



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:
 - The helicopter lifting capability; loads must be within the lifting capacity of the helicopter
 - Helicopter fuel duration and length of cycles
 - Use of support aircraft: proper loading and unloading of people and equipment (if applicable)
 - Aircraft flight paths and load pick up rotation
 - Monitoring the helicopter radio frequency
 - Identifying the location of the load to the pilot when appropriate (using the "clocking" method)
 - The operation of the remote helicopter hook and what to do if hook fails to operate properly
 - Always keep eyes on the hook or load when the helicopter is approaching and departing
 - Ensuring that loads are properly rigged
 - Clearly identifying drop points for the pilot and coordinate them with ground activity
 - Allow the hook to contact the ground to dissipate any static charge
 - Avoid hang-ups in rigging and notifying the pilot when hang-ups or other problems are anticipated or occur during the lift
 - 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.
 - In the event of an abort, have a back-up load ready
 - e. Ground crew should also be familiar with:
 - The hazards of working around lift site and drop off site loaders
 - 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
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- 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 from 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)

<u>RESPONSIBILITY</u>	<u>NAME</u>	<u>PHONE</u>
Company Coordinator	_____	_____
Notification and Working with Investigators	_____	_____
Notification and Working with Government Officials	_____	_____
Notification and Working with Local Officials	_____	_____
Notification and Working with Legal Council	_____	_____
Notification and Working with Victims' Families	_____	_____
Notification and Working with Insurance Adjusters	_____	_____
Notification and Working with Media	_____	_____
Notification and Working with Private Property Owner	_____	_____

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



Distribution
Original: Job Office
Copy: Safety Department

REPORT OF SAFETY MEETING

Employer		
<hr/>		
<u>Job Location</u>	<u>Department</u>	<u>Date</u>
<hr/>		
Accidents Reviewed		
<hr/>		
<hr/>		
<hr/>		
Subjects Discussed		
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Suggestions – Recommendations		
<hr/>		
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Action Taken/Supervisor's Comments		
<hr/>		
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Supervisor's Name – Signature		
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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.