



## **Presentations Terrestrial Rescue Commission**

Place: Soldeu, Andorra  
Date: October 19, 2017  
Time: 1030 hours  
Participants: Members of the Terrestrial Rescue Commission  
Members of the Air Rescue Commission (1400-1500 hours)  
Members of the Avalanche Rescue Commission (from 1500 hours)  
Chairmen: Gebhard Barbisch, Kirk Mauthner, Patrick Fauchère (1400-1500 hours)  
and Dominique Létang (from 1500 hours)  
Minutes: Fabienne Jelk

### **Revision of Recommendations:**

#### **TER-REC0001 – Using Connector/Carabiner in Mountain Rescue Organizations**

##### **Current:**

##### **Using of Carabiner with Self-Lock-Systems in Mountain Rescue Organizations**

*20051016-TER-REC0001 Commission for Terrestrial Rescue Recommendation*

The ICAR terrestrial rescue committee recommends at organized mountain rescue operations for main and central carabiners and for air rescue operations only the use of push/ pull and twist carabiners which is conform to EN 12275Q.

##### **New:**

The ICAR Terrestrial Rescue Commission recommends at organized mountain rescue operations for main/central attachment points and for air rescue operations only the use of:

- Triple action gate carabiners or
- connectors/carabiners with a screw gate.
- Connectors/carabiners must conform to EN 12275 or EN 362 ~~and~~/or NFPA 1983 US-Standard
- Steel main or central connectors if used with air rescue.

Connectors/carabiners used in flight rescue operations as a part of the equipment of

the crew or helicopter are regulated by an extra recommendation AIR-REC0014HEC-HHO-Equipment from the ICAR Air Rescue Commission.

**Discussion:**

Change: Removal of „and“.

Q. Question regarding triple action carabiners: Can one also use carabiners that are opened through pressure on the backside (Klettersteig carabiners)? These conform to EN 362.

A. No, but they can be used for securing oneself.

A reference will be included that the recommendation concerns main and central carabiners.

Change: "Incidents" is replaced by "activities" (in explanatory notes).

**Vote:**

The recommendation with the changes is approved.

*File: 20171019-1030-TER-REC0001-E-Final.pdf*

**TER-REC0004 – Rope Connection for Rope Extensions**

**Current:**

**Static Rope Knots for Rope Extension**

*20141007-TER-REC0004 Commission for Terrestrial Rescue Recommendation*

Knots for Joining Conventional Kernmantle Rescue Ropes:

Only a figure eight follow through, a flat figure eight or a double fisherman's knot are allowed for joining and extending conventional kernmantle nylon and/or polyester rescue ropes conforming to EN 1891 or CI 1809-98 for the purpose of mountain rescue operations.

**New:**

**~~Static rope Knots for rope Extension~~ or Rope Connections for Rope Extension**

Suitable knots for connecting ropes to extend them are:

- Ropes with sewn terminations: 10-mm standard maillon connector

- Ropes with NO GROUND CONTACT:
  - o Double or triple fisherman's bend.
- Rope with NO GROUND CONTACT BUT HIGH TENSION:
  - o Reef (square) bend with double fisherman's backup
  - o Double or triple fisherman's bend or
  - o Figure eight **bend**
- Ropes WITH GROUND CONTACT:
  - o **Flat** Double overhand **knot**
  - o **Postman's knot**
  - o Single **flat** overhand **knot** ~~when lead not more than one person and~~ **with** ropes of the same diameter **and type**.

Pictures of these notes can be found in Section 4. Glossary

All knots must be properly dressed and all strands must be individually set prior to use. Bends require tails to be at least 10 times the rope diameter. Knots require sufficient tail to allow at least one roll.

**Discussion:**

Removed: Static rope knots for rope extension in the title.

Q. Triple fisherman's bend: Were the different prerequisites of Dyneema ropes taken into consideration?

A. There are two types of fisherman's knots, both of them were meant.

Change: Kernmantle is included in the title of the recommendation.

Q. Regarding the tail of the knot: One rule is 10 times the diameter. Is that applicable here as well?

A. This does not work with all ropes or knots. Tucked knots require longer tails. The recommendation will be amended accordingly.

Add-on to the recommendation: All knots must be properly dressed and all strands must be individually set prior use. Bends require tails to be at least 10 times the rope diameter. Knots require sufficient tail to allow at least one roll.

Change: Several expressions in the explanatory notes (bend, knot).

**Vote:**

The recommendations with the changes are approved.

*File: 20171019-1100-TER-REC0004-E-Final.pdf*

**TER-REC0005 – Redundancy for Lowering or Raising People with Fiber Ropes  
(Program switch – 10.06.2017)**

**Current:**

**Redundancy for Lowering or Raising People with Fiber Ropes**

*20051016-TER-REC0005 Commission for Terrestrial Rescue Recommendation*

The ICAR Terrestrial Rescue Committee recommends for lowering or raising people with fiber ropes fundamentally two anchors, three dimensional apart as practical, have to be used.

One anchor is for the load rope or winch, the other is for the belay (rope).

If fiber rope winches are used the load rope runs over the winch. Using the winch the load is lowered or raised.

The three dimensional separated belay line runs through a braking device.

If the course of the rope on the winch must be changed the belay line has to be fixed to hold the rope.

A practical three dimensional separation of the load rope and the belay line is necessary to prevent damage and shearing of both ropes at the same time.

The belay line always must be kept tight over the whole rope length. For no reasons loose rope slings are allowed to develop.

**New:**

**Redundancy for Lowering or Raising People with *Fiber Ropes***

The ICAR Terrestrial Rescue Commission recommends two-tensioned rope systems for high consequence terrain when lowering or raising with fiber ropes that provide a mutual backup in the event of a failure of one of the rope systems.

Redundant anchor systems should be used for two-tensioned rope systems, preferably with some separation between ropes.

Whether using fiber rope winches or pulley systems, sharing the tension between rope systems is recommended, including when switching between lowering and raising.

If all tension is to be placed on one rope, then an additional risk assessment must be made.

**Discussion:**

- Q. PGHM winch: The system PGHM uses does not conform to the recommendation. The tension cannot be placed on two ropes except if there are two winches.
- A. There are many winches than can only handle one rope. However, there are winches that can handle the two-tension rope system.

Explanation Herbert Streibel:

A redundant location does not require two separate locations. Everything is already doubled. The location needs a safety factor of 10.

Winches: There is one winch that can pull up both ropes at the same time, which is why the two-tension rope system was adopted.

Explanation Kirk Mauthner:

The two ropes do not need to carry equally divided tension. The risk is already reduced if the tension can be divided.

Comment Tom Woods:

We need to differentiate between ropes: natural fibers are not meant.

Change: Adding to the title **conventional Kernmantle** ropes. Problem: some use Dyneema ropes. Therefore, add **fiber** ropes in the title. This will be further defined in the glossary as **no natural fiber ropes**.

Winch problem:

Kirk Mauthner poses the question if "winch" should be removed.

Winch will not be removed but the following added to the recommendation: **If all tension is to be placed on one rope, then an additional risk assessment must be made.**

Addition to the glossary: High consequence terrain: **Conditions which can lead to serious injuries.**

**Vote:**

The recommendation with changes is approved.

*File: 20171019-1130-TER-REC0005-E-Final.pdf*

**Base Jumping – Some Experiences from Norway (Dan Halvorsen)**

Base jumping is widespread. People come from all over to base jump in Norway. In 1986 base jumping in Trollveggen was prohibited, but the practice continued. The law could not be enforced. There were 34 deaths between 1984 and 2017. The risk in base jumping is 5 to 8 times higher than in parachuting off a plane.

Problems with the rescue of base jumpers in Trollveggen include the location of the victims, which is where climbers are not usually found. There is the risk of rock falls. The approach to the victim is dangerous. It is difficult to tell from the helicopter whether the victim is still alive. Many victims are blown away by the downwash of the helicopter.

A video is shown of a base jumping accident in which the victim was blown away from the downwash of the helicopter and therefore fell down farther. This happened despite using the smallest helicopter with the least downwash (EC 135).

Base jumping accidents are ever present in the Norwegian media. Politicians keep asking whether to regulate or even prohibit base jumping. Rescuers usually say that a rescue of base jumpers is not riskier than the rescue of other victims.

The following items need to be discussed during a rescue:

- Reconnaissance flight (observe clearance to the victim).
- Make a plan in which helicopter team and alpine rescuers are involved.
- Secure the victim (pack the parachute).
- Evacuation.

*File: 20171019-1400-Basejumping-Norway.pdf*

### **Methods of Rescue from Big Walls with Big Helicopters (Odd Staurset, F. Moller, F. Jomaas – 330SQ/NARG)**

The initial issue is the distances involved in Norway. It takes a while for the rescuers to reach the victim.

A video is shown which a base jumper made himself. He got hung up on the face of the mountain with his parachute. He was able to notify the rescue team himself. The problem was that there was a risk the victim would be blown off the wall by the helicopter downwash. It was decided to rescue him by using the super longline (100 meters).

Advantages of the super longline: the helicopter does not need to fly along the wall, the helicopter can fly in difficult wind conditions, the helicopter can hover over deep crevasses, less downwash at the accident site, less danger of rock fall, rescues in very steep or narrow locations are made easier.

- Q. Are there rules regarding the length of the super longline?  
A. There is no maximum length. The longest is 200 meters plus the winch cable. There are practical limits. The length is decided in discussion with the crew.
- Q. How about the downwash?  
A. The area of the downwash is much greater than expected.
- Q. Does the helicopter have an automatic hover to stay stable?  
A. No.

*File: 20171019-1430-NARG-BIG-WALL-Rescue.pdf*

### **Mountain Safety Knowledge Base Summary (Létang, Barbisch) (Program Switch – 10.06.2017)**

Gebhard Barbisch presents the phases of development of the Mountain Safety Knowledge Base (MSI).

General values of the Mountain Safety Knowledgebase:

- MSI does not want to record formal regulations. It is up to the partners whether or not they want to apply the MSI practices.

- Cultural differences are being considered as well as recommendations of member organizations.
- MSI is a non-commercial organization.
- MSI is a self-supporting unit which collaborates with other organizations to process practical and useful information.

Core topics in the Memorandum of Understanding:

- MSI shall be founded as a non-profit organization based on Swiss civil law (like UIAA, ICAR, IFMGA).
- Membership is limited to organizations and scientific institutions with global influence with regards to safety in the mountains.
- MSI is exclusively chaired by members. Possible members are UIAA, IFMGA, ICAR, ENSA, and SLF among others.
- The content of MSI will be developed by workgroups. Everyone has the right to make suggestions or the power of initiative.

Goals:

- Work out an international knowledge base about safety in the mountains.
- Use the advantages of existing knowledge.
- Include existing knowledge that is based on experience.
- Promote standardization.
- Distribute data in as many languages as possible. Use uniform terminology.
- Respect copyright law.
- Support continued development of knowledge.

Q. It is important to combine the knowledge. Is it too early to talk about differences in opinion? It is a norm but not a mandatory norm.

A. It is too early to discuss differences in opinion. They are not norms that are enforced on anyone. It is a toolbox in which knowledge is joined.

Comment Manuel Genswein:

MSI will not contain regulatory information. If the workgroups notice differences, they can inform the commission to solve those issues. The goal is to present content that can be used by as many as possible.



Comment Gebhard Barbisch:

In lots of cases, best practices will be available. In some cases there are different practices which are not equally suitable in all applications. Not everyone works the same way. More best practices need to be developed.

Manuals of technical devices should not be changed. If one notices that something is incorrect, the manufacturers should be asked to change that.

Comment Claude Jacot:

ENSA trains lots of people. The organization will sign the MSI paper.

Comment Manuel Genswein:

Different methods that lead to the same goal will be considered. Cultural differences will also be considered.

*File: 20171019-1500-MSKB-Status-Future-ICAR.pdf*

### **Rappelling Techniques on Big Walls (Ennio Rizotti – CNSAS)**

In order to decide which technique to use, the following needs to be considered:

- Morphology and height of the wall.
- Available equipment.
- Human resources and weather conditions.
- Risk analysis.
- The patient's medical condition.
- Alternatives that make the rescue easier.
- Emergency strategies

Equipment: The most important factor is the rope. Dynamic and static ropes are being used. The rappelling devices are standardized across Italy.

How do you choose the rappelling system? Is it dependent on wall morphology and the length of the rappelling system?

The following three rappelling systems are used with dynamic (EN 892) and semi-static (EN 1891) ropes: Kong „Gigi“ Brake, Petzl „Tube“ Brake, KONG „TOTEM“ brake (joined ropes can be pulled through, little weight, easy to fix to anchor points, modular

sliding effect, two hands have to be on the rope at all times). Mechanical devices are not used.

The system that had been used during the practical meeting is shown in pictures. A video is shown on how the KONG „TOTEM“ brake works as well as a video showing a situation in the mountains.

In canyoning and mountain rescue the one-sided overhand bend is used to join the ropes. The tail lengths should be a minimum of 40 cm and a maximum of 60 cm.

Important:

- The characteristics of the wall need to be known.
- The technique used needs to be known by all rescuers.
- Only use as many rescuers as needed on the wall.
- Do not throw down ropes without rescues.
- All rescuers need to be equipped with radios.

*Files: 20171019-1600-CNSAS-RAPPELING-BIG-WALLS.pdf  
20171019-1600-CNSAS-Rappelling-big-walls.mov*

### **Big Wall Caves, Systems for Rappelling and Recovering in Very Big Caves (Andrea Sbisa – CNSAS)**

Caves can be as deep as 600 meters and as wide as 50 meters.

Commonalities between caves and walls:

- Verticality.
- Risk of water and rock fall.

Differences:

- Structure of caves (pipe structure).
- Escape routes.
- No rain or hail.
- No wind.
- Temperature variations.
- No daylight.

#### Additional Challenges:

- Extreme isolation.
- Equipment has to be carried.
- Transport of heavy or voluminous equipment is not possible.
- Machines cannot be used.

The focus is to minimize the equipment needed as well as the number of rescuers. How to use counterweights (2 different methods) are shown as well as the advantages and disadvantages of the different methods.

A handbook on cave rescue in English is available for free download here

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

*File: 20171019-1630-CNSAS\_cave\_rescue.pdf*

#### **Rappelling Systems with Canyon Stretcher on Big Walls in Canyons (Piergiorgio Rossati, Piergiorgio Vidi – CNSAS)**

Three different techniques are shown to overcome a high waterfall with a stretcher.

#### Safety basics:

- The stretcher should be rappelled far away from the waterfall.
- A line for single rope walking technique has to be equipped top to bottom.
- Loose rocks and rock falls need to be avoided.
- Continuous radio communication is essential.
- If there is a risk of sharp edges or rock fall, the stretcher is rappelled using the two-tension rope system.
- The stretcher is rappelled in a vertical position if it is close to the waterfall or there is risk of rock fall. The stretcher is waterproof.
- One rescuer follows the stretcher during the rappelling.

A video is shown.

Q. How do you address the risk of the rope getting caught?

A. We ensure there is plenty of rope and a rescuer is being rappelled on a fixed rope together with the stretcher.

- Q. What about the availability of helicopters?
- A. In a canyon? We usually use helicopters to get to the location from which we can rappel.
- Q. Why are you using a one-rope system for rappelling the stretcher?
- A. Two ropes are used when certain risk factors are involved.

*Files: 20171019-1700-CNSAS-Canyon-Rescue.pdf*  
*20171019-1700-CNSAS-Canyon-Rescue.mov*

End of Meeting: 1720 hours

For the English Translation: Olivia Cashner