International Commission for Alpine Rescue
Avalanche Rescue and Terrestrial Rescue Commissions
Minutes of the combined Commission Meetings during the Conference in Pontresina on October 18 – 20, 2007

Friday, October 19

- **New National Standard for Organized Avalanche Rescue in Norway – Albert Lunde (N)**
  Albert reports on the development of a national avalanche rescue standard in Norway. The main challenges in Norway are the topography and the great distances. A national standard increases the rescue efficiency. Organizations involved include rescue dogs, the Red Cross, civil defense, the army, mountain rescue, the police, emergency medical services, ski patrol, and rescue helicopters. The resources are divided into three categories: air rescue, avalanche rescue, and other rescue services. The standard was developed by consensus.
  File:09-Lunde-Standards-Norway.pdf

- **The Importance of Organized Rescue - Dale Atkins (USA)**
  Dale makes a case for organized rescue. Since the mid '70s avalanche awareness educators have been focusing on the importance of companion rescue and almost ignoring organized rescue. This attitude is no longer appropriate. Thanks to increasingly rapid notification with cell phones, a greater density of rescue resources, greater mobility with helicopters, and better technology, organized rescue can contribute to a more favorable outcome in avalanche accidents. Given the fact that a fair number of backcountry avalanche accidents still occur relatively close to developed areas and that organized rescue has appropriate training and equipment to provide medical care, the importance of organized rescue must be reinforced in avalanche education.
  File:10-Atkins-org-rettung.pdf

- **Pieps – the Digital Revolution – Markus Eck (A)**
  Markus presents Pieps' avalanche transceiver technology. He gives an overview of Pieps' history including the launch of the first transceiver with three antennas and digital signal processing (DSP) in 2003. Pieps postulates that a largest possible search strip width be used during the primary search phase and that rotating a transceiver in all three axes should be eliminated. The declaration of the digital range, and by extension of the search strip width, must be made using the worst relative antenna orientation. The range must be consistent across the entire bandwidth of 457 kHz +- 80 Hz . Increases in range would be possible if the standardized bandwidth tolerance would be reduced. Three-antenna devices are state-of-the-art. A minimum range for the Z-antenna should be included in the standard. The signal separation and marking (suppression) of signals in multiple burials are subject to physical limitations. Improvements will only be possible if the standard defines maximum bandwidth tolerances, maximum pulse durations, and minimum pulse rates.
  File:11-Ecks-Pieps.pdf

- **Stategic Shoveling: the Next Frontier in Companion Rescue – Dale Atkins (USA)**
  Dale Atkins explains that strategic shoveling is necessary in companion rescue to save precious time and create sufficient space for patient care. The following method was established in a series of experiments in Colorado in 2006. Using this method, the probe pole is left in place to indicate the exact location and burial depth of the victim. Initially a starter hole is dug out downhill of the probe pole. It should be 1.5 times as long as the burial depth and about 1.25 m or an arms' length wide. These dimensions result in an angle of about 30 degrees from the victim to the snow surface and increase the probability of exposing the head of the victim quickly. Initially digging is performed in a kneeling position to spare the back and the snow is thrown out to the sides. Ideally, snow is cut out and removed in blocks. As soon as the hole is waist-deep, the snow is thrown downhill. At this point, digging continues at half the distance to the probe pole.

  Excavating a buried victim is the most time-consuming and most strenuous part of companion rescue. Efficient shoveling requires a strategy, physical fitness, and technique. Digging should be incorporated into companion rescue training.
  File:12-shovel-edge-atkins.pdf

- **The V-shaped Conveyor Belt for a Rapid and Gentle Excavation of an Avalanche Victim – Manuel Genswein (CH)**
  Manuel proposes a v-shaped conveyor-belt method to quickly and gently dig out a buried avalanche victim. With this method as well, the probe pole is left in place to indicate the exact location and burial depth of the victim. The hole is dug in the shape of a V pointing toward the buried victim, as his or her spatial orientation is yet unknown. In flat terrain, digging is started two burial depths downhill of the probe pole; on a slope, one burial depth down hill of the probe pole. On the downhill side, the hole should be at least one burial depth wide. These dimensions ensure that the angle of the downhill side of the hole is never more than 25 degrees. One rescuer digs in front. The remaining rescuers are staggered below at two shovel lengths' distance in the shape of a V, thus creating a central channel through which the snow is removed. The rescuers rotate positions clockwise every 4 minutes and continue digging until they make contact with the victim. Afterwards, 3 rescuers dig laterally in order to expose the head and airway as quickly as possible. Using this method, digging on one's knees and digging steps should be avoided, among other things.
  File:13-Genswein-Shovelstrategie-E.pdf
  File:13-Genswein-Schaufelstrategie-D.pdf

- **The Opportunity for Manufacturers to Solve 100% of the Multiple Burial Scenarios – Patrick Giraudan (F)**
  Patrick makes suggestions on how transceiver manufacturers could come closer to solving multiple burial situations reliably. Multiple burial situations pose challenges with regard to signal reception / separation, signal marking / suppression, and ethical issues. Each manufacturer uses different send / receive bandwidths and signal strengths. Patrick proposes a closer collaboration between manufacturers. Pulse duration and pulse rate should be standardized. The transmit bandwidth should be reduced to 457 kHz +- 20 Hz and the receive bandwidth to 457 kHz +- 80 Hz, respectively. Both should be standardized as

well.
File:14-Giraudon-Mehrfachverschuettung.pdf

- **Next-Generation Search with Visual Display and Digital Signal Separation - Franz Kröll (D)**
  Franz introduces the Ortovox S1. This three-antenna device with digital signal processing features a new map-like visual display of avalanche burials. Buried victims are shown in their relative position to each other. They can be located individually using a crosshair and subsequently marked. The device offers additional features such as a compass and an inclinometer. Franz confirms that modern transceivers must be capable of solving multiple burial scenarios. He points out that despite the reduction of the standard transmit bandwidth to +- 80 Hz, the numerous users of devices that were compliant with the previous standard of +- 100 Hz [like the F1] should not be neglected or discriminated. Franz also opposes the “intelligent transmitter” [of Pieps]. He points out that this feature negatively affects the signal separation algorithms of all manufacturers.
  More Infos at www.ortovox.com
  File: 15-Kroell-Ortovox-S1.pdf

- **The Avalanche Ball – the Lifesaver with the Speed of Lightning - Daniela Vernier und Herbert Fournier (A)**
  The two present a video of the avalanche ball. The system consists of a spring-loaded floatation device (ball) on a 6 m cord, which in case of an avalanche is triggered using a rip cord. In the event of a burial, the ball remains visible on the surface. The system is worn on a hip belt or in a special fanny pack and can be re-used indefinitely after easy repacking.
  More Infos at www.lawinenball.at

- **The New Life Bag from Snowpulse - Yan Berchten (CH)**
  Yan demonstrates a new avalanche airbag product, the Life Bag from SnowPulse. The Snowpulse Life Bag is triggered with a rip cord. The 150 l airbag inflates completely with air within 3 seconds. The cartridge contains compressed air and can be refilled by the user with the supplied adapter. The airbag is designed to protect the head, neck, and torso of a victim and to ensure a preferably upright burial position. Over time, the airbag shall automatically deflate thereby creating an even larger air pocket. The Life Bag is built into a backpack.
  More Infos at http://www.snowpulse.ch/v3/de/index.php
  File: 16-Berchten-Snowpulse.pdf

- **Signal Strength vs. Signal Timing - Dr. Thomas Lund (USA)**
  Tom reports on the results of a computer simulation to determine the probability of signal overlap with multiple burials. The pulse duration and the pulse rate of different transceiver brands served as the input for the simulation. To create statistical data on signal overlap, configurations of 24 Trackers, 24 F1s, and 24 mixed-brand devices were used. The simulations showed that signal overlaps of 10-15 minutes in over 10% of the scenarios involving four transceivers were absolutely possible, depending on the brand mix. With more than four transceivers, it is even possible to obtain indefinite signal overlap.

Tom therefore points out, that although digital signal separation and marking technologies may expedite a rescue effort under favorable conditions, these features still have limited capabilities. Using today's transceivers with digital signal separation, it can still occur that the number of signals indicated exceeds the actual number of victims, that the marking of a signal suppresses another signal thus making this victim undiscoverable, or that marked/suppressed signals suddenly show up again as new victims. Rescuers should therefore always practice and master analog search methods, such as the three-circle method or the micro-search-strip search. Some devices allow switching from digital to analog, which disables the signal separation.

The study can be viewed at http://backcountryaccess.com/english/research/documents/SignalOverlapPaper_001.pdf.
File: 17-Lund-signal-overlap.pdf and 17-Lund-signal-overlap.wmv

- **Rescue Operations in Mixed Avalanches/Landslides - Mats Hjelle (N)**
  Mats discusses the necessity of an improved preparation for rescue missions in combinations of avalanches and landslides. Such natural disasters are occurring more frequently with global climate change. The special challenges with these disasters include the coordination of all agencies and organizations involved, the training of all the rescuers, and the chain of command during the incident.
  File: 18-Jeller-Matts-Climate-Change.pdf

- **Use of GPS Receivers in K-9 Searches - Axel Budde (CH)**
  Axel talks about the practical use of GPS receivers on searches with search dogs. Exercises during the dog handler gathering as well as rescue missions in Switzerland lead Axel to the conviction that GPS receivers can provide very useful information about the coverage of a search area by a dog team, especially if the GPS receiver is attached to the dog's harness/vest instead of carried by the handler. Axel further recommends the increased use of RECCO reflectors and 457 kHz transmitters for avalanche rescue dogs.

Saturday, October 20, Avalanche Rescue and Terrestrial Rescue Commissions, in part time Medcom and Air Rescue commissions in addition

- **Local and Remote Triage Criteria in Avalanche Rescue – Manuel Genswein (CH)**
  After explaining the motivation for his presentation, Manuel talks about triage, measures to optimize avalanche rescue, sensor technology to detect vital data, MEMS: Micro-Electro-Mechanical System, as well as the field tests regarding vital data detection and their results.

  Question: What is your position on the ethical question whether people should be triaged using a chip?
  Answer: The device is still in development, but if significant advantages can be achieved in the triage, the development should be continued further and it is ethical to do so.
  Question: In reality, an Incident Commander will probably not conduct triage based on such a device?
  Answer: This kind of triage is not yet established in rescue. However, physicians have defined the triage criteria, and when its use is more widespread, its advantages will become more evident.

- **Snake Bites – Jeff Boyd**
  To begin, Jeff mentions that a paper titled “Wilderness & Environmental Medicine” has been published a few weeks ago. He introduces different snake species and talks about the venomousness of these animals and its consequences, as well as about prevention and First Aid.

  Question: Do all snake bites involve envenomation?
  Answer: No, there are also so-called dry bites.
  File: 20-Boyd-Snakebite.pdf

- **Basic Life Support Ventilation in Mountain Rescue – Peter Paal**
  Ventilation during Basic Life Support and how best to protect against infection. Methods and equipment are presented with their pros and cons.

  Question: Which kind of resuscitation with which equipment would you recommend? Answer: This question hasn’t been answered in detail to date. If mouth-to-mouth, mouth-to-mask, or other methods are not possible, then at least efficient compressions should be performed. If ventilations are performed, chest rise should be observed with each ventilation.

- **The Doctor’s Rucksack: What’s Useful and What’s Waste? - Oliver Reisten**
  A year ago, the idea came up to compare and discuss the medical packs of the different organizations and to offer the lists to organizations that are in the process of assembling their packs.

- **Case report: Full Recovery of an Avalanche Victim with Severe Hypothermia – Hermann Brugger**
  Using an impressive case study, it was made clear that a severely hypothermic avalanche victim with ventricular fibrillation and the presence of an air pocket should not be pronounced dead before he or she is connected to a heart-lung machine (cardiopulmonary bypass pump).
  A second case, a rockslide in the Dolomites, which occurred just a few days back, reminds us that all rescuers must be secured to the extent possible under the circumstances. Near misses provide food for thought.

An evaluation form for the ICAR Conference is handed out. Each organization is asked to return a completed form.

- **Multiple Burial Study - Dieter Stopper**
  Analyzing a series of avalanche incidents, Dieter studied how many people were fully or partially buried and how often a transceiver was actually needed to locate the victims. He notes that eye witness information given on scene by rescuers often doesn't match the information captured in the accident reports. In conclusion, he suggests that this is another reason why rescuers should focus more on shoveling and shoveling strategies.

  Question: We have heard presentations that describe the problems over signal overlap in multiple burials. Why this contradiction?
  Answer: It is not a contraction. These are two different possible situations.
  Question: Why is a new ultra light shovel, which is not suitable for rescue work, being exhibited and promoted here at the ICAR Conference?
  Answer: I am not a shovel expert; maybe a study on shovels would be appropriate.
  Question: Were the rescuers in these examples trained rescuers?
  Answer: Some yes, others not.
  File: 24-Stopper-Mehrfachverschuettung.pdf

- **Decision Making and Risk/Benefit Analyses in Avalanche Rescue Operations? - Krister Kristensen**
  He points out that no rescue mission should be carried out without first determining the risk for rescuers, whether this is done using checklists or other procedures. They have tried to develop a risk/benefit analysis formula in a workgroup, but have not completed the work yet.

  Question: How do you foresee practical decisions being made for the alpine world from a paper-laden desk?
  Answer: This fact will be inevitable in the future and should be optimized as far as possible. Management increasingly often asks for justifications, and the fact is that too many rescuers have lost their lives to date.
  File: 25-Kristensen-Risk-Benefit.pdf

Toni Grab welcomes the honorary member Dr. Flora and seine Frau who have kindly decided to stop by and visit. Colonel Franz Nager, Commander of the Mountain Troop Competence Center of the Swiss Army is also welcomed.

- **ICAR Web site - Gebhard Barbisch**
  Gebhard presents new features of and modifications to the IKAR web site.
  Forum
  A new forum platform is being provided for internal use only in order to prevent abuse for commercial purposes. The search function can also be used to search this web site.
  Newsletters
  Newsletters will be emailed in the future, which requires that all the email addresses be up-to-date. Subscriptions for the newsletters are possible through an extra menu point – visible after login.
  Adresses
  ICAR-Delegates has to modify their own contact information by themselve. This is very important in case of the emailadresses.
  The organizations are not only requested to subscribe new delegates, but also to unsubscribe retiring delegates to avoid extensive distribution lists with obsolete recipients.

Saturday, October 20 Reports from all Commissions

Please look for the president reports at this files:
20071030-Berichte der Praesidenten-D.PDF
20071030-President-report-E.PDF
20071030-President-report-F.PDF

- The Italian colleagues present a new training book containing mostly pictures regarding safety in mountain rescue. Each organization will receive a copy along with the voting card for the Delegate Assembly.

- The conference is adjourned by the President at 1535 hours.

- In addition to the links provide for additional information, most presentations will also be made available in the ICAR web site at www.ikar-cisa.org.

Pontresina, October 20, 2007

Hans-Jürg Etter and Bruno Jelk, Presidents
Dale Atkins and Gebhard Barbisch, Vice Presidents

Chris Utzinger, for the minutes (Fri)
Nathalie Werlen, for the minutes (Sat)