



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 of the Terrestrial Rescue Commission

Place: Krynica, Poland, Hotel Czarny Potok
Date: October 4, 2012
Time: 9:30 a.m.
Participants: Members of the Terrestrial Rescue Commission
Chairmen: Bruno Jelk and Gebhard Barbisch
Minutes: Fabienne Jelk

Peter Veider, OeBRD: Certification of Dyneema

Reflection on Dyneema. The system was introduced in Pontresina. It took 7 years to certify the system. It is important that the experiences of the past years are processed and the system improved. The complete systems were certified by the TÜV (technical inspection agency) in Vienna (A). All documentation was put together in a book. The topic of Dyneema in mountain rescue therefore ends. There are only 2 systems; team roping system and team pulley system. A quality improvement was introduced this year or last year. Spliceable ropes are preloaded by the manufacturer with 1000 kilograms. The problem was that the splice came slightly out when putting on the load as well as when lightening the load. The splice is additionally secured with heat shrink tubing.

„Tirol Rock Edition“: All accidents are analyzed. Mountaineering has boomed in the last few years. People can climb well but do not know how to safely come down again when climbing more than one rope length. There was a project with Gleistein Ropes. The „Tirol Rock Edition“ contains all slings necessary to ascend as well as descend. All slings are made of Dyneema and spliced; one sling is made of Aramid. Here the Prusik knot was replaced.

Questions/Remarks:

Bruno Jelk: This is a new technique that will take hold. However, it will require training since there is a danger of the common technique being mixed with this new technique.

Veider: There is a training requirement. No mountain rescuer is allowed to work with these ropes without going through a 3-day training. The Polish colleagues have completed this training.

Bruno Jelk: Which devices are used for rappelling? Dyneema is much more slippery than normal kernmantle rope.

Veider: Normal ropes are used for rappelling. If need be the Reverso and Prusik sling can be used to rappel. Rappelling is principally not trained.

Bruno Jelk: Are knots a problem?

Veider: There are knots one can use. Butterfly and clove hitch hold, but since the material is slippery, it is primarily not recommended to make knots. However, this issue is being addressed.

Hans-Martin Henny: Sliding causes great warmth and Dyneema ropes are sensitive to that. This is inconsistent with the above.

Veider: The sliding stops. Warmth is not the problem; the melting temperature of Dyneema is 140 degrees. The first heat marks start showing at 70 degrees. Gleistein makes a rope which is thermally treated and holds 7000 kilograms.

Hans-Martin Henny: There is still a great deal of uncertainty regarding Dyneema.

Veider: Each year we gain more knowledge and all experiences so far have been positive.

Herbert Streibel: What working load was the basis for the certification?

Veider: The systems are designed for 3 people.

Regarding the replacement knot for the Prusik: What is the knot efficiency with Dyneema?

Veider: The knot has to be twined around four times.

How durable are Dyneema ropes? When do you start replacing the ropes?

Veider: Last year a rope used in the Himalayans was tested. It broke at 3800 kilograms. The ropes used yesterday can hold at least 4500 kilograms. When the ropes optically look bad, they are discarded and tested. So far they have not had any values below 3800 kilograms.

Bruno Jelk: Is there a manufacturer's indication regarding lifespan of the ropes?

Veider: 10 years.

In Bavaria 3000 rescuers were introduced to the Dyneema technique. Tests were done. Optically one can not discern whether the ropes are good or bad. The ropes from yesterday were still good.

Veider: When one strand frays, the rope is discarded. There is no problem with abrasion fuzz; the longer the ropes are being used, the better the handling.

Kirk Mauthner: Regarding backup, the knot replacing the Prusik goes around 2 ropes. If you lose one rope, there is no hold left.

Veider: Normally people do not lose a rope, but there is room for improvement.

Ulrich Schwingshackl: Can you knot the rope?

Veider: We only recommend hanging in with splice. The rope is not suitable for mountain guides, but it is nevertheless being used. Mountain guides use a butterfly or a clove hitch.

Herbert Streibel: The strength is reduced by 25%.

Bruno Jelk: Dyneema has had positive development. If organizations want to use Dyneema, then they need to train their rescuers.

Files:

01-Veider-BR_Rettungstechniken_Veider.pdf

02-Veider-BR_Rettungstechniken_polnisch_no print data.pdf

03-Veider-BR_Faszination Klettern_2.Auflage.pdf



International Commission for Alpine Rescue ICAR
Terrestrial Rescue Commission
Avalanche Rescue Commission



Presentations of the Terrestrial and Avalanche Rescue Commissions

Jacek Jawien: Manaslu Avalanche 09/23/2012

Jecek Jawien returned a few days ago from the Manaslu expedition. Many mountain climbers were on Manaslu because China had closed the border; therefore, 25 expeditions were undertaken, a lot of people in a small area. Spring on Manaslu is dangerous; fall is better. A few days before the accident everything looked safe; the glacier was basically snowless. There were 200 people present. After a nice-weather period, there came a bad-weather period with snow and rain. After one or two nights there was minimal snowfall, and the alpinists felt safe. The snow pack in Camp 1 was not very deep. After the bad-weather period the weather was nice again and the climbers went to the highest possible area. Camp 3 consisted of 20-25 tents and many Sherpas as well as experienced and non-experienced mountaineers. The avalanche was triggered by a massive serac that broke loose on a high ridge. No one knows how big the serac was that caused the avalanche. The avalanche took 30-35 people with it. Camp 3 got completely covered and Camp 2 partially. Many mountaineers fell down crevasses; some could not free themselves. The dimensions of the avalanche were enormous. At first there was no professional help available; the call for help was made about half an hour after the avalanche had come down. The avalanche was triggered at 5 a.m. The first helicopters arrived between 8:00 and 8:30 a.m. There were few signs of an avalanche before this happened and the weather was good. A meeting was held with the Sherpas after the avalanche to decide whether or not to climb up to the avalanche. They decided to send a group of experts. The helicopter rescue was done by a local Nepalese company, Simrik Air. The people in charge of this company first asked who was going to pay them before they flew out. The rest of the organization was just as difficult since the helicopters were all stationed in different places far away from the avalanche. Himalaya needs a professionally organized helicopter rescue.

Questions/Remarks:

Bruno Jelk: Currently, they only fly in Nepal if someone pays. There are ongoing efforts to change this situation. This is a political problem and not a technical one.

Peter Veider: All expedition participants are insured and the rescues are paid for. The helicopter companies should be informed about this.

Bruno Jelk: That is true, but the companies want this in writing. In addition, incoming calls are being answered randomly at the company; there is no centralized office. They are also working on that.

Peter Veider: How many people carried avalanche beacons?

Jawien: There was a group of ski alpinists who carried avalanche beacons. However, there are surely less than 1% of alpinists in the Himalayans that carry an avalanche beacon. Most likely no one had one. Many had probes; however, not for an avalanche rescue but for testing the snow pack.

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Klaus Opperer, Bergwacht Bayern: Knowledge Management 2.0 in Mountain Rescue

2.0 means digital. Offered is the Learnbox App. This is not a home page or software but an application. An application enables interaction and communication. Nowadays almost everyone has a smartphone. In today's world a solution needs to be simple, compatible and up-to-date; able to be reached anywhere; multimedia needs to be tied in; one has to be able to communicate and search. Members of the Bavarian Mountain Rescue can retrieve different information via the internet, i.e. information about rescue with Dyneema. They can also ask questions. The feedback has been positive. One cannot become a mountain rescuer by using digital media, one does need practical training. The instructors, however, say that the trainees use the App to prepare and it is noticeable. For example, at ICAR congresses information is being exchanged, but it would be ideal if information was exchanged all year round.

Questions/Remarks:

There is one problem if only digital media is being used; there is not always internet coverage in the mountains. If one carries a book, it can also be used in the mountains. Is there a solution?

Opperer: Nowadays the internet can be accessed almost anywhere. The online version, which is always up-to-date, can be copied as a PDF document and printed. In a few years it could possibly also be used as an offline version.

Marcel Meier, ARS: Doctrine for Using Search Dogs When Searching for Missing Persons

Optimally the deployment should occur shortly after being notified of a missing person, suboptimal would be 1-2 days later, bad if no canine unit is being deployed. Important is information as to person, missing since, marital status, where did he/she/they intend to go, equipment, clothing. The topography has to be taken into consideration; alpine, pre-alpine, open, trails/roads. Is it a day or night search? Phone calls received, for example from cabins, have to be relayed. What other means are available for the search? Helicopter, fire department, bloodhounds, police dogs. The terrain search dog is an effective means and inexpensive. It can be used for trail and field search. Certain basic principles have to be followed. The dog handlers need exact instructions on where to search, from here to there. Big areas can be searched in a short amount of time. At nighttime only a trail search is possible. When searching the field, 6-7 teams can cover a huge area. The dog handlers also need background information, for example good bye letters in case of suicidal intentions which could indicate a location. A local rescuer who knows the area always has to be present. The search methods of each day have to be noted on a map, and then the data needs to be transferred into GPS. Means of communication need to be announced. No outdated maps can be used. In case of a search over several days, the dogs are used every other day.

There have been great improvements in the training of search dogs in the past years. Searching for missing persons without search dogs is unimaginable today. The training is intensive and takes at least 3 years. This training is documented in the handbook Alpine Rescue Switzerland.

Questions/Remarks:

Dominique Létang: What does the technical test consist of?

First the team has to do a trail search and then a field search. A certain amount of people and backpacks have to be found. Additional factors are the finding, the pointing, and the search time. There is only a yes or no and 2 of the 3 factors have to be fulfilled. Then there is an alpine test (rappelling), a medical test, and a theoretical test.

Bruno Jelk: The problem is that search dogs, whether they are police dogs or rescue dogs, are most often called in too late.

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05-Doktrin-Geländesuchhunde.pdf

Dan Hourihan, MRA: Virtual Search Planning

Introduces the concept of virtual search planning (VSP, Virtual Search Planning). When a person goes missing, the different behavioral patterns as well as the terrain are being looked at. Facts that are available in the beginning are analyzed. Previous searches are looked at again. There is always chaos in the beginning; not enough information and also sometimes inaccurate information. Based on this information a plan is being devised for the search. Information has to be collected and updated constantly. The search for a missing person is like solving a crime.

Example: Shane, 16 years of age, was missing in Las Vegas. He was enthusiastic about extreme hiking. His plan was to leave his home in Henderson, swim across the Colorado River, and then go on to the Hoover Dam. His mom was supposed to pick him up there. He left as planned, sent a text message to his mom at 7 p.m. stating that he could see the river and that he still needed to climb down the crag. Shane did not show up at the prearranged pick-up spot. Three days later Dan Hourihan's organization heard of the search on TV and inquired about the situation. Using Google Earth Hourihan's team found the most logical route Shane would have taken. They also found the place at which Shane would have seen the river for the first time. Within 40 minutes of making contact with the search organization, this information was transmitted to the search teams in the field. The next day this area was searched and Shane was found dead. Cause of death was unknown. The search had initially started on the other side of the river in Arizona due to the misconception that Shane had crossed the river after his text message to his mom.

This shows that search planning is very relevant. One has to take into consideration, though, that only a little information is available and that this information could be wrong. A certain amount of experience helps to analyze information. In case of Shane, the text message he sent to his mom was not analyzed as to time, daylight etc. Analyzing information needs to be done away from the center of operations. Google Earth or other means that visualize in terrain in detail should be used. Google Earth Pro is an excellent means since one can simulate a flight. Possibility zones need to be established.

Second case: Missing person in Nevada. It was an assumed suicide. The car had been found. It was further assumed that the missing person would be close to the car. The man, who had shot himself, was found 300 meters from his vehicle.

The virtual search planning client is the operations leader. The result of the search planning can be transmitted electronically to the operations center. The advantage is that the planners are not immersed in the whole search and can analyze in a more detached manner. The report given to the operations center needs to be clear, concise, and easily understandable.

Questions/Remarks:

Would your analysis have come up with the same result if there had not been a 3-day search on the Arizona side?

Hourihan: We would have looked at the facts the same way and indicated the same place where he was eventually found. Shane could not have swum across the river because it was already dark.

Why is it called *virtual* search planning?

Hourihan: Because we are not on location. The terrain is being looked at digitally. This, for us, is virtual.

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06-MRA Hourihan IKAR 2012.pdf

Sabin Cornoiu, Romania: Mountain Rescuer – Profession, Qualification, Certification

In 1996 the organization of mountain rescue in Romania was regulated by law. Mountain rescuer as a profession was officially recognized. The training of mountain rescuers is done by the national association of mountain rescuers. Rescuers have to be physically fit and able to ski, able to deal with stress and have analytical ability. There are three different programs that lead to the certification as mountain rescuer; a total of about 300 hours. There are 5 topics: Material, technique, organization, protective laws/standards, and first aid. At the end of the course the participant receives a certificate of competence.

Questions/Remarks:

Must candidates undergo a physical exam by a physician?

Cornoiu: Yes. Candidates have to be healthy and cannot have a criminal record. This is being done in a special clinic.

How many mountain rescuers do you have?

Cornoiu: More than 1000 rescuers are employed in Romania. This specific training program has been in place for about 3 years. Three hundred people have been trained. They also have to go through refresher courses.

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07-Cornoiu-Prezentare 2012 cisa Romania.pdf

Andres Bardill, ARS: Searching for People and Adequate Use of Resources

Remark to Klaus Opperer's presentation: We also need printed training material. Search operations are becoming more important. Different factors have to be analyzed individually: The missing person report, timeline, environmental circumstances, and available resources for the search.

Example Alp Siegl: REGA, No 1414, was notified by a woman who stated that she was hurt. The rescue specialist was called in for a regular mountain rescue operation on April 29, 2011 at 5 p.m. The problem was that it was very windy that day and it was also the day of Landsgemeinde (one of the biggest holidays). The rescue team was in "party mode". They assumed a short rescue operation. At first they still had contact with the patient by cell phone but then lost that contact. The first flight was unsuccessful. Finally the following means were deployed: Search dog, search team, REGA helicopter, police bloodhounds, IMSI-Catcher, GPS and radio relays. The police were in charge of the search. They also used maps and defined a primary search area. The woman had stated that she could see a lake. IMSI-Catcher was unsuccessful. The approximate location of the woman was traced through the provider. On May 2 at noon the woman was found alive. The patient was wearing grey clothing and was lying motionless next to a creek. She was barely visible.

Lessons to be learned:

This operation cost about CHF 250'000.--. They wanted to implement guidelines for incidents like this for rescuers, but especially for the operations leader so that there would not be any blame whether or not too many or too few resources were used. This was done in the new training manual.

Questions/Remarks:

How is the cooperation between rescuers and police?

Bardill: The cooperation is excellent. The police are the client for alpine rescue operations. The police can delegate this.

Who receives the alarm?

Bardill: That depends; police, REGA, 144. This is a sensitive topic for the future.

Bruno Jelk: Sometimes the notification stays with the police too long. There was a case in Switzerland where a 16-year-old was missing in Zermatt. The parents notified the police after their son had not returned in 2 days. The police did not directly relay this information to the rescuers.

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08-Bardil-Suchaktionen-Ressourceneinsatz-d.pdf

08-Bardil-Search-Operations-Ressources-e.pdf

Marec Biskupic, Slovakia: Three Different Types of Avalanche Balloons – A Pilot Study

Three different types of avalanche balloons and the effects of their shapes in the snow. They react differently in snow. There are big trees that stay on top of the avalanche and small trees that go under. There have been different tests with dummies. With the last test in 2011 there was evidence that dummies with airbags are less likely to be buried than dummies without airbags. It was proven that airbags work. So now they wanted to know how the form of the airbag affects the behavior. Chosen were 3 forms: Dual-bag, mono-bag, collar type (Mammut Lifebag Guide 30, BCA Float 18, ABS Vario 25). These were put on dummies with the weight of a human and an avalanche was triggered artificially. A film is shown that documents this. The avalanche had a volume of 280 m³ of snow, fracture height 1.5 meters, length 130 meters, width 30 meters. The maximal pressure was 125 kPa. All three dummies remained visible. The dummy with the ABS was only partially buried; the respiratory passages were partially closed. The dummy with the Mammut was partially buried but the respiratory tract was free. The dummy with the BCA was not buried but most likely the legs would have been broken. The dummies were not in the same location at the top nor at the bottom. The acceleration was different. The first dummy that stopped was not buried. No dummy was critically buried. All airbags were visible. The dummy that traveled the farthest was buried the most. This study is limited since it only applies to this specific trial. There was also a question on whether the form could still be improved. This is also a question to the manufacturers. There is no current study addressing this. More information is needed. If you have any, you can forward it to pascal@avisualanche.ca.

Questions/Remarks:

Felix Meier: Why did you only take 3 dummies and not more?

Biskupic: We were aware of the fact that this study would be limited. More tests with backpacks and dummies need to be undertaken.

How was the snow quality and snow pack?

There was fresh snow but there was also older snow on the slope. There were different types of snow, dry to wet.

Manuel Genswein: At ISSW 2012 a study was introduced by a commercial detonation company which did approximately 100 trials with avalanche balloon systems for different manufacturers. Their qualitative finding was that most dummies with balloons quickly moved to the edge and stop in roughly 2/3 of the avalanche chute.

Dominique Létang: Was this information relayed to the manufacturers?

Biskupic: The results were forwarded to the manufacturers. The reactions were okay.

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Theo Maurer, ARS: Problems in Training and Operations with Avalanche Beacons – Assuring that Devices are Switched Back to Send Mode after Searching

A spontaneous avalanche came down on Hasliberg (Switzerland) on January 26, 2012. The snow pack slid directly off the unfrozen ground. A ski path was buried. A woman was carried with it for about 20 meters. Her husband was able to get her back on the slope. Rescue teams were called in to search the avalanche for other skiers. By the time the rescue team arrived on location there were already about 20 people (ski patrol and skiers) on the run out. The search continued with avalanche dogs and probing teams. There was a great risk of secondary avalanches. In order to reduce this risk a spotter was posted who was supposed to warn the rescuers. In addition, good escape routes were made with the groomer. Finally the search was ended with avalanche beacons. At that point the rescuers would have had to switch their devices back to send; this order should have been given. The witness statements were contradictory. Some stated there had been other skiers; others said there had been none. The search was suspended after an hour; the danger of another avalanche was too great. There was only one person still on the avalanche run out when the secondary avalanche came down. The person was able to rescue himself. After that the search was ended completely.

This example is to show that an operations leader has to make many decisions in a short amount of time. Therefore, the technical devices being used should be as simple as possible so that one's head is free for other things. There are many different types of avalanche beacons on the market today. There is no standardized testing for these devices. This variety poses problems. One also has to have the ability to turn off devices that are being found which one is not familiar with. The fact that every year new devices are being marketed unsettles the rescuers as well. An amateur rescuer will need about 3 years to use the device correctly in stress situations. That's why the devices should be as simple and uniform as possible.

Summary:

1. Standardized testing would make a comparison between the devices easier.
2. Simpler devices would make use easier and would benefit the victims.
3. After a search is over, the device needs to be switched back to send.

The new teaching aid is introduced. Organized rescue is also explained in this book.

Questions/Remarks:

Had preventative avalanches been triggered that day?

Maurer: Shortly before 8 a.m. an avalanche detonation was carried out from a helicopter at 4 points without success.

Did the searchers know about the danger of secondary avalanches?

Maurer: Yes.

Why did the searchers not wear avalanche beacons and airbags?

Maurer: Skiers already present at the time of the avalanche are quicker on location than the rescue team. The operations leader arrives later. One has to decide whether to keep searching with the people already involved in the search or to have them quit. In this case it was decided to have them keep searching.

Bruno Jelk: Equipping rescuers with airbags is a problem; just the amount needed. Additionally, a person with an airbag who is digging in a hole on the run out will be buried in a secondary avalanche. Regarding the avalanche beacons, I agree. The devices need to be simple and uniform.

Gebhard Barbisch: Avalanche rescue in ski areas involves 2 different groups of rescuers. Professional rescuers are controllable; others, like ski instructors, are not. However, the noncontrollable rescuers can also be successful.

Dominique Létang: There have been tests last year to evaluate avalanche beacons. The results will be heard in the next presentation.

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10-Maurer-Vielfalt-LVS-Geräte_d.pdf

10-Maurer-wide-variety-Avalanche-Recue-Beacon-E.pdf

Frédéric Janry, ANENA, Manuel Genswein: Effectiveness of Transceivers When Searching Multiple Buried Persons

Frédéric Janry: The goal of the testing was to show the effectiveness of an avalanche beacon in case of several buried persons. Three user groups were tested; inexperienced user, people who had experience using avalanche beacons, and professional rescuers. These were quantitative tests. A multiple-burial scenario was chosen because it is common and new devices do have this function. There were 2 tests, one in Davos (CH) and one on Col du Lautarat (F). In Davos the test persons were beginners. The following devices were tested: ARVA Axis, Mammüt Element, Barryvox, Ortovox 3+, Pieps DSP Tour and Tracker 2. The manufacturers trained the users for 2 hours. In France the test persons were experienced users. They were instructors and other rescue professionals. The following devices were tested: ARVA Link, Mammüt Pulse, Barryvox, Ortovox S1+ and Pieps DSP. In Davos the field was 40-50 meters and in France 100 meters. In both tests the burial depth was 1 meter.

Test Davos: The test device was always found within 2 minutes. Finding the second device showed different results. With ARVA Axis 18 people did not find the third device. With Pieps DSP 23 people did not find the third device. In France the differences were smaller. The third and fourth devices were mostly found.

Manuel Genswein: Analysis of the results. In many cases in Davos the third victim was not found. That was primarily because neither the devices nor the minimally trained rescuers could recognize the situation. One of the problems is signal separation. In order to differentiate between signals, different tones can be used. Differences in time axis, frequency, signal strength as well as phase shift can be used as criteria. There are cases where signal differentiation does not reliably work. The experienced participants of the test in France had the opportunity to recognize these situations and to successfully apply the necessary search-tactical procedure. Only due to this fact were very few beacons not found in France as opposed to the comparatively large failure rate in Davos.

Questions/Remarks:

Hans-Martin Henny: It is very good that everyone found the first device and many found the second one. It is great that almost all devices were found at the same time in France.

How often did the professionals in France have to use backup strategies?

Genswein: That depended on the situation and the digital algorithms. This happened when the signals overlapped for a long time.

There were similar tests in Canada and the results were similar as well.

Could the W-Link be tested?

Genswein: No. The test was designed to be generic, so the W-Link data was not used as criteria.

Dominique Létang: Regarding Hans-Martin Henny's comments; the test results, to me, are not quite satisfying. For the mountain rescuers the test results were very good; however, the results of the mountain guides were disappointing. Nothing is learned forever.

Toni Grab: It is good to give this kind of attention to avalanche beacons. However, an avalanche can be compared to having diarrhea; what good does it do to have good soap to wash your pants with? What happens before an avalanche needs to be addressed more and get more attention. Also airbags and prevention need more attention.

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End of Meeting: 6 p.m.

For the English Translation: Olivia A. Cashner