Helicopter Safety

External Load Guidelines
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**Introduction:**

The purpose of this document is to offer general information for contractors and helicopter operators.

This document reflects procedures generally accepted as fundamental to the helicopter external load industry. Precision Lift Inc. encourages the use, modification, and adaptation of this document as necessary by each individual operator, as an addendum to an existing manual, or as additional information.

The information contained in this document should be considered advisory in nature and shall in no way supersede any applicable regulations, safe practices, or limitations.

Additional copies of this manual or further information can be obtained by contacting Precision Lift Inc.
HELICOPTER EXTERNAL LOAD GUIDELINES:

I. General Helicopter Safety for External Load Operations:

Every operator must ensure adequate employee supervision and instruction in the safe performance of all duties. Before operations begin, supervisors must plan the operation and communicate the following routine practices to all employees.

- safe work procedures to be used around helicopters
- all employees should recognize how their actions can endanger the safety of others both on the ground and in the air
- location of first aid services and equipment
- means for emergency transportation and evacuation
- method and equipment to be used to communicate between crews and between pilots and crews
- written procedures to be implemented for eliminating or controlling load hang up or snags and other work site hazards
- safe means for getting into and leaving work sites
- who is responsible for the various operations and activities
- procedures to be followed or the actions to be taken under adverse weather, wind and terrain conditions
- man-check procedures to periodically check worker well-being
- procedure for reporting unsafe conditions, personnel injuries, or accidents
II. Integration of Ground and Flight Activities

For each day's activities, site supervisors should ensure that crews are familiar with the following items:

1. Capabilities of external load helicopter and any support aircraft
   a. All employees should recognize how rotor wash will affect the work environment
   b. Ground crews should be constantly alert for changes in the movement, sound and exhaust from the helicopter, which could signal an in-flight emergency
   c. No employee is permitted on any load supported or suspended from the helicopter
   d. Ground crews should be familiar with the following:
      i. The helicopter lifting capability; loads must be within the lifting capacity of the helicopter
      ii. Helicopter fuel duration and length of cycles
      iii. Use of support aircraft: proper loading and unloading of people and equipment (if applicable)
      iv. Aircraft flight paths and load pick up rotation
      v. Monitoring the helicopter radio frequency
      vi. Identifying the location of the load to the pilot when appropriate (using the "clocking" method)
      vii. The operation of the remote helicopter hook and what to do if hook fails to operate properly
      viii. Always keep eyes on the hook or load when the helicopter is approaching and departing
      ix. Ensuring that loads are properly rigged
      x. Clearly identifying drop points for the pilot and coordinate them with ground activity
      xi. Allow the hook to contact the ground to dissipate any static charge
      xii. Avoid hang-ups in rigging and notifying the pilot when hang-ups or other problems are anticipated or occur during the lift
      xiii. When sending out a load, alert the pilot immediately of any slack rigging, or if loose material appears that may fall from the load during the trip to the drop off site.
      xiv. In the event of an abort, have a back-up load ready
   e. Ground crew should also be familiar with:
      i. The hazards of working around lift site and drop off site loaders
      ii. The importance of being in a safe zone when the helicopter approaches with a load until the load has been released from the remote hook
• Allowing the load to settle (stabilize) before removing rigging and being watchful of load movement while removing the rigging

• Monitoring the helicopter radio frequency
• The operation of the remote helicopter hook
• In the event the remote hook will not release, waiting for the pilot's instructions to manually release the rigging form the hook
• When rigging will not release from the hook manually, notify the pilot of your intention to disconnect the rigging from the load or other action
• Preparing rigging for return to lift site; watching for steel splinters when handling steel rigging lines and removing damaged rigging from service as necessary
• Coordinating rigging removal with the loader operator

2. Flight crews
   a. Flight paths or corridors must be arranged so that load is not flown over ground crews.
   b. Flight paths must be laid out taking into consideration the prevailing winds. Alternative routes must be established and ready for use should winds change direction.
   c. The flight paths should not cross active roadways unless flaggers or road guards control traffic.
   d. Flight paths should be planned to avoid noise-sensitive areas (fly neighborly).
   e. Flight hazards in the area such as traveled roadways; power lines, towers or tall trees should be identified.

3. Communication procedures
   a. All ground crews involved with the operation must know how to use the radio
   b. Exact voice commands must be established to avoid misunderstanding, and all communication should be pertinent and brief
   d. Pilots and ground crews should continually monitor the same frequency
   d. Helicopter identification must be included in any command given to direct flight movement
   e. A worker who is in two-way radio contact with the pilot must wear high-visibility clothing, hard hat and eye protection (everyone working under the helicopter must wear high-visibility clothing)
   f. In addition to two-way radio communication, ground crew and pilot, in case of radio failure must know an effective system of hand signals
   g. If the statement "This is a First Aid Emergency" or "Aircraft Emergency" is heard, stop all talking on the radio and listen for further instructions. Those not involved with the emergency should remain off the radio unless they are requested to relay messages or give other assistance.
4. Rigging
   a. The ultimate breaking strength of rigging must be 5 times the safe working load of that rigging
   b. Rigging must be inspected immediately before use. If any rigging show signs of abnormal wear or broken strands, the rigging should be removed from service
   c. Long-lines and hooks must be inspected daily
   d. Shackle pins must be lock-wired, or otherwise secured, to prevent accidental load release

5. Establish location of work areas for ground crew and operating ground equipment

6. Establish locations for Landing:
   a. Emergency landing areas should be designated for:
      - Ground employee injury evacuation with the support helicopter
      - In-flight emergencies
   b. Helipads, near the pick up sites and drop off sites:
      - Should provide a means for showing wind direction
      - Be reasonably level, have sufficient main and tail rotor clearance, and be effectively secured to the ground or other surface
      - If constructed, have all parts securely fastened, e.g., spiked together
      - Be free of all loose debris which could be picked up by rotor wash
      - Have suitable approach and takeoff paths into prevailing winds
   c. Service and fueling areas
      - Should be separate form camp and ground crew work areas
      - Should be sized to accommodate the largest helicopter utilized, support helicopter (if applicable), fuel truck, fuel tanks, service truck and any other necessary equipment

7. Firefighting preparedness
   a. All employees should be alert for fires
   b. Site supervisors should establish fire-reporting procedures
   c. Helicopter firefighting equipment, such as Bambi bucket, should be ready for immediate use
   d. Pilots should know the location of water sources

8. Area weather to include direction of prevailing wind and any storm warnings
III. Helicopter Specific Planning

1. Helicopter safety briefing for both passenger and external load helicopters
   a. Pilots or their representatives should provide the following safety information for ground crews.
   b. Wear high-visibility clothing, hard hat, boots, gloves, eye and ear protection as necessary
   c. Limitations and capabilities of the helicopter
   d. Procedure for manually opening the remote hook
   e. Ground to helicopter communication (radio and hand signals)
   f. Passenger briefing to include proper entrance and exit from helicopter, emergency exits, and location of survival and emergency equipment
   g. Approach and depart the helicopter from the front in full view of the pilot and hold onto hard hat (even when chin straps are used)
   h. Caution everyone about the danger area around tail rotors
   i. Walk in a crouched position when approaching or leaving the helicopter
   j. Never approach or depart uphill from the helicopter as the blade tips may come close to the ground on inclined surfaces
   k. Carry tools and equipment horizontally at or below waist level (never upright or over shoulder height)
   l. When deplaning men and equipment, crouch down at the side of the helipad and give all-clear signal to the pilot and wait until the helicopter has lifted off and cleared the pad before moving equipment to work area
   m. During flight or whenever rotors are turning, never throw anything out of the helicopter as it may strike the rotors.

2. Pilot Training
   a. Helicopter model specific training should be provided for all flight crews on a periodic basis in accordance with FAA regulations and flight operating manuals
   b. Actual flight training should include emphasis on smoothness and precision
   c. External load training to include vertical reference slung operations, both belly and remote hook operations and load cell recording
   d. Emphasis should be placed on lifting loads that are within the helicopter's capability
   e. Training should include “Fly Neighborly” information.

3. Maintenance
   a. Helicopter maintenance personnel and fuelers should be informed of the day’s flying activities so they can plan maintenance during down times.
   b. Due to the heavy workload placed on the external load helicopter, preflight and maintenance inspections should be thorough and
conducted in accordance with the manufacturer and FAA’s recommendations.

c. Specific maintenance programs should be established
d. Only approved parts should be used
e. Good housekeeping must be maintained in all helicopter landing areas in an effort to keep loose debris from becoming flying missiles when blown around by rotor wash

4. Fueling
   a. No unauthorized employees are allowed within fifty feet of the refueling operation
   b. An adequate fire extinguisher should be within one hundred feet on the upwind side of the refueling operation.
   c. All fuelers should be thoroughly trained in the refueling operation including bulk fuel handling and the correct procedures for maintaining good fuel quality.
   d. Fuel quality checks should be made and recorded.
   e. All fuelers should be trained in the use of the available fire extinguishing equipment.
   f. Before starting refueling operations, the fueling equipment and the helicopter must be grounded. All grounding and bonding connections must be electrically and mechanically touching clean unpainted metal parts.
   g. Spill control awareness, fuel should be pumped either by hand or power, avoid the use of fuel cans. Self-closing nozzles or deadman controls should be used and must not be blocked open.
   h. Procedures should be established for the disposal of contaminated or spilled fuel.
   i. Maintenance training program
   j. Recurrent and/or initial training classes for maintenance personnel
   k. Classes should be model specific to the aircraft being operated, including all accessories.

5. Post flight (at day's end)
   a. Inspect aircraft and all components for wear or damage
   b. Flight crews should perform a walk around inspection and identify any discrepancies needing attention
   c. Identify all pilot complaints and communicate them to the maintenance personnel
   d. Inspect belly hook, remote hook and long line for wear or damage
   e. Perform maintenance and prepare aircraft for the next operation
IV. Personal Safety Equipment Checklist

1. Protective Body Gear
   Headwear
   Eyewear
   Handwear
   Footwear
   Raingear

2. Clothing
   Fluorescent Vest
   Reflective Vest

3. Personal Items
   Prescriptions
   Inoculations (pertinent to region)
   Vitamins
   Sunscreen
   Sunglasses
   Foot Care Kit
   Insect Repellant
   Flashlight
   Shower Shoes
   First Aid Kit

V. Work Site Safety Equipment Checklist

   Handheld Radio
   Fire Extinguisher
   First Aid Kit
   Eye Flush Station
   Lighting
   Equipment Backup Alarm
   Dust Abatement Equipment
   Warning Signs
   Caution Signs
   Safety Zone Signs
   Safety Posters
   Wind Direction Indicator
   Emergency Rescue Kit
   Extrication Tool Rescue Kit
   Hazardous Substance Response Kit
   Megaphone
   Firefighting Kit
   Firefighting Tools
   Heli-Basket (standby emergency rescue unit)
VI. Site Emergency Plan:

Location: ______________________________________________________

Employee Name: _______________________________________________

Employer Name: _______________________________________________

Directions: ____________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Lat&Long: ______________________________________________________
VII. Emergency Rescue Information:

Police:
_____________________________________________________

Sheriff:
_____________________________________________________  

Fire:
_____________________________________________________

Rescue Squad:
___________________________________________________

Hospital:
___________________________________________________

EMS Helicopter:
___________________________________________________

Radio Frequency:
___________________________________________________
VIII. Pre-Accident Plan

1. It is important to recognize that all accidents are different. Some accidents pose a danger not only to those who are involved, but also to would-be rescuers.
   a. Distribute completed Pre-Accident Guideline to all company officials.
   b. Site supervisors should inform all employees at each work site which employees have first aid training.
   c. Supervisors or their representatives should complete and distribute a copy of the site and/or load operation emergency plan(s) to each employee.
   d. If you decide to be of assistance in an accident, provide treatment only to the level of your own training and only with the victim's permission.
      - Approach the scene with caution, watching for hazards such as traffic, power lines, spilled fuel, sharp glass/metal, falling objects, fire, etc.
      - Notify emergency personnel of accident, providing location, type of accident, nature and number of injuries, and any other known information. Call 911, use phone, cell phone, radio or send someone to make the call.
      - If the accident site is hard to find, send someone as a guide to lead emergency personnel to the scene. The bystander with the highest level of first aid training should remain with the victims.
      - If victims are conscious, tell them your level of training and ask if they want you to help them. Limit your actions to the level of first aid training you have, unless the victims are in imminent danger. To prevent further injury, do not move victim unless necessary.
      - Keep individuals who are not helping away from the accident site.
   e. As soon as possible, provide accident details to the site supervisor.
   f. Supervisors should inform company headquarters of the accident and provide accurate information for the company’s public relations officer.
IX. Company Pre-Accident Guideline:

COMPANY OFFICIALS—RESPONSE EFFORTS

List of Names (Contact in Order Listed)

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<thead>
<tr>
<th>RESPONSIBILITY</th>
<th>NAME</th>
<th>PHONE</th>
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<tbody>
<tr>
<td>Company Coordinator</td>
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<tr>
<td>Notification and Working with Investigators</td>
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<td>Notification and Working with Government Officials</td>
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<td>Notification and Working with Local Officials</td>
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<td>Notification and Working with Legal Council</td>
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<tr>
<td>Notification and Working with Victims’ Families</td>
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<td>Notification and Working with Insurance Adjusters</td>
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<td>Notification and Working with Media</td>
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<tr>
<td>Notification and Working with Private Property Owner</td>
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</tbody>
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INFORMATION DISTRIBUTION
1. Who, What and When
   a. Focus media contact through one company official only
   b. Refer inquiries to National Transportation Safety Board or appropriate agency
   c. Verify that information being released is correct

EMERGENCY RESPONSE
2. Make Certain that Medical Response or Rescue Units have been notified immediately
   a. Notify National Transportation Safety Board
   b. Notify FAA
   c. Notify Local Authorities
   d. Notify Victims’ Families (Personal call from Company President)
      • Arrangements
      • Lodging
      • Transportation
      • Accident Information
REPORT OF SAFETY MEETING

<table>
<thead>
<tr>
<th>Employer</th>
<th>Job Location</th>
<th>Department</th>
<th>Date</th>
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Accidents Reviewed

Subjects Discussed

Suggestions – Recommendations

Action Taken/Supervisor's Comments

Supervisor's Name – Signature
X. SUGGESTED TOPICS FOR SAFETY MEETINGS:

CONSTRUCTION
   Equipment Operating Rules
   Work Site Safety
   Helicopter Safety
   Fuel Safety and Fuel Farm Operations

CHEMICAL SAFETY
   Safety Behavior
   Protective Clothing
   Process Hazard Analysis

ELECTRICAL
   Electrical Equipment
   Lockout/Tagout
   Machinery/Maintenance
   Overhead Power Lines
   Underfoot Power Cables

HOUSEKEEPING
   Control of Scrap
   Fire Hazards
   General Housekeeping
   Protruding Nails

LADDERS
   Condition of Ladders
   Placement of Ladders
   Use of Ladders

MATERIALS HANDLING
   Back Injury Prevention
   Correct Lifting Techniques

OCCUPATIONAL HEALTH
   Hazard Communication Program
   Material Safety Data Sheets
   Safety in Confined Spaces
   Working Safely with Paints
   Working Safely with Solvents
PERSONAL SAFETY
- Emergency Preparedness
- Ergonomics
- First Aid
- Heat Stress
- Nutrition
- Lifting
- Personal Protective Equipment
- Safety Rules
- Slips and Falls
- Think Safety

PROTECTIVE RAILINGS

SCAFFOLDING
- Back Rails
- Ladder Jacks
- Rolling Scaffolds
- Saw Horses
- Scaffold Planks

TOOLS
- Electrical Equipment
- Hammers
- Hand Saws
- Pneumatic Tools
- Power Actuated
- Power Tools
- Power Saws

TRENCHING, SHORING
- Falling Rock
- Steep Slopes

VEHICULAR SAFETY
- Heavy Equipment Safety
- Roll Over Protection
- Safe Driving
- Seat Belts
- Vehicle Maintenance
- Vehicles on the Job Site

Make your meetings brief. Cover only one subject. Involve employees in the discussion.