

AVALANCHE RESCUE REPORT

International Commission for Alpine Rescue

Lawinenkommission • Commission d'avalanche • Avalanche Rescue Commission



IKAR-CISA

15 – 19 October 2013 — Bol, Brač Croatia

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The following report is based on notes and commentary by Atkins. As of early November the official minutes of the Avalanche Rescue Commission — taken and submitted by Atkins at the close of the meeting — have not yet been published. The minutes will eventually be posted on the IKAR website.

INTRODUCTION

The Avalanche Rescue Commission meets once a year at the Annual Meeting of the IKAR. In some years a special winter-skills meeting may be held. Within the Avalanche Rescue Commission is a sub-group of rescue dog handlers. These rescuers host typically a spring or summer time meeting.

The Avalanche Rescue Commission is a comprehensive composite of the international avalanche community represented by national mountain rescue associations, avalanche research and forecast institutions, national alpine clubs, and avalanche-rescue equipment manufacturers. The Commission provides a forum for the discussion and exchange of ideas, skills and knowledge. This expertise helps mountain rescuers become more effective and efficient, which also helps those in need. The commission generates guidelines related to avalanche rescue that are typically adopted at national levels. Recommendations can be found on the IKAR website: www.ikar-cisa.org > **Avalanche Rescue** > **Recommendations**.

AVALANCHE COMMISSION MEETINGS

This year's congress was held in Bol, on the Croatian island of Brač, surrounded by the gentle waters of the Adriatic Sea. Commission president Mr. Dominique Létang (ANENA, FR) chaired the daily meetings; vice president Atkins assisted, and Mr. Manuel Genswein served as interpreter working breathlessly and seamlessly in German and English, and occasionally in French.

More than 50 rescuers from at least 20 countries participated: Andorra, Austria, Canada, Croatia, Czech Republic, France, Germany, Iceland, Italy, Liechtenstein, Norway, Poland, Serbia,



Welcome to Bol, Croatia.

Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom (Scotland) and United States of America. The Avalanche Rescue Commission also joined the Terrestrial Commission for a day to share presentations and experiences.

Pre-Conference Workshop

Formally the Terrestrial Commission organized the field day on the 16th but without an avalanche rescue component. However, a special two-day meeting of the Network of Prevention and Mountain Safety work group was held on the 15th

and 16th. Cam Campbell of Canada was a featured speaker and presented the Canadian Avalanche Association's Avalanche Terrain Exposure Scale (www.avalanche.ca/cac/training/online-course/terrain/ATES).

Minutes

Minutes from the 2012 meeting in Krynica, Poland, were read and approved.

Summary of Avalanche Accidents, 2012/13, and Other Topics

Accident case reports or season summaries were presented by nine member countries. Lessons learned were highlighted, and the theme of risk management was often heard.

Austria: *Klaus Wagenbichler (ÖBRD)* presented a summary of Austrian accidents and deaths. Snowfall was similar to the rest of the Alps – abundant! As a consequence the deep snows resulted in numerous accidents and deaths with a total of 26 killed, which matches the long-term average 26. Seventy-eight percent of victims were ski tourers and the other 22% were mostly mountaineers with a few work-related deaths. Despite the increase in accidents mountain rescue responded to fewer accidents because the police and air ambulance services responded more frequently.

France: *Frédéric Jarry (ANENA)* reported another exceptionally snowy winter, and that temperatures stayed cold with no warming until mid April. A total of 36 people (average 31) were killed in 27 accidents (average 23). Five victims were ski tourers; 4, snowshoers; 16, off-piste riders; 9, mountaineers; 1, piste, and 1 hiker. In addition to the 36 killed, 51 people were injured. Most avalanche deaths occur in the mid winter months of January and February, but this winter 45% of deaths occurred in March, and 25% in April. [For comparison, on average, only 18% and 12% respectively of US deaths occur in March and April.] Jarry remarked that people seemed to forecast by the calendar rather than by snow conditions.

In the northern Alps, snowfall was the greatest in 30 years with winter-like conditions well into April. More snow meant more accidents than normal. The southern Alps also received abundant snows. In an unusual turn of events the department of the Hautes-Alpes saw 6 fatal accidents, where was more than the number in the much more populated and visited Haute Savoie and Isère.



An avalanche in Barèges buried numerous cars in a parking lot. Fortunately, no one was injured. (Photo: www.sudouest.fr)

The Pyrenees were exceptionally snowy, and snowfall broke 50-year records, but there were only 2 fatalities (off-piste riders). The deep snows resulted in many natural avalanches and forced the closure of a ski area and the evacuation of a town. The ski area in Barèges was closed on the morning of February 23; police and firefighters went door to door evacuating 600 people. Local news media reported avalanche conditions were similar to 1907, 1939, 1970 and 1986.



The 1 April avalanche that killed four skitourers on the slopes of Punta Beltovov di Fuori. (Photo:<http://geoavalanche.org/incident/reports/view/284>)

Italy: *Stefano Pivot (AINEVA)* reported the winter was the 5th worst in terms of deaths in the last 27 years. Avalanches claimed 28 victims. Of the those killed, 15 were backcountry skiers, and 9 of those skiers were ascending when caught. Eleven victims were off-piste riders; one was a mountaineer, and one was a fisherman struck by a huge natural avalanche that traveled to the valley floor.

The worst accident occurred in the South Tyrol on 1 April when 4 skiers were hit and buried by an avalanche triggered by another group of 2 skiers. One of the victim's airbag pack was "ripped off"

during the avalanche. Another skier had forgotten his transceiver in his car. He was found later in the summer. In another accident a heli skier in La Thuile could not trigger their airbag because of heavy mittens [sic]. This does point to the importance of practicing. **A reminder about airbags, which do save lives, however, there is no guarantee it will save a life in a specific avalanche.**

Switzerland: *Lukas Dürr (SLF)* reported that despite the snowy winter avalanche deaths (22) were a bit below average (25). Most accidents occurred in areas that experienced intermountain and continental conditions [faceted snow and persistent weak layers]. This season many of the deaths occurred when the danger was rated "moderate," which caught the attention of the press. **Dürr reminded all that avalanche professionals view the avalanche danger scale as continuous and not discrete steps.** Unfortunately, the public perceives the danger as distinct steps.

A mass casualty incident was narrowly avoided in Engleberg on 9 December (2012) when a large avalanche triggered by skiers swept down the popular and relatively crowded off-piste run called the *Laub*. The avalanche was said to be 300m across and traveled about 800m. Between 11 and 15 people were caught and partly buried, but only 2 suffered relatively minor injuries. The avalanche danger was rated "considerable". Because of the uncertainty regarding the actual number of people caught, rescuers searched until late into the day before accounting for all the people in the area and ending the search.

Switzerland – Valais/Wallis: *Dominique Michellod, (OCVS)* gave a summary of avalanche accidents in the Valais region where 66 accidents occurred. The majority (80%) occurred in the lower Valais (FR speaking) with the remainder in the upper Valais (DE speaking). Just over half of all accidents involved ski tourers and the rest occurred off-piste. Nearly all alerts were made by mobile phone with 78% of the calls coming from companions or witnesses. Michellod also described a 3-phase form being developed as part of their SCAR (Swiss Crevasse Avalanche Registry) database. The form includes avalanche, medical and rescue details, and he pointed out the importance of tracking patient information from excavation to discharge. This form ties in with the checklist just developed by the MEDCOM.



Foto: Kjetil Brattlien, NGI



Foto: Kjetil Brattlien, NGI

Tromdalen (NO) avalanche and search area, 26 March to 9 April, 2013. (Photo: <http://www.ngi.no>)

Norway: *Albert Lunde (Røde Kors)* reported that accidents were double the average of 35, which also meant more deaths (8) than average (5). One accident in Tromdalen Senja on 26 March resulted in the largest avalanche search effort ever done in Norway.

The two week search for three buried snowmobilers involved hundreds of searchers, nearly a ton of explosives, and rescue leaders were challenged by locals who felt the leaders were ignoring concerns by the families. The accident was unwitnessed, but when the men failed to return after a trip to a friend's cabin a friend drove out along the trail and discovered tracks ending in a narrow gully filled with avalanche debris. It appeared that two avalanches had run.

Local rescuers searched that evening and found one snowmobile buried 1.5m and a snowmobile helmet that had been set down purposefully on a rock about 90m away from the debris. Dogs,

probes and Recco failed to find any additional clues. Bad weather forced suspension of the search for the next nine days, which frustrated local people, who conducted "private" searches. These searches were prohibited and not tolerated; however, poor weather and remoteness made control of the accident site impossible.

Authorities feared the locals would end up being buried in subsequent avalanches. A community meeting was held to explain the dangers and the rationale for delaying the search, and about the logistics and complexities that would be required to search the gully in order to find their sons and friends. Informed, the locals stopped their unauthorized searches.

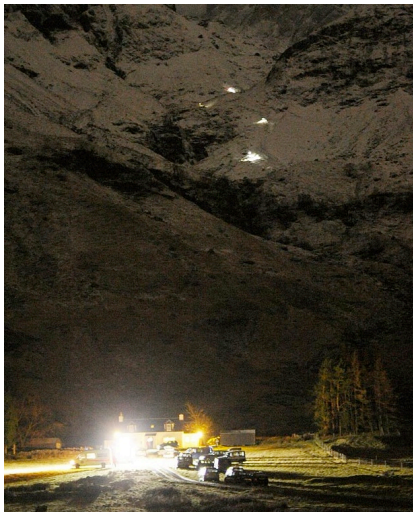
When the weather finally cleared 9 days later the search effort resumed, but first extensive blasting was performed. A Daisy Bell (gas exploder) suspended beneath a helicopter directed 40 blasts onto the slope, which resulted in many new-snow avalanches. Rescue leaders, however, were still concerned about deep instability. With the military's help 750 kg of explosives were used to triggered additional avalanches that swept down and filled the narrow gully. Only then did more than 200 soldiers and 70 Red Cross rescuers start searching. In addition were police dogs and dog handlers from both Norway and Sweden also participated. Technical specialists from the Norwegian Geotechnical Institute advised rescue leaders regarding hazards and risks. In total more than 300 people were involved.

Because of the additional debris brought down from explosive work two snowcats and one excavator were used to clear away snow so conventional searching could be more effective. By the end of the operation an estimated 40,000m³ of snow (15,000 to 20,000 tons) had been cleared away. But probing was nearly impossible in the hard debris. **On day 4 of the search operations, two of the snowmobiles (not equipped with reflectors) were found by the RECCO detector.** The discovery of the snowmobiles focused the search effort and the three victims were found the next day. Burial depths were at least 6 meters. The operation was completed and demobilized the next day.

About the helmet found on the rock. At 1300 the day of the accident the owner of that helmet, one of the victims, had made an call to a friend. His voice sounded stressed and that he

stated that he didn't have time to talk. Then the call ended. Rescuers deduced that his two friends had already been caught, so he set down his helmet and headed into search. While he was searching he was caught by the second avalanche.

Lunde also spoke about the challenges of slush flow avalanches. These avalanches are more common than originally thought, and while they generally occur during cold springs that experience a sudden warm up, slush flow avalanches have occurred throughout Norway and in all winter and spring months. Slush flows present unique challenges to travelers and rescuers as they release on very shallow slopes, less than 10 degrees, and can run for 2+ km across practically flat terrain. This makes it difficult to predict safe and not safe areas. Safety only comes after the slush either melts away or refreezes. **An important lesson learned from slush flow events is that the traditional rules of terrain selection and management do not apply. Every and all approach routes are dangerous.**



SMR rescuers' headlamps light up Bidean Nam Bian. (Photo: www.thesun.co.uk)

Scotland: Ken Marsden (SMR – Glencoe) reported Scotland had experienced its worst winter in terms of avalanche accidents in years with 8 deaths. On average Scotland sees 2 deaths per winter. The worst accident occurred in January on Bidean Nam Bian (1151m) when a group of 6 climbers were caught, 1 was able to self arrest, 3 were buried and killed, and 1 partly buried and seriously injured (head injury). The alarm was sounded only after 2 other climbers came across one of the casualties lying in the snow. The Glencoe and Lochaber Mountain Rescue Teams responded along with an avalanche rescue dog from SARDA. The buried victims were found by spot probing in the narrow gully. Because of a regional training with the RAF, rescuers and helicopters were already together when the alarm was sounded. Rescuers were on scene in 20 minutes of the alarm.

Marsden also told of another fatal accident that occurred 30 March, off-piste of the Glencoe Ski Centre. The avalanche swept the skier into a narrow gorge and filling the gorge with up to 7m of debris. **The victim was not searchable; he had left his avalanche transceiver in his car and did not have Recco reflectors.** Probing and Recco were tried on day one without success. On day two searchers resorted to trenching and probing. The victim was found when a probe struck the toe of his ski boot.

Marsden also described the debrief issues, and that the SMR has an Avalanche Working Group to evaluate avalanche SAR because in the past burials were infrequent, so the group is reviewing past responses, equipment used, and rescue training methods and procedures.

Slovakia: Marek Biskupič (HZS) reported that unusual, southwestern, winds resulted in slopes that are typically safe to be unsafe, reflecting the adage that unusual conditions result in unusual avalanches. He also presented a study of the danger of small, short running avalanches that are often called “sluffs.” Size 1 avalanches are often thought (and by definition) to not be disastrous to people. **In Slovakia 12 of 51 size 1 avalanches resulted in deaths or serious trauma.** Biskupič pointed out that sluffs can be very dangerous especially in steep terrain or in traps. [In the US 11 (3%) people have died in size 1 avalanches in the last 15 years].

Canada: Cam Campbell (CAA) presented the ATES (Avalanche Terrain Exposure Scale) used in Canada, and described how it can be used in rescue operations. The ATES was developed by Parks Canada to help backcountry users assess the severity of the terrain encountered in a given trip. The scale has been used operationally in Canada for the past 10

years. Terrain is classified (and in commercial operations the terrain is actually catalogued) as either simple, challenging, or complex. For more details please see www.pc.gc.ca/eng/pn-np/mtn/securiteenmontagne-mountainsafety/avalanche/echelle-ratings.aspx#scale. The scale provides a quick way to describe general avalanche terrain conditions. Also in the event of an avalanche rescue callout, the ATES is addressed by filling out the CA ICS305A hazard form, which is done first before filling out other forms.

Canada: *John Buffery*, (CAA) described the ISO 31000 standards to risk management and how the standard was applied to a RedBull big-mountain snowboard competition held at Baldface, BC. This event combined big mountain and park style snowboarding by constructing 100 stunt platforms in a steep avalanche path start zone that frequently produces very large, destructive avalanches. His presentation can be seen at: <http://prezi.com/-u4go1u6ek86/icar-iso-31000-rm-avalanche-hazard-supernatural/>

USA: *Dale Atkins* (MRA) recapped the winter season, which saw a below average number of avalanche deaths (24 versus 30). The locations and activities of these accidents were consistent with past years. The below average number of avalanche deaths mirrored the below average snowfall experienced by most places in the US. The early winter was one of driest on record, and dry conditions remained the theme for most sites. While the US was below average in deaths, avalanche deaths in Colorado was nearly double the long-term average because of one accident that killed 5 backcountry enthusiasts in late April. This was an atypical accident because the party (6 total and all were buried) knew explicitly the avalanche danger, problems and conditions. The night before they met with a forecaster who accurately described the situation. Before the group headed out they discussed the danger and even practiced with transceivers. It seems they did not expect trouble. They triggered the avalanche from the bottom of the slope. While common in mid-winter such triggering is rare in spring. However, snow and weather conditions resembled January or February and not April. Unusual conditions result in unusual avalanches.

In Colorado [professional rescuers saved the life of a man buried for 3 hours](#). Interestingly, and contrary to conventional wisdom, the “best” rescue tool in the 3-hr burial and for the 6 buried (mentioned above) was (or would have been) the cell phone. The victim of the 3-hr burial survived because two other skiers witnessed the avalanche and called for help. They then tried with transceivers to find the two buried skiers; however, they could only find one. Overlapping signals and inexperience prevented them from finding the survivor. Professional rescuers arrived hours later found, unexpectedly, the buried man alive. In the burial of the 6 riders, the survivor was able to quickly get a hand above the surface, but for the next three hours he tried to dig himself out (with only one free hand). He sought desperately to reach his cell phone, but it was in a pants pocket. Had he been able to reach his cell phone, ski patrollers no more than 15 minutes away would have rushed to his aid. It was not until the group was missed – 3 hours later – that the accident was discovered.

Some other tidbits from the winter’s accidents included a survivor whose GPS recorded his descent at 97 km/h. He survived but a friend did not. A very sad accident in Utah claimed the lives of two children in a very small avalanche on a slope only 15m tall. There were 3 victims killed who carried airbag packs. In two cases they did not trigger the system. In the third case, the victim was killed from trauma after being swept into trees. Lastly, on average, only about 5% of victims killed in avalanches were not buried; however, last winter 33% of the victims killed were not buried. These victims died in falls over cliffs or from being swept into trees.

What to do about summer/high altitude avalanches?

Commission president Dominique Létang (FR, ANENA) described the problem experienced in France where summer time avalanches in recent years have resulted in large accidents with many victims, notably on the Mont Blanc massif. Rescuers and victims are at a disadvantage because the victims do not carry transceivers or Recco reflectors. Therefore victims are not easy to find resulting in long-duration SAR operations that expose rescuers to

significant hazards. Létang asked the group to recommend that transceivers and Recco reflectors should be used for adventures to high mountains, even in summer. What followed was a lively and at times heated discussion about what to do about this issue of rescuers spending excessive time searching for buried victims not equipped with transceivers.

Responses fell into three categories based upon who the recommendation was felt to serve: rescuers or public. Surprisingly, few representatives could identify with serving both groups. So the categories were:

- education only (most)
- rescue technology only (few)
- both education and rescue technology (some)

There were also concerns from the guiding community that a rescue technology recommendation could be perceived as mandatory.

The more the discussion flowed the further away from initial issue it spilled, so the official position has yet to be defined. But IKAR's position is for recommendations to improve speed and safety of rescues for both rescuers and victims.

Létang's parting statement on the topic was, "If you recreate in the mountains, equip yourself to be found." My conclusion from the discussion is that people who recreate (and work) in the mountains need to make themselves searchable to rescuers. For avalanches electronic means – transceiver and Recco reflectors – are the best way to be searchable. Transceivers make one searchable to their friends. Reflectors make one searchable to rescuers. When considering more general outdoor activities there are other devices and techniques that make one searchable like SPOT, PLB, EPIRB. A cell phone may (if coordinates are available) make one searchable. Being searchable is not always about technology, even simple things like a whistle, light and bright clothing make one searchable. Certainly our PSAR messages should include education and prevention, but our messages should also include being searchable. There's a lot people can do to help us – rescuers – better help them.

Results From 2013 Workgroups

Probing Efficiency

Genswein and *Atkins* have renewed this work group and plan to start trials during the 2013–14 winter. Preliminary trials were planned in Chile during the austral winter, but low snow conditions prevented testing. The goal is to propose a standard for fast-coarse probing (when there is the best chance to save a life) in fall 2014. [Update Feb. 2014, field testing has been occurring in both Europe and North America with promising results.]

Avalanche & Rescue Dog Handlers Sub Commission

On the direction of commission chair *Marcel Meir (ARS)* thirty rescue dog handlers from seventeen countries meet separately on the 16th and discussed the use and practice of dogs for wilderness, cadaver, avalanche and water search. The survey prepared by Albert Lunde for avalanche dogs has not been used. Several said it was too long and must be shortened. The handlers also set a spring workshop in Kühteil, Austria, 11–13 April 2014.

Avalanche Accident Statistics, 2012–13

For the second year the electronic database has not functioned so we will return to old school means – pen and paper – to collect accidents statistics.

Prevention Work Group

Per-Olov Wikberg (Fjällsäkerhetsrådet) leads the group, which met the day before the official start of the IKAR congress. For details, please visit the work group's website: http://icarmountainsafety.ning.com/xn/detail/6559677?Note=1711?xg_source=activity

Other / Miscellaneous

None stated.

JOINT SESSIONS — AVALANCHE AND TERRESTRIAL COMMISSIONS

NOTE: Several avalanche presentations were presented to the joint session of the Avalanche and Terrestrial Commissions. These include:

Alpify App — (GRIM Andorra) This smartphone app —both Android and OS — is meant to increase the security of outdoor recreationalists by connecting users directly to rescue services. The app makes it very easy to alert rescuers, and was developed after a lost person was able to use their mobile phone to call for help but rescuers couldn't find the person. All



Alpify is a novel app that is already in use.

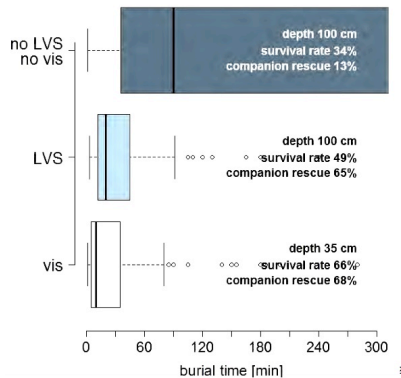
too soon his battery died, and he wasn't found until more than one month later — deceased. The system consists of two parts: the app and an online management program (dashboard) that a rescue team uses to monitor and visualize (on a map) all users. The system also allows for two-way communications. The user can send alerts with their coordinates via data or cellular connection, and rescuers can also send messages such as warnings to users. If concerned about using up battery power to run the app, don't worry. Coordinates are sent every 2 minutes, therefore only 7% of battery power is used per day. The system is

already in use at a number of international ski resorts and emergency services programs including Courchevel, La Tania (3 Vallées), Las Leñas, Govern d'Andorra, Principat d'Andorra Bombers, Gobierno de La Rioja, and Gobierno de Cantabria. For more information: www.alpify.com.

Matts Nilsson and Rikard Svedjesten (Swedish Police – Mountain Rescue, CIFRO) reported on "Mountain Rescuer Training In Sweden." Mountain rescue is performed by volunteers but with coordination and communications assistance by the police. The police also play a larger role in that locally there is a police officer in charge of recruiting and training new mountain rescuers. In addition to their preliminary training every rescuer receives 16 hours of paid training per year – 8 hours summer and 8 hours in the winter. Each rescuer is also evaluated annually. The police are starting to organize the National Center of Swedish Mountain Rescue, to be located in Östersund. A moment of silence was observed for Kent Herrström who unexpectedly passed away just before the start of the IKAR congress. **Because of dense vegetation rescuers also carry avalanche transceivers in the summer in case a rescuer becomes unresponsive.**

Vittoria Bellagamba (SAGF, Italy) presented the smartphone app aGestic developed in conjunction with the Italian Soccorso Alpino Guardia di Finanza, Ariannanet (app development) and BPG (radio communications). This app is very similar to Alpify. Both apps leverage smartphone technology to locate the user's position in real time, but aGestic goes a step further by identifying potential dangerous situations like when the user is incapacitated. The app then can send a distress signal to rescuers. Operators can monitor users locations in real time. For more information: www.ariannanet.it/agesic.

Lukas Dürr (SLF, Switzerland) presented a summary of "Recreational Avalanche Accidents in Switzerland." In the past 20 years 417 people have died. [For comparison 557 have died in the US. Unlike the US the CH trend is downward slightly while the US trend has been upward.] The statistics show that about 50% of buried victims die. Interestingly, only 55% of the 1902 accidents (deaths and no deaths) occurred on weekends. Also in the past 20 years both small-group (companion) rescue and professional (organized) rescue has gotten faster. Compared to the first 10 years the times have dropped from 15 to 10 minutes, and from 105 to 60 minutes. Conclusion: burial time has decreased and survival has increased. A question posed by Atkins to the audience was, **"What is the longest survival time of a buried person?"**



Electronic signalling (transceivers) means one is found faster and have a greater chance to survive.

(54%) have participated in avalanche awareness training. **Conclusion: Swedes are well-equipped, ski often, have some training, know the danger, but still want to go.**

Answers were: Austria, 24 hours a few years ago; Switzerland, 17 hours (2010); Sweden, 6 days; US, 23 and 24 hours (2003); France, 7.5 hours (a few years); Argentina, 15 hours (2013).

Per-Olov Wikbert (Fjällsäkerhetsrådet, Sweden) presented results from a survey of potential Swedish avalanche victims: freeriders. Last winter 7 Swedes were killed in avalanches; however, 6 of those deaths occurred in other countries. The mountain safety council sought to learn more about freeriders' attitudes, level of knowledge, risk acceptance, etc. The survey was posted on the largest freerider forum in Sweden. 1127 people participated, and 93% said they use ski lifts to access out-of-area terrain. Surprisingly, 62% said they carry avalanche rescue equipment. A large majority (81%) say they are familiar with rescue equipment, but 30% said they have never trained with it. More than half

Bernd Zehetleiter, (*Bergwacht, Germany and Recco*) *Dale Atkins* (*MRA, US and Recco*) presented "Reflectors as Backup: Opportunity and Challenge For Rescuers." Starting this winter all Ortovox transceivers will include a Recco reflector. Ortovox is taking a systems approach to rescue and want their users to have a back up. Reflectors on recreationalists are great, but will pose an extra challenge to rescuers. However, the situation is not new and reflectors on rescuers has been practiced by some teams for more than 20 years. Zehetleiter described situations when distracting signals may be encountered and offered solutions to manage these times. **Reflectors on rescuers is not a new challenge and is only a problem for rescuers that don't train.**

"Störsignale" – Lösungen

Fünf Techniken helfen störende RECCO Signale in allen Situationen zu minimieren.

- **Detektor ausrichten**
- **Organisieren**
- **Positionieren**
- **Üben**
- **Abschirmen**

(Inhalte aus:
Trainingsprogramm:
Advanced)

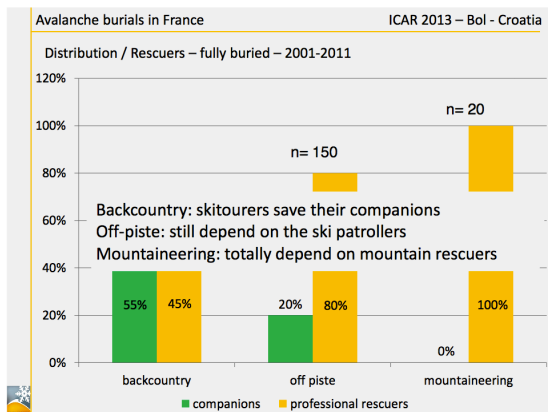


RECCO recommends five solutions to minimize distracting signals: detector alignment, organizing (managing the site), position (move electronic items to one's back), practice (train with complications), and shield (when the other steps don't work).



PIEPS introduces their new JetForce airbag technology which will be available next winter. In the US the JetForce will be branded under the Black Diamond Equipment label, PIEPS's new owner.

Michael Rust, (*PIEPS, Austria*) demonstrated their new avalanche airbag technology called JetForce which uses a battery-powered mechanical blower. Think like a mini but high-powered leaf blower. The fan twirls at 60,000 rpm. **This innovative approach overcomes the two serious issues of the compressed gas systems: travel on airplanes and re-use.** The JetForce li-ion battery can be used three times before needing to be recharged, so reuse whether for training or emergency, is simple and without additional costs. The JetForce also deflates after 3 minutes, so a buried person is can be left with a large airpocket. The JetForce system will be available to skiers and rescuers in the fall of 2014.



Distribution of who searches for whom in France.

reflectors; especially mountaineers who are not well equipped and “totally depend on mountain rescuers.” Recent, large summer-time avalanche accidents on the Mont Blanc massif have resulted in prolonged SAR operations that expose large numbers of rescuers to significant hazards because the buried victims were not searchable.

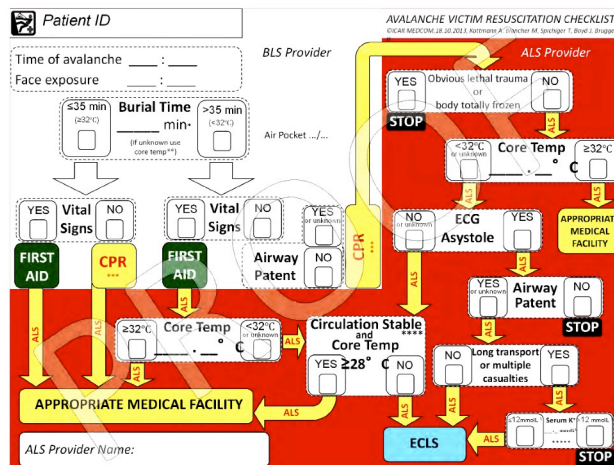
Frédéric Jarry, (ANENA, France) presented a review of avalanche burial durations in France over the previous 10 years. Ski tourers equipped with electronic devices were found on average at 30 minutes. However, without electronic means (transceiver or recco reflectors) were found at 115 minutes. Freeriders with electronic means were found quickly at 25 minutes; however, most freeriders do not carry transceivers, as a result riders without, were buried for an average of 70 minutes. Jarry concluded that carrying an electronic device (transceiver and Recco reflectors) increases survival and shortens the duration of rescue operations. France wants more people to be equipped with transceiver or Recco

JOINT SESSIONS — ALL COMMISSIONS

NOTE: Several avalanche presentations were presented to all Commissions. To learn about all the reports, please see the reports from the individual commissions (www.mra.org/training-education/ikar-reports). The avalanche oriented presentations include:

Avalanche Victim Resuscitation Checklist

Alex Knottmann (CH, Rega): The IKAR avalanche resuscitation algorithm has for some users been difficult to remember or use during the stress of a rescue. This MEDCOM checklist can be used by both physicians and first responders. The card will be laminated with plastic and should be slung around the neck of the victim. The white part is filled out by first responders and the red part by paramedics or physicians. The advantage is the medical information is available on arrival at the hospital. The MEDCOM will translate and distribute the A6-sized (pocket size) card.



Checklist can be used by medical providers at all levels.

Managing Moderate To Severe Pain In Mountain Rescue

John Ellerton (UK, Mountain Rescue England and Wales) presented the MEDCOM's recommendations on managing pain for all levels of providers from first responders to physicians, including rescue organizations. Many emergency responders fail to adequately recognize, assess and treat pain. While this was not an avalanche talk, it was filled with excellent advice that should be listened to by avalanche rescuers. Serious injuries are much more common than avalanche burials and rescuers should be ready and able to manage severe pain of casualties. For more details, please see the MRA MEDCOM report: www.mra.org/images/stories/ikar/2013_MEDCOM_MRareport.pdf.

HEC (Human External Cargo) Avalanche Rescue

Dominique Michellod, (CH, OCVS) presented an unusual avalanche rescue of a buried victim during a very warm, spring-time avalanche cycle. The danger was rated “high” [natural avalanches likely] and the threat of a second avalanche was great. The victim’s three companions had already found their serious injured friend and were in the process of digging him out. But to leave the companions and rescuers on site was a recipe for disaster. Rescuers first evacuated the companions, which was difficult to do because they did not want to leave their friend. Then 2 rescuers worked for 15 minutes while hanging beneath the rescue helicopter to finish digging out and then packaging the injured skier. All were short hauled away to the staging area. The victim spend several days in hospital. **This rescue went beyond traditional thinking to consider and perform a what-else-can-we-do action to mitigate and manage risk in a high-risk situation but also in a situation with high benefit.**

Risk Analysis and Management

Col. Blaise Agresti (FR, PGHM) director of the National Mountain Rescue Training Center in Chamonix presented the PGHM’s approach to rescuer-accident analysis. The PGHM has suffered just over one rescuer death per year since it’s inception in 1958; 20 occurred in actual rescues but 41 occurred in trainings. In the last 10 years all deaths occurred during training exercises. 2013 was especially difficult as 5 gendarmes (military rescuers) were killed. The PGHM learned that 90% of the accidents resulted from human error. Over the last several years the PGHM has been working on a better risk management process and the accidents of early 2013 have heightened the concern and interest to improve the process. The PGHM operate in an environment (both physical and cultural) of high risk. To reduce this risk they have formulated a four-stage process:”

1. Analyze internal risks (circumstances of the rescue, training, risk during operation and training, communication, etc.)
2. Lessons learned process (RETEX: what happened; how accidents, new methods, incidents should be reported; main objective to discover new practices and new technologies)
3. Incident debriefing (ALARM: 4 steps that involve a detailed chronology of events, identifying the non-conformities – lack of care, anomalies, and disrespect of rules; proposing risk management measure, and creating a verification/monitoring process. This is done in a framework of 7 linked factors starting with the patient, rescuers, team processes, tasks, working conditions, incident management and the context or culture of the organization.)
4. Monitoring and control process (done by an external authority)

Col. Agresti pointed out the human errors have two faces. The “ugly” face is the perception of negative consequences of mistakes so people try to hide or suppress activities. The “positive” face reveals the “hidden weaknesses of the system” which leads prevention. The challenge for the PGHM [and all rescue organizations] is to move from a “fault culture” toward an “error and risk management culture.” Agresti emphasized that **“a debriefing is not a discussion around a beer.”**

A Leader’s Guide Short Version

1. Recognize the proper context

How familiar am I with this situation?

2. Apply appropriate strategy

answer	context	strategy
I know this situation.	SIMPLE	BEST PRACTICE
I am familiar with this situation. OR I don't know but I know someone who does.	COMPLICATED	GOOD PRACTICE
We don't know, yet.	COMPLEX	EMERGENCE

Atkins, 2013

The short version of how to decide which strategy to use.

Order And Disorder In Mountain Rescue Decision Making

Dale Atkins (US, MRA) presented a conceptual talk on a different approach to decision making based on the degree of order or disorder presented during SAR operations. As order and disorder change so too does the context or circumstances, and as context changes so too should our strategies – best practice, good practice, emergence, interrupt. An incorrect strategy may work; however, if it fails the failure is either lost time or catastrophe. He used several examples from mountain rescues gone

bad to the Air France 447 crash when a complicated problem turned complex resulting in confusion by the pilots and the deaths of all 228 passengers. Atkins also identified the ways, or barriers that keep us from adapting and changing strategies, including cause does not equal effect; listening to experts, and past success should not always mean confidence.

Avalanche On Kamešnica Mountain – February 23, 2013 – First Avalanche Rescue For Croatian Mountain Rescue – From Theory to Practice.

Hrvoje Dujmić (HR, HGS) director of Croatian Mountain Rescue described their recent experience with their first avalanche rescue. The accident occurred just across the border in Bosnia-Herzegovina when one person was buried and killed in a large wet-snow avalanche. Croatian rescuers were the closest; however, they had to wait for a permit to fly over the border, which took time. The first rescuers arrived 90 minutes after the avalanche. In bad weather rescuers searched until 22 hours, but Dujmić pointed out the victim had no transceiver or Recco reflector, so the operation was suspended for the night. The next day more than 200 rescuers from both BH and HR searched until an avalanche dog located the body. Dujmić stated that everything his team did had been learned from IKAR, so the continuation and progress of IKAR is very important. He also would like IKAR to work on improving and coordinating border crossings. He also wishes IKAR would provide more tactical – how-to – training.

2014 MEETING – USA

The 66th IKAR Congress will be held 5–10 October Lake Tahoe in Stateline, Nevada (<https://goo.gl/maps/Mxod1>). The theme will be “Multi-Casualty Incidents in Mountain Rescue”. This will be the first IKAR Congress held in the United States.

RECOMMENDATION REGARDING THE MRA INVOLVEMENT IN FUTURE IKAR MEETINGS

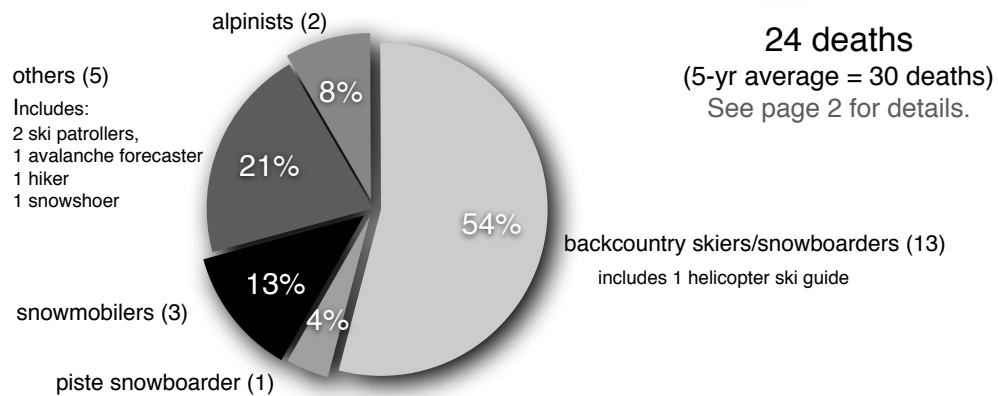
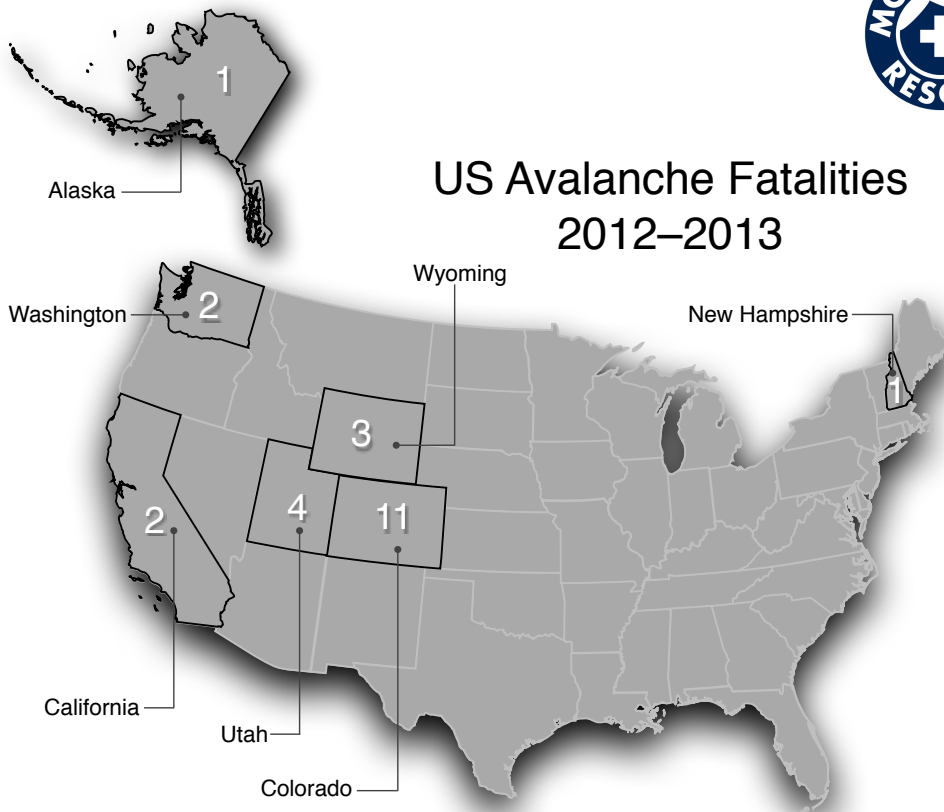
It is this writer's opinion the MRA remain involved in IKAR. The exchange of ideas, knowledge, and skills, is of huge benefit to the MRA membership. The analysis, consideration or application of this information, skills, and equipment can benefit all MRA teams from training to SAR operations. IKAR can help MRA teams become better, safer, and more efficient rescuers. The challenge to the MRA is better bring and share this knowledge to the MRA community. This report is one way to transfer information

The Mountain Rescue Association (MRA) benefits from participation in IKAR in many ways. Perhaps the most import benefit is the opportunity to gain knowledge and skills from the leaders of mountain rescue from around the world, especially in Europe. The knowledge and skills learned can help MRA teams and members do their jobs faster and safer. In recent years the reach of IKAR has been expanding beyond Europe and North America. Japanese representation has been present for several years.

DISCLOSURE

I, Dale Atkins, am a volunteer MRA member (Alpine Rescue Team, Evergreen CO), and I am also employed by RECCO AB who paid for my participation at the 2013 IKAR congress, reducing the costs of the MRA's participation. I am very aware of the potential for conflict of interests and have in the past withdrawn myself from specific voting actions. During the 2013 meeting no voting took place involving the RECCO system.

Summary of US Avalanche Deaths — Handout



date	location	state	description	rescue method	rescue technique
Dec. 24	Alpine Meadows	California	1 ski patroller buried and killed	professional	transceiver
Dec. 24	Donner Ski Ranch	California	1 piste snowboarder buried and killed	professional	dog
Dec. 31	Snowmass (Aspen)	Colorado	1 ski patroller killed (solo)	professional	not buried
Jan. 13	Marble	Colorado	1 backcountry skier buried and killed	companion	transceiver
Jan. 18	Urrita Mountains	Utah	2 snowmobilers buried and killed	companion / professional	digging
Jan. 27	Jackson, Hoback Canyon	Wyoming	1 backcountry skier killed	companion	not buried
Jan. 27	Jackson, Grand Teton NP	Wyoming	1 backcountry skier killed	companion	not buried
Feb. 02	Silverton	Colorado	1 backcountry skier buried and killed	companion	transceiver
Mar. 01	Jackson, Grand Teton NP	Wyoming	1 backcountry skier killed	companion	not buried
Mar. 01	Mt Washington	New Hampshire	1 ice climber skier killed (solo)	professional	not buried
Mar. 01	Manti Skyline	Utah	1 snowmobiler buried and killed §	professional	probe line
Mar. 02	Cameron Pass	Colorado	1 backcountry skier buried and killed *	professional	transceiver
Mar. 03	Haines	Alaska	1 heli-ski (snowboarder) guided killed	professional	not buried
Mar. 17	Estes Park, Rocky Mtn NP	Colorado	1 alpinist killed	professional	not buried (hypothermia)
Apr. 11	Big Cottonwood Canyon	Utah	1 DOT avalanche forecaster killed ‡	professional	not buried
Apr. 13	Snoqualmie Pass, Red Mtn	Washington	1 snowshoer buried and killed § †	others	digging
Apr. 13	Snoqualmie Pass, Granite Mtn	Washington	1 hiker buried and killed §	professional	melted out (25 days)
Apr. 18	Vail Pass	Colorado	1 backcountry snowboarder buried and killed	companion	transceiver
Apr. 21	Loveland Pass	Colorado	4 backcountry split snowboarders and 1 backcountry skier buried and killed †	others / professional	transceiver and digging

§ No rescue equipment † No companion rescue ‡ Equipped with airbag * Companion survived 3-hr burial
 rescue method: professional = organized, companions = members of victim's group, others = people near by