

This Field Operations Guide contains specific information on technical rescue procedures.

THIS GUIDE IS NOT ALL INCLUSIVE!

It is intended to be used as a tool for training and for quick field reference. Refer to current training manuals and your department policies for detailed explanations. There is no substitute for regular, quality, hands-on training by a qualified instructor.



The techniques and procedures illustrated in this guide follow NFPA standards and OSHA regulations as much as possible. This guide can be used by rescuers at all skill levels but was specifically developed for fully qualified technical rescue technicians. Special operations are inherently dangerous and serious injury or fatality may result from improper performance of these techniques. The author accepts no responsibility for damage, loss, injury or death resulting from information contained in or omitted from this guide.

Thanks to the Phoenix Fire Department and everyone who helped make this guide possible. Special thanks to my friend Ron Jamison for helping to write this guide, Kathy Darrow for editing and to George Drees, Ken Phillips and Jim Frank for great ideas and input.

This guide is dedicated to all those people who go the extra inch every day to make themselves better rescuers.

This handbook is based on the Phoenix Fire Department and Arizona State Fire Marshall's Office technical rescue programs.

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Contents

Key procedures in red

NFPA Standards	2	Confined Space Rescue	
Risk Management	3	Con Space Command Checklist	58
Incident Management	4	Con Space Definitions	60
Time Management	6	Con Space Entry Safety Checklist	61
Rope Rescue		Personal Protective Equipment	62
Rope Command Checklist	7	Supplied Air Station Operation	63
Personal Protective Equipment	8	Remote Air Cart	64
Terrain Types	9	Communication Position	65
Mountain Rescue Decision Tree	10	Intercom	66
Basic Life Safety Knots	11	Atmospheric Monitoring	67
Load Releasing Hitch (LRH)	15	Ventilation	68
Personal Purcell Prusik System	16	Extrication Device	72
Self Rescue	18	Rescue Tripod and Winch	73
Patient Packaging	19	Winch Cable Setup	75
Low Angle Evacuation	20	Rescue Tripod and Pulley System	76
Anchor Systems	21	Aerial Apparatus	77
Back-Tie Anchors	23	Swiftwater Rescue	
Directional Anchors	24	Swiftwater Command Checklist	79
Structural Anchors	25	Equipment	80
Fixed Belay for Edgemen	26	Swiftwater Rescue Comm	82
Edge Protection	27	Swiftwater Hazards	83
Tandem Prusik Belay Setup	28	Safe Swimming Position	84
Technical Evacuation	30	Shore-Based Rescue: Reach	85
Technical Evacuation Commands	33	Shore-Based Rescue: Throw	87
Technical Evacuation Lower	34	Shallow Water Crossing: Wade	89
Technical Evacuation Raise	35	Boat Operations: Row	91
Steep Angle Evacuation	36	Boat on Highline	94
High Angle Litter Rigging	37	Strong Swimmer Rescue: Go	97
High Angle Evacuation	38	Helicopters and Swiftwater	100
Mechanical Advantages	39	Trench Rescue	
Ganged Mechanical Advantage	41	Trench Command Checklist	101
Conversion from Lower to Raise	42	Trench Incident Site Setup	103
Knot Passing	43	Trench Definitions	104
Mid-Face Litter Scoop	46	Trench Hazards	105
Rescue Pick-off	48	Hydraulic Speed Shore System	106
Rescuer Based Pick-off	50	Pneumatic Shore Placement	109
Team Based Pick-off	55	Timber Shore Step-by-Step	111

Contents

Key procedures in red

Structural Collapse

Structural Collapse Checklist	116
Task Level Checklist	117
SAR Marking System	119
Cut Station	121
Material Capacities and Weights	123
Airbag Operation	124
T Spot Shore	125
Ellis Clamps	126
Two Post Vertical Shore	127
Laced Post Shore	128
Alternate Door/Window Shore	129
Standard Door / Window Shore	130
60° and 45° Solid Sole Rakers	131
Flying Raker	134
Sloped Floor Shoring	135

Helicopter Operations

Helo Ops Command Checklist	139
Helicopter Flight Risk Score	140
Landing Zone Safety	141
Rescuer Safety	142
Power On Insertions	143
Longline Use Decision Tree	145
Longline/Short Haul Procedures	146
Capewell Release Mechanism	148
Litter Rigging for Longline	149
Emergency Procedures	150
Sling Loading Equipment	150

Rescue Medical Situations

Crush Syndrome	151
Suspension Trauma	152
Hypothermia	153

Appendices	154
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Helicopter Ops Command Checklist

Type of mission

- Aerial reconnaissance
- Med-evac
- Firefighting
- Transport personnel and equipment
- Does the mission include any special use activity?
 - External load (longline)
 - Hover sites
 - Helicopter rappelling
 - Single skid landings
 - Two skid, power on landings
 - Water rescue
 - Any takeoff or landing requiring special pilot technique due to terrain, obstacle or surface condition

Base landing zone

- Separate radio channel
- LZ description and location (60x60 ft. (18x18m) day
100x100 ft. (30x30m) night)
- Clear approach and departure path
- Hazards (do not use flares)
- LZ security
- Wind speed and direction
- Clean LZ of any debris
- Headset or flight helmet for LZ control officer

Important aviation questions

- Is the flight necessary?
- Have all hazards been identified and made known?
- Is there a better or safer way?
- Is there an overwhelming sense of urgency?
- Be certain the following items are acceptable:
 - Communications
 - Weather
 - Turbulence
 - Personnel qualifications and abilities



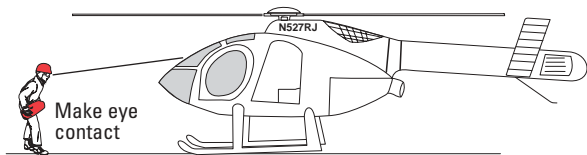
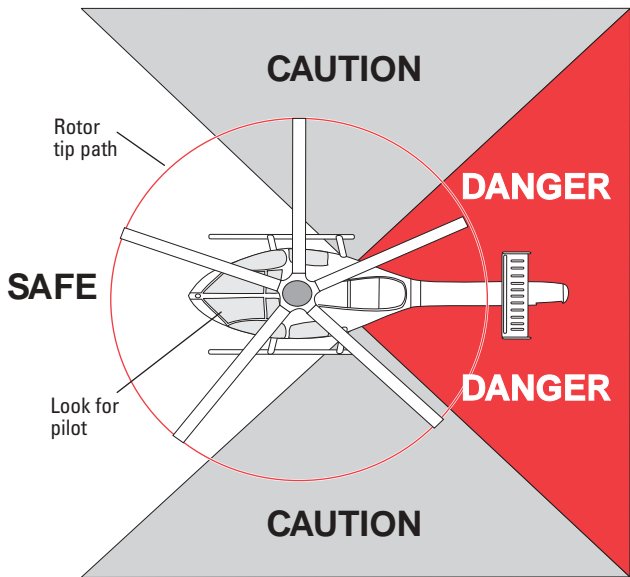
Helicopter Flight Risk Score



Rescue Flight Risk Score		Total
<i>Time</i>		
Day	1	
Night	5	
<i>Wind speed in knots (per pilot)</i>		
10-15 knot steady wind = best performance	0	
0-5 knots	3	
Gusting more than 10 knots over base speed	add 5	
Gusting more than 15 knots over base speed	add 10	
<i>Type of use</i>		
Normal	1	
Special	10	
<i>Load calculation (useful load carrying capacity of helo at rescue site)</i>		
greater than 800 lbs. (360kg)	1	
600-800 lbs. (270-360kg)	2	
400-600 lbs. (180-360 kg)	3	
200-400 lbs. (90-180kg)	5	
<i>Air temperature</i>		
less than 80° F (27°C)	1	
80° – 100° F (27-38°C)	2	
greater than 100°F (38°C)	5	
<i>Total score</i>		
If score is 5-10	Lowest risk	
If score is 11-20	High risk	
If score is 21-30	Extreme risk	
If score is greater than 30	No go!	

Landing Zone Safety

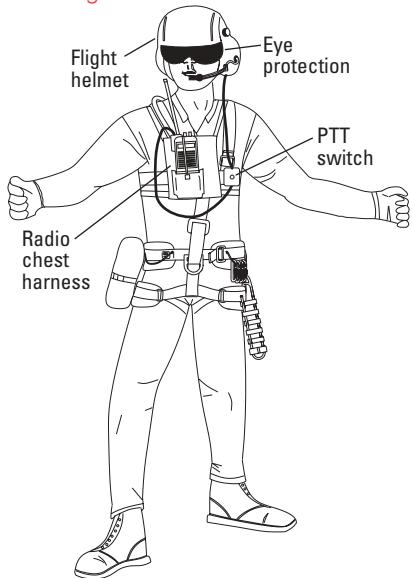
- Always get permission to approach the aircraft from the pilot or on-board crew.
- Always approach from the front and have eye contact with pilot or crew.
- **Do not** go near the tail boom when the aircraft is running.
- **Do not** stand or take any position under the rotor tip path.



Rescuer Safety



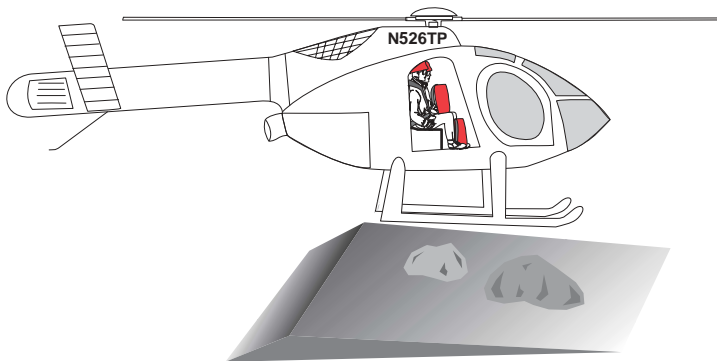
- Do not try to talk a pilot into doing something he doesn't think is within his or the helicopters capabilities
- Average flight weight is your normal weight plus 35 lbs. (16kg)
- Eye protection should always be worn around helicopters
- The LZ control officer and the longline litter attendant should wear a flight helmet if available
- If you see a problem or if you think something dangerous is about to happen, **say something!**



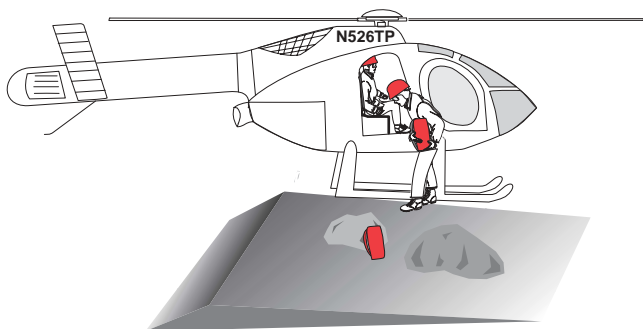
Power On Insertions

One and two skid power on insertions

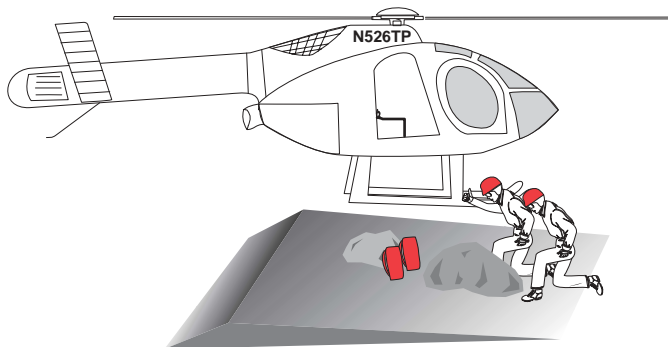
1. Board the helicopter and fasten seatbelts.
2. Hold gear bags securely in lap or between legs.
3. One member of the insertion team should put a headset on and establish contact with the flight crew.
4. Make sure there is nothing loose in the back.
5. Advise the crew you are ready in back.
6. Keep headset on until ship is stable at remote LZ or until crew advises you to remove it.
7. Do not remove seatbelts until clearly told or signaled to do so (over intercom or by hand signal).
8. When you receive the signal to disembark, unbuckle your seatbelt.
9. Re-buckle the seatbelt behind you.
10. Leave the gear with the other rescuer and carefully get out.
11. Remember, a gust of wind can cause the aircraft to lift off at any time. If that happens and you are mostly inside, stay in. If you are mostly outside, get off. Anticipate this happening and be ready. (continued)



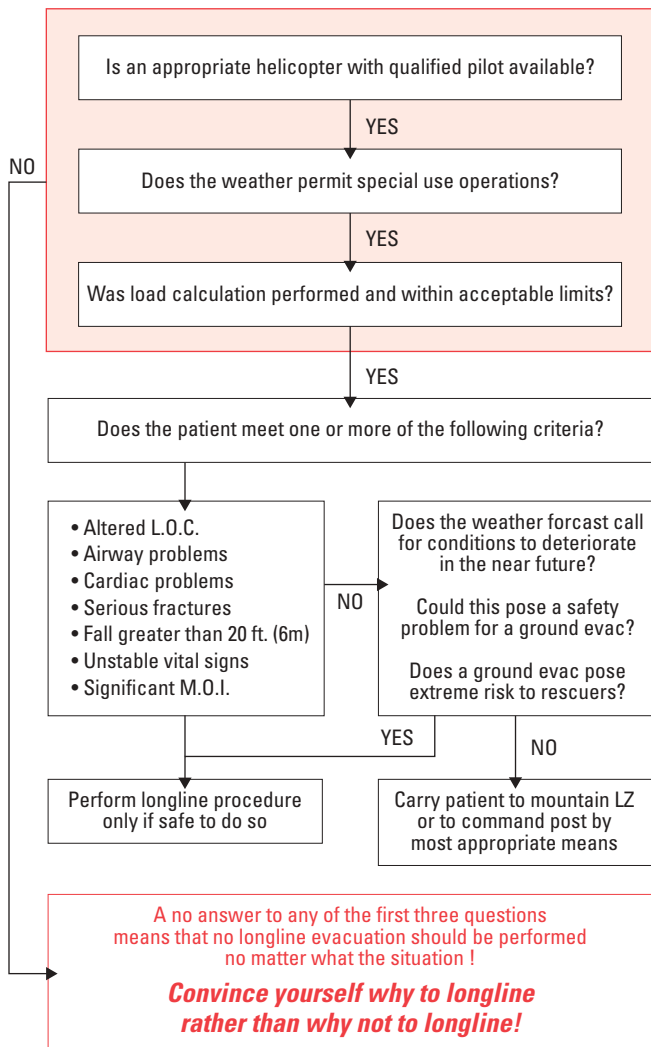
Power On Insertions



12. Do not straddle the skid.
13. Take the gear from the other rescuer and place it in a secure spot.
14. Second rescuer unfastens seatbelt.
15. Re-fasten seatbelt behind and carefully move across seats and disembark.
16. Both rescuers crouch down just in front of the skid in view of the pilot or crew.
17. Signal that you are clear with a thumbs up.



Longline Use Decision Tree



Longline/Short Haul Procedures



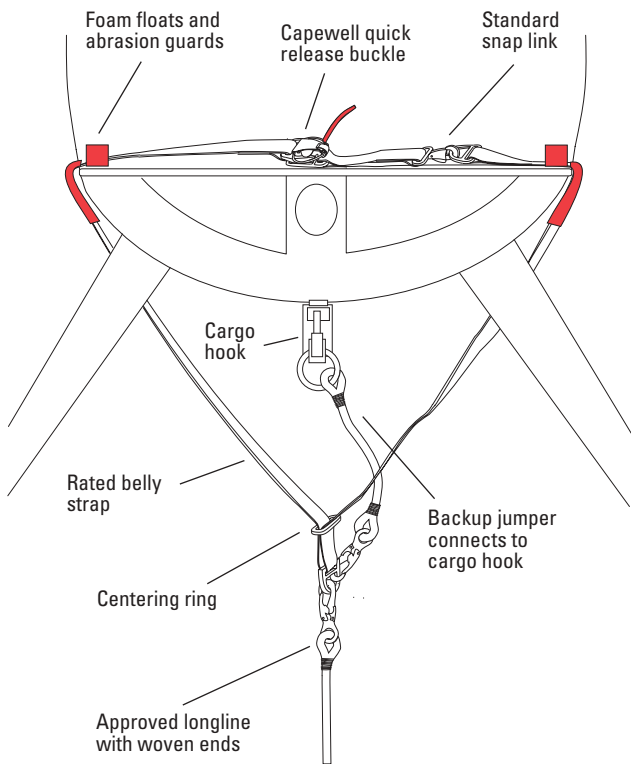
Rigging the aircraft for longline (hot or cold)

1. Open the long line equipment bag (at aircraft cold, away from aircraft hot) and remove the belly strap.
2. Open the protective vinyl cover on the Capewell release.
3. Two technicians inspect the quick release mechanism, reset it if there is any doubt whether it is set correctly.
4. Take belly strap and longline kit to front of aircraft.
5. Two riggers lift the belly strap and remove kinks.
6. Open standard snap link.
7. Pass ends of belly strap under belly and into rear cabin.
8. Be careful of antennas.
9. Pay close attention to remove all twists from belly strap.
10. Connect belly strap at standard snap link.
11. Adjust belly strap so that quick release is near center of aircraft and so that load will hang in line with cargo hook.
12. Adjust abrasion guards to protect strap from doorsills.
13. Pull both sides of strap to middle of belly and center load D ring.
14. Position centering ring 6 in. (15cm) above load D ring.
15. Connect the backup jumper to the load D ring on the belly strap and cargo hook as shown.
16. Confirm cargo hook is set by giving gentle tug on jumper.
17. The longline safety hook should be connected to the belly strap load D ring.

Rigging the litter

1. Walk the longline bag out in front of the aircraft.
2. Connect the steel ring on the longline to the steel ring on the litter bridle with 2 steel carabiners, gates down and opposed.
3. Adjust the sandbag so that it is 4-5 ft. (1-1.5m) above the litter attachment point.
4. Check strobe function for night operations.
5. Litter attendant connects into the steel ring of the litter bridle with 2 purcells or with 2 36 in. (1m) multi loop straps.
6. A 15 ft. (4.5m) piece of webbing can be attached to the end of the litter and deployed by the attendant for a tag line.

Longline Rigging Diagram



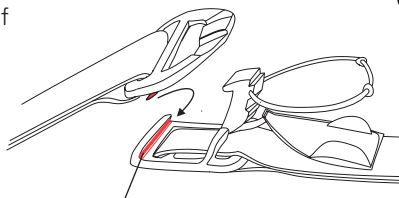
Some agencies may prefer to have primary weight on cargo hook and use the belly strap as backup.



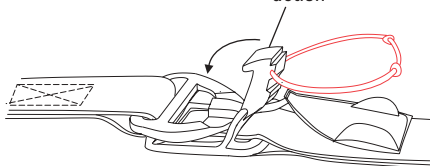
Capewell® Release Mechanism



1. Inspect for any damage.
2. Seat spline on male half into notch A on female half.
3. Move release action into locked position and gently snap it into place.
4. If release action does not lock in with gentle pressure, start over.
5. Once release action is locked into place, move cable pull all the way forward in front of notch B.
6. While holding cable in position, seat end of safety cover into notch B and flip over into position.
7. To release, lift safety cover and pull cable.



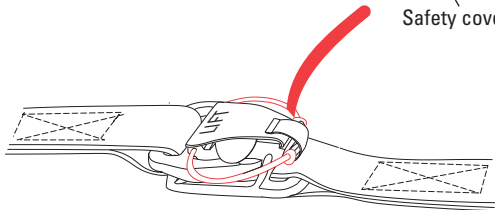
Notch A

Release
action

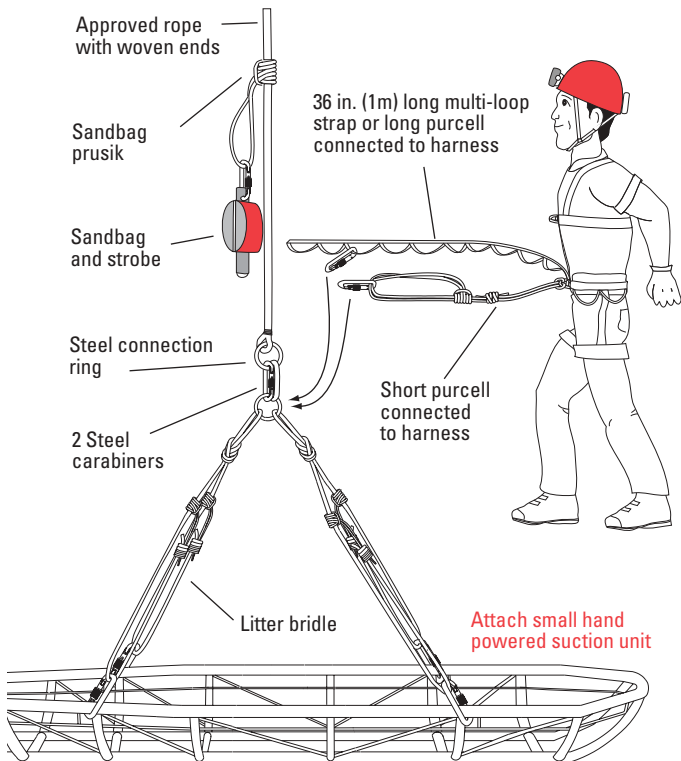
Notch B



Safety cover



Litter Rigging for Longline



- ✓ Do not connect the longline to the rescuer and litter bridle until completely ready for flight.



Emergency Procedures



Internal load

- In the event of a power failure or emergency landing, lean forward and hold lower legs tightly
- After landing, remain in the aircraft until all parts have stopped moving

External load

- In the event of a power failure while in forward flight, prepare for autorotation
- In the event of a power failure while hovering one longline length off the ground or low level hover, prepare for hard impact and take cover if possible

Sling Loading Equipment with the Cargo Hook

1. Use the stokes basket or cargo net to hold the gear.
2. Tie gear securely together.
3. Connect one end of the equipment longline to the equipment package with steel carabiners.
4. Connect the other end to the cargo hook on the helicopter.
5. Be sure that the bight is all the way into the hook.
6. Gently tug on the rope to confirm that the hook is set.
7. Signal the pilot that the load is secure.
8. Advise the field team that gear is on the way.
9. The helicopter will place the load near the rescue sector.
10. Disconnect load from equipment longline.

