# ICAR 2022 Montreux, Switzerland Terrestrial Rescue Commission Report Text and photos by Dale Wang (Rocky Mountain Rescue Group) and Tom Wood (Alpine Rescue Team)

#### Practical Day

The 2022 ICAR Practical Day took place high in the mountains above Montreux, about a 20-minute cog rail train ride from the town center on the day before the conference began. Nearly 200 mountain rescuers attended 9 different stations that were spread throughout the high alpine terrain.

To view the official ICAR 2022 Practical Day video by Topograph Media, visit <a href="https://vimeo.com/776669633">https://vimeo.com/776669633</a>

 Station One: Set up and run by the European Association for Cave Rescue (EURAC), Swiss Mountain Rescue and the Croatian Mountain and Cave Rescue organization, this cliffside demo included three different ways to accomplish a small party rescue of an injured caver or climber using Single Rope Technique (SRT). Climbing a counterweight system with ascending gear, rappelling with a counterweight system and a diminishing loop counterbalance were three techniques that were flawlessly demonstrated.





 Station Two: The Vita Inclinata Anti-Rotation Litter Evac System was demonstrated. Manufactured in Broomfield, Colorado, this device is a bottom-mounted system intended to stop litter spin during helicopter external hoist rescues. This allows the litter attendant to use a remote control to stop spine and also position the load by use of internal batterypowered fans that counteract the spin as the litter is hoisted towards the ship. It also eliminates the need for a tag line on the litter. It can run for roughly 90 minutes (or 10 lifts) and weighs approximately 22-26 kilos with a maximum carrying capacity of 600lbs. The system costs roughly \$250,000 U.S. dollars and is being used by National Guard Units in the United States as well as in Ukraine.



- *Station Three:* The ICAR MedComm hosted a discussion entitled, "How to Reconcile Risk and Resource Management with Medical Algorithms for Mountain Rescue." The importance of accounting for human factors when pre-planning for rescues was stressed.
- Station Four: Air Zermatt/RECCO demonstrated a live flight exercise of a helicopter based Recco avalanche detection system that allows the rescue helicopter to search large areas of avalanche debris using the Recco detector suspended from the bottom of the ship. The scenario, locating three buried skiers with Recco reflectors on them, was accomplished in less than 15 minutes.
- *Station Five:* Marcel Meier, with the ICAR Dog Handler Sub commission, demonstrated the three levels of their summer training program with two

dogs and handlers. Using positive reinforcement and a tiered and regimented system for both the handler and the dog, they demonstrated the ability of the dog to find a "missing" person by way of first giving the dog a scent article and then tasking them with finding the scent owner at distances up to 150 meters.

• *Station Six:* Various helicopter rescue litters/bags were set up for comparison/contrast discussions led by Volker Lischke (DRK Bergwacht) from the ICAR MedComm.



Tyromont, Pax and Kong helicopter rescue litters/bags were on display. All rescue bags had some sort of provision reduce or eliminate litter spin during hoist operations. Also discussed at length was the recent push by the Medical Device Coordination Group in Europe to have all helicopter rescue litters certified as Medical Devices in all EU countries. ICAR strongly opposes this potential classification, and has sent letters to the MDCG stating their opposition. Currently, helicopter rescue litters in the EU need only be certified to meet the EASA Guidelines for Personal Safety Equipment.

• Station Seven: Eco Systems & Digitalization was presented by members of Swiss Mountain Rescue. A digital paging, record keeping and mission

management program, it is being used by rescue teams throughout Switzerland.

- *Station Eight:* The REGA Swiss Helicopter Rescue team, based in Interlocken, discussed how they respond with their helicopters to neighboring countries on both mountain rescue and disaster response calls.
- Station Nine: Based out of Lausanne, REGA displayed one of their helicopters that is equipped for nearly every SAR application that they encounter. A busy station, they respond to roughly 13,000 combined missions per year between each of their bases. Roughly 1/3 of their calls happen at night, which is why most of their ships are NVG and FLIR equipped.

## **Terrestrial Rescue Commission Business**

Terrestrial Rescue Commission President: Gebhard Barbisch Terrestrial Rescue Commission Vice President: Kirk Mauthner On the first day of the conference, each of the commissions met with their members to discuss their part of ICAR's business.

The Terrestrial Commission is working with the UIAA Safety Committee working groups on:

Via Ferrata standards for lighter weight persons, chinstrap breaking force standards for climbing helmets, create a testing standard for rope resistance to cutting over an edge, standards for rigging plates, interference with avalanche beacons, and fixed anchors.

ICAR is seeing an increasing number of attendees – over 400 this year – and thus facing changes which come with that (venue size limitations, complexity, added cost to attendees and more work for both hosts and the ICAR Executive Board). There are concerns about how ICAR can keep the conference participatory and not become just a lecture series.

The ICAR TerCom also reviewed previous Terrestrial Rescue Commission recommendations (10 total) and no changes recommended. All ICAR commission recommendations are up for review every five years.

Upcoming ICAR Conferences:

2023 in Toblach/Dobbiaco, Italy

2024 in Thessaloniki, Greece

2025 in Jackson, WY

#### Furggbach Rescue, Air Zermatt, Anjan Trufer

In May of 2022, at 10:30am, 2 skiers broke through a snow bridge in a couloir and fell into a running creek at 2600m. Neither one was wearing a Recco reflector or an avalanche transceiver. One self-extricated but the other was swept downhill under the snow and in the creek. Rapid response was initiated by helicopter and the first rescuer was on scene 13 minutes after the call for help was received.



The missing skier was located alive but injured, and the only way to access was through a hole in the snow which led directly into the running water. One of the rescuers volunteered to be lowered into the hole and the subject was extricated using a rescue triangle. When brought to the surface he was hypothermic and unconscious with a temperature of 26C. He was intubated and flown to the hospital in critical condition; but recovered fully.

The discussion centered around how much risk is acceptable? The rescuer who went into the hole got soaking wet immediately, and also had to be flown from the scene with hypothermia. The decision to proceed went quickly because of good teamwork, and the fact that all rescuers were from the same team and knew each other well from previous training and missions.

#### Snow Machine Accident Review, Marie Nordgren & Johnny Olofssson, Sweden

In bad weather a 23-year-old snow machine operator crashed, fracturing his pelvis and left hip. Rescuers searched through the night on snow machines, and he was eventually found 130m from an existing hut, more than 15 hours after the accident. How did he survive in a snowstorm, at night, with temperatures -20C? In an interview conducted afterwards it appeared that he unknowingly applied many of the principles of psychological first aid. He was unafraid of the weather since he lived in the area, and was used to being out in a storm. Instead of passively waiting for rescue he set his phone alarm for 30 minutes and would exercise when it went off to stay warm. Finally, he told the rescuers that he never gave up hope that someone would eventually find and rescue him, as long as he could stay awake and alive.

#### The Mount Hood Problem: The Impact of Overcrowding, Onexperience, and Social Media Dr. Christopher Van Tilburg, Hood River Crag Rats, USA

With nearly 20,000 climbers attempting Oregon's Mount Hood each year, the mountain's dramatic increase in rescues has strained Portland Mountain Rescue and the Hood River Crag Rats, the two teams who respond to most of the mountain's rescues.

An Alpine volcanic mountain with an ever-changing and dynamic environment that includes fumaroles with poisonous gases, crevasses, bergschrunds, glide cracks and avalanches, the mountain's dangerous conditions are easily accessible to the recreating public. The 2,000-meter climb attracts unprepared roped and un-roped climbers year-round, and social media has been a huge factor in the increased recklessness of thrill-seekers that feed off the social media feeding frenzy surrounding stunts on the mountain.

Rather than engaging in preachy and punitive public service announcements, PMR and the Crag Rats have decided to use social media as a positive public education tool, often using local social media influencers to send out informative posts to their followers. Also, they utilize platforms like Tik Tok, Facebook and Instagram to assist with recruiting.

Both teams have had their members hit the slopes with their rescue toboggans during high traffic weekends and holidays to inform the public and offer tips on backcountry safety.

# <u>Risk based decision making – Whakaari Volcano Eruption, Nico Fournier,</u> LandSar New Zealand

After the massive eruption of the Whakaari volcano, there was an immediate SAR response but after several hours it was clear that all the survivors had been evacuated, and the operation was paused. There was increasing pressure to recover the last few missing persons several days later; this presentation focused on how to evaluate the risk in the context of increasing seismic activity. LandSAR New Zealand's consultant used an expert consensus for estimating the likelihood of a repeat eruption at the volcano. This process, named "expert elicitation" pooled the estimates of multiple experts to arrive at a consensus likelihood of a second eruption, and a probability of rescuer fatality should that eruption occur. Ultimately the calculation came out at 6% chance of rescuer fatality which was interestingly deemed low enough to proceed. The recovery operation succeeded without any additional casualties.

# Romania Salvamont, Cornoiu and Zamfirescu

The Romanian Salvamont team showed how they use drones in collaboration with the cell provider Vodafone during searches. They can increase cell coverage up to 10km with a drone-mounted portable cell tower. They also take high resolution photos including infrared from drone mounted cameras during a search. These are then downloaded in real time and analyzed with an artificial intelligence software to look for evidence of a human subject. In their experience the software is better than the human eye for scanning the many images generated.

# Cell phone tracking, Guardia di Finanza (SAGF); Lifeseeker cell tracker

There were several presentations on cell phone locator devices, including one proprietary to the Italian National Police, and the Lifeseeker which is anticipating FCC approval in the US later this year. They both require an air platform (drone or helicopter) and can search for and communicate with a known cell phone if it is 1) turned on and 2) the IMEI number is known.

Several cases were presented by Lifeseeker, all showing a less than 30 min total search time and geolocation less than 3 minutes after the first signal was detected.

#### Horyzn - Defibrillator drone

Students from the Technical University of Munich presented their drone project. The objective was to produce a "proof of concept" drone which could deliver a defibrillator to a simulated cardiac arrest patient. At the time of this project, the average response time to a cardiac arrest in Bavaria was 11 minutes; and 11% of those patients survived. The team of students built a prototype and flew a demonstration. Their next project is to address drones for mountain rescue. For mountain rescue they propose building a modular system to address the problems encountered in the mountains, including decreased operational radius with increasing payload, signal loss with terrain, ability to operate in extreme weather, and lack of adequate endurance.



## Software for Managing Operations

Multiple agencies (Bergwacht Bayern, Styrian Mountain Rescue, Mountain Rescue Ireland) presented custom software packages to help in running all aspects of a SAR organization. Components included day to day management and inventory, call-out procedures, cell phone tracking, and specific tools to assist in providing a Common Operational Picture to all responders.

## Innovations in Managing the Increase in SAR Operational Stress, Laura McGladrey, Responder Alliance and Portland Mountain Rescue, USA

Historically, most mountain rescue teams have followed a reactive model when dealing with traumatic stress and psychological first aid. Through the Responder Alliance, McGladrey proposes a proactive model that incorporates pre-planning for potentially traumatic events and uses the Incident Command System (ICS) to combat the negative psychological impact to rescuers who have been exposed to trauma as a part of their job.

Additionally, McGladrey encourages the use of the Responder Alliance's Incident Support Tool in a way similar to the tools they use to improve their rope rescue rigging skills and practice it as if it is a standard procedure used for other occupational exposure hazards such as Hazmat or Bio Hazard.

Encouraging rescuers to use the 3-3-3 model as a schedule for checking in with rescuers after a traumatic event (check in at 3 days, 3 weeks and 3 months), she stressed that most rescuers should be recovering by the three month mark. But if they are not, that's where a team appointed Stress and Resilience (SAR) officer could help work out a treatment plan that includes visiting a clinician.

For more information on psychological first aid, ways to deal with traumatic stress and other related rescuer mental health topics, visit

https://www.responderalliance.com/



# Helicopter Very Long Line, 330 Squadron, Moren Sandvic and Torgeir Klus, Norway

In Norway they use helicopter hoist for rescue but the cable length limits what they can do when faced with very steep cliffs, or vertical areas in the fjords. They showed their procedure for lowering over 1,000 ft of rope to a subject, then using a Harken Clutch in the aircraft as progress capture and a Rescuescender on the hoist hook as the haul system. This innovative system blends helicopter hoist operations with traditional terrestrial rope rescue equipment to solve the problem of how to do a hoist when the cable isn't nearly long enough.

## The Oxy-pack, PGHM and Chamoniarde

Although the PGHM in Chamonix conducts more than 90% of its rescues by helicopter, sometimes the weather is too bad for them to fly. They climbed to a mountaineer who was incapacitated by altitude illness on Mont Blanc, and with supplemental oxygen were able to short rope him back safely to one of the huts. Afterwards they looked for a system to address the deficiencies in their set-up. They settled on the carbon cylinders and full-face masks used in Himalayan climbing, to minimize weight and maximize use of the delivered oxygen. The system is used for rescuers and subjects for terrestrial high-altitude missions.



## Volunteer Versus Paid Professional Discussion Bergwacht Bayern

Bergwacht Bayern is the primary mountain rescue service in Germany and is comprised of volunteers in state associations who are aligned with the Red Cross. The presentation compared volunteer and professional paid rescue systems, concluding that the advantages of their system outweigh the disadvantages. Paid professionals do have the advantages of availability, and that often a clearer chain of command is in place. There is an opportunity to have paid time for training and additional certifications which creates the opportunity for a higher baseline skills standard if managed well. Volunteer rescuers can have restricted availability during typical "working hours," and higher turnover because of other personal life changes. Overall costs for equipment can be higher as more rescuers need to be equipped.

However, Bergwacht argues there are many advantages. Rescuers live in the community and are personally invested in the "duty." Response times can be shorter since the responders are local. Surge capacity is built in, as there is a large pool to draw from for disasters or the infrequent large event. Overall costs are typically lower since personnel are not directly paid.



To make a volunteer system work, there must be an appropriate infrastructure in place. Employers must be supportive and allow workers to respond even during "business hours." Sufficient funds must be in place to support adequate training, and to purchase and maintain professional equipment suited to the task. Overall their conclusion is that the best system depends heavily on the local "norms" and the type and amount of funding available for mountain rescue in the response area.