International Commission for Alpine Rescue

Presentations Terrestrial Rescue Commission

Place: Chamonix, France

Date: October 17, 2018

Time: 11:30 a.m.

Participants: Members Terrestrial Rescue Commission
Members Avalanche Rescue Commission (from 3 p.m. to 5:30 p.m.)
Members Air Rescue Commission (from 2 p.m. to 3:30 p.m.)
Members Dog Rescue (from 3 p.m. to 3:30 p.m. and from 5 p.m. to 5:30 p.m.)

Chairmen: Gebhard Barbisch, Kirk Mauthner

Minutes: Fabienne Jelk

Workgroup Incident Command Systems, Presentation and Discussion; Ásgeir Kristinson, ICE-SAR

In November 2017 a workgroup was founded with the main goal of getting an overview of incident command systems used in mountain rescue organizations. New solutions as well as best practices to the same problems should be found and discussed using Edward Deming's four-step cycle of continuous improvement processes, called Plan-Do-Study-Act (PDSA). A good search and rescue mission distinguishes itself in that all members receive the correct information at the correct time. Is the information relevant to the incident? During a mission many things can go wrong: chaos, wrong information, ability to implement new information into the rescue plan, unexpected developments, overestimating one's abilities and equipment. It can be said that every published plan is perfect, but no plan survives the first contact with the enemy. A plan needs changing when the search turns into a rescue. The overview needs to be kept, the focus on safety is important. Uniform commands are also important.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

As an example, a rescue on the Vatnajökull Glacier from 05/17/18 is shown. Two touring skiers had to be rescued. Iceland is divided into 16 regions. There is a software called SAREYE Crisis & Incident Management that each commandant can use. At 6:35 p.m. the call came in through the PLB. The skiers had rented the beacon from ICESAR. At 7:20 p.m. the first rescuers started the mission. The search started within a 300-meter radius from where the signal had originated without success. At 1:35 a.m. a large avalanche was discovered. At 2:56 a.m. boot prints that led away from the avalanche were found. At 3:15 a.m. both skiers were found alive in a snow cave 9 hours after the alarm call came in. They had tied the PLB to a pick.
The rescue is analyzed using PDSA. A plan that seemed logical was initialized. The success of the plan was measured. The rescue was assessed. All information was reported to the decision makers. Necessary changes that will improve such missions were implemented. In this case the plan worked. All went well. Personnel and material returned home safely. The plan matched reality. The difficulties were the long distances and transportation as well as the work environment. A large-scale avalanche search under those circumstances would have been problematic.

The final question was whether or not operational command could have handled it better? If so, how?

Q. Red Alistair: Is it correct that you have two levels; organization of the resources and then the organization in the field?

A. Planning stays with incident command. However, it happens more and more often that the rescuers in the field take over control. There needs to be a command post in the field.

Q. Red Alistair: How does the communication between incident command and the rescuers in the field work?

A. All possible means are being used; phone, internet, etc., but it is a critical point.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

Comment Gebhard Barbisch: The work group is being reactivated. Anyone interested in participating, please say so.

File: 20181017-02-WG-ICS.pdf

Rec/0007 Discussion and Decision

TER-REC 0007 – Static Rope Differentiation

The title was changed. The static (low-stretch) ropes need to be well differentiated from the dynamic ones. There are continued issues during rescue operations in which the ropes are being mistaken for one another.

The recommendation was written in 1999 in Sonthofen. Prior to 1999 the static (low-stretch) ropes were white or black. Keeping them apart from dynamic ropes was easy. This changed and different colors started being used for static ropes as well.

ICAR recommends that rescue teams who work with both static (low-stretch) and dynamic ropes develop a simple and practicable system to differentiate them. This system should be announced and easily recognizable for all rescuers.

Explanation: Using the wrong rope during a rescue leads to increased risk.

UIAA Safety Label Standard 107: Describes how the sheath of low-stretch ropes should be colored and marked. Static ropes have a circular running ring in the sheath. Dynamic ropes have a cross pattern. However, many companies are not using this standard.

Request: The glossary should state „low elongation" instead of „low stretch".

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

Vote: The recommendation is unanimously approved. The Assembly of Delegates will decide on this recommendation on Saturday.

File: 20181017-03-TER-REC0007-E.pdf

Light-weight backcountry rope rescue systems; Richard Delaney, NSW State Emergency Service AU

Shows light-weight rescue systems for remote areas. Equipment choices are increasing and so one has to decide which material is best suited for which mission. For example, the rescuer should secure himself before going to the edge to check for any victims. Most times that is not done. Richard Delaney shows a prototype of a system consisting of a belt and a rope that is meant to prevent the rescuer from falling while searching.

Ropes that contain nylon get weaker when wet. Richard Delaney tested various ropes (friction testing). The 11-mm polyester ropes held the longest. A device to use 8-mm ropes for rappelling and belaying needed to be found as well. TibLoc was tested with different ropes. A rappelling system is presented.

Q. Gebhard Barbisch: What type of rope was used for rappelling and hoisting?

A. 8-mm double rope.

File: 20181017-04-Light-Weight-Rope-Rescue.pdf

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

Wind Turbine Hazards and Rescue Operations; Charley Shimanski, MRA, and Axel Manz, ECMS Academy

Wind turbines are increasing enormously. China is the industry leader. Wind turbines can reach a height of 150 meters. The tallest is 220 meters. The biggest issue with rescues inside a turbine is the small openings in the tower that don't allow for stretchers and are merely emergency ports. There is also no railing on the platform on top of the turbine. Practicing wind turbine rescues keeps presenting difficulties. For example, due to the wind sag, the ropes were too short.

Examples of rescue missions are presented:
In 2007, a worker fell off a ladder above a 25-meter-high platform. The stretcher had to be carried through small openings several times, and every time the stretcher had to be upright, the victim lost consciousness.
In another incident, a worker got his hand stuck and the rescuers had to climb up the turbine with a HighStep system.
Another case involved a cardiac arrest in which a winch was used.

Depending on the injury, different equipment is needed; i.e. for a cardiac arrest the PPE belt, rescue triangle, Spec Pak sternal, and stretcher. Different stretchers for different systems are presented; for example, when doing CPR on a patient.
An incident is shown in which the patient used his hands and feet to keep from falling out of the stretcher. Stretchers made out of plastic or aluminum cause issues; the solution was Skedco with Aztek. This stretcher can easily be brought into the upright position in order to fit through narrow openings. There was also an incident where a stretcher rotated quickly while in the air. This led to the use of anti-rotation ropes.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

Rescues off the actual wind turbine blades are rare, but they are extremely difficult. They can cause a CSR rescue (confined space rescue) in which a Spec Pac is used. This type of rescue is not widely used in Europe. This should be improved. Wind turbines in the ocean can be accessed by helicopter or boat but require overcoming long distances. Additionally, it is often very cold and the batteries won't last long. The wind turbine industry is starting to use helicopters more often; either to ferry workers or for rescues. The airflow of the turbines can influence the helicopter. They also have to fly very close to the turbine in general. Keeping a safe distance is important. Currently, only 10% of wind turbines are located in an ocean, but this will increase.

File: 20181017-05-Wind-Turbine-Rescues.pdf

Resero Whistle, Alpine Emergency Notification System; Dmitry Gavva, Resero

In Wallis 250 people are currently missing. Since April 7 this includes the CEO of the biggest German retail group. The difficulty is notifying authorities of an accident and to then locating these people. Smartphones are not always suitable. The batteries only last 6-8 hours and a GSM network isn't always available. Even satellite phones don't work without line of sight to the sky. GPS Tetra and radios in general are too expensive and too complicated for general usage. Resero solves this problem.

An App is used to save the personal data of the user on a platform. If the battery on the smartphone dies, the data is still available on the platform. Resero Whistle is a LoRA/GSM GPS emergency device that can send out an alarm and position signals. When an alarm is initiated, the device will relay the alarm through GPS or LoRa to the IOT platform from which the data is sent to

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

the nearest rescue organization and/or the personal emergency number entered by the user. The device has an international SIM card and is waterproof. It weighs 89 grams. The battery is rechargeable and lasts 5 days. If at the location of the accident there is no GSM or LoRA network, the Resero SAR can be used to establish a network to locate the Resero Whistle. The Resero Whistle signal can be located by Resero SAR out to a distance of 15 kilometers, or 2-3 kilometers if the device is buried.

Contact information: info@avalanche-float.com Website: www.resero-whistle.com.

File: 20181017-06-Resero.pdf

Glacier Cave Rescue, Considerations & Techniques in the Cascade Range; Edy Cartaya, MRA

The areas surrounding Mount St. Helens, Mount Rainier and Mount Hood contain many glacial caves, which are used for studies. A project including NCRC and MRA established rescue cards and plans for each glacial cave system.

Many alpinists don't know the dangers of these caves. They walk over holes and close to the caves without even knowing of their existence. Others use the caves for activities such as ice climbing. These caves also contain many dangers for rescuers.

Glacial caves are not crevasses. Glacial caves are part of the glacier's hydrologic system and change rapidly. They are formed through water (liquid or vapor) and then expanded by air and plastic deformation. Climate is a big influence on caves, but a lot is also still unclear.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

The difficulties during a rescue are: difficult access, usually only one entry, unstable, thin snow bridges over enormous entries making it difficult to establish how safe one is close to the entry, loose rocks, falling rocks and ice, water inside the cave (very loud, makes communication difficult), low visibility (steam, fog), difficulty moving ahead and transporting material. The warm temperature inside a cave can cause rocks and ice to suddenly fall, which is extremely dangerous. It's also a difficult rescue for the rescuers staying topside. They are stationary for a long time with slow communication from inside the cave. How do you protect yourself as well as your equipment? Avalanche danger has to be considered. Even inside the cave one is not safe from an avalanche.

Rescues in caves have to be well planned. Caves need to be mapped. Flagging and reflectors should be used within the caves. Patients inside caves quickly succumb to hypothermia through the cold, water, ice and wind. CO2 has to be monitored. Equipment used during rescues: helmets, three light sources (two on the helmet and one inside the backpack), cave suits (Gore-Tex doesn't work well as it absorbs water), respirator, gas monitor, avalanche beacon (this needs to always be in send mode even inside the cave), watertight bags, safety devices, reflecting tape to mark the path to the victim. For communication line telephones are used as GPS, radio, and smartphones don't work. This also requires a line repair kit to be carried. Crampons and picks have to always be part of the equipment. A designated communication person needs to be in a safe spot topside. Avalanche beacons work deep inside the ice and through ice layers. When setting anchors, one has to consider the immense pressure the ice is under. Screws need a protective layer so that the warm air cannot melt the ice in which the ice screw is set. Mechanical rope clamps should be used because these will also work on frozen ropes. Static ropes should be used. In the event of a gas alarm, an ascent has to be performed rapidly.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

The rope system and stretcher that are used in ice caves are presented (Ferno SPED, APLS Bag, Micro SKED). It is a combination of two systems. A solution for the edge needs to be found, and one is presented.

Q. Alistair Red: Do the moisture and sulfur damage the equipment?

A. Yes, if the rope is being pulled through steam and gas, it can lead to damage.

Q. Do you use satellite radar to look at the avalanche situation? This also shows, for example, how thick the ice is.

A. No. We check the avalanche situation from the air. Maybe we should use the satellite.

Q. Are the caves used commercially? Is there commercial pressure?

A. They are getting more and more popular. Organized tours of caves have been offered and tried.

Files: 20181017-07a-Glacier-Caves.pdf
20181017-07b-xxx.mp4 bis 20181017-07o-xxx.mp4

Fatigue influences the search strategy but not the likelihood of success of well-trained military dogs; Alessandro Alberioli, GdF

Does better physical training of a dog influence the success of the search? When a dog is physically under pressure, it pants to cool down its core temperature. A panting dog does not sniff. Alertness and concentration decrease. The dog works better when it believes it can solve the problem.

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org

In a study with 13 avalanche dogs the influence of fatigue on the search was analyzed. The dog's GPS data and heart rate were logged. Additionally, the rectal temperature was measured before and after practice. The heart rate was above the resting pulse for 50% of the time. The temperature increased during the practice. The fatigue, however, had no influence on the success of finding the object nor the time it took. The behavior, on the other hand, was different. When fatigued, the mouth was often closed and the head hanging down. The question is, does stress lead to failure or failure to stress? Stress does influence the search result. There are still a lot of questions to be researched.

End of Meeting: 5:20 p.m.

For the Translation: Olivia A. Cashner

ICAR – International Commission for Alpine Rescue + www.alpine-rescue.org
Gebhard Barbisch + President of the Terrestrial Rescue Commission + Kemtergasse 1 + 6830 Rankweil + Austria
mobile +43-663-3336216 + terrestrial.rescue@alpine-rescue.org