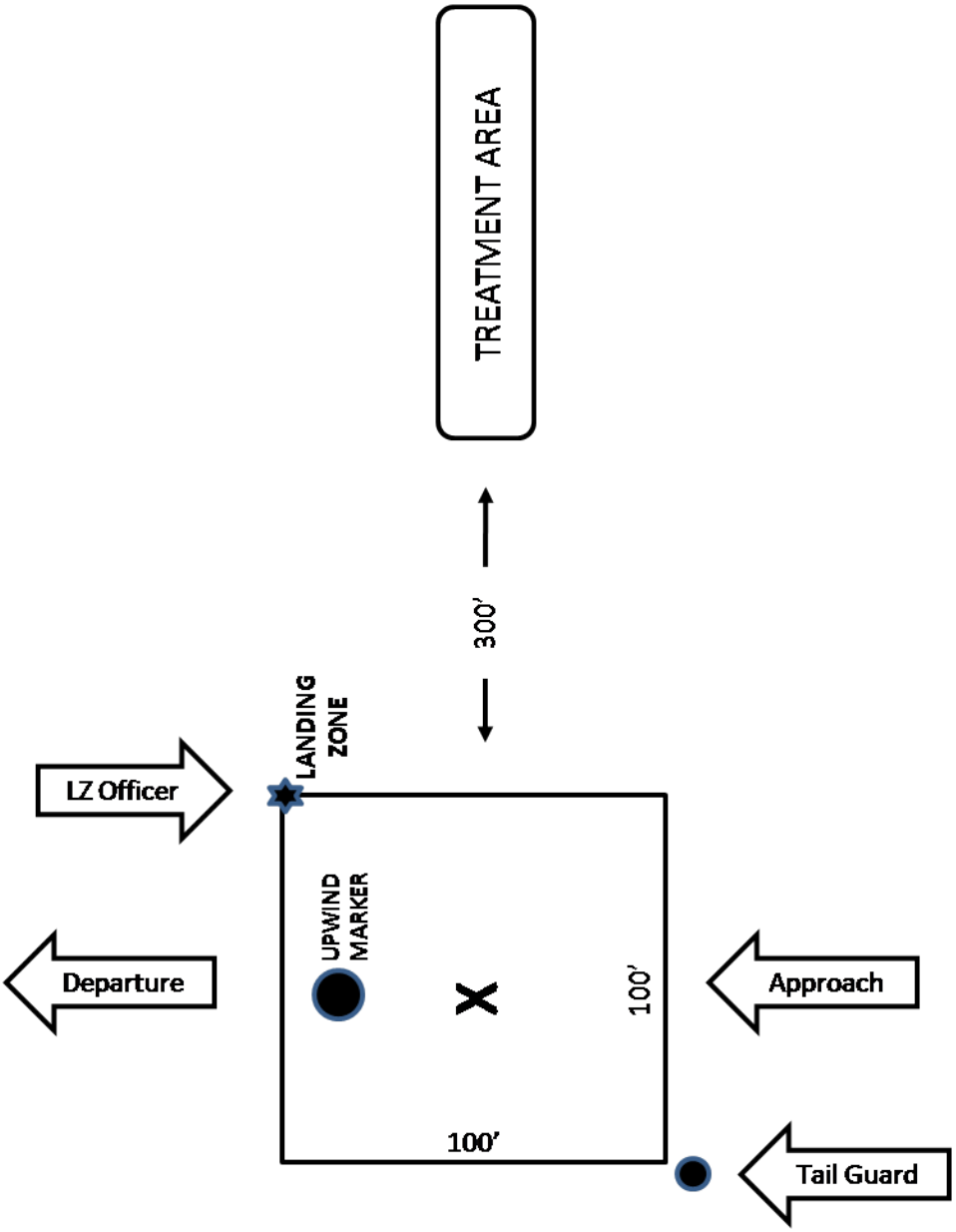
Flight Helmet: Must provide protection for the head.
Exceptions: TRT helmets or helicopter headsets may be used when a flight helmet is not necessary. (Flight helmets must be worn during long-line operations.) Fire helmets may be used by brush firefighters being transported to and from sites and firefighters in full protective clothing.

Fire Resistant Clothing: Nomex jumpsuit with length sufficient to eliminate exposure between boots and gloves, or structural firefighting coat and pants.
Exception: Brush firefighters may wear FR pants and Nomex brush jacket.

Leather Boots: Should extend above ankle.
Exception: Working in an environment not conducive to wearing leather boots.
Gloves: Should be leather or Nomex and leather.

SURFACE SELECTION

1. Concrete
2. Asphalt
3. Grass
4. Compacted dirt (lightly moistened to control dust)
5. Dry, loose dirt/sand (heavily moistened to control dust)


TREATMENT AREA
300'
LANDING ZONE
LZ Officer
UPWIND MARKER
Departure
100'
Approach
100'
Tail Guard

5.2 <u>Qualifications of Personnel</u>:

5.3 <u>Care and Maintenance of Aircraft</u>:

5.4 Requests for Air Support:

5.5 Operating Aircraft:

5.6 Use of Special Equipment: