Internationale Kommission für Alpines Rettungswesen IKAR
Kommission für Bodenrettung
International Commission for Alpine Rescue ICAR
Commission for Terrestrial Rescue
Commission Internationale de Sauvetage Alpin CISA
Sauvetage Terrestre

Presentations Terrestrial Rescue Commission

Place: Lake Tahoe, Nevada, USA, Harveys Hotel

Date: October 7, 2014

Time: 10:30 a.m.

Participants: Members of the Terrestrial Rescue Commission

Member of the Avalanche Rescue Commission (at 3 p.m.)

Chairmen: Gebhard Barbisch and Kirk Mauthner

Minutes: Fabienne Jelk

Stefan Longren, MRA: Preparing Climbing Rangers for Rescue on Mt. Rainier

Stefan Longren talks about the training of the mountain rescuers on Mt. Rainier. Mt. Rainier sees about 10,700 climbers annually. Some rescuers work seasonally (less than 6 months) and others work year-round. They are hired by the government. There have been a lot of accidents throughout the years. In 1995 a rescuer died during a rescue. After the incident training was improved. In 2012 another rescuer died. He attempted to grab a stretcher that was being belayed from a helicopter. The stretcher caught the downwash and hit the rescuer who fell off the mountain. The problems were analyzed. Seasonal rescuers were young, inexperienced, and poorly paid. There was essentially no oversight of these rescuers. The equipment was poor. The whole situation was unsafe.

Each rescue organization should reflect on its culture. Outside experts should evaluate the organization. Their critique needs to be accepted. That is difficult but it is better to do this voluntarily than to be ordered to do this by the courts after an accident.

Today the rescue organization at Mt. Rainier looks different. The rescuers are better trained, there are 5 supervisory rangers employed year-round, the equipment is better. The goal is to have more permanently employed rescuers and to receive the AMGA certification for the rescuers.

The problems during the accidents:

- No leadership
- Bad communication
- Below average training
- Not enough experience

Improvements made include the rescuers completing a 5-step certification:

- Basic medical training
- Avalanche rescue training
- Air rescue
- Technical rope rescue
- Mountain climbing skills

The following 8 factors should be reevaluated after each accident:

- Planning
- Leadership
- Equipment
- Training
- Team
- Communication
- Circumstances
- Complexity of the operation

One has to be aware that there are risks – risk normalization cannot be allowed.

Questions/Comments:

> What is GAR?

It is a risk assessment system - Green, amber, red.

One of the participants thanks the speaker. It is very important to recognize one's mistakes and then take action.

> You stated that training occurs once a month. Does this apply to all 5 training areas?

Yes, we try to train once a month in all areas.

> Is there cooperation with the police and military?

There is tight cooperation with the army but not with the police. However, the police help and are part of the command post in which they are very experienced.

File: 01-Mount-Rainier-Longren.pdf

Paul Burke, MRA: Virtual Search Planning

Paul Burke talks about virtual search planning and how it is helpful even on the first day of an operation.
At the start of an operation there is little information. A certain percentage of the available data is wrong. There is always chaos in the beginning.
What is virtual search planning?
Data about a missing person has to be collected, analyzed, and verified. Already available statistics are also consulted. Weather data and technical data (cell phone, radar, video) are considered. Virtual imaging and tools for terrain analysis are utilized. Subsequently, a logical search plan is established.
The case of "extreme hiker" Shane, a 16-year-old boy, is presented. He wanted to hike 17 miles from Henderson (NV) to the Hoover Dam in extreme heat. His mom was going to pick him up at the dam. Shane didn't arrive at the dam. The last information anyone had was a text message to his mom saying that he could see the river. The search was based on this information and after 3 days nothing had been found. Shane was eventually found using virtual search planning.
The initial search was based on the wrong assumption that Shane had already crossed the river, which was not the case. Several factors were not considered due to this assumption. Shane fell down a crag and died, most likely due to the heat.
With an example of a missing plane, it is further demonstrated how virtual search planning works.

Questions/Comments: None

File: 02-Virtual Search Planning MRA.pdf

Theo Maurer, ARS: Accident of a Rescuer in Action

Theo Maurer presents an operation in which a hiker got lost and called for help telephonically. Two mountain rescuers searched the hiking trail but didn't find anything. Due to bad weather, the search continued terrestrially instead of aerially. The area was forested. Around midnight two rescuers had contact with the hiker through shouting; however, they couldn't get to the hiker. The rescuers then proceeded to the agreed-upon meeting point. All of sudden, contact with one of the rescuers was lost and he didn't show up at the meeting point. It was assumed that he was trying to get to the hiker by himself. A search for the rescuer ensued in which he was found at the bottom of a rock face. He fell about 10 meters in the dark. The rescuer died of his injuries. The hiker was rescued. He had suffered no injuries.
This operation shows that there are risks even in seemingly harmless rescues. It is also important that the mountain rescuers are sufficiently insured. ARS offers good insurance coverage to their rescuers; this includes personal, property, and liability insurance.

Conclusion:
- No individual actions during rescues; not even when these seem to be simple rescues
- Mountain rescuers have to be sufficiently insured at all times

Comments:

Gebhard Barbisch: There is also forested terrain in his operational area. There was an accident with a rescuer. He postponed securing himself because he would have had to put down his rucksack and pull on the climbing harness. Now the harness is being worn from the start, facilitating securing, which encourages rescuers to secure themselves first.

Files: 03-ARS-Absturz-Bergretter-DE.pdf
03-ARS-Absturz-Bergretter-ENG.pdf

Sabin Cornoniu, SALVAMONT: The SALVAMONT Application

Sabin Cornoniu presents a new App. The collaboration with Vodafone began in 2004, at which time incoming emergency calls were also centralized. Romania adapted the 112 emergency call number. The App reached the market in 2012.
The App has two parts; one with touristy information and one for emergencies. Tourist information includes cabins, gondolas, and slope and weather conditions. The emergency part requires registration. Only through registration can Salvamont receive localizing data. An activated emergency call is sent to Salvamont which receives the location as well as the battery charge of the cell phone. There is also the capability to send data continuously if one is, for example, in a dangerous area. In order to get a location, the GPS inside the cell phone needs to be active. The emergency call is not only sent to the dispatch center but also to the local rescue teams as well as the rescuers' data carriers.
The App is being demonstrated.

Questions/Comments: None

Andrzey Gorka, GOPR: Method for Searching for Humans with Phone Apps

Andrzey Gorka demonstrates searching for missing persons with the help of the victims' cell phones; 98% of people going into the mountains carry a cell phone. We should be able to search for the cell phones as well. Three methods for searching for cell phones are shown. A cell phone always connects to the tower with the strongest signal. The Mountain Rescue Service has an agreement with the Polish police and receives the location of the tower that was last used by the victim's cell phone. However, the person has to officially be a missing person for the police to forward this information, which requires at least 24 hours. Unfortunately, that is also the timeframe after which the data is erased, which is a problem. Another problem is the coverage area in the mountains. The cell phones connect to towers that are much farther away, which requires triangulation for a location. An exact localization is impossible but the search area is being reduced. For this method one needs the cell phone number of the victim, the BTS data, a computer with internet connection and a web browser. GOPR developed its own website on which one can locate and follow the search helicopters and vehicles. In addition the receivers are also marked. The results are not always exact. All data needs to be further analyzed. The advantages of the system: A search area can be quickly defined. There are good contacts with the police and cell phone providers. Disadvantages: The search still has to be done the

traditional way. An agreement with the police is needed in order to receive the missing person's data. An exact localization is difficult.
Another search method is with GSM receivers with a direct antenna. The cell phone needs to be connected to a free net. One needs the phone number, the network data, and the BTS information. One of the BTS channels needs to be open onto which the signal is going to be switched. This has to be done by the cell phone providers, so tight cooperation is necessary. Advantages: Long range, efficient search, exact. Disadvantages: The cell phone needs a network, the device is relatively large, there needs to be an agreement with the providers.
The last method, which is independent of GSM network providers, is called Ghost Receiver Method. This device functions like an avalanche beacon. The range, however, is only 1 kilometer under perfect circumstances. Advantages: The phone's location can be exactly pinpointed, a search without a network is possible, search for people without knowing their phone number is possible, range can be set between 100 meters and 1 kilometer, no interference with cell phone networks. Disadvantages: Short range, heavy device, a permit is needed to use the frequencies (which have been issued).

This APP is being advertised on train tickets, for example. It is available on Google Play for iPhone as well as android.

Conclusion: The two search devices are still prototypes. The search needs to be fine tuned. Only triangulation can locate an inactive cell phone. Another hindrance is the required permits. None of the methods presented are optimal. Existing methods cannot be replaced. In many cases the search for the cell phone is the only possibility of locating the victim, i.e. when there is no avalanche beacon or the person is unconscious.

Questions/Comments:

> How expensive are the search devices?

The prices are not exactly known.

> In Austria the political parties are against such search methods due to data protection (right to privacy). Is that the case in Poland as well?

Only missing persons can be searched this way. The devices are not broadly used, only for a few cases each year. Lives have been saved with these methods.

File: 04-TOPR-GSM_en.pdf

The members of the Avalanche Rescue Commission join the meeting.

Jean Babtiste Estachy, PGHM Chamonix: Dramatical Avalanche at Mount Maudit

This accident is used to show how the operational command was organized.
The avalanche happened on July 12, 2012. Twenty-three alpinists were involved; 9 dead, 7 injured, and 7 in shock. Forty mountain rescuers were engaged in the operation for 11 hours straight. There were rescuers engaged in the operation on and

off the avalanche. Approximately 30 flights were conducted. The emergency call came in around 0525 hours. The first team arrived on scene at 0620 hours.
First the extent of the crisis needs to be assessed. Then a command and control structure has to be organized. Seven points that need attention:

- Command
- Control
- Reporting
- Communication
- Overview of victims
- Management of the avalanche area
- Medical care
- Cooperation with the authorities
- Legal aspects (which rucksack belongs to whom, which ropes were cut during the rescue)
- Public relations

At the end there is a debriefing.

On Mont Maudit the first time the situation could be truly assessed was around 0700 hours. All available means were engaged and the authorities informed. The visit of the minister was prepared. A crisis has many components. The operation itself lasted one day; however, the after-effects last much longer. The first mission is to save lives. This goal can, under no circumstances, be dropped. The debriefing showed that the rescuers had been called quickly and the cooperation between the organizations worked well and that not too many rescuers arrived on scene at the same time. The negative was that the authorities usurped the incident commander, helicopter flights could have been better coordinated, and the physicians had no incident commander in the valley.
This accident proves that avalanche beacons should also be carried in summer.

Questions/Comments:

How were the helicopters utilized?

This part didn't work well. Whenever multiple helicopters are being used for one operation, one pilot who is not flying should be coordinating the flights. He would be sort of the control tower. This did not work well. However, during the operation it worked relatively well because not many "outside" helicopters were involved and the pilots who knew each other coordinated their flights.

File: 05-Maudit PGHM Chamonix.pdf

Manuel Genswein, Fred Jarry: Slalom Probing

Manuel Genswein presents a study for the optimization of search methods using avalanche probes. Participants in the study were Manuel Genswein, Dominique Létang, Dale Atkins, Fred Jarry and Ingrid Reiweger. Avalanche probes still rescue lives; 13.2% from 2001/2002 through 2010/2011, which is roughly 1 in 8. The effectiveness of the method is measured by the number of holes made per rescuer per minute. In order to establish effectiveness, different studies were made. Evaluated were stepping forward, angle of the probe when probing, searching in front of or to the side of the rescuer, etc.

After analysis of the trials the following conclusions regarding effectiveness were reached:

- Set up of rescuers with extended arms in a line separated 150 cm.

- Search grid of 50 cm – 50 cm; probing as follows: 2 steps to the right, 1 step forward, 2 steps to the left, and 1 step forward.

Why more steps to the side than forward? Sidesteps are less time consuming and the 50 cm mark is better met.

Commands will be given from the middle. Advantage: The person who is giving orders is also searching; therefore the commands won't be too fast. The orders to be given are: Probe, right, right, forward, left, left, forward, right, right, etc.

Depth of probing:

1. Run 1.5 meters
2. Run 2.5 meters

When probing on an incline, it is better to probe at a 90-degree angle to the slope.

Fred Jarry details the practical field tests made. The goal was to collect data, comparing the new method with the current methods and to hear the opinions of the rescue teams. The tests were made in June 2012 on Col du Galibier in wet snow with two groups. The study tested the slalom method, the 1 step 2 holes method, and the 1 step 1 hole method. The results were combined and evaluated.

Questions/Comments:

> Gebhard Barbisch: When traveling in a group, it works that the probing leader is in the middle. In organized rescue, however, the probing leader also has other duties.

Manuel Genswein: That is correct; however, with few rescuers, it is favorable if the probing leader also probes.

File: 06-Slalom Probing-Genswein et al.pdf

Florian Austruy, GSM: Difficulties in Rescue Missions Due to Frozen Equipment

This past spring there was an evacuation mission of a skitourer at an altitude of about 6000 feet past 5 p.m. when it was already almost dark. A snow bridge collapsed and the victim fell into the water. The weather forecast was bad. The victim was not readily visible because she was in a hole. Therefore, a direct winch rescue was not possible. The second person tried to dig a hole with a shovel to free his partner. He was in shock and was unable to give concrete details regarding the incident. The woman was halfway in the water, had spinal injuries, and lost consciousness several times. The operation commander ascertained that it was impossible to prepare the victim at the rescue site for a flight. He decided to move the victim to a different location with a triangular cloth. However, the physician demanded that the victim

be relocated horizontally. The method had to be adapted. Eventually the victim was flown out in a stretcher.

The following problems occurred:
Ice developed on the connecting carabiners. They could not be opened anymore and the victim could not be separated from the rescuer once they were at the helicopter. The second rescuer had to cut his connection due to the frozen carabiners. How can we avoid the carabiners freezing? In this case the problems were the below freezing temperatures as well as the helicopter downwash.

Questions/Comments: None

File: 07-Frozen-Equipement-GSM.pdf

Manuel Genswein, Lukas Dürr: Standardization of Avalanche Rescue Curriculum

Lukas Dürr explains how the need came about to work out a universal avalanche rescue curriculum. In Switzerland there is a core training team whose goal it is to find a common language within the group. The member Seilbahnen Schweiz came up with the idea to work out a common avalanche rescue curriculum. The project was successfully completed in the fall of 2013. The program consists of 4 levels which are recorded on a board.

Joe Obad, Canadian Avalanche Association, who also collaborated on the curriculum states that all organizations that are part of an operation need to work off of the same standards. In Canada they had a standard for beginners and for experts but not for the intermediate group. Canada took the curriculum developed in Switzerland and adapted it for the Canadian rescue teams.

Manuel Genswein shows one of the boards. The boards had to be generic so that they could be adapted to the countries, the different teams involved, as well as the language (12 languages). The boards contain different aspects of rescue, including medical and command structure. The goal was to come up with a standardized solution which could then be passed on to the organizations who in turn could adapt it to their specific needs.

Dominique Létang states that this system was also adapted in France. The overall goal should be to have a standard on an international level. Dominique Létang suggest the formation of a work group to etch out an international standard and to improve the product. The names of the participants who are interested in this project are taken down and the work group is formed.

Questions/Comments: None

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End of Meeting: 5:20 p.m.