

AVALANCHE RESCUE REPORT

International Commission for Alpine Rescue

Lawinenkommission • Commission d'avalanche • Avalanche Rescue Commission



IKAR-CISA

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This reported was updated on February 23, 2015 to include the Be Searchable recommendation. See appendix III.

The following report is based on notes and commentary by Atkins. As of late November the official minutes of the Avalanche Rescue Commission — have not yet been published. The minutes will eventually posted on the ICAR website.



NOTE: ICAR is changing it's logo and website address. The transition has already started and will continue over the coming winter. Please use the **new ICAR web address: www.alpine-rescue.org**. Also as the organization moves toward a single language – English – the German abbreviation (IKAR) will become ICAR. Hence, in this paper the organization will only be referred to as ICAR.

INTRODUCTION

The Avalanche Rescue Commission meets once a year at the Annual Meeting of the ICAR. In some years a special winter-skills meeting may be held. Within the Avalanche Rescue Commission is a sub-group of rescue dog handlers, and a workgroup of those interested in safety and accident prevention. 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 ICAR website: www.alpine-rescue.org.

Pre-Conference Workshop

The Avalanche Commission organized the field day with the active participation of the Terrestrial and Medical commissions. More than 180 participants attended, and despite (and planned for) the lack of snow, six field stations gave hands-on opportunities to increase, knowledge, skills and abilities.

The stations were:

- Hypothermia (field treatment with a variety of methods and tools)
- Avalanche Triage Strategy (MEDCOM checklist)
- Probing (slalom technique)
- Recco (managing distracting signals)
- Mass Casualty Incident management (focus on organization and communication)
- Commercial (transceivers company representatives)

Lessons learned from the field day

Hypothermia workshop: Prevent heat loss! Deliver heat by creating your own heated “ambulance” or shelter (e.g., a tent). Watch out for baffled vapor barriers, as sometimes the baffles get compressed. Wind barriers are very important in preventing heat loss.

Probing workshop: Introduced the “slalom” method, which works well for trained rescuers to probe small areas quickly. More details can be found later in this report.

Avalanche triage workshop: Focused on triage and reverse triage – not breathing/cardiac arrest patients are treated first rather than “black” tagged. Because avalanche death is almost always caused by asphyxia, attempting to manage airway and ventilations are paramount. A quick attempt at CPR / defibrillation are important too. Rescuers should use and practice the [MedCom’s avalanche checklist](#). Also practice medical care in steep, challenging terrain.



Recco field station.

RECCO workshop: Focused on managing distracting signals. Successful use of the detector increases greatly when operators are aware of distracting signals and know how to manage those signals.

MCI management workshop: Dealt with managing a ski lift accident. The focus was on managing the organization of the response from incident command, mass casualties, triage, transport and hospitals. The triage and transport portions were performed well as that is what rescuers do often. However, the two problem areas were establishing a command structure and containment of the accident.

Commercial workshop: Transceiver company representatives were on hand to answer questions and show off their wares.

AVALANCHE COMMISSION MEETING

This year’s congress was held in South Lake Tahoe, Nevada (US). 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 35 rescuers from at least 15 countries participated: Austria, Canada, Croatia, France, Iceland, Italy, Norway, Poland, Slovakia, Slovenia, Sweden, Switzerland, United Kingdom (Scotland) and United States of America.

Marc Beverly, a long-time mountain rescuer and AMGA/UIAGM mountain guide from New

Mexico, served and participated as the MRA's alternate representative to the Avalanche Rescue Commission. His notes were especially helpful as Atkins was not able to attend all sessions. Marc's participation will provide future benefits to the MRA.

Moment of Silence

A silent tribute was held as a gesture of respect to those rescuers who lost their lives in the past year.

Minutes

Minutes from the 2013 meeting in Bol, Croatia, were read and approved.

Summary Of Avalanche Accidents, 2013/14 And Other Topics

The ICAR avalanche accident database is still not functional and outside of the hands of the Avalanche Commission; however, accident case reports or season summaries were presented by several member countries. Lessons learned were highlighted, and the theme of risk management was often heard. [Unfortunately, a spilled drink ruined several pages of this author's notes regarding accidents in a few countries and one presentation.]

France: *Fréd Jarry (ANENA)* reported a quiet winter with the third lowest tally in 30 years. Despite a shallow snow cover, warm temperatures limited the formation of weak layers. Also bad weather kept many people from venturing into the mountains, especially during the February holidays. As a result, the 21 avalanche deaths were far below the average of 32. Another reason mentioned by Jarry was that **only 3 of the 18 fatal accidents involved more than one victim**, and each of those fatal accidents involved only 2 persons. In most winters there are often a couple of accidents that kill three or four victims. Of the 21 killed last winter, 7 were ski tourers; 10, off-piste riders; 2, mountaineers; 1, snowshoer; and 1 hut keeper who was returning to work on his skis. The fatalities occurred in 18 accidents. Jarry also reported that 38 people were injured. [More detail was presented but notes were damaged.]

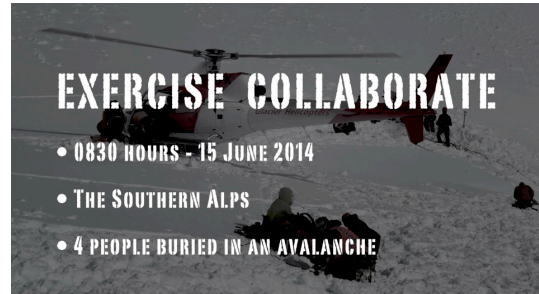
Italy: *Stefano Pivot (AINEVA)* reported that the central and eastern Alps recorded one of the best winters for snow since 1930. Only the winter of 1951–52 saw more snow. With a persistent, mild and wet southwesterly storm track from December through mid February, heavy snows fell especially above 1600m resulting in long periods of elevated avalanche danger. Much rain fell in the valleys. Avalanches killed 22 people, which is above the 30-year average of 19. **Of those killed 8 (36%) were not equipped with transceivers.** Pivot also pointed out that a significant number of accidents involved minors. [More detail was presented but notes were damaged.]

Switzerland: *Lukas Dürr (SLF)* reported that 22 people died in 16 accidents, which is a bit below the average of 25 deaths. Most victims (18) were backcountry skiers; the other 4 deaths occurred off-piste. Of the 16 accidents, 13 occurred in the winter and spring months; 3 accidents occurred in summer (2 in July and 1 in August). He noted it was a wet and cool summer with snow on the high peaks. **In 11 of the 13 winter accidents the avalanche danger was rated "considerable" and in one other the danger was rated "high."** He added that "human factors" were key to most of the accidents. In the one March fatal accident, the danger rating was "low" but a cornice collapse released a slab avalanche that caught 2 unsuspecting heli-skiers. [Much more detail was presented but notes were damaged.]

Norway: *Albert Lunde (Røde Kors)* reported that accidents killed 9 which is about double the average of 5 deaths. Five of the deaths involved backcountry skiers; however, four died in a single accident. Also killed in separate accidents were a 1 snowboarder and 3 snowmobilers. Lunde highlighted the accident that killed 4 very experienced and very fit backcountry skiers on Mt. Litlskjorta in the Sunndalsfjella Mountains on April 14. The group of 6 set out that morning, but 2 turned around because of bad weather. About 20–25cm of new snow had fallen in the past 24 hours and strong winds continued to cause significant blowing snow. The others continued up the peak. All were equipped with transceivers, probes and shovels; and 3 had airbags. It is unknown whether they triggered the avalanche, or if it was a natural release. All 4 were completely buried. When they failed to meet their friends back at the hut, rescuers were called. Bad weather kept rescuers away until the next morning. A rescuer with a transceiver was slung beneath a helicopter

and detected the first transceiver signal. Ground crews quickly located three signals and recovered three bodies, but no fourth signal was heard. Warming temperatures and rising danger that afternoon chased rescuers away. The next morning rescuers returned and by probing located the 4th skier. All the bodies were close together; **none of the three airbags had been deployed, and the last skier found had his transceiver turned off and in his backpack.**

New Zealand: A short video shows an avalanche MCI drill done in June 2014 that involved 4 helicopters and 30 rescuers to locate and evacuate 4 buried victims. Total time: 1 hour and 27 minutes to complete the drill; about 3 minutes to watch the video. See the video at: vimeo.com/108218407



New Zealand MCI drill, June 2014

USA: Dale Atkins (MRA) presented a handout that briefly summarized the year's fatal avalanche accidents (see Appendix I). The 35 avalanche deaths in 2013–14 were 4 above the 5-year average. The tally only jumped to above average in late May when a single avalanche buried and killed 6 alpinists on Mt Rainier. While snowmobile and skier/snowboarder deaths were about even (11 and 12 respectively), the number of snow professionals (those who work in snow and avalanche terrain) was unusual. Avalanches claimed 5 snow professionals (1 ski patroller, 2 mountain guides, and 2 ski guides). **This tally and trend is troubling, and is the second year in a row with a high number of professional deaths.** For the 5 years from 2008 to 2012, one 1 (3%) snow professional was killed each winter. However, in each of the past 2 winters (2013 and 2014) 4 and 5 (~15%) respectively, snow professionals died.

Results From 2014 Workgroups

Probing Efficiency

Genswein and Atkins – results were presented to both the Avalanche and Terrestrial Commission. See details under Joint Sessions.

Be Searchable

At last year's meeting in Croatia a rough draft was prepared about the concept and importance of "being searchable." The text was reworked during this year's meeting and shared with the Terrestrial Commission. Final action on the recommendation could not be taken but will be addressed at ICAR's winter board meeting in January 2015. **Being searchable is critically important for all search and rescue activities and should be an important message in all PSAR activities.** A person who is searchable is easier to find. That makes rescues faster and less risky for rescuers (due to reduced exposure times). Text of the proposed recommendation is included in appendix II. **UPDATE: Approved on January 24, 2015, see Appendix III.**

Avalanche & Rescue Dog Handlers Sub Commission

On the direction of commission chair Marcel Meir (CH-ARS) 13 rescue dog handlers from 9 countries meet separately on the 7th and discussed the use and practice of dogs for wilderness, cadaver, avalanche and water search. Poland, Sweden, Italy, Ireland, Switzerland, and Wasatch Backcountry Rescue (Utah – Keith Sternenfels) presented information about their practices and use of dogs, and the spring workshop in Kühteil, Austria was reviewed. Several Americans outside the MRA community participated in the meeting. Unfortunately, the commission reports that the survey prepared by Albert Lunde (NO) is still not being used and will no longer be pursued.

Avalanche Accident Statistics, 2013–14

For a third year the electronic database has not functioned, so we will return to old school means – pen and paper – to collect accidents statistics. Collection of the data, however, remains poor.

Prevention Workgroup

Per-Olov Wikberg (Fjällsäkerhetsrådet) Reports the group has been active. Details can be found at [ikar20150304001496.pdf](#). The workgroup's aim to exchange ideas and to launch common studies and projects related to preventive safety will be important in the upcoming 2015 congress in Ireland.

Other / Miscellaneous

None stated.

Technical Presentations

A History of US Avalanche Accidents and Rescues:

Dale Atkins (MRA-US) presented a brief overview of US avalanche accidents and rescues from before the 1800s to the present. Common themes that have persisted since the early 1800's are:

- rescuers still rely on probes and shovels, and dogs
- attitudes in the late 1900s shifted away from saving lives to finding bodies, however, the attitude in past few years is starting to shift back to saving lives

The question rescuers should ask is not whether a victim is dead; rather rescuers should ask, "Could this buried person still be alive?"



States where serious accidents had occurred around 1800.

Avalanche Risk Management Framework:

John Buffery, (CAA) described a framework for managing risk as it could be related back to a backcountry accident and rescue that occurred in 1998. Buffery spoke of the Silver Spray accident where 5 hut guests and the hut custodian were killed in an avalanche while backcountry skiing. He applied a modern approach to risk management (ISO 31000) retroactively to see how it would have worked prior to the 1998 accident. Unfortunately, this author's notes about Buffery's presentation were ruined when a spilled drink washed away the ink. [Obviously, poor risk management on this author's part.]

White Risk: Lukas Dürr, (SLF) presented *White Risk* which is a web- and mobile phone-based "avalanche prevention portal." White Risk has evolved over the years from a safety/prevention video to a full-featured, sophisticated, web-based prevention tool. The "portal" has 3 layers: Explore, Tour & App, and Pro. The *Explore* function is about knowledge and learning. It can be used by beginners and experts alike. The *Tour & App* functions are for organizing backcountry tours online. It also provides access to key weather and avalanche data via a smartphone app. The *Pro* module allows for the creation of professional level presentations that can be used on- and off-line. The portal is a subscription service that is not cheap; however, it is not unreasonable either. It is impressive. For details visit: www.whiterisk.ch

Consumer Electronics and Avalanche Transceivers: Erwin Meister (CCS Adaxys, CH) and Illar Dammert (Mammut, CH) presented a summary of how electronic products can interfere with avalanche transceivers. The pair systematically analyzed how the transmit and receive modes can be adversely affected – and significantly so – by electronic devices (cameras, gps, phones, wrist watches, headlamps, etc.) and metal objects (e.g., shovels, food wrappers, carabiners, ice screws, etc.). Their conclusions and recommendations are critical for anyone who uses an avalanche transceiver. As a general principle, keep transceivers apart from all metal objects and electronic devices. When in "send" the separation should be at least 20cm. When in "receive" their general recommendation is at least 50cm. Distracting signals and interference are a real threat to avalanche transceivers and have already been known to disrupt searches. Mobile phones, even in "airplane mode" can still cause considerable grief for transceivers. A copy of their ISSW 2014 paper can be found at the [ISSW archives](#).

JOINT SESSIONS — AVALANCHE AND TERRESTRIAL COMMISSIONS

NOTE: Several avalanche presentations were presented to the joint session of the Avalanche and Terrestrial Commissions. Below are the avalanche-related presentations.

Dramatic Avalanche at Mount Maudit

Jean Baptiste Estachy (PGHM, FR) presented how command and control structure was organized for a MCI avalanche event that occurred outside Chamonix on Mount Maudit. Early in the morning of July 12, 2012, a slab avalanche caught 23 climbers, injuring 7 and killing 9. In addition another 7 suffered “shock” and needed attending. The SAR operation lasted 11 hours and involved 40 rescuers. Approximately 30 helicopter flights ferried rescuers to and from the accident site high on the Mont Blanc massif. The emergency call came in at 0525 hours and the first rescuers were on site at 0620. The command leadership focused on 7 functional areas:

- command, control, report, communicate
- inventory of victims and potential victims
- management of avalanche/accident area
- medical care and support
- management of the DZ (operations)
- judicial tasks (investigation and identification)
- public relations



Rescues are complicated activities that require thinking and coordination beyond the search and rescue operation.

The debriefing shows that notification, response and coordination of the different rescue organizations worked well. **Problems identified were that local authorities usurped the incident commander; helicopter flights lacked a coordinator; and there was no physician leader in the valley to coordinate medical care once patients were off-loaded.** An air boss (helicopter coordinator) – a pilot but not flying – to coordinate the flights would have been very helpful. Fortunately, Estachy added, the pilots all knew one other and did their own coordination. Estachy's presentation can be downloaded at: [20141205001396.pdf](https://www.researchgate.net/publication/275001396)

Slalom Probing

Manuel Genswein (CH) and Fred Jarry (ANENA-FR) presented their study on the optimization of probe lines (additional study authors include Dominique Létang, Dale Atkins, and Ingrid Reiweger). In Europe probe lines still rescue people alive, ~13% (2002-2012). [In the US during a similar time period 14% (of people found by probing, 7 of 50) were found alive (includes spot probing and probe lines)]. As part of the study the authors considered step movement, angle of probe, probe position, etc. **It was found that stepping to the side is easier and does not adversely affect probe spacing.** The 50x50cm probe grid (as previously identified by Atkins, Ballard and Ballard (2004, 2006)) as the optimal probe spacing worked very well for trained probers.

Basically, the “slalom” set up is:

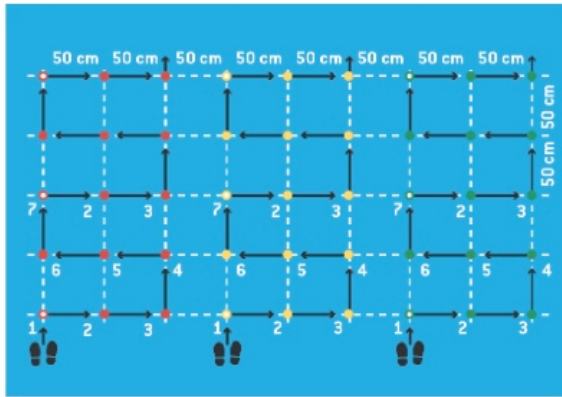
- probe line searchers extend arms wrist-to-wrist, ~150cm apart.
- probe spacing 50x50cm
- sequence: probe in front of feet, 1 step right – probe, 1 step right – probe; 1 step forward – probe, 1 step left – probe, 1 step left probe; 1 step forward – probe....

The commands – best given from the middle – are:

- probe
- right
- right
- forward
- left

- left
- forward

On paper it seems the best approach to finding a live victim is to make one pass probing to a depth of 1.5m. If the victim is not found a second pass should be made at 2.5m. Author's opinion: the probing depths are only theoretical and have not yet been tested by computer modeling or field trials. It is this author's opinion from experience that having to make a second pass is discouraging to rescuers and the search speed of the second pass slows dramatically. It is my opinion to probe full depth (~2.5 to 3m) on the first pass. While most avalanche victims are buried within 1.5m of the surface, 20% of buried victims are buried deeper. Probing only to 1.5m gives a



Slalom probing pattern.

1 in 5 chance of missing a buried victim.

Approximately 9 in 10 victims are buried within 2.5m of the surface. About 5% of all buried victims are deeper than 4m. The "slalom"

approach to probing is a very good method for a few trained professionals to quickly search likely areas. Practice shows it takes about 15

minutes of training. If only recreational –

untrained and not practiced – searchers are

available it is the authors' opinion that

generally the old school approach – line up

shoulder to shoulder – of "one probe hole per

step" is better. The "slalom" method has merit

and is worth trying and practicing with

professional rescuers, but it should not be

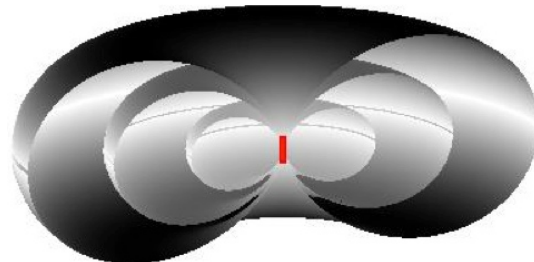
considered "the standard." The technical paper

can be found at: [20141205001397.pdf](https://www.researchgate.net/publication/20141205001397)

Field Line Search Revisited

Felix Meier (CH) the guru of avalanche transceivers presented a premier on the avalanche transceivers' magnetic field. His purpose was to inform many and remind some that the "field line search" is actually not a search along the field lines, but along the path by the projection of the field lines onto the plane of the searching transceiver." This sounds very complicated but it explains why we should be doing what we do when we search with a transceiver. Some of Meier's recommendations included:

- When getting into the pinpoint search, do not rely too much on direction indications.
- Do not spend much time on pinpoint search by means of your transceiver. Start probing early.
- A horizontal transmitter does give better range.
- In that respect, an intelligent transmitter makes sense.
- A vertical transmitter will result in the shortest search (straight) path, but also in reduced range.



Shape of the field of a vertical dipole.

Standardization of Avalanche Rescue Curriculum

Manuel Genswein (CH) and *Lukas Dürr (SLF-CH)* presented an approach recently adopted in Switzerland to standardize avalanche rescue education. In Switzerland all activities are complicated by 4 national languages (make it 5 when English is used). The Swiss ski-lift association (Seilbahnen Schweiz) requested a common avalanche rescue curriculum. Dürr stated their goal (SLF) was to find a common language for rescue, both in terminology and practice for transceiver and probe searching, and shoveling. The project was successfully completed in the fall of 2013 and consists of 4 levels. Avalanche leaders in Canada and France also were involved in the effort. Joe Obad (CAA-CA) stated that all organizations need to work off the same

standards. In Canada they had a standard for beginners and one for experts but not for those in between. Canada took the Swiss curriculum and adapted it for Canadian teams. The system was also adapted in France. **This approach of avalanche rescue standardization has merit, but in the US its acceptance may run into difficulties because of American's decentralized approach to most activities, and because there is no clear American leader in avalanche rescue activities.** Also, it remains to be seen if transceiver companies will embrace the standardization. Some techniques are also not appropriate for some transceivers, and some techniques are the not the best in some situations. Examples of the Swiss (and Canadian and French) approaches can be seen at:

- basic: [20141205001403.jpg](#)
- intermediate: [20141205001404.jpg](#)
- advanced: [20141205001405.jpg](#)
- expert: [20141205001406.jpg](#)

Snowmobiling in Sweden, 2014 – Trends, Attitudes to Risk & Knowledge about Avalanches

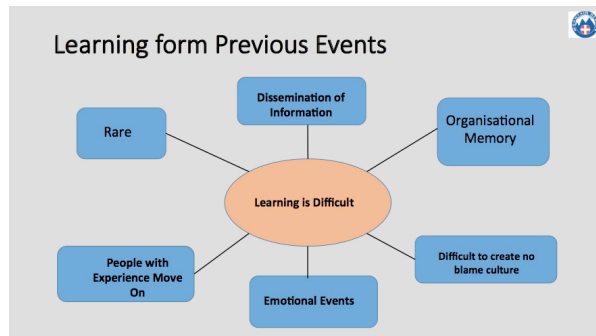
Per-Olov Wikbert (Fjällsäkerhetsrådet, Sweden) presented results from a web survey of snowmobilers; 2917 responded. The results provided new and important knowledge about behavior and attitudes toward risk and general knowledge about avalanches. Per-Olov reported that 34% of the snowmobilers said they were sometimes or often in avalanche terrain, and nearly 1 in 5 have had an avalanche incident. But only 14 % regularly carry a transceiver. **And of those that carried rescue gear, 33% said they rarely or never practice using it.** [Suspect a similar situation in the US.]

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/ICAR-reports). The avalanche oriented or related presentations included:

Medical Aspects of Disaster Management

Dr. Marc Blancher (FR) presented experience learned from major MCI events over the past 10 years. Their perspective incorporated how medical care fits into the overall management of an incident. **They pointed out that while each event is unique, the principles of assessment, treatment and care are the same.** Likewise, the French approach to MCI management is a bit different than that done in the American ICS system, however, the principles are the same. Their presentation can be downloaded at: [20141205001426.pdf](#)



Greene, ICAR 2014.

Cold-Wet-Pain – Treat the Basics: Limitations in Multi-Casualty Incidents

Dr. Fidel Elsensohn (AT) spoke of the important and critical role that first responders play in MCI events. With more people venturing into the mountains the number of MCI's are increasing and mountain rescue teams worldwide need to be ready. In the mountain rescue community MCI events are typically associated with avalanches, bad weather and transportation accidents (roads, airplanes, cable cars, etc.), Elsensohn introduced a new MCI source for many to consider – mass-participation events like concerts and sporting events. **When it comes to the treatment and care of injured persons, Elsensohn stressed the importance of supplemental oxygen, especially as an adjunct for helping prevent hypothermia and for reducing pain.** For more details, please see his presentation: [20141205001427.pdf](#)

Organization and Communication Saves Lives

Dr. Mike Greene, (UK, OCVS) presented a different perspective on MCI events from how such events are usually discussed and analyzed. Since the goal of an MCI is really about getting

people (rescuers and rescuees) to the correct location (accident site and definitive care) the management and communication processes are critical. He stressed the importance of learning from others, since MCI are rare, and especially so for individual rescue teams. Two important messages from Dr. Greene's talk included 5 persistent lessons learned from a review of 32 major incidents in the UK (Pollock, 2013):

- poor working practice and poor planning
- inadequate training
- ineffective communication
- lack of leadership
- failure to learn lessons

He also mentioned lessons rescuers tend not to learn from Donahue's (2006) paper studying disaster responses.

- communication failure
- command and control failure
- resources slow to be deployed

His presentation can be downloaded at: [20141205001428.pdf](#)

Helicopter Base Search for Buried Subjects in Avalanches

Patrick Fauchère and *Manuel Genswein (CH)* presented their experience of helicopter search with the long-range transceiver antenna and Recco. Over the years the systems have sometimes worked well but at other times not worked at all. There was no consistency. In 2013 OCVS and Genswein collaborated to bring a systematic approach to searching with both technologies. As a result of training pilots and rescuers Fauchère reports the technologies are working well.

Genswein stated that a proper setup with the helicopter, rescuers and technology is critical, and this should be done and practiced before any real-world mission occurs. Dan Halvorsen add that Norway had similar problems with the technology, so they also contacted Genswein with "very valuable results."

Avalanche Pte. de Massery

Raphael Richard, *Greg Zen Ruffinen*, and *Patrick Fauchère (OCVS-CH)* presented a case report of a series of avalanche accidents that occurred on 5 January 2014. Five avalanches and five deaths occurred that day, but not all avalanches resulted in fatalities. The three shared their perspectives as rescuers where things – techniques, processes and equipment – worked well and what did not work well (including an AED arriving late and with dead batteries, transceiver batteries dying, and delays for the helicopter caused by air traffic control). The last accident that afternoon involved 4 patients but tracks into the avalanche indicated maybe as many as 7 might be have been buried. One rescuer was dropped off to start the entire search. He [either Greg or Raphael] arrived onsite at 8 minutes after the avalanche; he was confident he would find some victims alive. He found the first patient 4 minutes after being dropped off – pulseless with an open airway. Despite trainings, as a single rescuer he was troubled by what to do next. Focus on this patient and risk the lives of others, or move on to the others and risk the life of this first patient? He continued to search. A second signal was quickly found, but then his transceiver died.

Fortunately, he had extra batteries because of an unknown fault in the transceiver. The second patient was also pulseless and with an open airway. By now other helicopters and rescuers and doctors started to arrive. All 4 victims had short burials (<25 minutes) and all died. In hindsight the question the rescuers thought to address is, "Do statistics and protocols influence rescuers?" The answer is, "yes." For the rescuers the rescue effort was "unnerving" because they thought, "statistically speaking, these victims should have been rescued alive." They said "it was difficult to accept" that the four died. In the Q&A Jean Baptiste Estachy (PGHM) pointed out that the 98% survival rate within the first 15 minutes refers only to those dug out alive. It does not refer to resuscitating the pulseless. This is an important concept for rescuers to know. As noted above, all five victims died that afternoon, but their organs were donated and many other lives were saved. The presentation can be found at: [20141205001429.pdf](#)

Stress Responses to Simulated Avalanche SAR Operations in Military Dogs

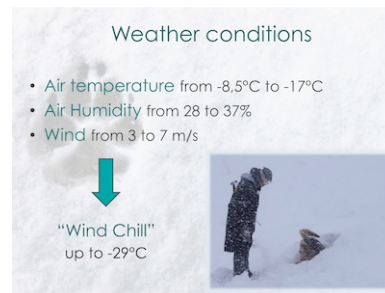
Col Fabio Mannucci (SAGF-IT) presented a detail study to answer two questions: Is avalanche SAR work stressful for dogs? And, is this stress posing a risk to the dogs' welfare? The study

assessed the both the physiological and behavioral responses to stress. The study's conclusions:

- Avalanche SAR work does not seem to negatively affect the welfare of dogs, though it involves physical and psychological efforts, and
- The parameters investigated were useful indicators of the stress induced during the simulated avalanche, missing person search exercise.

The presentation can be downloaded at:

[ikar20141205001418.ppt](#)



Real-world conditions for dog study.

Uepaa! Avalanche Rescue Beacon with Smartphones

Mattias Mock (CH) presentation about his masters' thesis project (that has been further developed as a part of commercial smartphone app Uepaa) about the technical details of how he tested the Uepaa search capabilities in snow. While he says Uepaa is not a replacement for a transceiver; he adds that it useful for people who don't have a transceiver. The reality is that few people that venture into avalanche terrain carry transceivers, but many have smartphones. As a proof of concept and for validation purposes Mock developed a very sophisticated search simulator to model any kind of radio signal in any kind of snow conditions. His field tests were limited but validated his model (for those conditions). While it is this author's opinion that **no smartphone app should be a considered a replacement for a transceiver; apps today, including Uepaa, have the potential to greatly help in the notification of rescuers and the general localization of one needing help.** As the computing power of smart phones improves, maybe rescuers will have to reconsider their thinking about apps. However, one must realize that a dedicated rescue tool like the transceiver will always be superior to a multipurpose tool like the smartphone to pinpoint a buried person. For more details Mattias's presentation can be seen at [ICAR20141205001430.pdf](#)

High Risk Avalanche Search

Alf Peter Kahrs and Dan Halverson (NO) presented an approach used to insert a single rescuer during high risk incidents. Often because of social pressures rescuers feel an obligation to respond to situations that normally would be deemed too hazardous. Their approached, termed "Plan B" **is to longline a single rescuer on a 40m low-stretch rope and let the rescuer search while attached to the rope.** The rescuer and 10m of rope stay on the ground while the helicopter hovers about 30m overhead. The rescuer can do a transceiver search, probe and even shovel out a victim. If another avalanche occurs the pilot can immediately pull out with the rescuer. Some may feel this is too risky, but similar approaches have been used in other countries to search for and extricate injured avalanche victims.

Terrestrial Recco Search

Manuel Genswein (CH) presented a quality talk about how to use the Recco detector from on the ground and from a helicopter. Like current Recco trainings, Genswein, stressed the importance of preparing properly to search so to eliminate distracting signals and other sources of interference. During the helicopter portion **he presented a novel way to hang the detector at the door of the helicopter, which actually makes the detector less tiring to use.** [Disclosure: Genswein is not an employee of RECCO AB and does not receive any compensation from RECCO AB.]

Road Safety to Mountain Rescuer Safety

Dale Atkins (US, MRA) presented a conceptual talk on a very different approach to mountain rescuer safety. Mountain rescue is dangerous even as rescuers try to work in a safe manner. In the past 50 years in the United States an informal search identified 31 fatal accidents resulting in 48 deaths. The tally comes from SAR organizations involved in mountain rescue activities, and the tally is likely incomplete. Atkins presented the idea to look to road safety as a metaphor for mountain rescuer safety for a source of new ideas. The road safety approach is called Vision Zero (VZ), which is a paradigm shift in road safety. The program originated in Sweden more than

Conclusion



Vision Zero:

- requires a holistic approach.
- generates new ideas.
- questions conventional thinking.
- removes limiting biases & old-fashioned methods and attitudes.

Vision Zero is a paradigm shift in thinking about safety.

20 years ago where it has had great success. (Sweden now has the world's safest roads.) VZ has been adopted or adapted by other countries, and some US states and cities. The concept has also been applied with success to medicine, aviation, and the battlefield. Basically, VZ changes the focus of the responsibility from just solely being on the individual to focusing on the "system." **Safety comes from the shared responsibility by all actors within the system – rescuers, designers (gear and training), enforcers (rule makers and land managers), transporters (ground, water and air), and providers (from prehospital to hospital).** The most important questions rescuers should ask themselves about safety is not, "What can we do?" Rather it should be. "What else can we do?" The presentation can be seen at: [20150604001666.pdf](https://www.icar-2015.com/20150604001666.pdf)

RECCO Helicopter Detector

Bruno Jelk (CH, Zermat) presented a brief review of RECCO's prototype helicopter-based detector that Air Zermatt has been testing. Jelk reports they are pleased with the results. The device is a very large detector that is slung beneath the helicopter. With a wireless connection the device takes no power from the helicopter, so it is considered external cargo and requires no aircraft certifications. With a large antenna and lots of batteries for power it has long range capabilities. RECCO diodes were easily located at 300-400m. Since it is heavy, it can be flown fast – up to 130 km/h – so large areas can be searched quickly. Jelk added that testing has occurred in the forests, glaciers and at sea. Even electronic devices (turned off) often produce good range – cell phones, 5–12m; transceivers, 15m; vehicles, 40–100m. The device is designed for the lost-person search in summer and winter. Testing will continue over the winter.

2015 MEETING – Ireland

The 67th ICAR Congress will be held 13–17 October (www.icar-2015.com) in Killarney, southwestern Ireland. The theme will be "Decision Making and Human Factors".

RECOMMENDATION REGARDING THE MRA INVOLVEMENT IN FUTURE ICAR MEETINGS

It is this writer's opinion the MRA remain involved in ICAR. 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. ICAR 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 ICAR 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 ICAR has been expanding beyond Europe and North America. Japanese representation has been present for several years.

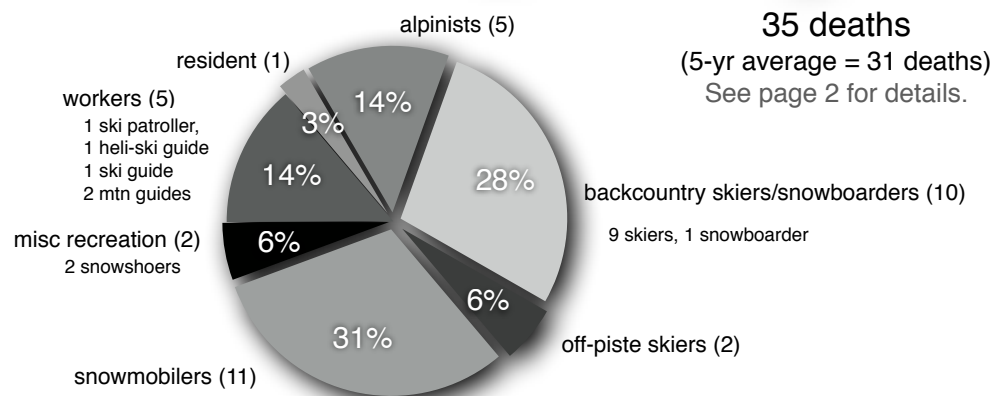
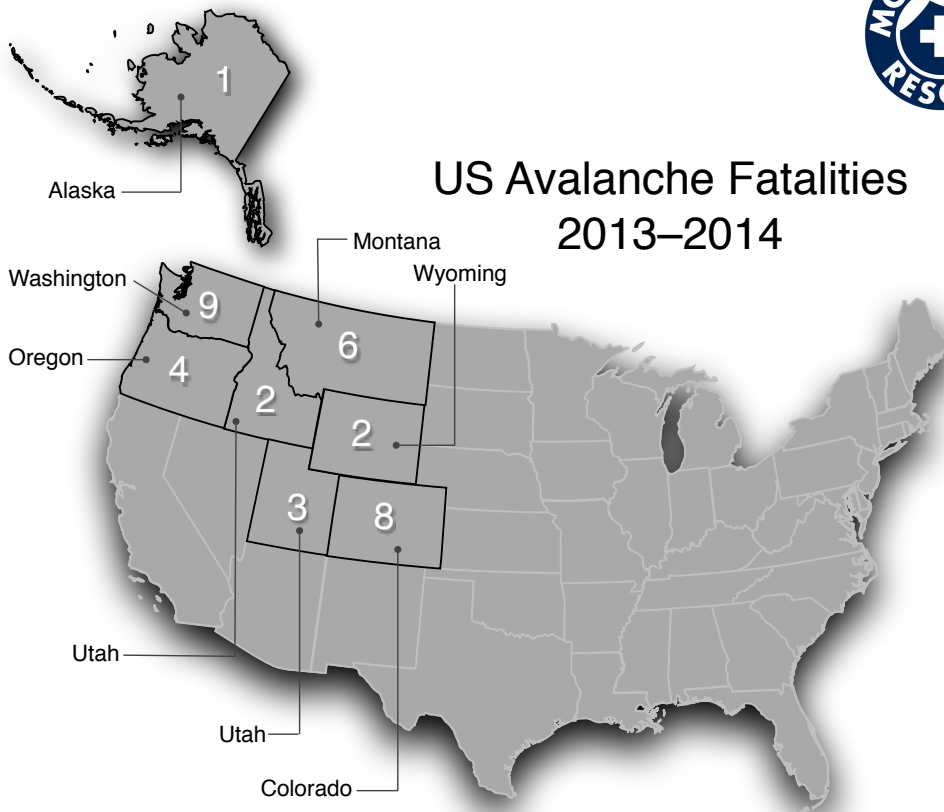
PERSONAL NOTE

This will be my final ICAR meeting as the MRA's representative to the Avalanche Rescue Commission. A 5-year commitment turned into 20 years and it long past time for new blood. It has been an honor to represent the MRA.

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 2014 ICAR 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 2014 meeting no voting took place involving the RECCO system.

Appendix I — US Avalanche Fatalities 2013–14 Handout



date	location	state	description	rescue method	rescue technique
Dec. 26	Jackson Hole	Wyoming	1 off-piste skier buried and killed	small party / professional	transceiver
Dec. 26	Swan Valley	Idaho	1 snowmobiler buried and killed	companion	transceiver
Dec. 31	Willow Creek Pass	Colorado	1 backcountry skier buried and killed	professional	transceiver
Jan. 1	Gallatin Range	Montana	1 snowmobiler buried and killed	companion	transceiver
Jan. 7	Vail	Colorado	4 off-piste skiers caught, 3 injured, 1 buried and killed	companion / professional	transceiver
Jan. 18	North Cascades	Washington	1 climber killed	professional	not buried
Feb. 8	American Fork Canyon	Utah	1 snowshoer buried and killed	small party / professional	digging (buried in water)
Feb. 9	Skyline	Utah	1 snowmobiler buried and killed	companion	transceiver
Feb. 10	Keystone	Colorado	1 off-piste skier buried and killed	professional	recco
Feb. 10	Crested Butte	Colorado	2 snowmobilers caught, 1 partly buried, 1 buried and killed	companion	transceiver
Feb. 11	Wallowa Mountains	Oregon	5 backcountry skiers caught, 2 partly buried and injured, 2 buried and killed skiers (1 guide) buried and killed	companion	transceiver
Feb. 15	Independence Pass	Colorado	5 backcountry skiers caught, 3 injured, 2 buried and killed	companion / professional	probe line
Feb. 16	Gaiena Summit	Colorado	4 snowmobilers buried, 1 killed *	small party / professional	transceiver
Feb. 18	Togwotee Pass	Wyoming	1 snowmobiler buried and killed	companion	transceiver
Feb. 22	Cabinet Mountain Range	Montana	1 snowmobiler buried and killed	companion	transceiver
Feb. 28	Missoula	Montana	4 caught: 1 snowplayer buried, 2 residents buried, 1 killed \$	professional	spot probe
Mar. 4	Conejos Peak, Sand Juans	Colorado	1 ski patrolier buried and killed	companion	transceiver
Mar. 5	La Plata Mountains	Colorado	1 snowmobiler buried and killed †	small party	melted out (96 days)
Mar. 7	Umta Mountains	Utah	1 snowmobiler buried and killed	companion	transceiver
Mar. 10	Flint Creek Range	Montana	1 backcountry skier buried and killed	companion	transceiver
Mar. 11	Cooke City	Montana	2 snowmobilers caught, 1 partly buried and injured, 1 buried and killed \$	professional	probe line
Mar. 15	Haines	Alaska	1 heli-ski guide buried and killed	companion / professional	transceiver
Mar. 22	Granite Mountain	Washington	1 backcountry skier buried and killed	professional	dog *
Mar. 30	Paulina Peak	Oregon	1 snowmobiler buried and killed \$	companion	digging
Apr. 28	Crater Lake	Oregon	1 snowshoer swept into lake and killed \$	—	not found
May 3	Anaconda	Montana	1 backcountry skier partly buried and killed	professional	not buried
May 14	Mt Shuskan	Washington	2 backcountry (alpinist) skiers caught, 1 killed	professional	not buried
May 28	Mt Rainier	Washington	6 alpinists (2 guides) buried and killed	professional	3 melted out / 3 missing

\$ No rescue equipment † No companion rescue ‡ Equipped with airbag * 1 short burial, 60-min burial, 105 burial
rescue method: professional = organized, companion = members of victim's group, small party = others nearby

Appendix II — Be Searchable – DRAFT

The following is a draft version of the proposed recommendation that was passed by the Avalanche Commission and passed along to the Terrestrial Commission for comments and participation. A final version will be submitted to ICAR's executive board in January 2015 for final action.

Be Searchable!

A recommendation to people who travel, recreate or work in mountainous areas.

By increasing visibility, detectability and leaving details of your intentions, you help your companions and rescuers to find you. For this purpose, carry equipment appropriate for the conditions and area. This minimizes the time to find you and reduces the exposure of rescuers to danger.

In snow sports outside developed areas (e.g., snowshoeing, ski touring, out-of-area skiing, backcountry skiing, snowmobiling etc.), as a minimum, it is highly recommended to carry a transceiver, probe, and shovel. This equipment allows immediate companion rescue.

Some examples of devices which make you searchable:

- Reflective materials
- Lamp
- Whistle
- Recco reflector
- transceiver probe shovel
- Mobile, satellite phone
- Satellite Emergency Notification Devices
- Radio



Be searchable!

AVA-REC0010 / Avalanche Rescue Commission / January 24, 2015

This recommendation is for people who travel in mountain for work or pleasure:

By increasing visibility and detectability, leaving details of your intentions, you help your companions and rescuers to find you. For this purpose, carry equipment appropriate for the conditions and area. This minimizes the time to find you and reduces the exposure of rescuers to danger.

In snow sports outside of developed areas (e.g. snowshoeing, ski touring, out of bounds skiing, snowmobiling etc.), it is highly recommended that you carry a transceiver, probe and shovel. This equipment allows immediate companion rescue.

Some examples of devices which make you searchable:

- Reflective materials
- Lamps
- Whistle
- RECCO reflector
- Transceiver, probe, shovel
- Mobile, satellite phone
- Satellite emergency notification devices
- Radio