

## ICAR 2024 Toblach, South Tyrol, Italy –Avalanche Commission Report

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The practical field day was held at Tre Cime di Lavaredo, a national park in the heart of the Dolomites.



The avalanche morning session focused on beacon interference issues, which can be lumped into two categories: **passive interference** is what happens when metal de-tunes the antennas in a beacon when it in 'send' mode. Luckily most of us don't ski with large pieces of steel. However, with some beacons the old 'foil on a chocolate bar' can reduce the effective send range by up to 25-30%.

Active interference is what happens when you have a powered electronic device close to your beacon when it is in search mode. Some examples are LED headlamps, heated gloves, radios, and electronic airbags. Active interference can cause ghost signals and 'reduces' the search range of a beacon.

BCA, Mammut, Ortovox, and Pieps each ran a workshop where they demonstrated different beacon interference issues and how they were dealing with the issue. Some ways presented to help the user deal with interference include directly alerting the user when interference was detected or displaying a reduced search strip size to use. Arva also presented some research they were doing on electronic airbag interference (more on this later).



During the lunch break there was a demonstration of a helicopter hoist and long line mid-face pick-off of 'injured' climbers on the north face of Cima Grande.

For the afternoon session the theme was special avalanche problems, with various stations that showed responses to different avalanche problems.

A **Steam Probe** was first used by Italy while looking for patients after an avalanche hit an occupied hotel in the mountains. It allowed rescuers to burrow through the snow and use a camera mounted to the end of the probe to check for survivors.

Iceland presented a poster on an **ice slush flow avalanche accident** they had during a warm weather spell. There wasn't a lot of knowledge on how to search for the missing person as it required water rescue and winter rescue skills.

Bruce Edgerly from BCA presented on **search strips** where a less-skilled group facing multiple burials forms a beacon line, much like a probe line. A line leader stops the line every 30m or so and has everyone read out the signal reading they have, if they have one. When a searcher gets a number smaller than the spacing between each of the people in the group, that person will split off and do a fine search. The idea is to prevent people swarming on one beacon and not locating the other buried patients.

Pieps display of the evolution of their beacons (first -> newest beacon)



Photo: A. Sheets

The conference kicked off the next day with countries giving an update on the previous season including accident stats and notable avalanche incidents. Europe mostly had a dry, warm season and most accidents involved small slides that resulted in the patient not being fully buried with trauma. Canada had a below-average season and deep slab instability issues. There were a few notable large incidents with mechanized guided groups resulting in multiple fatalities.

## **UIAA** update

There was a UIAA proposal to change low battery warning from 20 hours to 40 hours. Some delegates voiced concerns that there would be two versions of the warning on the market (20 hour and 40 hour), and that the warning would be less urgent if there is too much time left.



Jonathan Wilson gave a presentation on how he tweaked the Coast Guard GAR go/no-go risk assessment model to deal with the specific risk encountered doing an avalanche rescue.

The AvGAR utilizes the eight key areas for consideration that the original GAR model established. The AvGAR further divides these eight categories into two critical focus areas: Fixed Categories for the Operational Cycle and Malleable Categories within the Mission Profile.

## FIXED CATEGORIES

dership is actively engaged, knowledgeable, and experienced in
r from bottom to top. ICS protocols are understood & field teams empowered via de-centralized command
n meets/exceeds the level of experience and training to move ugh avy terrain. Team is competent in snowpack, terrain, weather, human considerations. Adequate numbers of personnel for mission s.
n is mentally and physical fit. Team is rested, engaged, and has d morale. Team has a high level of situational and self awareness. n is mindful of human factors and internal/external bias.
anche and meteorological forecast reviewed. Terrain familiarity, vpack knowledge, and weather challenges are understood. ognized and anticipated natural hazards identified.

## MALLEABLE CATEGORIES

PLANNING	Adequate intel on victim(s). Review ingress and egress, turn around, tactical pause, and re-GAR points. Required equipment and PPE. Risk vs rewards, long approaches, remoteness, elevation gain, altitude considered. Safety for overwatch and spotting changing conditions established.
CONTIGENCY RESOURCES	Additional resources/assets exist, are easily actionable/deployable, and provide ample opportunity for adaptation, alternative action, and solutions. Rescue plan for rescuers in place.
COMMUNICATION	Two way communications, understood area of coverage, back up/satellite communications available. Non-verbal protocols established
TASK COMPEXITY	Complexity increased by: heightened avy danger, persistent/problematic weak layers, unfamiliar terrain, time of day, inclimate weather, deteriorating conditions, aviation/mechanized assets, limited resources, multi-agency collaboration, limited and/or unknown intel.

Avalanche Transceivers and Electromagnetic Interference

BCA interference report – Bruce Edgerly of BCA gave a presentation on field research BCA had done on the effects of **active beacon interference**. They found that the distance at which various devices caused interference ranged from touching the beacon up to 400cm for a snowmobile. They proposed the 20/50 rule: Keep devices, metal objects and magnets 20cm from transmitting devices and 50cm away from beacons in search. The ICAR avalanche commission is composed of people that serve in a wide variety of avalanche roles such as Search and Rescue, avalanche/weather forecasters, ski guides, patrollers, and avalanche equipment manufacturers, so this talk caused a lively discussion. One topic that was brought up was that, in SAR or patrol work, it's a lot easier to educate your members and just test the beacons and equipment, radios, etc. you operate with, but a mountain guide has a harder job of checking clients for heated gloves, jackets with foil liners, the non-FCC approved wireless



headphone, etc. One manufacturer would like to see more research with multiple beacons and interference. This also brought up the issue of 'just turn the offending electronic device off' during a search, which Is just one more thing to deal with in a stressful situation.

ELECTRIC AIRBAGS INTEREFERENCES WITH TRANSCEIVER – Arva is working with Manuel Genswein (of MountainSafety.info) to measure and come up with a standard way to measure electronic interference from electric avalanche airbags. They took over 1000+ measurements with five transceivers and five airbags in standby mode with various software updates. They found two potential issues where the search strip band was reduced and false positive signals were detected. Lithium batteries caused the greatest issues. They came up a maximum allowed reduced search range at a distance of 25cm for the EN 16716 standard. If no airbag can meet this standard the recommendation will be to turn your airbag off while performing a search. They also pointed out that some airbags are worse than others and to make sure software is updated as manufacturers are working to mitigate this issue. After the presentation, Ortovox said that their new Litric airbag system meets these requirements, which, if it is certified, would allow the interference standard to move forward.

Safeback Device— A 'new asphyxiation delaying device during snow burial in a prone position." This is a battery powdered rebreather device that pulls fresh air from the back of a buried patient and moves it to vents located on the shoulder straps of the pack and is activated by pulling a handle on the shoulder handle.

Dig close, dig fast – Davide Rogora and Gianni Perelli studied the best point to start digging for a buried patient after a successful probe strike during an avalanche rescue. There are two popular thoughts on this: The 'Conveyor Belt' method states that you begin digging close to the probe and follow it down vs. Digging starts at a distance from the probe equal to one and a half times the burial depth. By means of controlled field tests, a sample of volunteers dug pairs of pits using both approaches. The differences between the recorded excavation times appeared statistically significant: digging "from one and a half" requires, on average, two minutes, and thirty seconds more than following the probe.

Dr. Simon Rauch presented accident data based on 2500 avalanches with 4270 victims in Switzerland. He found that the probability of surviving an avalanche in relation to the time of burial hasn't changed significantly, although the rate of survival for a long burial (burial>120min) has increased. Overall there has been a slight increase in the survival rate, which can be attributed to a reduction in rescue response time.