

Report on the meeting of the
AVALANCHE COMMISSION OF CISA-IKAR
(International Commission for Alpine Rescue)
Zakopane, Poland
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Business of the Avalanche Rescue Commission

The Avalanche Rescue Commission's meeting was attended by 42 members from about 16 countries representing avalanche forecasters, rescuers, educators, and equipment manufacturers. At the direction of Commission chairman Mr. Hans-Jürg Etter (a long-time director of the Davos Ski Patrol and currently an avalanche forecaster with the Swiss Federal Institute for Snow and Avalanches) significant results were achieved as to goals, direction, recommendations, data collection and dissemination. The meeting was conducted in German, French, and English, though time consuming it allowed complete participation by all members.

Minutes from the Scotland (Fall 2003) and Diavolezza (Winter 2004) were accepted. The minutes are available on the IKAR web site (www.ikar-cisa.org).

Chairman Etter suggested to the Commission that Dale Atkins be elected as Co-Chair. The suggestion was unanimously approved. [I am looking forward to working with Mr. Etter as we share many common goals and interest in the mountains, rescue, and avalanches.]

Information about the other commissions and about IKAR can be found on the IKAR web site.

Goals of Commission

A written survey to determine strategy, goals, and business language of the Avalanche Rescue Commission were passed out to members (organizations) and nine were returned. Below are the following strategies and goals as its priority:

The Commission shall ...

1. ... provide a platform to exchange experience and to discuss and learn from successful and less successful incidents and missions.

Presentations shall be structured as follows:

- Two to five keywords on the incident

- A report of the event
 - Lessons learned
2. ... promote detailed reports by rescuers on mission, e.g. with post-mission analysis of the scope and course of the mission. Search and rescue strategies as well as emergency medical procedures can thus be improved.
 3. ... provide vendors with the opportunity to display safety and rescue equipment.
 4. ... provide the opportunity to present new technologies during the conference.
 5. ... further promote international investigation and verification of methods (e.g. warning systems for general dangers in mountainous areas and especially for avalanche danger). ICAR can play a coordinating role and offer to moderate such meetings.
 6. ... provide the possibility to present and discuss accident analyses made in individual countries. Comparisons of experiences from different countries may lead to new international insight on accident prevention and/or mountain rescue techniques.
 7. ... continue to publish and disseminate recommendations on rescue methods and preventative measures, which are agreed upon internationally. There have been many previous examples from the Commission for Alpine Medicine, the Air Rescue Commission, the Terrestrial Rescue Commission, as well as the Avalanche Rescue Commission.
 8. ... invite countries from overseas (e.g. Australia, China, Japan, New Zealand, South America, etc.) to participate and integrate these countries. A written exchange of experiences can be a promising start – along the lines of a membership by correspondence.
 9. ... continue to make every effort possible to ensure that rescue missions can be run as safely as possible for the rescuers involved. Risk management must primarily entail the safety of the rescuers. (In the last 65 years 18 mountain rescuers were killed on avalanche rescue missions).
 10. ... support an improved and optimized international data collection of search and rescue missions (with positive and negative outcomes). There is a justifiable conviction, that such data will provide new insights on accident prevention and allow rescue missions to be optimized.

There was also major consensus on the following issues:

- There is often too little time to accomplish everything during the annual conference. Members are coming from distant countries (e.g. North America, Scandinavia, or Bulgaria). The suggestion was made that the Avalanche Rescue Commission meet at the location of the annual conference, but maybe a few days earlier, if needed. This would only require one trip and would save both time and money.
- The agenda, along with the topics to be discussed, should be established well ahead of time so that the members can prepare themselves adequately
- The Avalanche Rescue Commission of ICAR is the ideal venue to consolidate the different systems, methods, and strategies used in searching for and rescuing missing or buried subjects.

The following equally important issues were brought up as well:

The members of the Avalanche Rescue Commission shall ...

- briefly introduce themselves at the beginning of each conference (who they are, where they're from,
- whom they are affiliated with and in which capacity as far as avalanche and rescue work goes).
- provide discussions and workshops in special interest groups using a common language, in addition
- to the general presentations.
- from now on use English as the common language.
- require a 2/3 majority when voting on recommendations
- allow a total of 60 minutes per presentation, which shall include 40 minutes to discuss the material and exchange experiences.
- host the conference and a workshop (for practical work) in alternate years.
- not define standards but cover more EU and UIAA topics and inform the industry.
- maintain and support the collaboration with the other commissions. The same rescuers are often also involved in terrestrial rescue and vice versa.
- develop and present more case studies.
- present training systems.
- form special interest groups which cover certain topics throughout the year and present the results at the conference. Based on this preparation, recommendations can be completed quicker.
- also discuss avalanche danger and forecasting.
- develop standard tests for avalanche transceivers in collaboration with the manufacturers.
- evaluate devices and search strategies and orient the manufacturers and the public.
- identify trends in avalanche accidents. Incorporate the findings in avalanche awareness training and prevention.
- only participate in joint presentations (with the Terrestrial Rescue Commission) if the topic is avalanche-related.

Additional comments:

- Eight of the nine respondents would like to continue the collaboration with the Terrestrial Rescue Commission as is. The duration of the collaboration shall, however, be limited to mutually interesting presentations.
- The time saved can be used for further work within the Avalanche Rescue Commission.
- All respondents mentioned the possibility to discuss exclusively in English. This would save an enormous amount of time. The question will be answered conclusively at the beginning of the next conference and the language(s) will be agreed upon.

These newly defined goals and strategies will be implemented at the Fall 2005 meeting.

Recommendations

After a thorough discussion and following revision, the two proposal drafts were accepted in a joint vote of the Avalanche and the Terrestrial Rescue Commissions with one opposing vote. The delegates of the ICAR countries did not have any objections during the Delegate Assembly.

The recommendations have the following titles:

- Recommendation REC L 0003 of the Commission for Avalanche Rescue of October 16, 2004 Regarding the Marking of Locations on an Avalanche
- Recommendation REC L 0004 of the Avalanche Rescue Commission of October 16, 2004 Regarding Avalanche Search Training with Buried People

Both recommendations are included in the appendixes of this report and can be found on the web page of the ICAR Avalanche Rescue Commission.

An addendum to REC L 0003 was requested by France on October 22, 2004. The following comment should be added to the minutes (freely translated): "In France and in the Wallis (Switzerland), the locations of vague avalanche dog alerts are marked in orange".

Mountain rescue teams and ski patrols in the United States should be aware of these recommendations as they will improve the operation of searches and the safety of drills. At the Spring 2005 meeting of the American Avalanche Association the AAA voted to follow recommendation REC L 0003. The color scheme is simple and easy to use. SAR teams can use additional colors to mark clues, alerts, searched-areas as desired. All teams can benefit from the standardized marking colors.

Accident Statistics

In 2003-04 126 fatalities occurred in the IKAR-member countries (Table 1). This number was well below the 20-year average of 155 deaths. The majority of deaths in Europe occurred to backcountry skiers/snowboarders, off-piste skiers/snowboarders, and climbers. Surprising were the few fatalities in Austria and Switzerland. The reason avalanche forecasters believe was simply luck.

country	back-country	off area	ski area	climbers	residents	highways	snow-mobiles	misc.	total
Switzerland	5	4	0	0	0	0	0	2	11
France	9	10	0	5	0	0	0	2	26
Austria	3	5	0	0	0	0	0	0	8
Italy	8	8	1	4	0	0	1	0	22
Norway	2	0	0	1	0	0	1	0	4
Poland	0	0	0	9	0	0	0	0	9

Slovenia	0	0	0	2	0	0	0	0	2
Spain	2	0	0	0	0	0	0	1	3
Slovakia	4	0	0	2	0	0	0	0	6
Sweden	0	1	0	0	0	0	0	0	1
Canada	4	0	0	3	0	0	2	2	11
United States	5	1	0	4	3	0	6	4	23
<i>TOTAL</i>	<i>42</i>	<i>29</i>	<i>1</i>	<i>30</i>	<i>3</i>	<i>0</i>	<i>10</i>	<i>11</i>	<i>126</i>
%%	33.3 %	23.0%	0.8%	23.8%	2.4%	0%	7.9%	8.7%	100.0%

Table 1. Avalanche Fatalities in IKAR-member Countries, 2003-04. (No avalanche fatalities were reported in Croatia, Germany, Great Britain, Liechtenstein. No report from Andorra, Bulgaria, Czech Republic, Ireland, and Romania.)

In 2003-04 there were no unusual or exceptional avalanche events affecting European towns or transportation corridors.

Avalanche Dogs

Little discussion was undertaken on behalf of dog handlers but these rescuers met during the winter (2004) at Diavolezza (Switzerland). There they shared experiences, techniques, and concerns. It is important to note that through the efforts of MRA member and US-ICAR alternate Chris Utzinger Swiss handlers (and IKAR members) Axel Budde and Marcel Meier have visited the States to conduct and participate in avalanche-rescue dog trainings. The contacts and exchanges that Chris Utzinger has facilitated are a tremendous benefit to the MRA.

In the preparation of recommendation REC L 0004 commission members were queried as to incidents in the last 5 years involving the burial of live people for avalanche rescue trainings. Fortunately incidents have been few but do occur:

- Lost hole (several)
- Hurt by probe
- Cave collapsed while digging (several)
- Triggered small avalanche

Accidents during trainings must not be allowed to happen and organizations must prepare and follow procedures so accidents do not occur. REC L 0004 is an example of simple procedures that will prevent accidents.

PRESENTATIONS

Avalanche Rescue Commission

At the biennial International Snow Science Workshop held in Jackson Hole in late September 2004, ICAR members Hans-Jürg Etter, , and Dale Atkins presented a poster and paper "ICAR and its Role in Avalanche Rescue" and it included an evaluation of all the

avalanche fatalities in member countries during the previous 20 years. The proceedings of the conference should be available by Spring of 2005. The poster was also presented to the Avalanche Rescue Commission in Zakopane.

Dale Atkins also presented to the Commission a technical paper on avalanche probing and the results of a computer study done with co-authors Henry and Lin Ballard. The authors suggest a new probe-spacing pattern and technique that greatly increases the probability of detection but still ensures a speedy search. A computerized study demonstrated that a 50x50 cm spacing with 3-holes-per-step is far superior to the traditional 70x75 cm coarse probe. Field practice over the past winter supports the claim. Mountain rescue teams and ski patrols will benefit from this new method. A copy of the paper is included in the appendixes of this report. An article about the 50x50 probe technique is to appear in the spring 2005 issue of the National Ski Patrol Magazine.

gave a quick introduction to problem of search strip-widths for avalanche transceivers. There are number of factors that determine this width including the transmitter strength, receiver sensitivity, and antenna orientations. Meier went on to add that most beacons transmit at the upper end of field strength, so the more sensitive the receiver, the greater the range. Franz Kroll brought up the issue of bandwidth. Better matching of transmitting and receiving bandwidths would also increase range. The manufacturers present (Ortovox, Barryvox, and ARVA) agreed to work together to solve the issues of range and multiple burials. A working group will be organized to tackle these issues. (See Future Topics and Meetings)

Joint Session of Terrestrial and Avalanche Rescue Commissions

The theme of the congress was "Safety of Rescuers." The Terrestrial and Avalanche Rescue Commissions met together to share experiences and lessons learned. This is second year in row where members have presented and discussed experiences from not only successful but also less than successful SAR missions. This refreshing, new-found openness to share lessons learned will go a long ways to reducing risks to mountain rescuers.

Action Matterhorn/Poland

Bruno Jelk (KWRO-Switzerland) presented a case history of rescue on the Matterhorn in late January 2004. The problem was that it involved 3 Polish climbers who had been warned about an approaching storm. It was a high-risk rescue done at night in very strong winds. This incident raised several interesting points including the attitudes and self-responsibility of the climbers as well as what is an acceptable level of risk for rescuers. There was no final answer to that last topic, but the question of risk should make all rescuers stop and re-evaluate their actions, especially if conditions are worsening.

Mountain Rescuers' Responsibility for Safety in Rescue Actions

The Slovenia rescue service presented a lesson learned from a February 2004 mission where 2 climbers were benighted on the summit of the Brana because of bad weather and poor visibility. (Brana is a 2,000+ meter peak with a nasty reputation for accidents). The climbers called for help just before sundown. Rescuers started up the mountain but could not reach the summit because of the weather and spent the night out. In the morning the weather improved and skies cleared. Rescuers and climbers were evacuated by helicopter. This mission reinforced the rescue team's philosophy that the responsibility for safety starts with the individual rescuer and any rescuer may say "No." The rescuers allowed themselves to enter a high-risk situation when there was no emergency. In hindsight the climbers perceived an emergency that did not exist. While the cell phone can be a wonder tool to notify rescuers, it can also be a crutch for outdoors enthusiasts with poor judgment and no alternative options.

Warnings Ignored – Safety of the Rescuers

Similar to the incident on the Matterhorn the Austrian ÖBRD presented a case on the Grossglockner (Tyrol) where climbers seemed to have ignored a well-disseminated weather forecast of an approaching storm, and the rescue team conducted a SAR mission in high-risk conditions. The initial call for help came from a 4-person Slovenian team. Forced to bivouac just below the summit two members had also been injured by falling rock and ice. The climbers were off route and lost in whiteout conditions. As the rescue effort was gearing up it was learned two other climbing groups were on the mountain in the storm and overdue. The mission teetered on the edge of GO/NO GO because of severe weather, terrain, and avalanche danger. The threat to the lost and injured climbers was deemed as a sufficient enough reason to undertake the rescue. The final authority to say "NO GO" was entrusted with lead field teams. All made it off the mountain safely two days later when the weather improved.

Why It Is So Simple To Make Mistakes

Walter Würtle of the ÖBRD presented a fascinating look at "Why It Is So Simple To Make Mistakes." Würtle focused on different contributing factors and group dynamics involved in numerous accidents involving rescuers and rescue teams. (These factors and group dynamics fall under a category known as "human factors" and deal with how individuals and groups use experience and knowledge to make decisions.) He reviewed the problems of perception and how it influences or disrupts one's situational awareness. Mental filters or blinders reinforced by past experiences can lead to false confidence. This is why sometimes a not-typical situation is perceived as typical and individuals and groups can be surprised and un-prepared. He cited an incident in Austria in December 2002 when responding to an avalanche search, a second avalanche – triggered by rescuers – caught 53 rescuers. Fortunately all survived.

Würtle also presented additional group factors that can cause errors and increase risk and mistakes. These include:

- Expert opinion: maybe faulty
- Conflict avoidance: want to preserve group harmony

- Risk = worth: wanting to be a hero or to prove one can do it
- Erfüllungsdruck (going one more step): blind to or dismissing dangers so to go further

To avoid these mental traps Würtle suggests using the group's knowledge and experience. Everyone in the group should be involved in providing input and decisions should be clear to all.

Würtle cautioned all that experts have greater chances of accidents because of exposure: experts are always in the field. Earlier in his presentation he pointed out the typical way many individuals learn – including mountain rescuers – is from “trial and error.” (With experience we learn, and by learning we gain experience.) While this approach works fine at home, work, and play, it can be disastrous in the mountains because sometimes the error results in death. His final message was that there are many ways to make mistakes, but rescuers cannot afford to make mistakes because mistakes can be fatal.

Danger Assessment-Risk Management: Costs and Benefit

Continuing with the theme of risk, (NGI-Norway) presented another stimulating presentation looking at SAR from a costs/benefit analysis. Though the title said, “costs” Kristensen did not put a price on people's lives or apply a cost to operations. Instead he presented a methodology to make an objective comparison of risk and benefit by using a transparent decision tool – as compared to “romantic heroism” – to determine whether or not to field searchers.

Kristensen's presentation started with a story of an avalanche accident in 1971 at Molaupen (Hjørundfjord) where an avalanche had already buried one person. Ten rescuers arrived and started to search; tragically a second avalanche released and killed 7 rescuers. He then introduced some parameters that must be performed prior to the risk/benefit analysis. There must first be risk acceptance and assessment. For risk to be acceptable it must be as low as reasonably practicable (ALARP). This can be a bit confusing because in the mountains there is always some risk and safety requirements are often ambiguous. Kristensen also pointed out there is asymmetry in risk between rescuers and victims, acceptable risk maybe different between the two parties. Risk assessment in Norway starts with computer-generated maps that show avalanche-hazard terrain. In addition rescuers also use “classical” methods of weather, terrain, and snowpack evaluation to better evaluate avalanche hazard.

Kristensen offered a simple formula to approximate the risk/benefit, but I will not present them, as my notes are unclear. I will try to follow up with Kristensen in the future and amend.

The point of Kristensen's presentation is that the risk/benefit can be described in a simple formula [sorry about my unclear notes], but that in the real world actual risk to rescuers should be much less than appears to outsiders. This is because of risk reduction, tactical decisions, and windows of opportunity are exploited. Kristensen also points out that when high-risk SAR operations are necessary informed consent should be required of all involved.

Safety in Search and Rescue – Dealing with Go-Fever

Our own Rick Lorenz (Olympic Mountain Rescue, WA) followed with a discussion of leadership and “go-fever.” Lorenz defined go-fever as an “inevitable and relentless march towards conducting a mission before all the facts are fully analyzed.” While we can and all have suffered from go-fever, Lorenz cautioned rescuers that the decision not to search should be just as carefully reviewed as the decision to search.

To help make better decisions Lorenz proposed a technique for informing and leading small teams in the field based on the five-paragraph operation order known as SMEAC that was developed by US military planners.

- Situation
- Mission–incident objectives
- Execution–strategy and tactical objectives
- Administrative & Logistics
- Command & Communication

The technique appears to be a great way to gather and communicate essential information.

A three-page summary of the presentation and a PowerPoint presentation is available upon request. For a more detailed discussion of leadership issues see the article by Rick Lorenz (FMLORENZ1@aol.com) was published in the Jan/Feb 2005 edition of Advanced Rescue Technology magazine.

The Risks in Avalanche Rescue

Building upon Kristensen’s topic, the discussion in later talks focused on trying to define the “thin red line;” that line when crossed can result in injuries and death. Paul-André Gillioz (KWRO-Switzerland) presented a Swiss effort to find and manage the “red line.” The Swiss Kantonale Wallier Rettungsorganisation developed the “Triple Safety System” to make GO/NO GO decisions. It uses a series of yes/no answers to three principle factors made by three key leaders:

- Medical – Life Threatening?
- Time of Day – Day or Night
- Access – Helicopter or Ground

To determine if the danger is acceptable or not acceptable there is communication between the:

- Doctor
- Pilot

- Guide/Technical Specialist

Before any response the three leaders discuss medical, timing, and access issues and problems and must formulate a plan of action. Though the Triple Safety System seems like an objective technique it can be significantly influenced by subjective factors, to either the benefit or detriment of a SAR operation.

Avalanches

Many successful SAR operations are the result of different agencies coming together and working together. An avalanche SAR mission in Poland's Tatra Mountains nicely exemplified this cooperation and TOPR (Tatra Mountain Rescue) shared the story of a recent mission. The operation also provided insight to just how much the "times have changed" in Eastern Europe.

In January 2004 four cavers approaching the Muramara Cave were caught and buried in an avalanche. The next day clues lead to the quick find of one victim, but the other three remained buried. A Slovakian rescue team conducting a dog training on the other side of the border was monitoring the radio traffic. Being near by they offered to help. TOPR flew across the border and picked up 17 members and 7 dogs and flew. The remaining three victims were found within an hour. This mission marked the first time ever that teams from the two countries did not have to use and wait on formal diplomatic channels. In the past such approvals would take days or even longer.

Safety in Rescue Actions

Returning to Western Europe, Henry Philippe (?) from Chamonix (FFME) discussed the safety of rescuers. Philippe started with a chilling reminder that "no one is outside the danger or peril" [of an accident]. He briefly described the organization and training philosophy of the two French agencies responsible for mountain rescue: the mountain police and the gendarmerie (military). Each organization consists of about 250 members whose career is mountain rescue. The training is done through 2 national centers. The trainings are highly specialized, extensive, continuous, and progressive. It is also very practical as it is based upon actual incidents. The rescuers train in all conditions. The initial training takes about 10 years with re-certification necessary every 3 years. This rigorous and demanding pursuit of excellence is no wonder the French rescue services are held in such high esteem.

Avalanche Action in the Caucasus

Berand Zehetleitner (Bergwacht – Germany) presented in interesting presentation of a trans-national response and its problems caused by borders, customs, technology, and language. In February 2004, seven snowboarders – teenagers of Russian members of parliament – were buried in an avalanche. Many rescuers came from Moscow and during the first few days, 160 ski patrollers and soldiers, plus 9 avalanche dogs searched without success. On the third day it was learned that one boy had a RECCO reflector in his

clothing. On day 4 the Russian ambassador to Austria had secured a RECCO detector but no operator.

On Day 6 the Russian government – at the suggestion of RECCO – made a formal request to the German government for 2 members of the Bergwacht to assist in the search. It took several days to process the request, and 2 rescuers were picked. Despite “official” government introductions and assistance it still took days to get the rescuers and their equipment from Germany to Moscow to Terskol in the Caucasus Mountains of southwest Russia.

In Terskol, the victim’s families who still clung to the hope their children might be found alive met the rescuers. Zehetleitner and Daniel Freuding faced enormous difficulties. There was no rescue team or leadership to learn what had been done. Heavy snows had continued to fall after the accident, so the avalanche danger was high. They faced technical problems like no power to recharge detectors, no probe poles, no rescue transceivers, and no rescuers with avalanche training. To compound difficulties, there was a language barrier between the Germans and Russians. Fortunately some locals spoke a bit of English so all communications were translated into broken English.

Finally on the 10th day the search started and after only 10 minutes of searching with the RECCO detector, the victim with RECCO reflector was found. He was buried 3 meters. Fifteen minutes later the second victim was found with the help of the detector. It alerted on his cell phone. The next day 2 others were found by RECCO. One had a walkie-talkie radio and the other had a cell phone. Both victims were buried 2-3 meters.

On day 12 trenching was begun and the fifth body was recovered. The digging continued and finally on the day 14 the last two bodies were found.

Avalanche Accident from Rescue Technical/Medical Point of View

Dr. Dan Halvorsen’s (Red Cross – Norway) interesting talk reinforced the message of don’t give on the victim, whether in the field or in the hospital. He described the successful rescue and recovery of a 12-year-old boy who was buried on a family ski trip. The father called for help with his cell phone, and rescuers and avalanche rescue dogs were flown to the site. Though 8 dogs were on the site, the boy was found by probing, buried under 2 meters of snow. After a 2 hour and 25 minute burial the boy was found with a small tree bent over his face. It provided a teacup-sized air space. Initially he was breathing but stopped breathing when removed from the hole. One-half hour later he went into cardiac arrest. (This was in route or occurred shortly after arrival to a hospital.) In the emergency room and at 3.5 hours after being buried the boy’s core temperature had cooled to 22°C [sic]. The boy was successfully resuscitated and re-warmed. The next day he appeared to be doing well when his condition deteriorated. He had suffered a slow bleed in his brain. Emergency surgery corrected the problem and the boy has since made a complete recovery.

Factors Influencing Dog Search in Avalanche Rescue

Matt Hjelle of Norway followed up Dr. Halvorsen's talk to address the issue of dogs and why they sometimes work and sometimes fail. In a couple of instances of avalanche rescues (one cited above) many trained dogs arrived on site but failed to locate the buried victims. It seems that in trainings the dogs all performed well, and the rescuers have been conditioned to expect a fast recovery. However, on actual rescues the dogs did not work well. [I have seen this numerous times in Colorado.]

In carefully deconstructing the operations the Norwegians found that despite lots of dogs on scene, areas of the debris did not get searched by the dogs. It seemed the dogs likely worked okay, but it was the dog handlers who worked less well. It seems that dog handlers' roles changed early in the mission. Though originally flown to the accident site to work their dog the first handlers ended up having to organize the search and also work their dogs. The handlers could not do both, so portions of the debris were missed. Now the Norwegians send a second rescuer with the dog handler. This rescuer can do the rescue tasks while the dog handler only needs to work their dog.

Another lesson to be learned by the handlers is the importance of marking searched areas. Dog handlers (as well as transceiver and RECCO searchers) should mark their search line. This gives a clear indication to what was searched.

Vail – Summer 2005

As the joint meeting of the two commissions wound down, Rick Lorenz and Dan Hourihan passed out invitations to rescuers to attend this summer's meeting in Vail. Organizers hope to have many teams from around the world demonstrating different techniques.

FUTURE TOPICS AND MEETINGS

It is now 2005 and the Avalanche Rescue Commission is already active and working on new topics. In March five working groups were assigned to work on different topics. The work groups are expected to start work during the summer of 2005 and report preliminary results at the Cortina meeting in October 2005. The five workgroups, their mission, and their leaders are:

1. Glossary

Create a glossary of common avalanche rescue terms for different languages (for example Verschwindepunkt = last seen area). This work would update the 1995 book: Multilingual Vocabulary–Snow and Avalanches. Leader: Dale Atkins, USA.

2. Guidelines for new avalanche rescue technologies

Define minimum guidelines for new avalanche rescue technologies (for example radar) to guide developers and manufacturers of new and devices and systems. (We should provide developers and manufacturers with guidelines and information regarding how

new devices and systems should best work in the field as to snow cover penetration, working temperatures, waterproofness, maximum weight, snow wetness, etc.)
Leader: , Switzerland.

3. **Recommendation search-strip**

Create a recommendation for avalanche rescue transceiver manufacturers to emphasize search-strip dimensions rather than maximum range. ICAR should work together with the manufacturers to create the recommendation. Leader: François Sivardière, France

4. **Standardize the ICAR data collection of avalanche accident**

Standardize the collection of avalanche accident data to better assist in the collection and interpretation of avalanche data. Leader: Albert Lunde, Norway.

5. **Checklist of avalanche accidents**

Review and evaluate the Rescue Checklist of avalanche accidents (Proposed at the Leichtenstein ICAR-Congress). Do rescuers use it, what do they think about it, is more clarification necessary, or what is not needed in the "Checklist." Leader: Heini Malue, Germany.

The 2005 IKAR Congress will be held in Cortina d'Ampezzo, Italy from October 12-15. The theme of the 2005 Congress will be the "Search for Missing Persons."

THE FUTURE

The reasons and objectives for continued involvement by the USA in CISA-IKAR remain unchanged. Avalanche accidents and deaths in the USA are increasing and IKAR is a very important forum for USA SAR personnel and avalanche workers. IKAR continues to be the best forum for the exchange of information and ideas for avalanche rescue. The MRA is the best vehicle to disseminate this information to across the USA.

It is very important MRA teams and ski patrols stay current on the latest developments in avalanche rescue, education, accidents, litigation, forecasting, etc. For years, avalanches have been generally thought of as a European problem. This is no longer true. The number of people killed by avalanches in the USA is similar to those killed in Austria, France, or Switzerland.

Membership in IKAR gives the MRA the opportunity to share information and learn from other experts. IKAR is becoming a repository and also a clearinghouse for mountain-safety education materials.

Financial Disclosure

RECCO AB paid for my travel to and from Zakopane. This was accepted in lieu of monetary compensation for earlier work performed in my authoring The White Book.

Submitted by Dale Atkins, June 7, 2005

APPENDIXES

Note to readers: To keep the electronic file sizes relatively small each appendix is treated as a separate file.

- A** USA avalanche report to the 2004 CISA-IKAR meeting (USA_report_04.pdf)

- B** Recommendation REC L 0003 of the Commission for Avalanche Rescue of October 16, 2004 Regarding the Marking of Locations on an Avalanche (RECL0003E.pdf)

- C** Recommendation REC L 0004 of the Avalanche Rescue Commission of October 16, 2004 Regarding Avalanche Search Training with Buried People (RECL0004E.pdf)

- D** Probing For Avalanche Victims (probe_ballard_atkins.pdf)