

A photograph of a helicopter hovering in the sky next to a massive, vertical rock wall. A person is rappelling down the rock face, and another person is visible higher up. The scene is set against a clear blue sky.

Helicopter Support for Big Wall Rescues

Yosemite National Park

Charley Shimanski
USA Delegate to ICAR

October 2017 – Soldeu, Andorra



**An unusual transition
from a Big Wall anchor
to a helicopter**

**USA delegate to ICAR Air Rescue Commission
Mountain Rescue Program Coord.; *Flight For Life* Colorado
25+ years; Alpine Rescue Team**



Helicopter Big Wall

Support for Rescues

PART 1

Yosemite
National Park

PART 2

YOSAR

PART 3

Yosemite Offset
Technique



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Yosemite National Park



Yosemite National Park



**Climbers here can enjoy
an endless variety of challenges,
including multi-day climbs
on the big walls of Yosemite Valley.**



**25,000
to 50,000
climber
days**
**each year,
mostly
in spring,
summer and fall.**

Photo: Cheyne Lempe

EL CAPITAN

**900 m /
3,000 ft.
vertical of
granite**

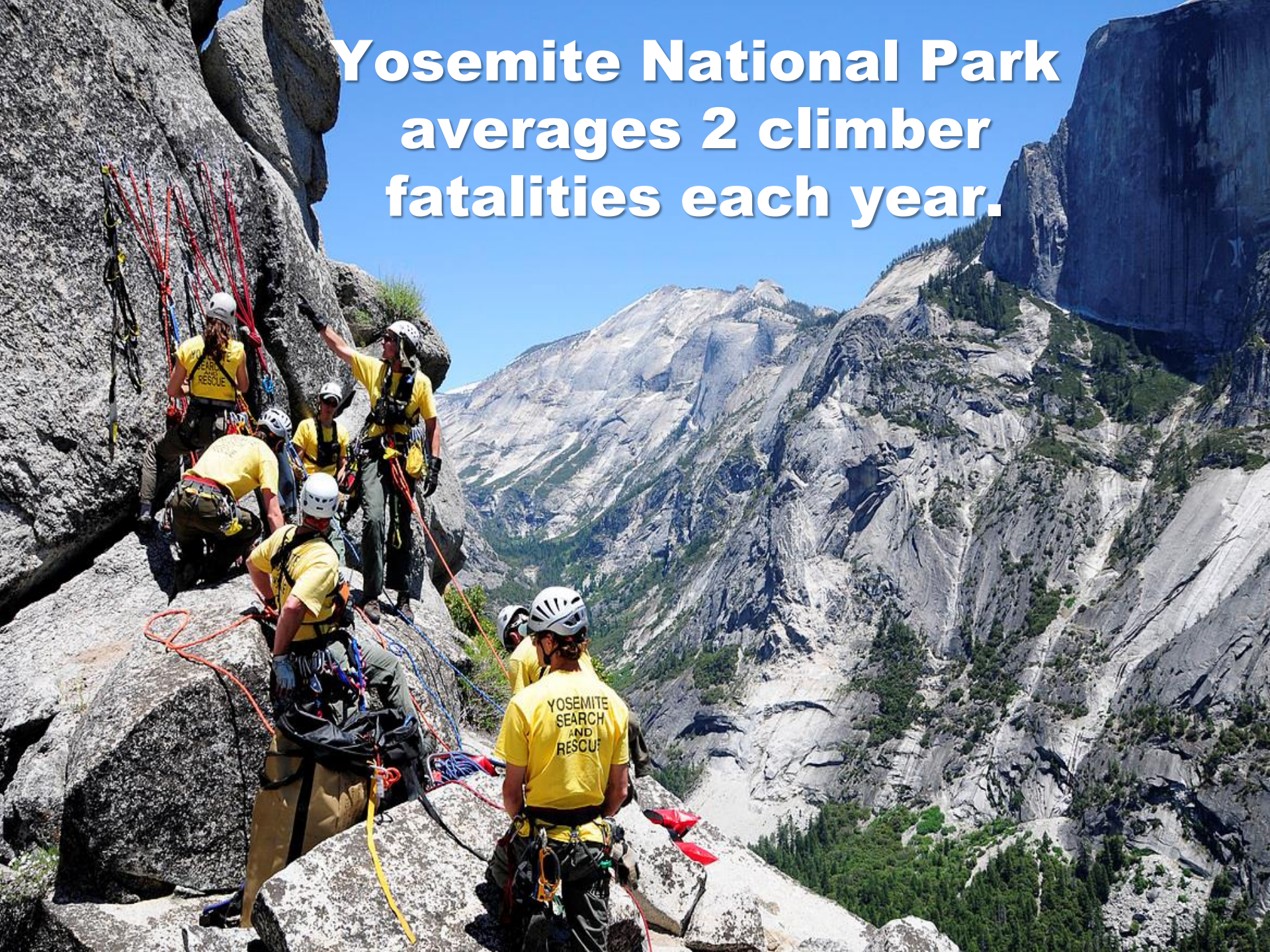


**More than 100 climbing accidents occur each year.
15-25 parties require a rescue.**



Photo: Cheyne Lempe

**Yosemite National Park
averages 2 climber
fatalities each year.**



Fatalities

**10% from
rockfall**

**25% from
being
deliberately
unroped**

**40% from
mistakes with
gear.**



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Yosemite Search and Rescue “YOSAR”





**Yosemite
National
Park
created
Yosemite
Search and
Rescue
("YOSAR")
in the
1970's**

My thanks to John Dill

Leader of Yosemite rescue work for more than 40 years. He has played a critical role in the development and evolution of YOSAR and the HRT.



Chronicle / Michael Maloney





**YOSAR workers
owe what they
know to John Dill.**




**YOSAR's Helicopter
Rescue Team
("HRT") is entirely
paid Park staff.**



Bell 205 A1++



H125/AS350 B3e

A Bell 205 A1++ helicopter is shown in flight, carrying a person on a stretcher. The helicopter is white with red and blue stripes. The call sign "H551" is visible on the nose, and the registration "N28HJ" is on the tail. The background features a large, craggy rock formation under a clear blue sky.

Bell 205 A1++
(May to October)
Call sign is “H551”

- **Live loads:**
Heli-rappel and short-haul (up to 300 feet).

- **Cargo:**
Short-haul, lower, and sling-load (longline).

- **NO hoist**



**Main-rotor diameter
= 15m / 48 ft.**



**One pilot,
one lead crew
member, and
one or more
assistants
for short-haul
and
heli-rappel**



**California Highway Patrol
(CHP) H125/AS350 B3e
All year**

- **ONLY hoist.**
- **Normal working length 40m / 130 ft.**
- **Max load 225 kg/500 lb**
- **No Short-haul, no heli-rappel, no sling-load and longline**



Main-rotor diameter = 11m / 36 ft.



**Crew: one pilot and one
crewmember**

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Yosemite Helicopter Offset External-Load Operations

2011 Salathe Wall, gear drop to rescue subjects

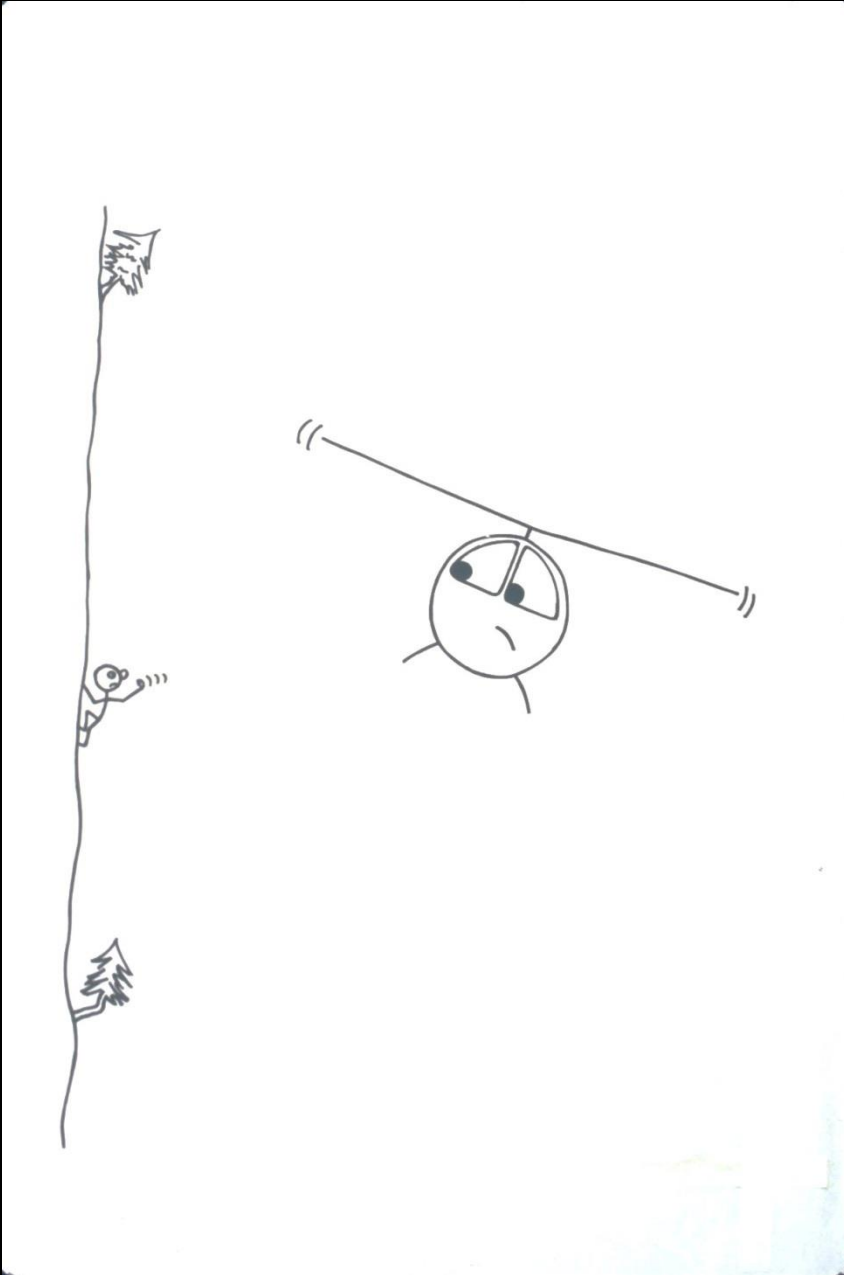


“Offset”

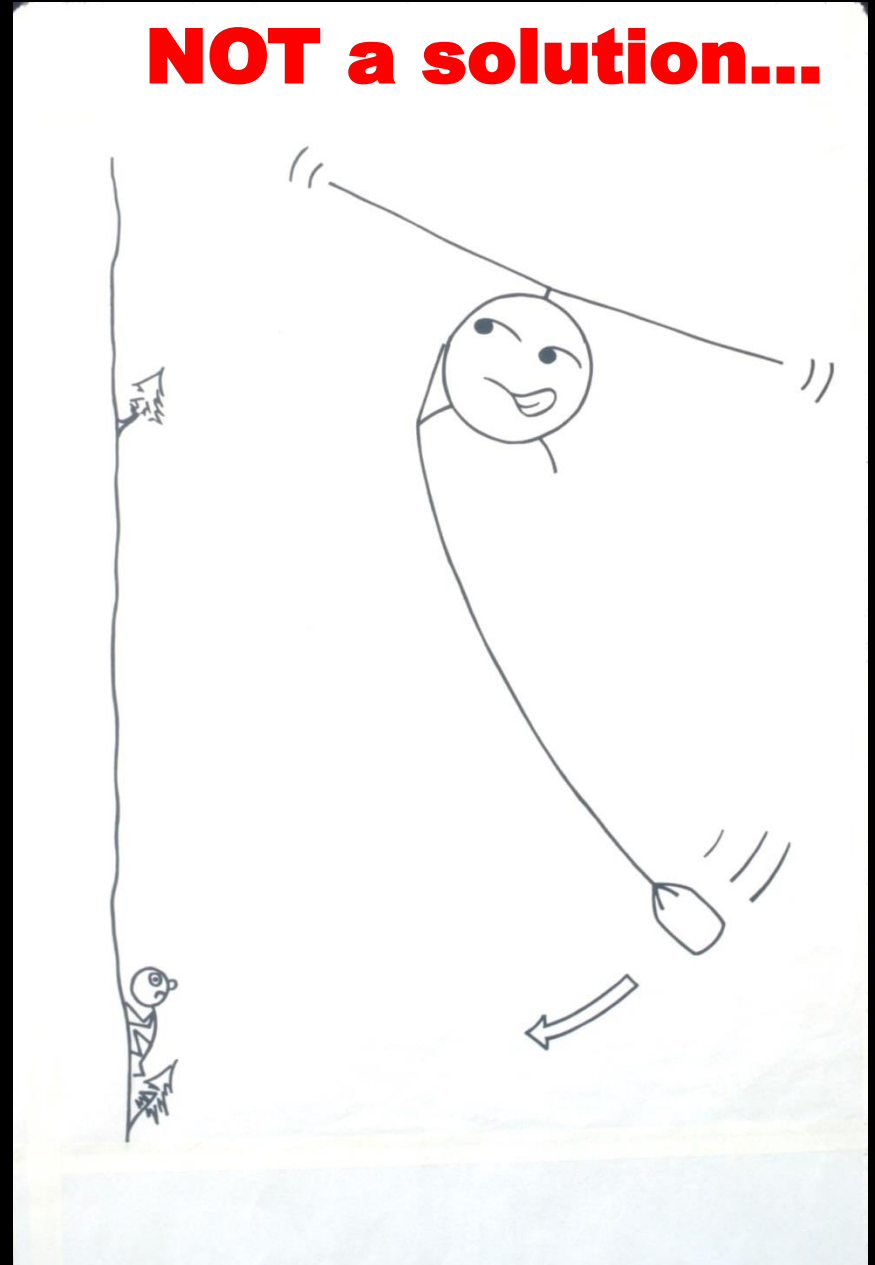
When the helicopter must hover TO ONE SIDE of the site.

The load must be pulled across that distance to reach the site.

The problem.....



NOT a solution...



The line must be pulled over at an offset angle to the wall.



Photo: Tom Evans

A video of the Offset Technique



VIMEO

2017 Offset video





**The Nose,
El Capitan,
September
2011.**

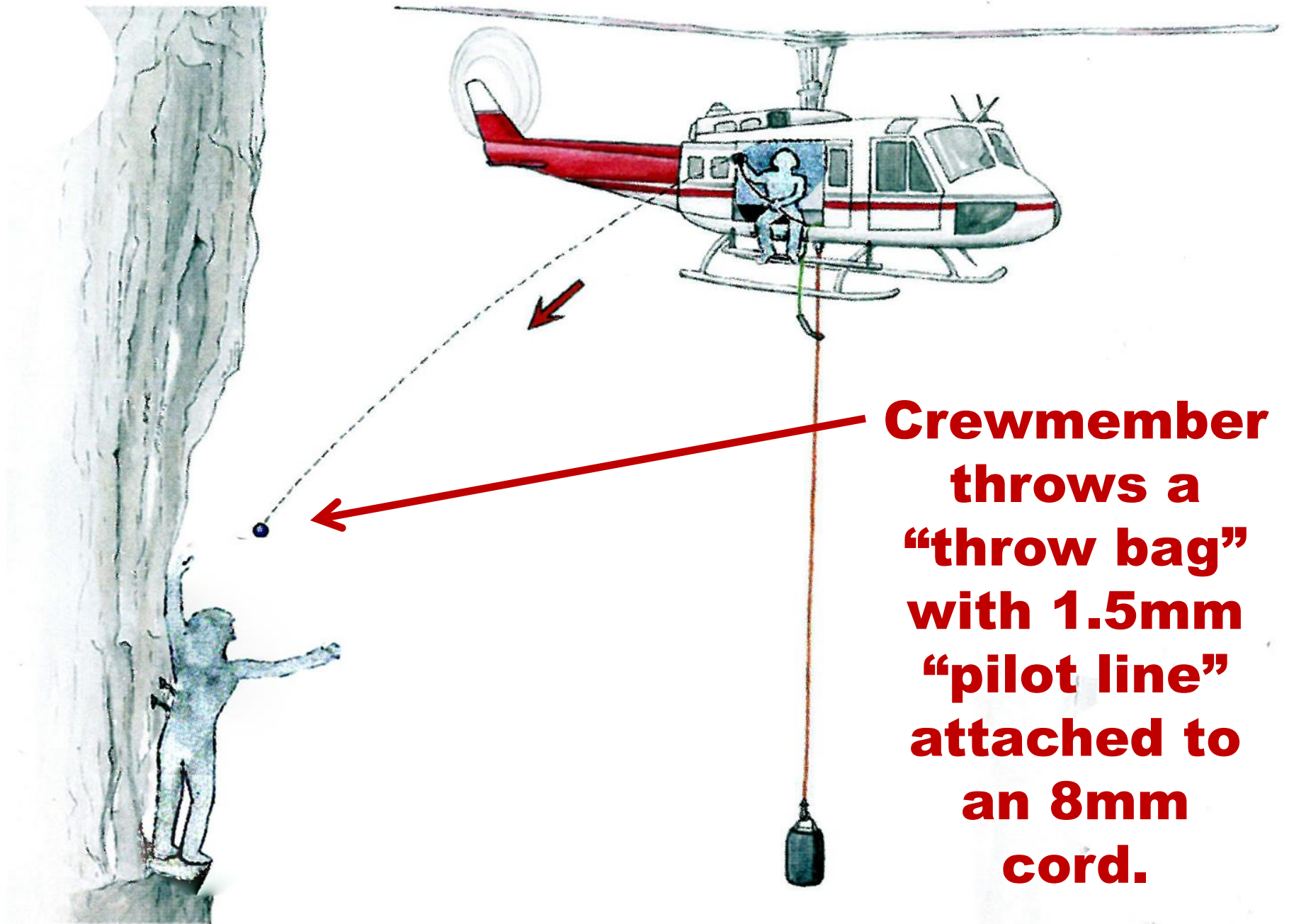
**Start of
short-haul
extraction
of rescuer
and patient.**

**The offset is
45-50 feet.**



**Crewmember
and partner**

**Attendant
and Patient**



**Crewmember
throws a
“throw bag”
with 1.5mm
“pilot line”
attached to
an 8mm
cord.**

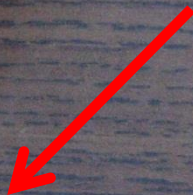




Throw Bag



**Pilot
line**



**If the
helicopter
has to leave
unexpectedly
and a line is
anchored to
or tangled
with people
or rigging at
the site...**

**50 lb.
Breakaway**



**Deflection
line**



Carabiner



Throw Bag

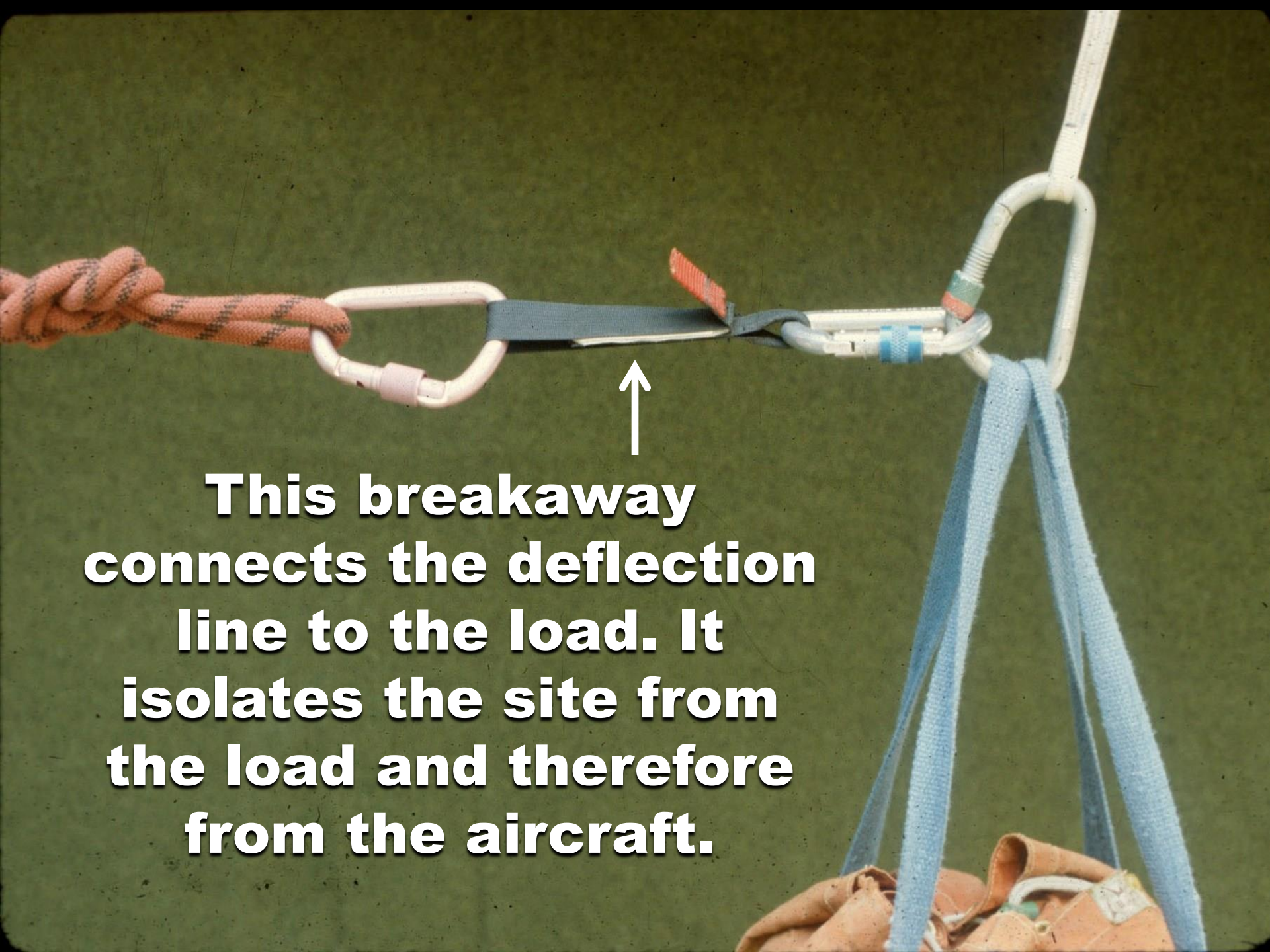


**50 lb.
Breakaway**



Pilot line





This breakaway connects the deflection line to the load. It isolates the site from the load and therefore from the aircraft.

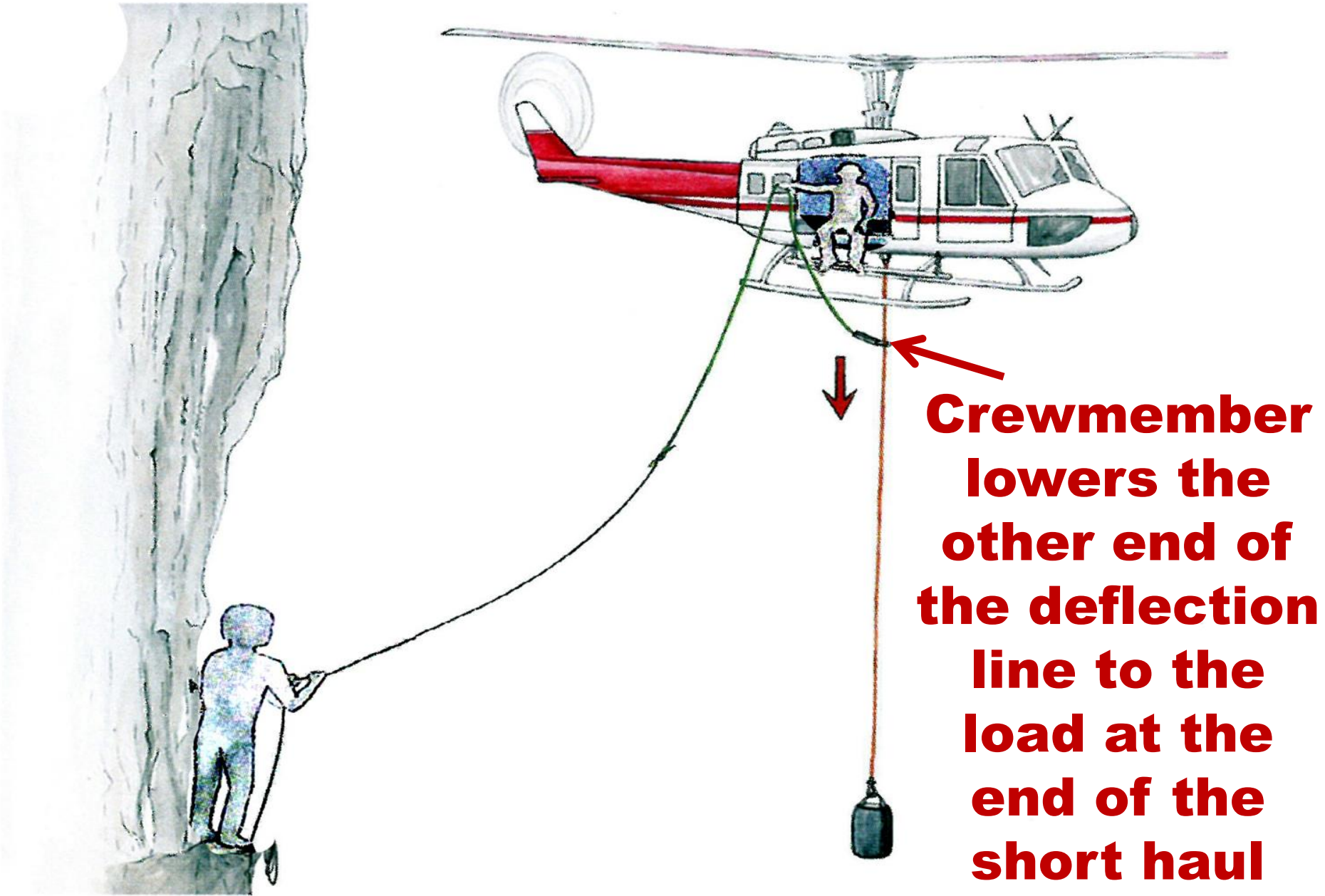


Read This Now!

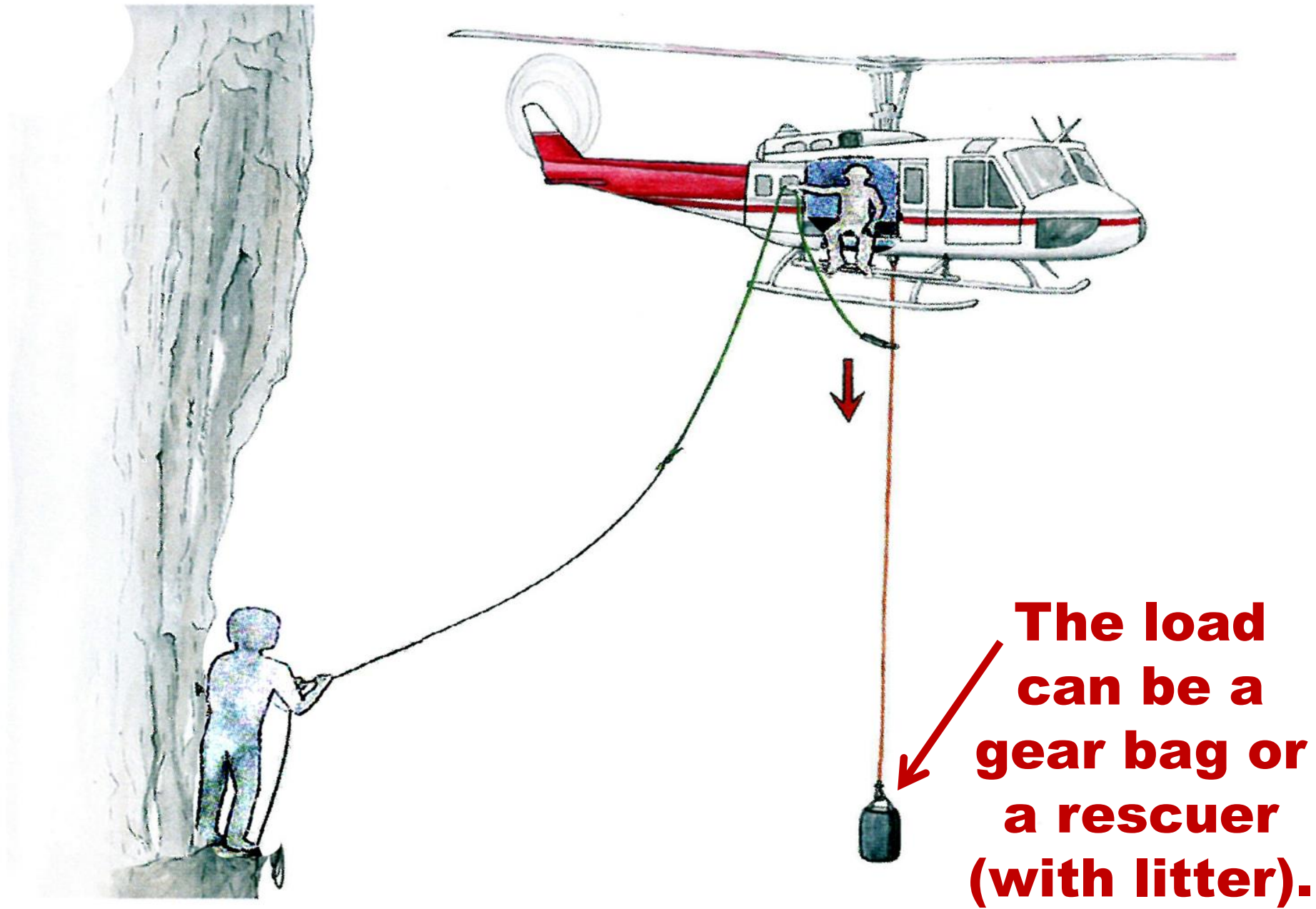
- * Do not anchor this rope.
- * Pull the cargo to you **GENTLY**, as we lower it.
(There is a weak link in the line.)
- * When you get the cargo, clip it to your anchor.
- * We are not in a hurry.
Take your time.

See other side now!



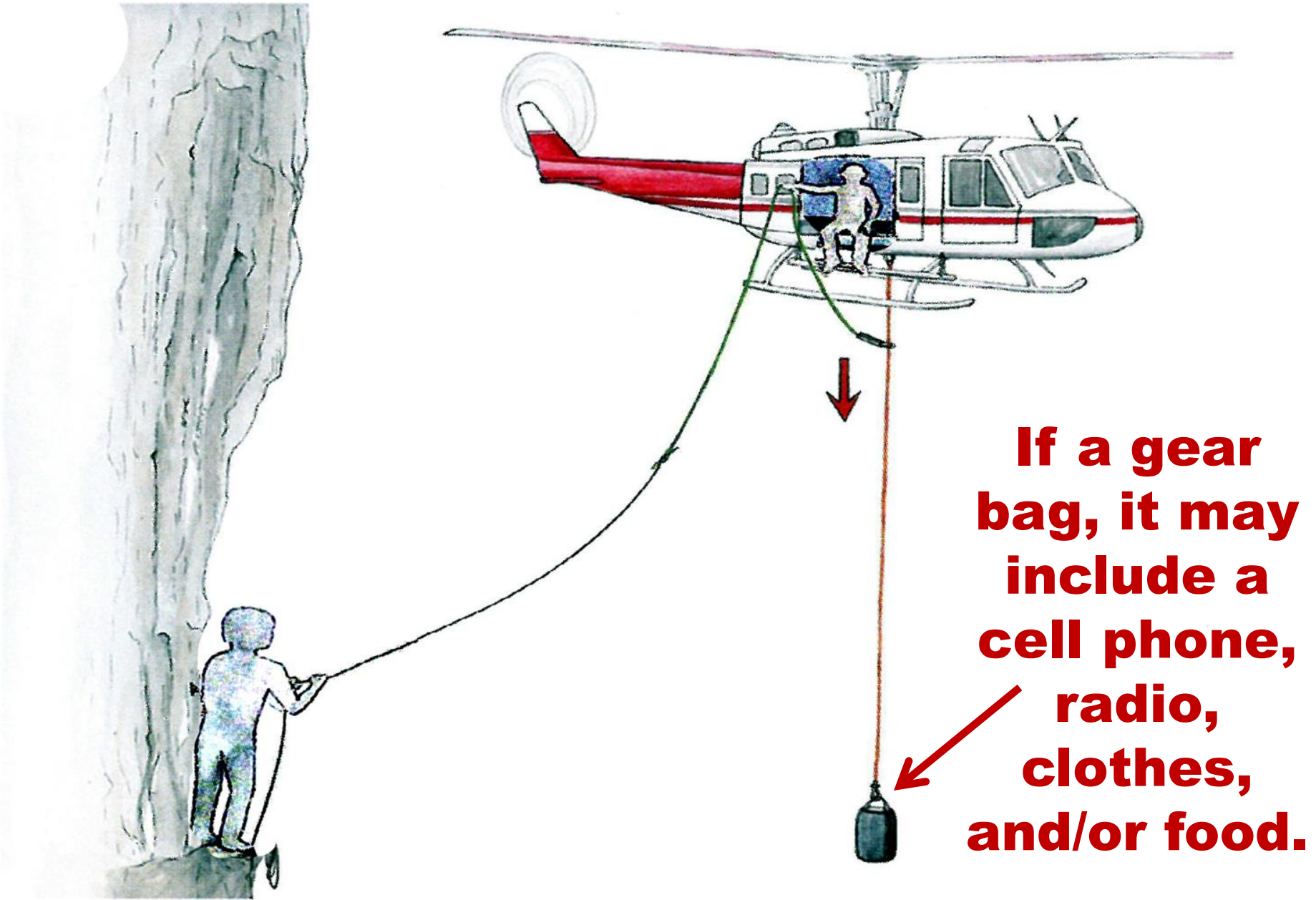


**Crewmember
lowers the
other end of
the deflection
line to the
load at the
end of the
short haul
line.**



**The load
can be a
gear bag or
a rescuer
(with litter).**

Graphic courtesy "Big Walls, Swift Waters" by Charles R. "Butch" Farabee; Yosemite Conservancy



If a gear bag, it may include a cell phone, radio, clothes, and/or food.

Graphic courtesy "Big Walls, Swift Waters" by Charles R. "Butch" Farabee; Yosemite Conservancy

Throw Video



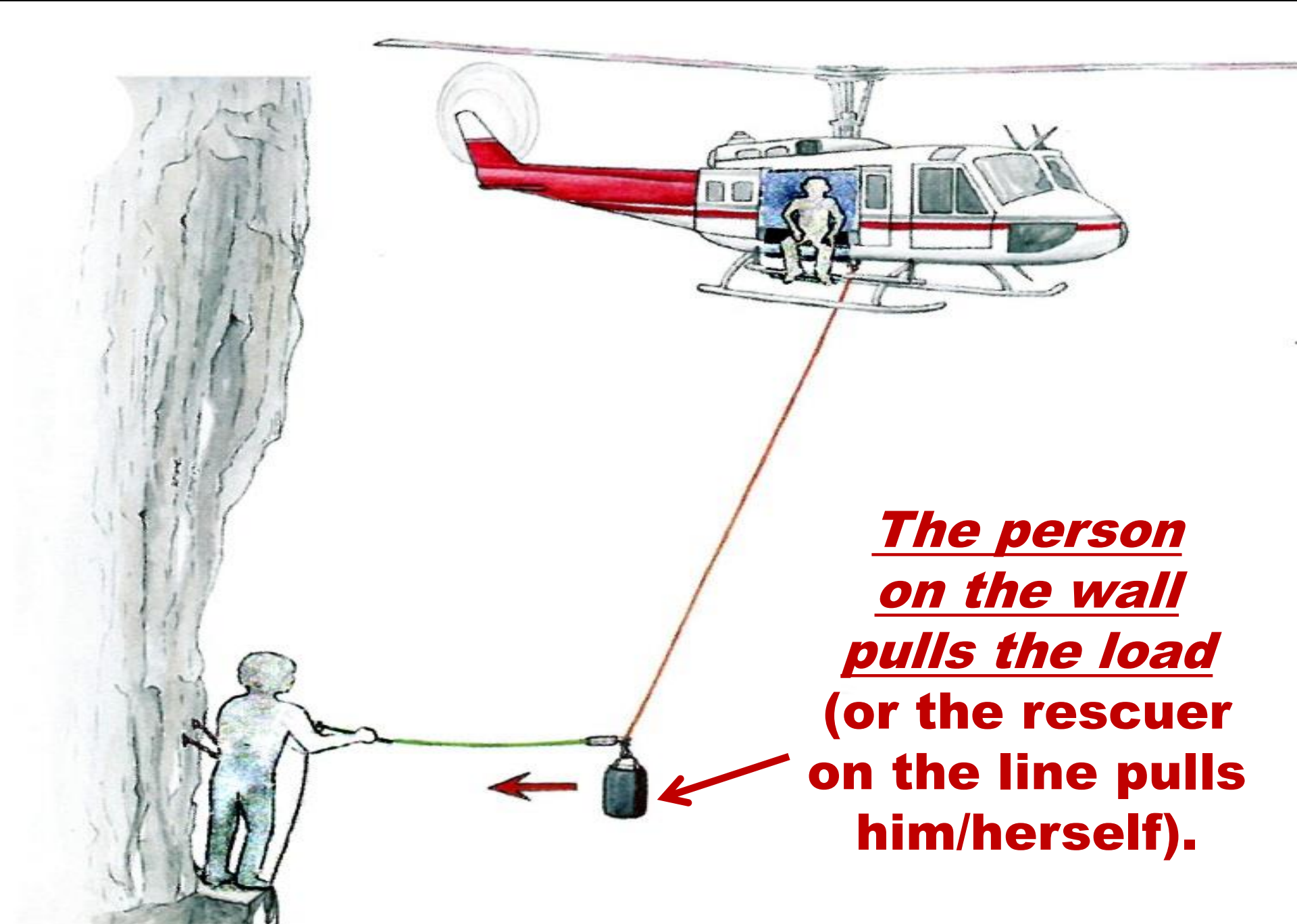






Deflection line drop video





The person on the wall pulls the load (or the rescuer on the line pulls him/herself).



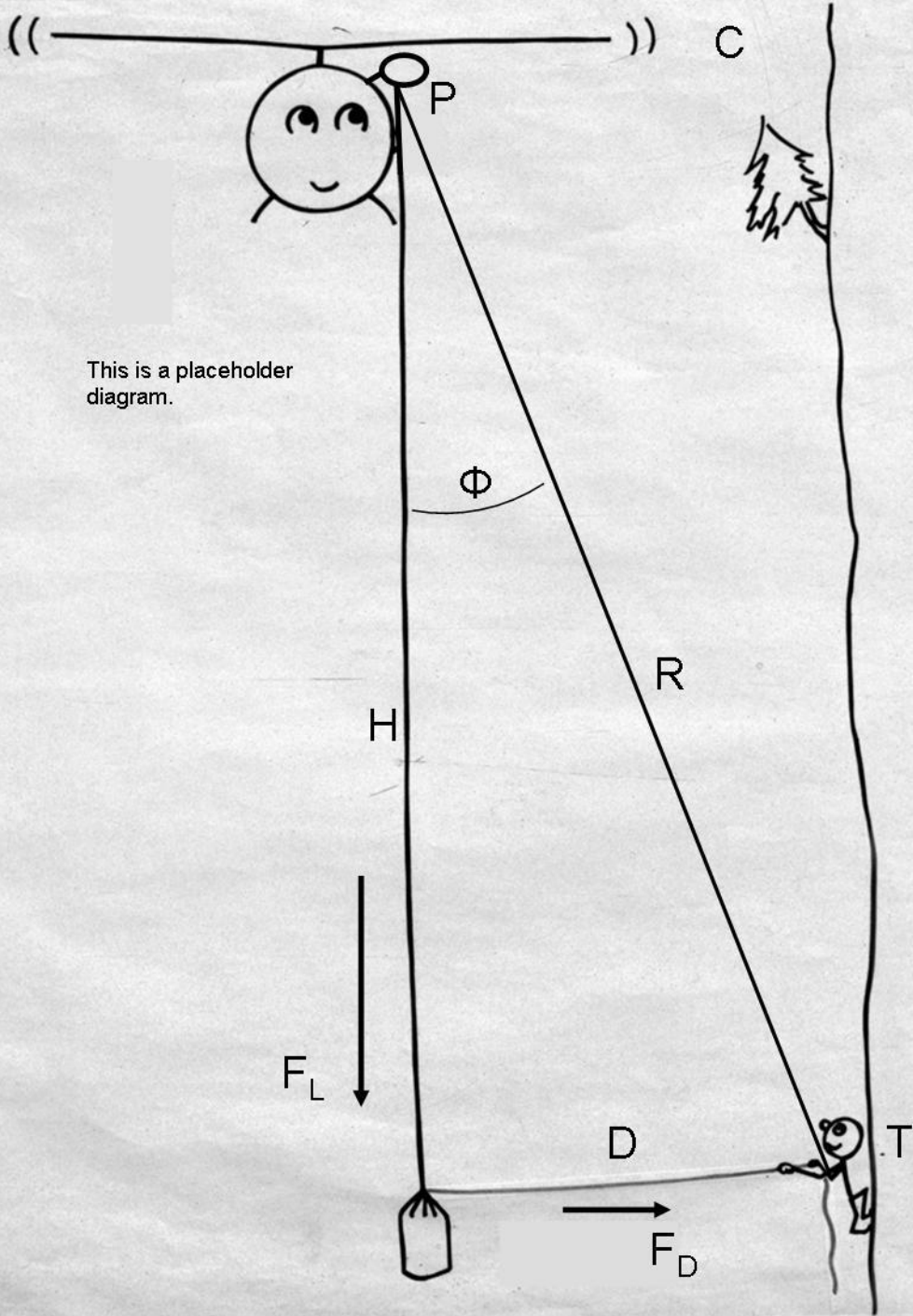
**Occasionally,
the subject can
self-rescue
once receiving
a gear bag that
contains survival
gear or replaces
lost climbing
gear.**



**Subjects
or
rescuer**







**El Capitan, October
2014. Leader fall with
serious head injury**

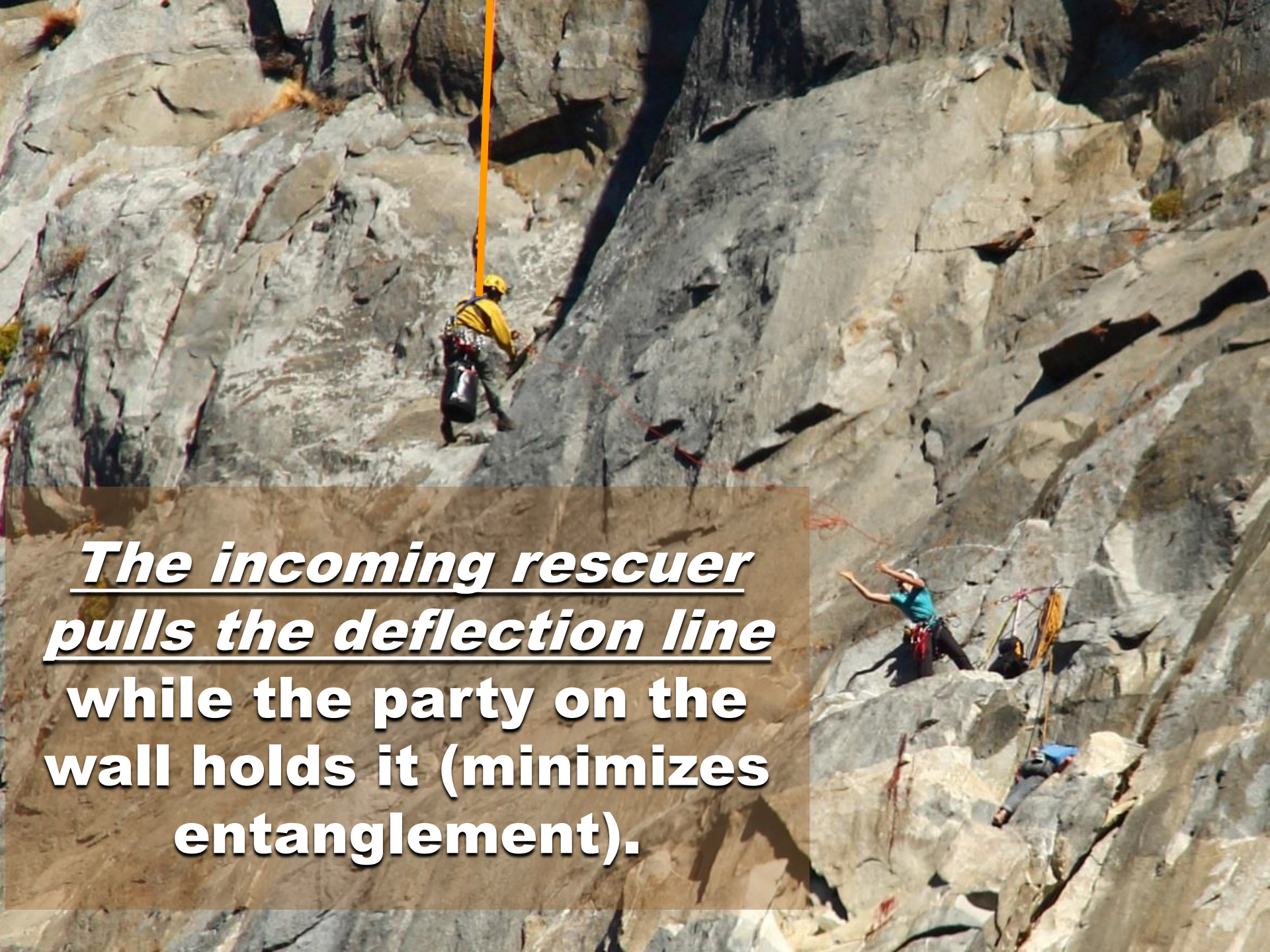
**Sometimes the rescuer
on the short-haul line
can throw the 8 mm
cord directly to a
person at the site.**

Photo: Tom Evans

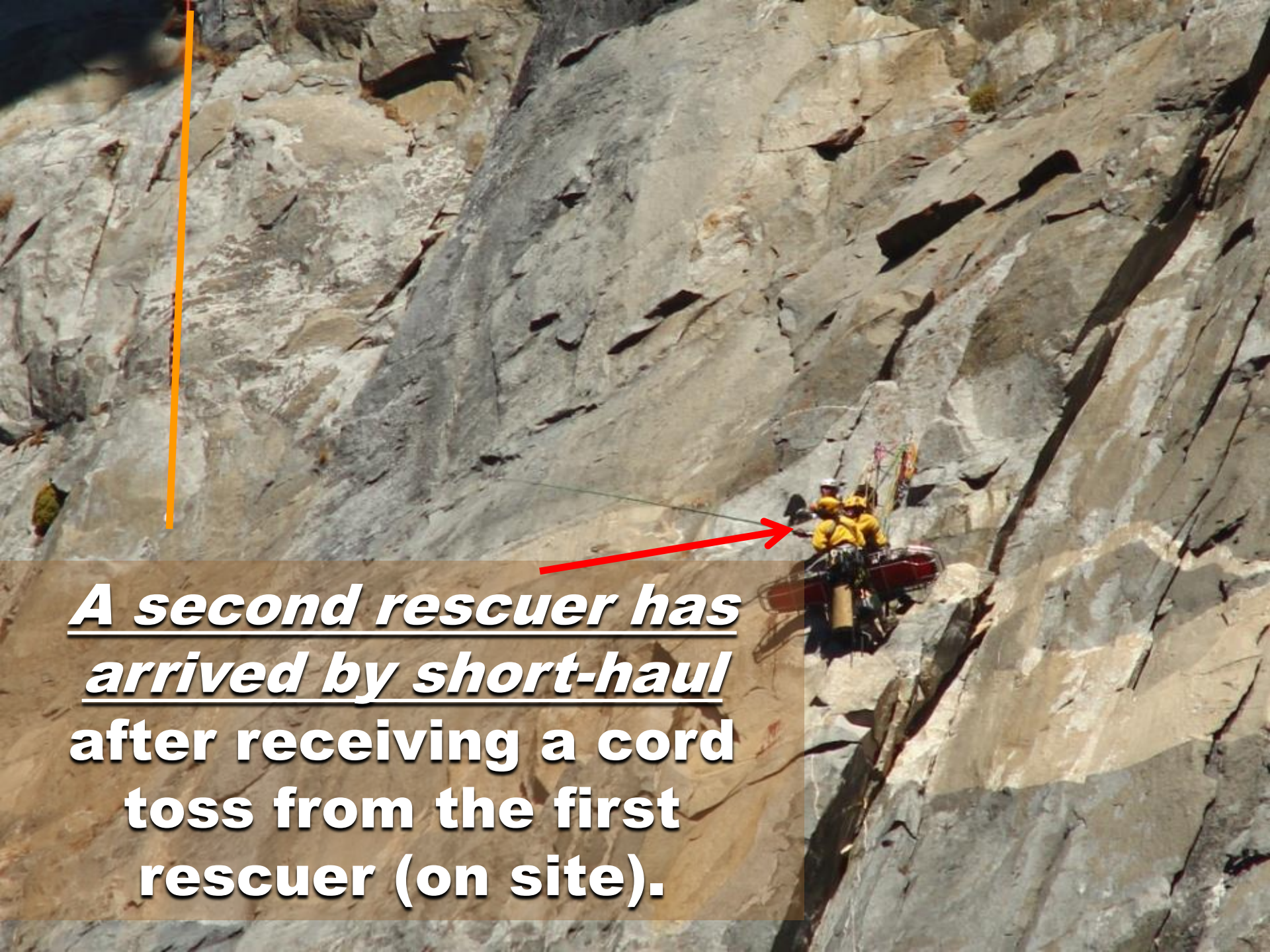


**Video of
Throw from longline**



A photograph of a rock climbing rescue operation on a steep, grey rock face. A rescuer in a yellow shirt and helmet is positioned higher up, pulling a bright orange rope. Below, a party of climbers is on the wall, with one person in a blue shirt and another in a blue shirt and dark pants. The rock surface is textured with cracks and shadows.

The incoming rescuer
pulls the deflection line
while the party on the
wall holds it (minimizes
entanglement).



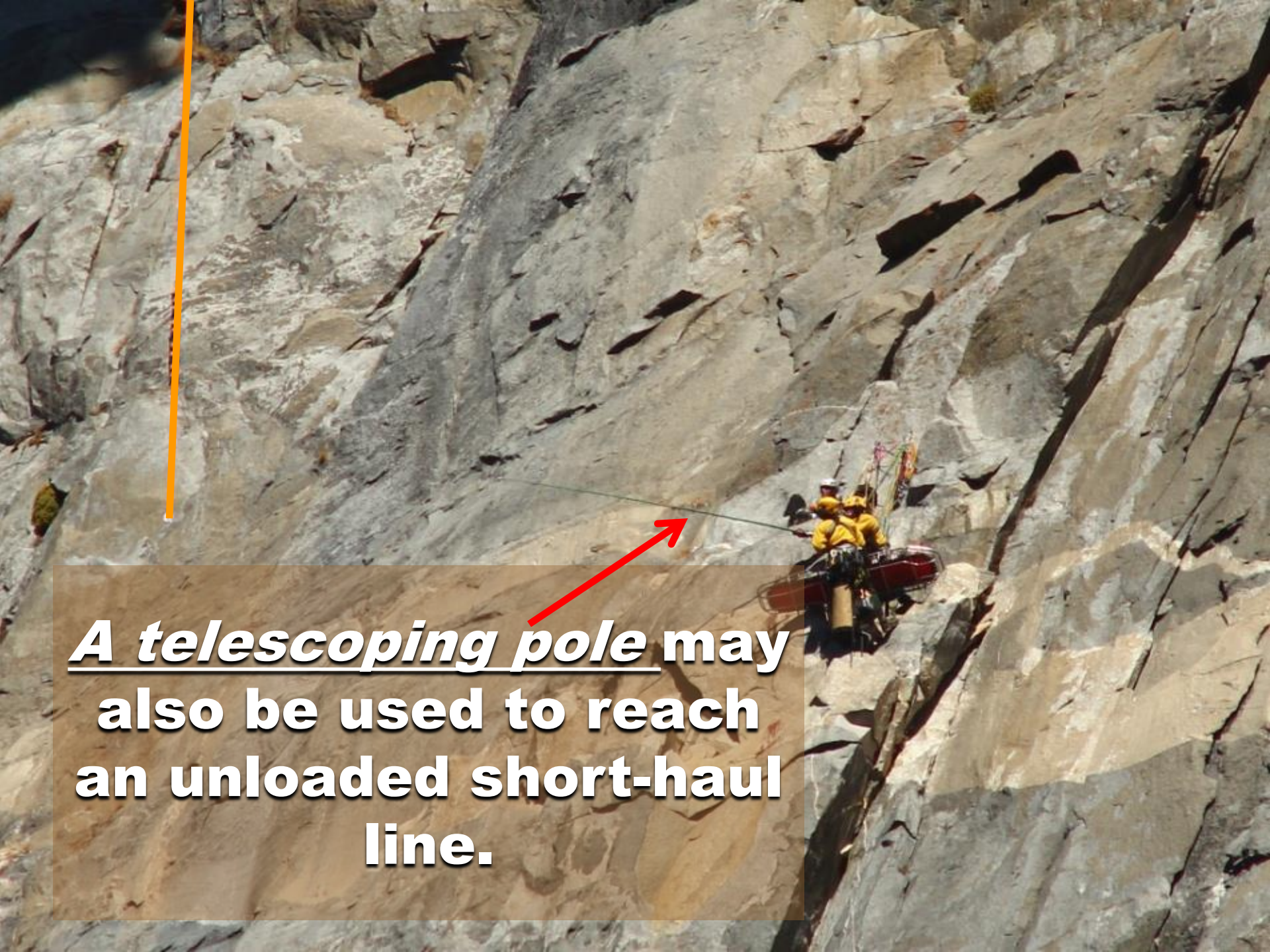
A second rescuer has arrived by short-haul after receiving a cord toss from the first rescuer (on site).



**The second rescuer
is rigged for extraction
with the litter.**



**The helicopter is
delivering the short-
haul line.**



A telescoping pole may also be used to reach an unloaded short-haul line.

**Telescoping pole grabbing
the short-haul line for patient
extraction.**

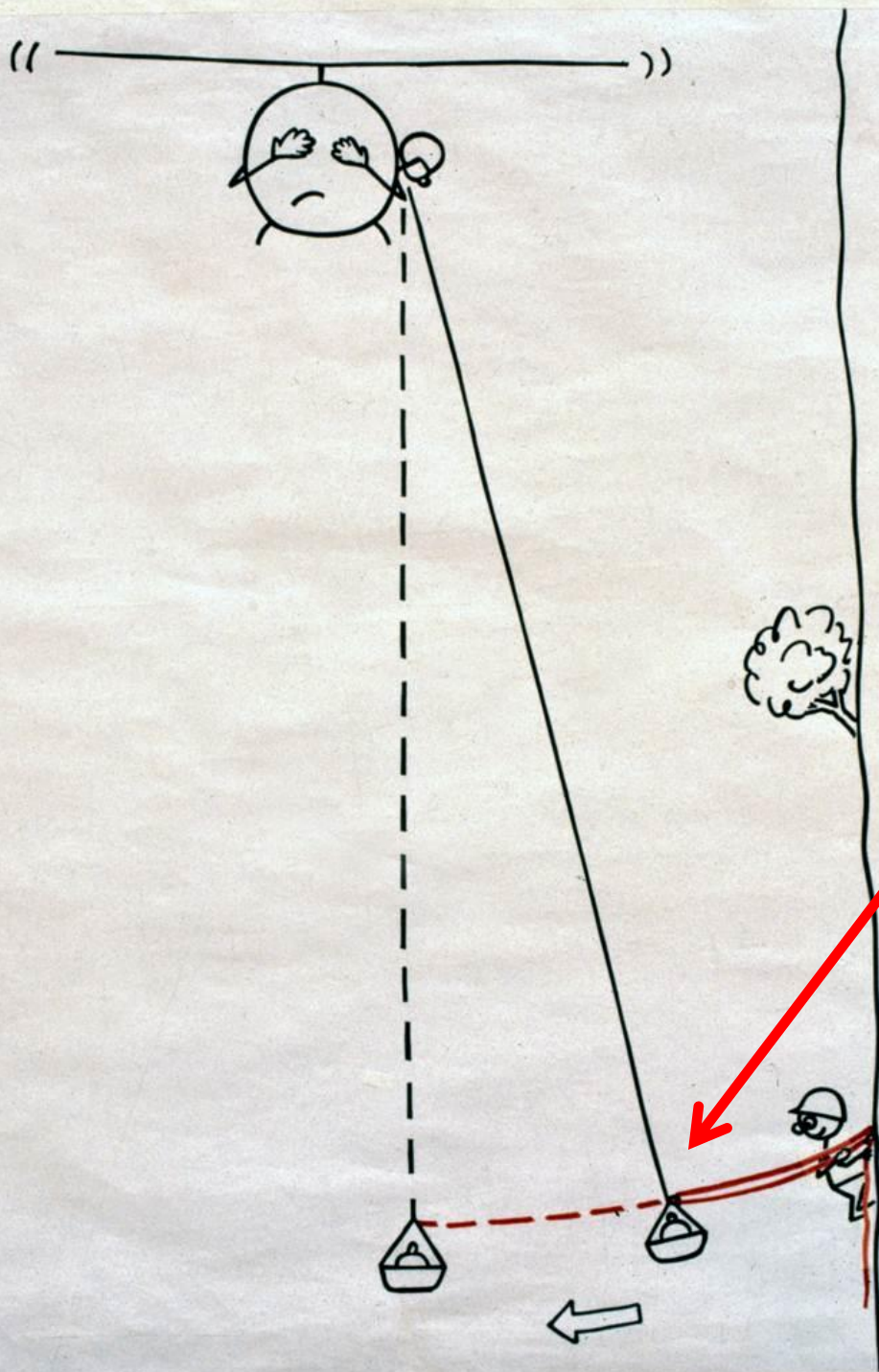


Video of telescoping pole



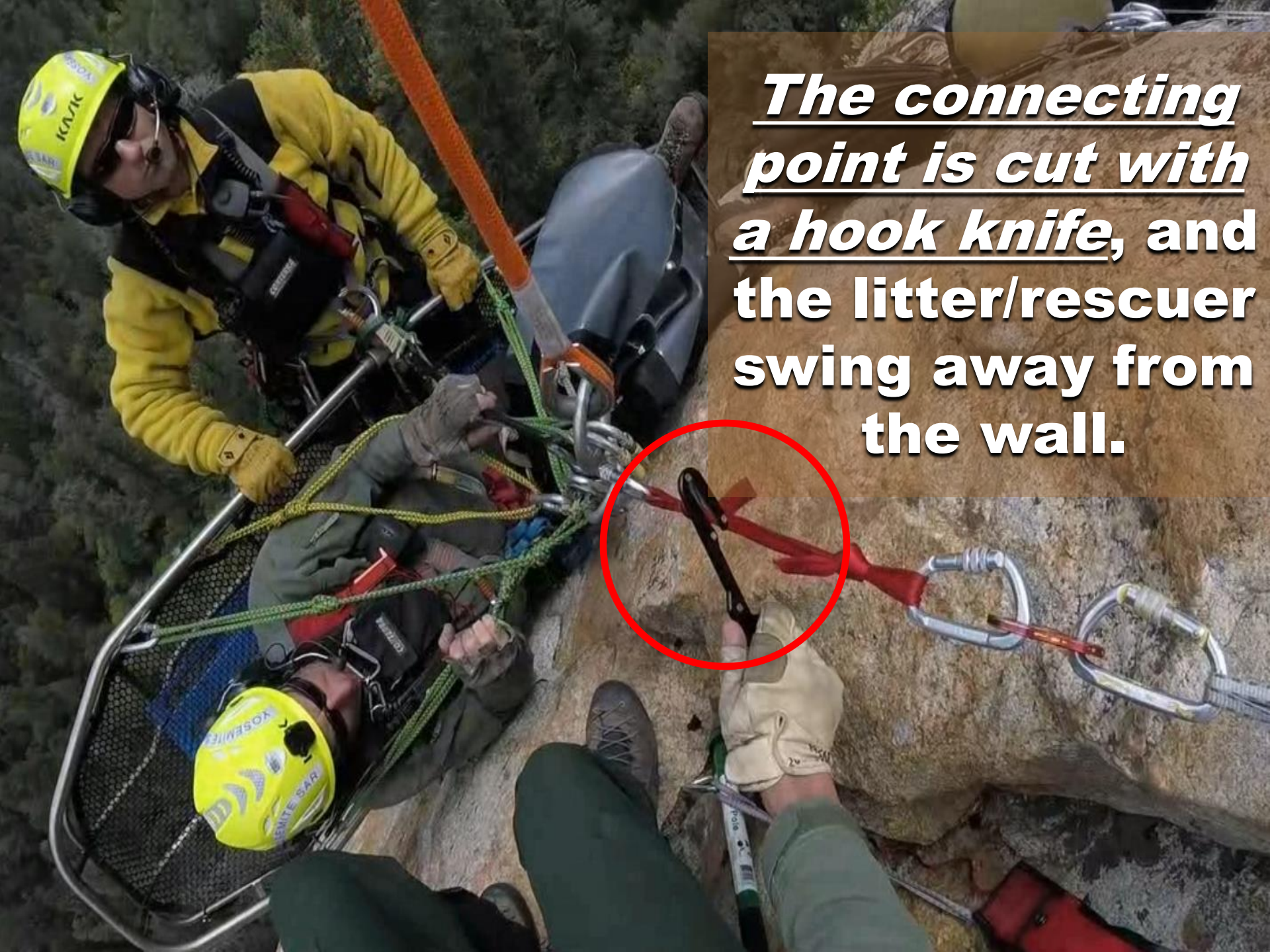


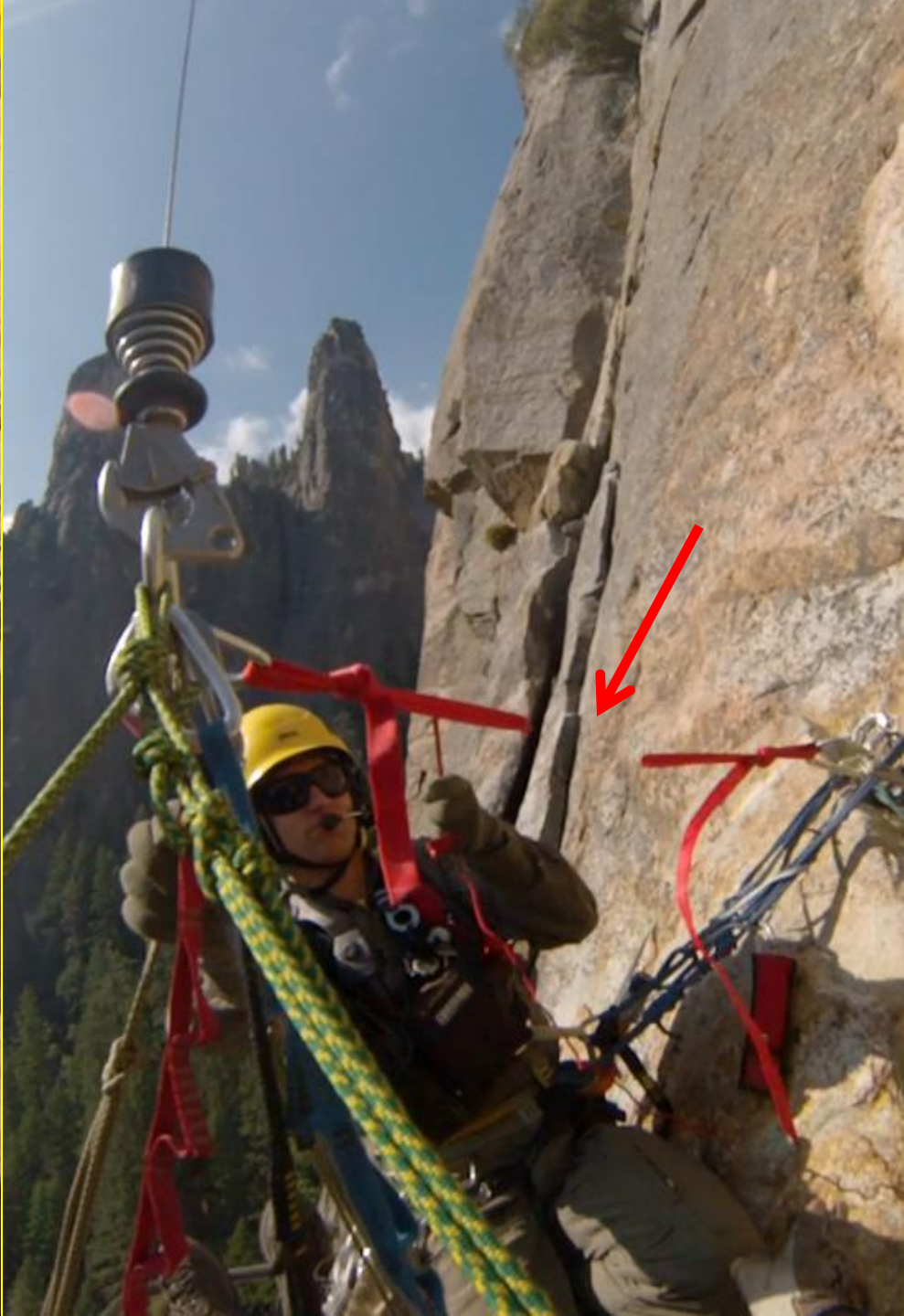
The first rescuer will usually oversee the extraction (then rappel with the patient's partner).



**The crux
move**

The connecting point is cut with a hook knife, and the litter/rescuer swing away from the wall.











Cutaway video



Cutaway video #2



**Cutaway video
from Rescuer Perspective**

**One final look at the
entire
“Offset Technique”**



Thank You!



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A photograph showing a helicopter in flight, hoisting a person over a steep, light-colored rock face. The helicopter is positioned in the upper left, with a red rope extending from it towards the rock. The rock face is vertical and textured, with some shadows. The sky is a clear, bright blue, and the sun is visible in the upper left corner, creating a lens flare effect. In the lower right, a person is visible on the rock face, secured by ropes and equipment, likely a rappelling or rescue operation.

Grateful Appreciation:

- **John Dill; Yosemite National Park**
- **Ken Phillips, National Park Service (retired)**

Photo credits

- **Friends of YOSAR**
- **John Dill**
- **Tom Evans/ElCapreport.com**
- **Cheyne Lempe**
- **San Francisco Chronicle**