Corpo Nazionale Soccorso Alpino e Speleologico

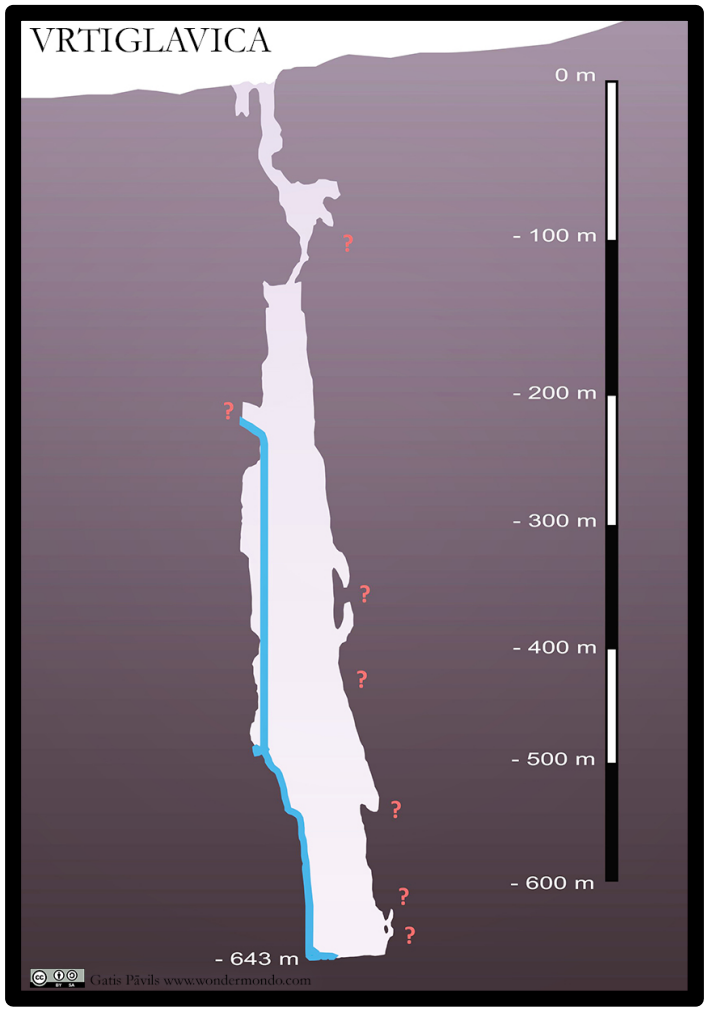
RESCUE SYSTEM FOR DEEP CAVE PITCHES

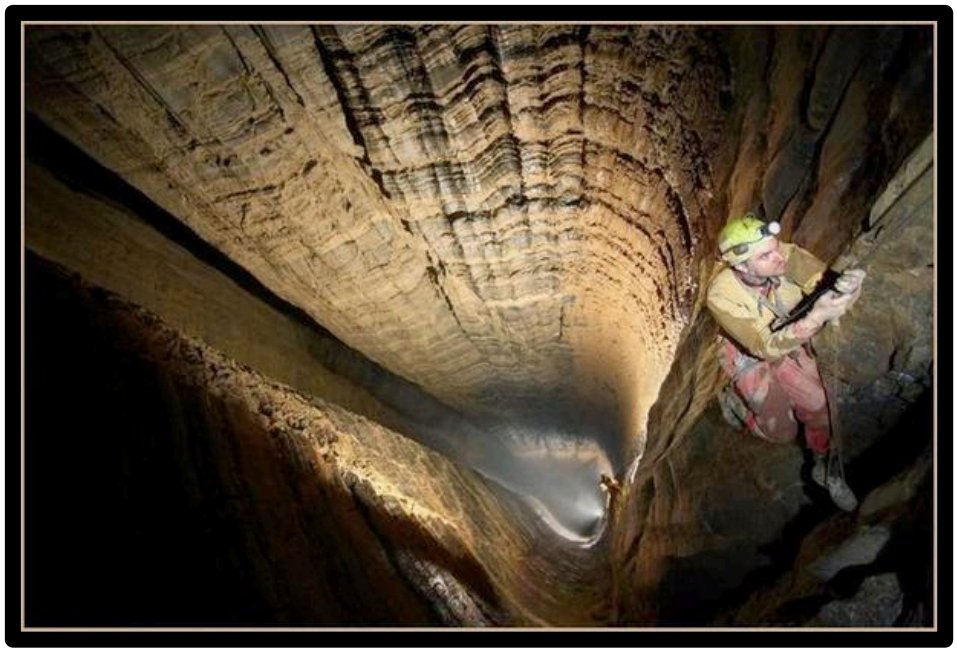
CNSAS (Italy) – Cave Rescue

ICAR

ICAR CONGRÈS ANDORRA 18-21/10/2017 Soldeu

STRUCTURE OF DEEP UNDERGROUND PITCHES





UNDERGROUND PITCHES:
> 600m HIGH AND > 50m WIDE.

Vrtiglavica, cave Kanin Mountains, Western Julian Alps - Slovenia

Brezno Pod Velbom, Kanin Mountains, Western Julian Alps - Slovenia

BIG WALLS VS. DEEP UNDERGROUND PITCHES

SHARED	DIFFER
• VERTICALITY.	• CAVE'S PIPE STRUCTURE. • ESCAPE OPTIONS.
• RISKS OF FLOODING.	• RAINFALLS AND HAIL. • WIND GUSTS. • TEMPERATURE VARIATIONS.
• RISKS OF ROCK FALL.	
	• DAY LIGHT.

DEEP UNDERGROUND PITCHES ARE SIMILAR TO BIG WALL FLOOD LINES, DURING NIGHTTIME.

CAVE RESCUE SPECS:

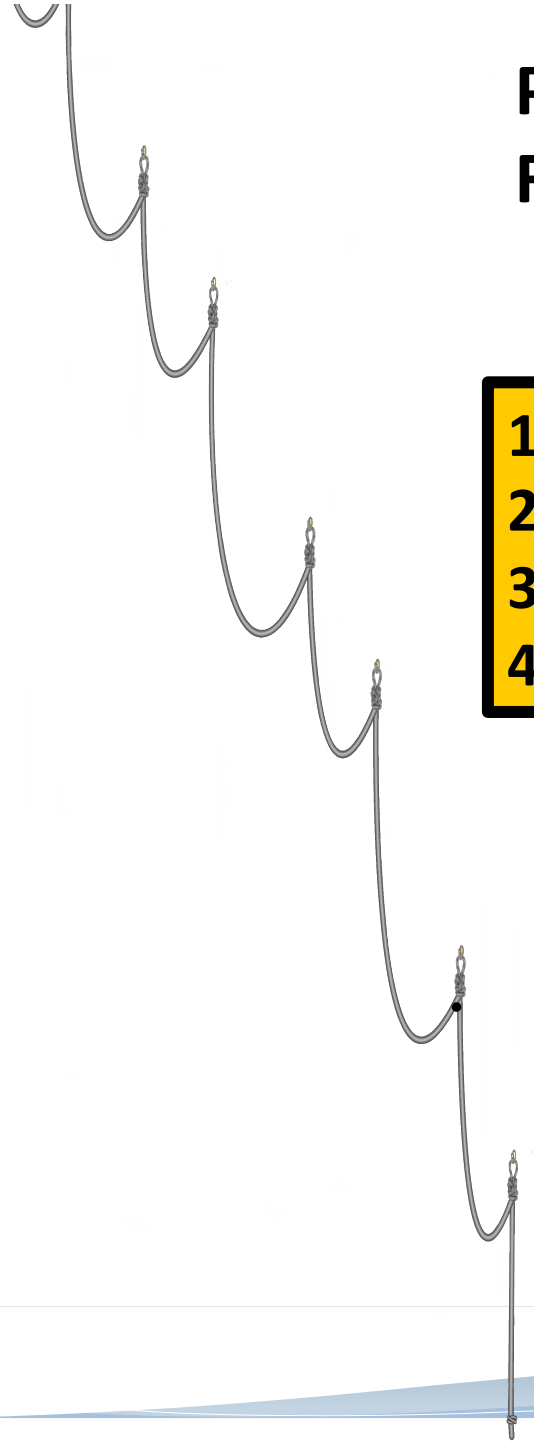
- **EXTREME REMOTENESS.**
- **OBLIGATION TO HAUL.**

IS NOT FEASIBLE TO:

- TRANSPORT HEAVY AND VOLUMINOUS GEARS.
- USE MACHINERY

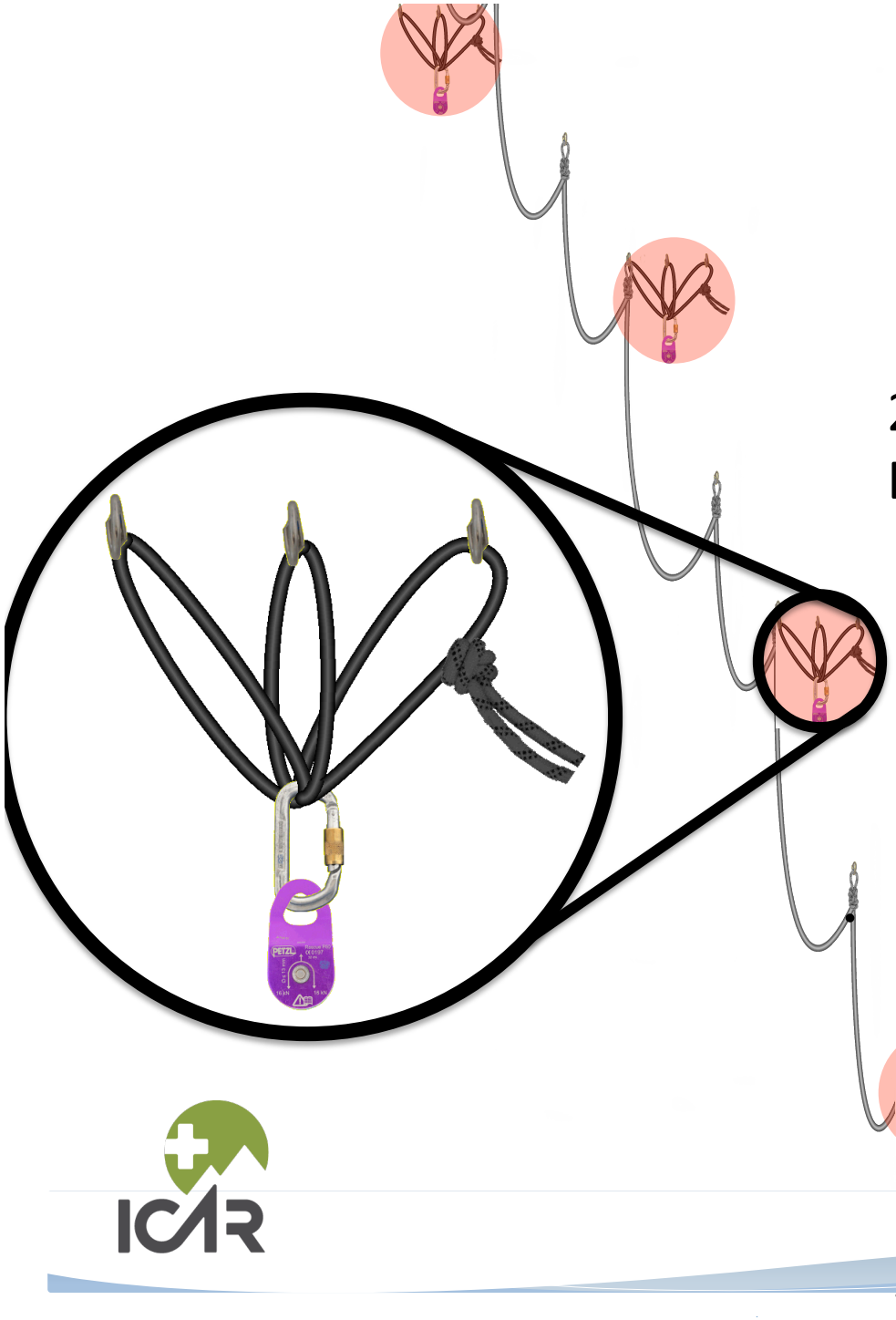
OUR FOCUS: MINIMIZING GEARS AND OPERATORS

Abisso Casermette
Kanin Mountains, Western Julian Alps – Italy



PRE-EXSISTING LINE FOR ROPE WALKING

1. static EN 1891 type “A”;
2. no rope rub → re – belays;
3. anchors bombproof;
4. rebelays → minimize risks.



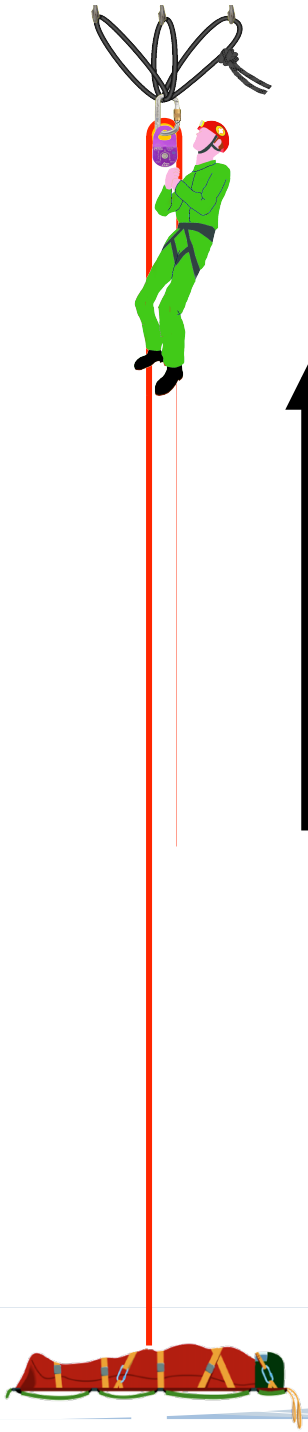
HOW TO RIG THE PITCH

3 OPERATORS TEAM

1) CHOOSES COUNTERWEIGHT POSITIONS.
2) RIGS COUNTERWEIGHT BELAYS.

GEAR NEEDED :
60 m and 20m ropes
2 pulleys – slings – anchors

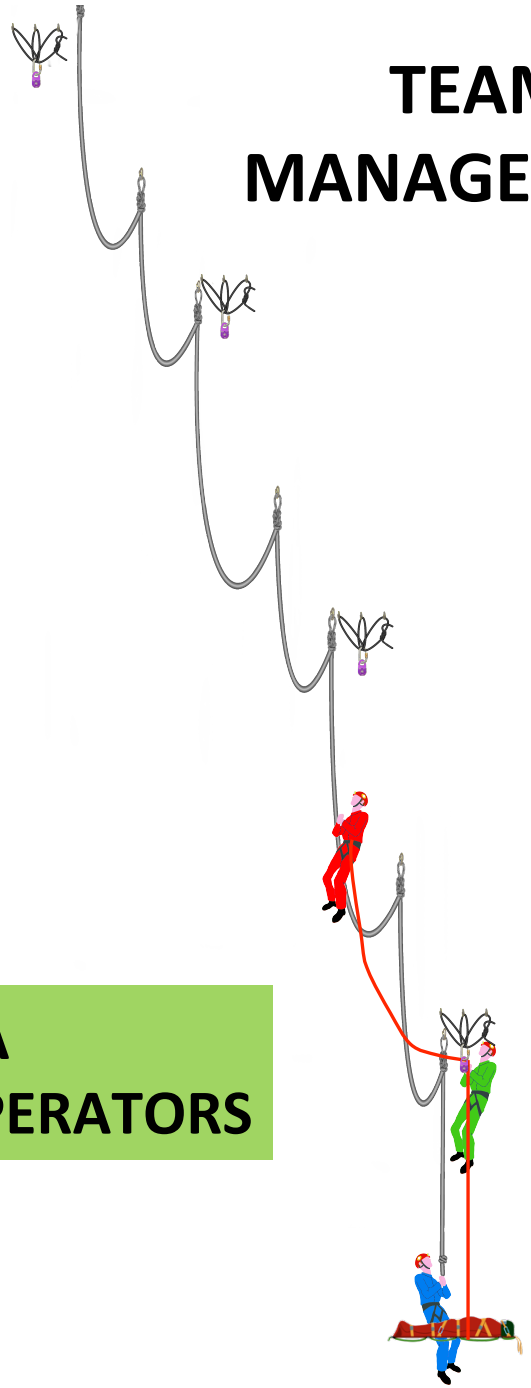
COUNTERWEIGHT DYNAMICS



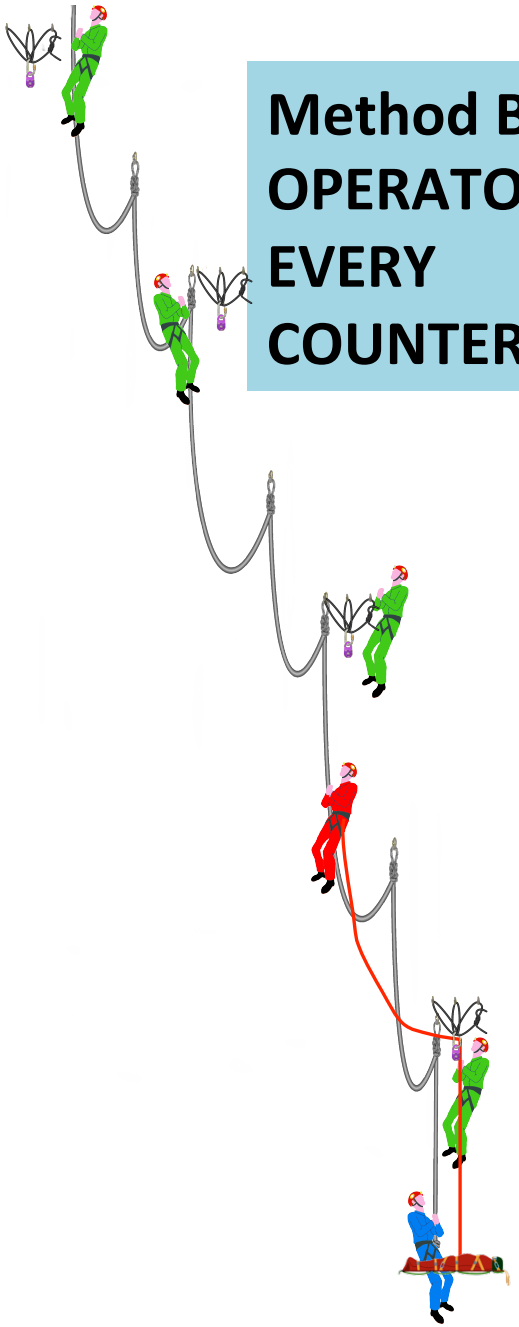
OPERATOR AND STRETCHER ARE TOGETHER AT THE BELAY

THE OPERATOR CLIMB UP THE HAULING ROPE

TEAM MANAGEMENT



Method A
THREE OPERATORS



Method B
OPERATORS ON EVERY COUNTERWEIGHT

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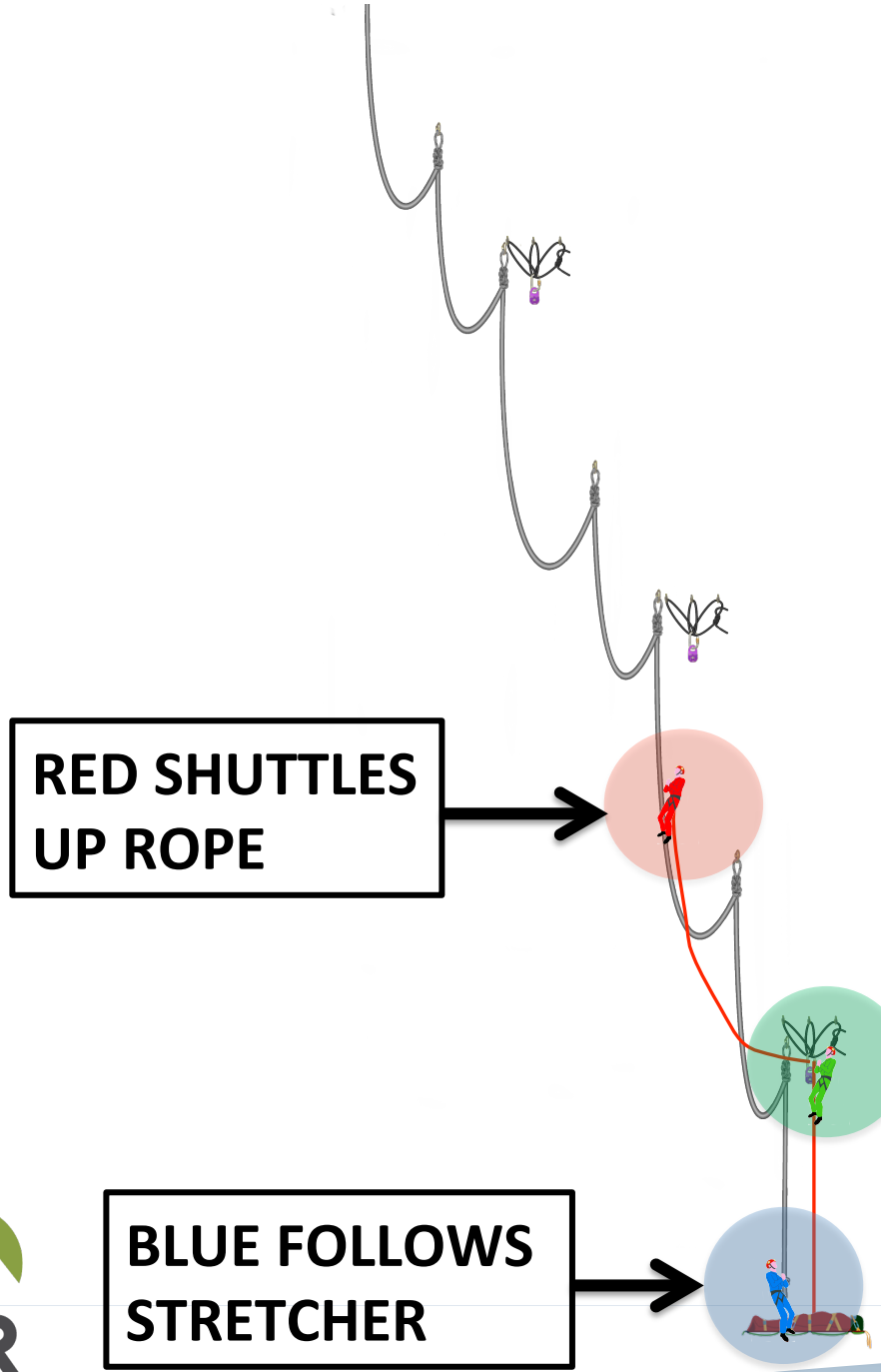
Method A
THREE OPERATORS



RED SHUTTLES
UP ROPE

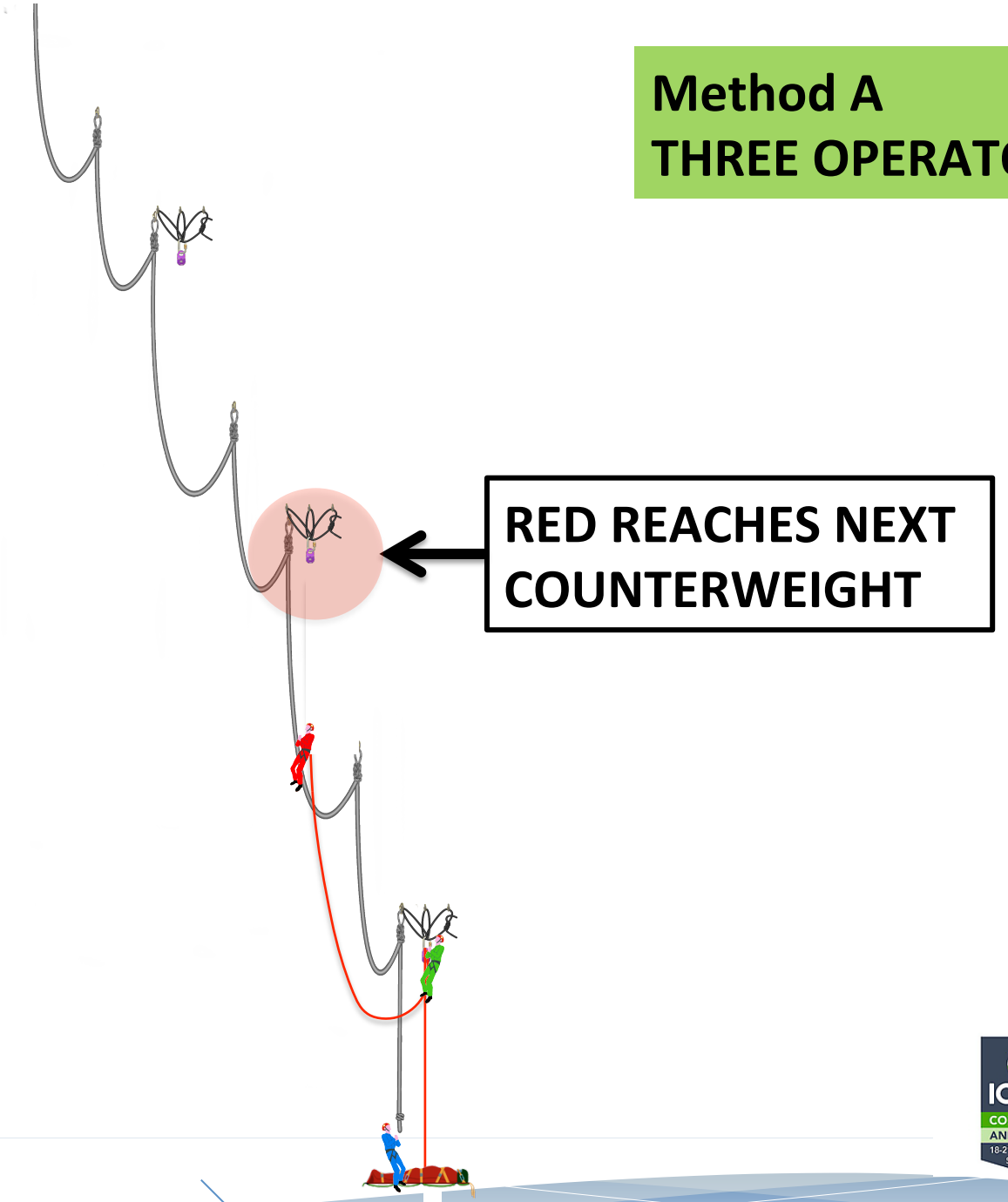
GREEN HAULS
STRETCHER

BLUE FOLLOWS
STRETCHER

STEP 1: HAULING

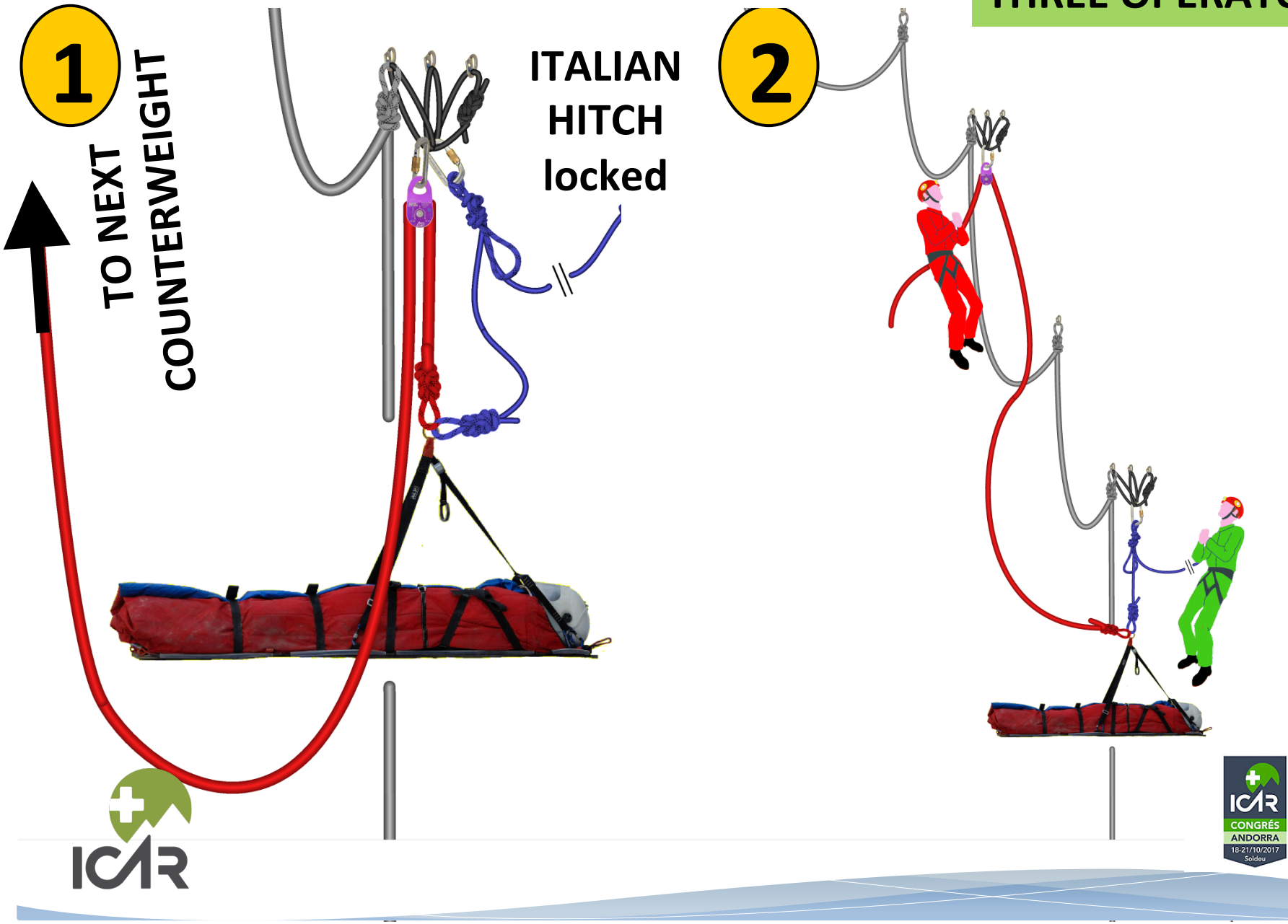
“ANIMATION”

Method A
THREE OPERATORS



STEP 2: CHANGE COUNTERWEIGHT

Method A
THREE OPERATORS



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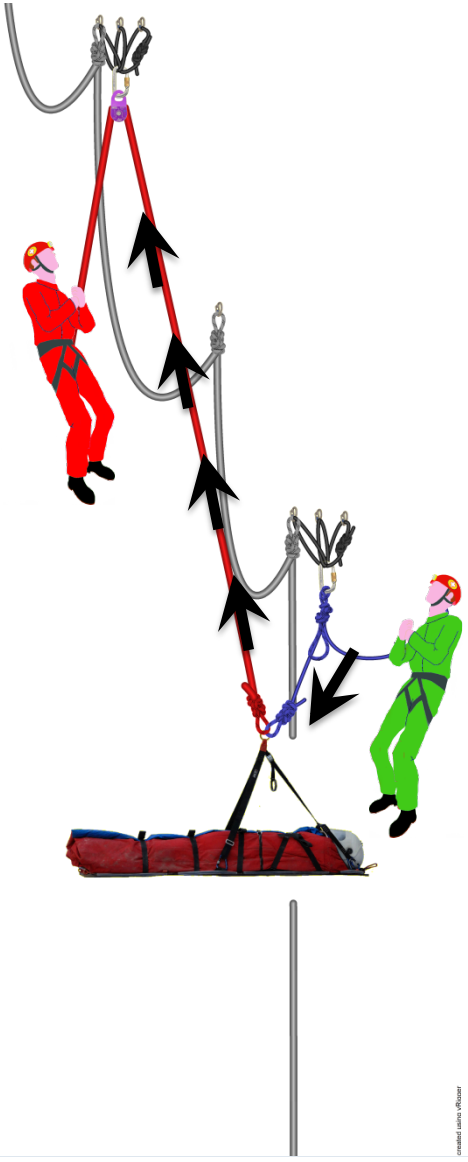
STEP 2: CHANGE COUNTERWEIGHT

Method A
THREE OPERATORS

3

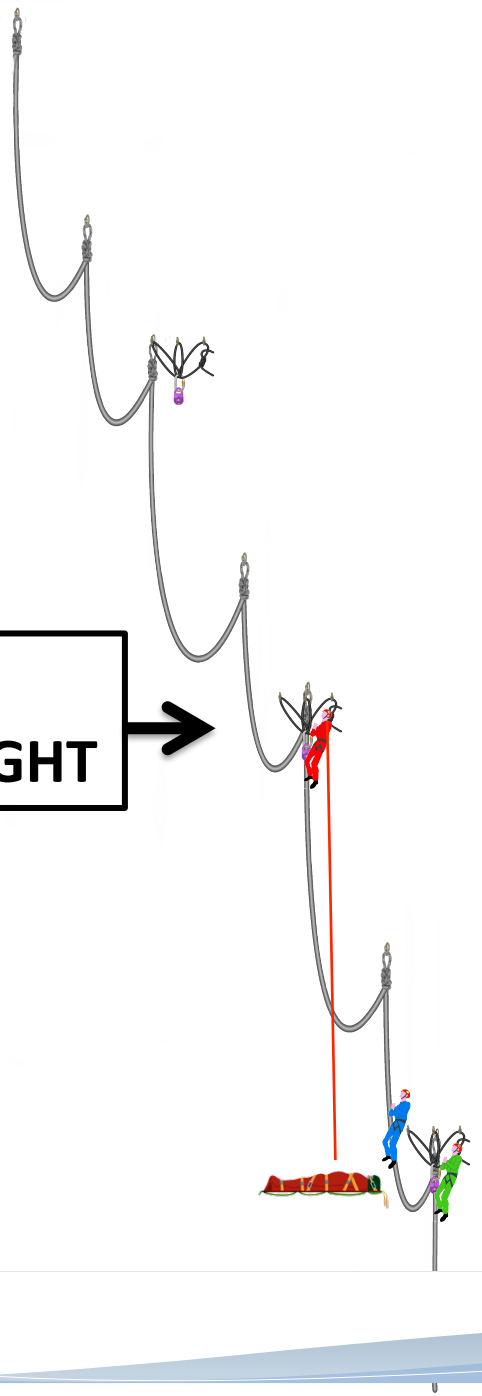


4

STEP 3: EXCHANGING TASKS

"ANIMATION"

Method A
THREE OPERATORS



BLUE CLIMBS OVER NEXT COUNTERWEIGHT

G R E E N FOLLOWS STRETCHER

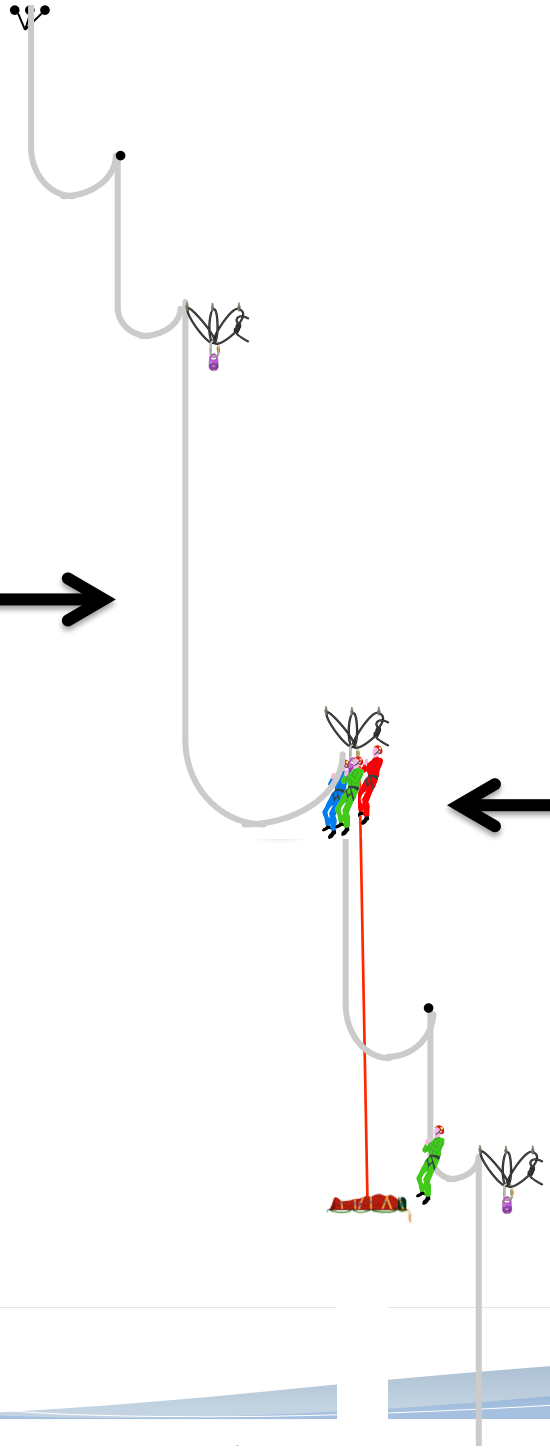
REPEAT HAULING

"ANIMATION"

Method A
THREE OPERATORS

REPEAT EVERY COUNTERWEIGHT

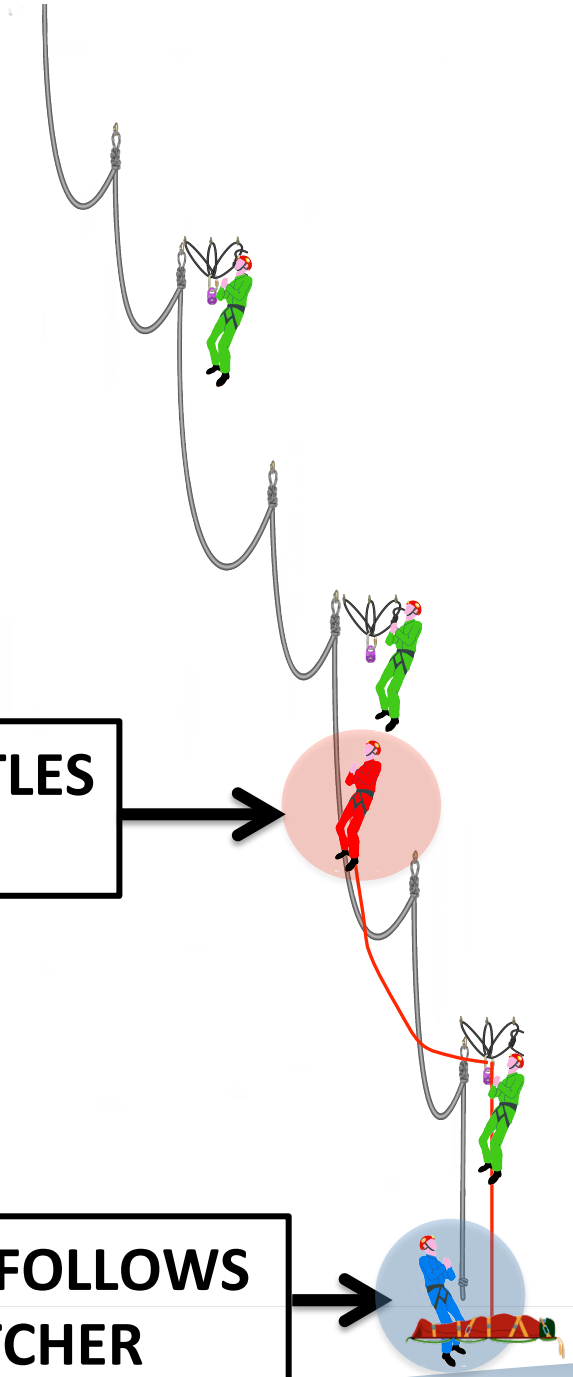
BLUE SHUTTLES UP ROPE



RED HAULS STRETCHER

INITIAL SET UP

Method B
OPERATORS ON EVERY COUNTERWEIGHT

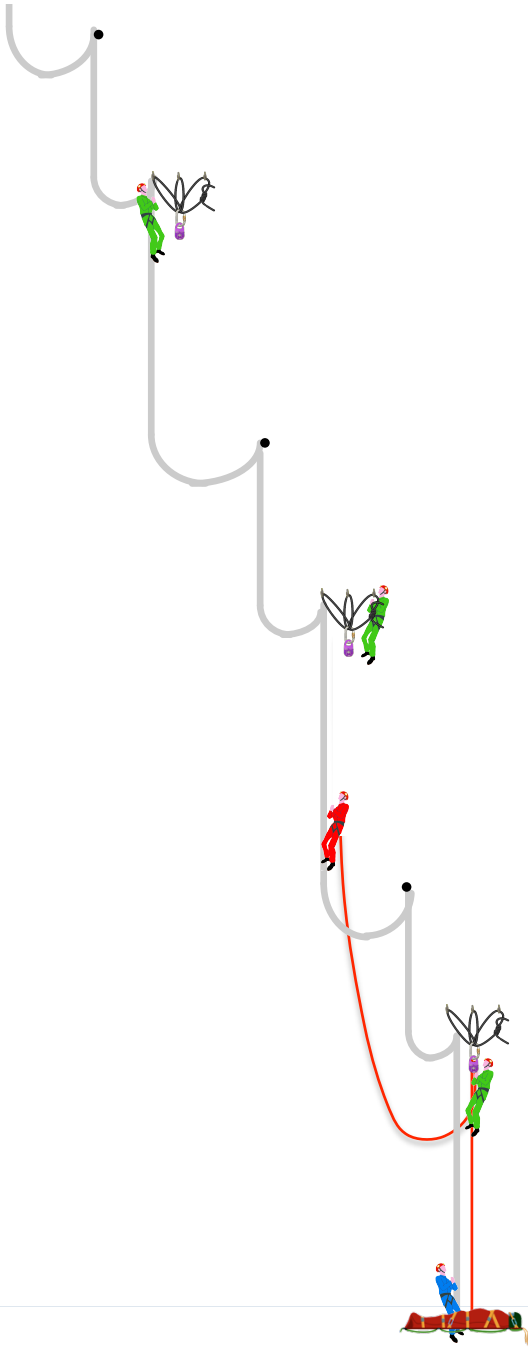


RED SHUTTLES UP ROPE

GREENS HAUL STRETCHER

BLUE FOLLOWS STRETCHER

Step 1:
HAULING
“ANIMATION”



Method B
OPERATORS ON EVERY COUNTERWEIGHT

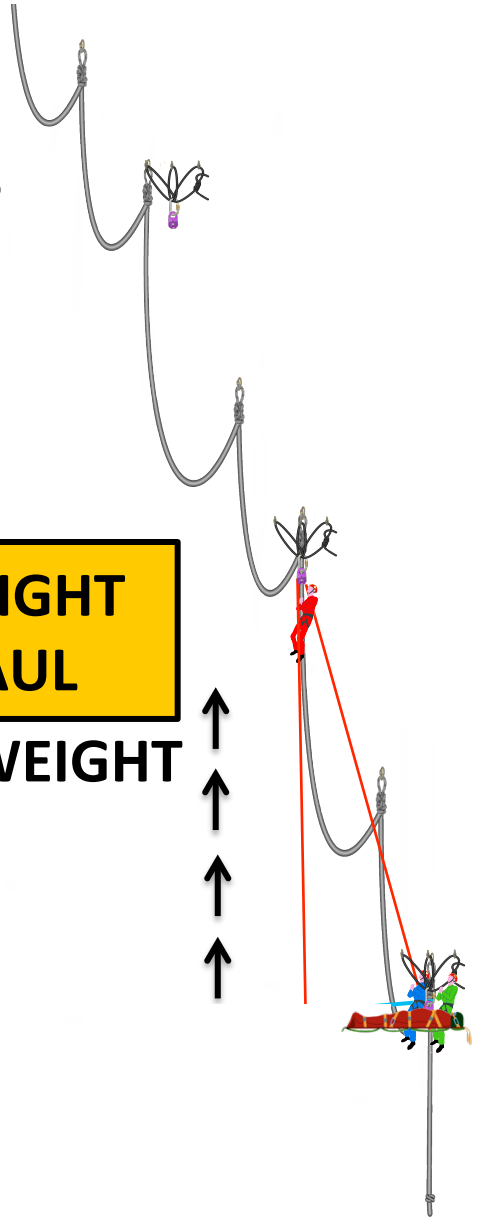
Step 2: CHANGE COUNTERWEIGHT

"ANIMATION"

Method B
OPERATORS ON EVERY COUNTERWEIGHT

COUNTERWEIGHT READY TO HAUL

COUNTERWEIGHT HAUL S

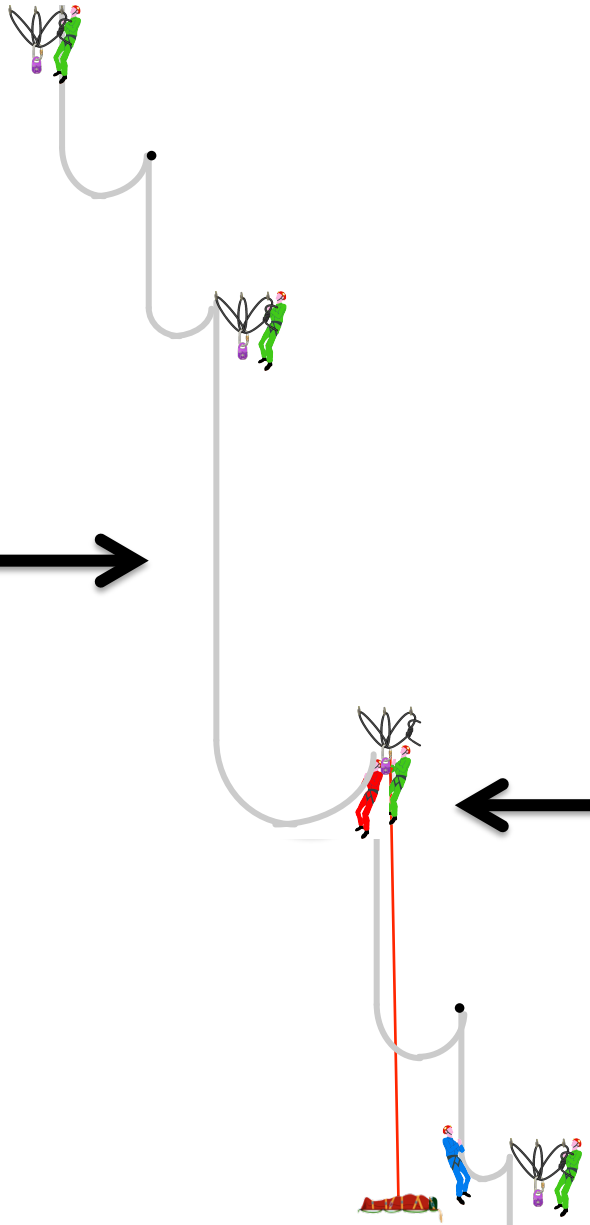


STRETCHER CONNECTED TO BELAY WITH LOCKED ITALIAN HITCH

GREEN LOWERS

REPEAT HAULING

"ANIMATION"



Method B
OPERATORS ON EVERY COUNTERWEIGHT

RED SHUTTLES UP ROPE

REPEAT EVERY COUNTERWEIGHT

GREEN HAULS STRETCHER

COMPARISON BETWEEN THE TWO SYSTEMS

	PRO	CONS
EVERY COUNTERWEIGHT	FASTER	•MORE OPERATORS SUBJECTED TO **ROCK FALL.** •**HUMAN FACTOR.** •MORE SKILLED OPERATORS NEEDED.
3 OPERATORS	MINOR RISKS	OPERATORS HAVE TO BE **VERY SKILLED.** **HEAVY DUTY** JOB. RISKS RELATED TO **FATIGUE.**

THANK YOU

OUR ENGLISH VERSION OF CAVE RESCUE HANDBOOK
IS **FREE TO DOWNLOAD** AT:

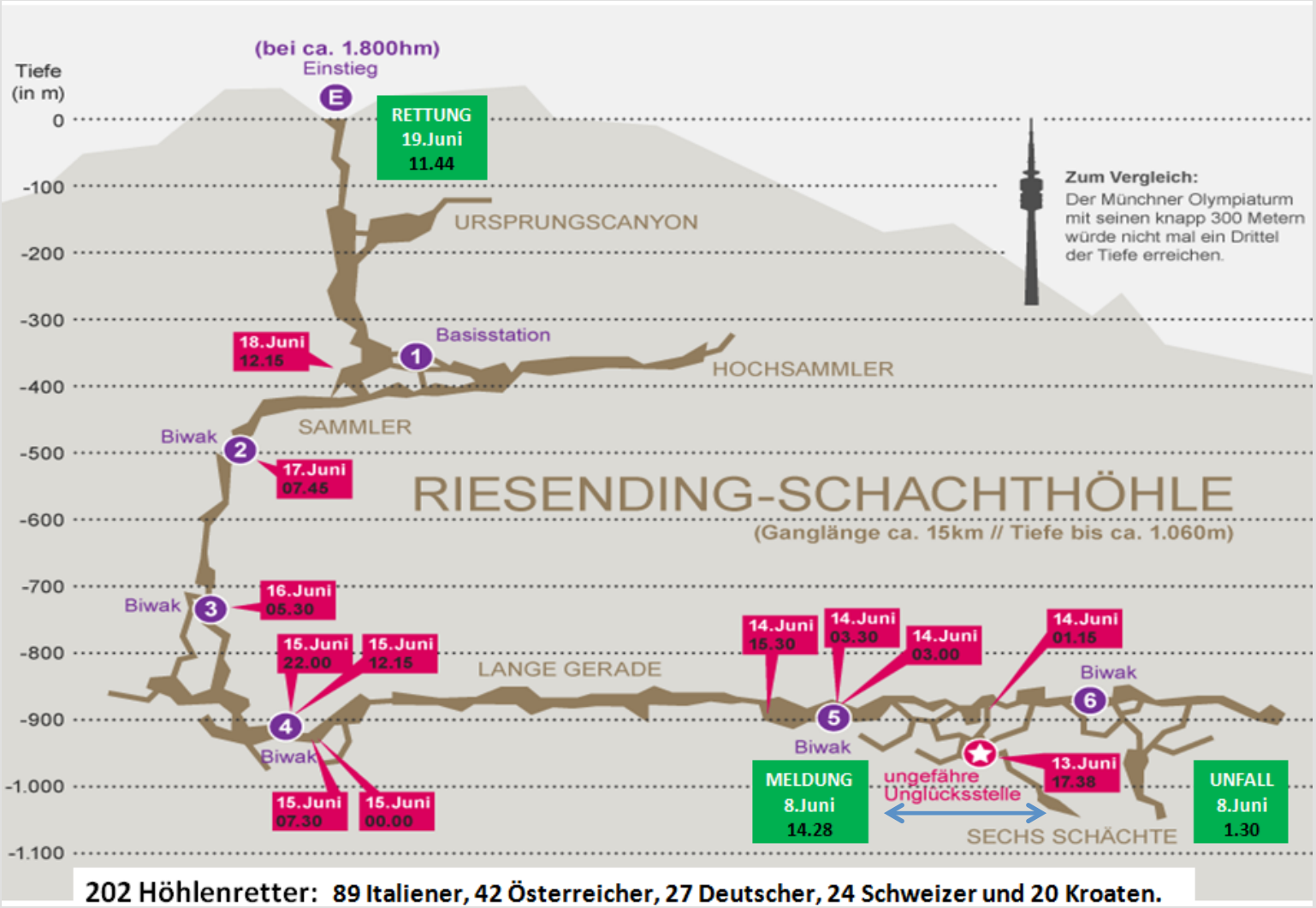
https://formazione.cnsas.it/download/handbook/caving-rescue/

or Google "**CNSAS ENGLISH HANDBOOK**"

EXTRE SLIDES

RIESENDING GERMANIA

TIME-TABLE


(bei ca. 1.800hm)
Einstieg
Tiefe (in m)
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1.000
-1.100
RETTUNG 19.Juni 11.44
URSPRUNGSCANYON
Zum Vergleich:
Der Münchner Olympiaturm mit seinen knapp 300 Metern würde nicht mal ein Drittel der Tiefe erreichen.
18.Juni 12.15
Basisstation
HOCHSAMMLER
SAMMLER
Biwak
17.Juni 07.45
RIESENDING-SCHACHTHÖHLE
(Ganglänge ca. 15km // Tiefe bis ca. 1.060m)
16.Juni 05.30
15.Juni 22.00
15.Juni 12.15
LANGE GERADE
14.Juni 15.30
14.Juni 03.30
14.Juni 03.00
14.Juni 01.15
Biwak
15.Juni 07.30
15.Juni 00.00
MELDUNG 8.Juni 14.28
ungefähre Unglücksstelle
13.Juni 17.38
UNFALL 8.Juni 1.30
SECHS SCHÄCHTE
202 Höhlenretter: 89 Italiener, 42 Österreicher, 27 Deutscher, 24 Schweizer und 20 Kroaten.

ICEFALLS IN CAVE

SEQUENCE PITCHES

WEATHER, WATERFALLS AND FLOODING

SEQUENCE OF DEEP UNDERGROUND PITCHES

- SEQUENCE OF PITCHES IS A COMMON FEATURE.
- RESCUE OPERATIONS ARE SIMILAR TO SINGLE VERTICAL PITCHES.

Modficare immagine mettento background come precedente

n° 4636 - Abisso Maurizio Martini
Kanin Mountains, Western Julian Alps – Italy

CORDE FISSE
SPECS
NORMATIVA

EN 1891 static ropes

Personal protective equipment for the prevention of falls from a height - Low stretch kernmantel ropes - This European Standard applies to low stretch textile ropes of kernmantel construction from 8,5 mm to 16 mm diameter, for use by persons in rope access including all kinds of work positioning and restraint; for rescue and in speleology. Two types of low stretch kernmantel rope are defined: A and B. The European Standard specifies requirements, testing, marking and information to be supplied by the manufacturer including instructions for use of such low stretch kernmantel ropes. NOTE 1: It is possible that rope not conforming to this European Standard may also be suitable for the activities described above. NOTE 2: Ropes used for protection during any free climbing activity in rope access, rescue or speleology should take account of other standards, e.g. EN 892. Dynamic mountaineering rope may also be used for protection during rope access and work positioning.

Example of our alternating teams

Rescue in Riesending-Schachthöhle (Untersberg – Germany) 8 – 20 June 2014

Rilievo in cui siano evidenziati i tratti di lavoro dei 2 team che si sono scambiati lavorando in profondità ed i punti dei due campi dove hanno dormito

SVINCOLO DA SOSTA

Method A
THREE OPERATORS