

**2019 INTERNATIONAL COMMISSION FOR ALPINE RESCUE
(ICAR) CONFERENCE
TERRESTRIAL RESCUE COMMISSION REPORT
OCTOBER 9-13, 2019
ZAKOPANE, POLAND**

BY MRA TERRESTRIAL RESCUE DELEGATES TOM WOOD AND DALE WANG



Practical Day in the Kościeliska Valley

The 2019 International Commission for Alpine Rescue (ICAR) Pre-Conference Practical Day on Wednesday, October 9th focused on the theme of “teamwork,” with presenters using their workshops to demonstrate cooperation in technical rescue, electronic search, medical simulations. Although the weather was intermittently rainy and wet, the event was a great success with a lot of learning and interaction. The Practical Day was well-attended, with more than 200 rescuers attending the various stations. The Kościeliska Valley is one of the most popular and often visited places in the Tatra Mountains, with a small river running down a valley ringed with limestone cliffs. Distant rockfall was a common sound throughout the day, and attendees were able to take shelter from the elements in a couple of the caves near the stations.

The day concluded with helicopter rescue simulations from two different helicopters used by TOPR, demonstrating the cooperation and teamwork between the Terrestrial Rescue and Air Rescue Commissions.

The official ICAR Practical Day video by Topograph Media can be found at:

<https://vimeo.com/371651432?fbclid=IwAR1eaZFoyRg4c8eggylAJyQe4xYjM6atYLcTXylwkcWxH5TUOfHVxGKokk>



Small Party Assisted Rescue (SPAR) Techniques

Eddy Cartaya from Portland Mountain Rescue, Oregon and Tom Wood from Alpine Rescue Team in Colorado demonstrated several single rope methods for raising an injured party using only 1 or 2 persons. Adapted from cave rescue techniques, methods included an assisted 2:1 uphaul and several variations of a diminishing loop counterbalance haul. As demonstrated, the rescuer needs to be well-practiced at ascending and descending the rope (Vertical Mobility). These types of techniques allow a single rescuer to raise and lower an injured subject in a controlled fashion without outside assistance. One take-away is that just by “closing the loop,” or attaching the rescuer to the subject of the counterbalance haul, mechanical advantage is increased by a factor of roughly one.



Single Rope Crevasse Rescue System

The Peloton Gendarmerie de Haute Montagne (PGHM) celebrated its 60th anniversary and its 40,000th search and rescue mission last year. This station was a demonstration of their single rope 2:1 crevasse rescue system using a Petzl Maestro for lowering the load on one side, and a Harken winch used on the haul line.

One end of the 120m rope was fixed to an anchor on the surface, and the other end was anchored with the winch attached. The rescuer rappelled into the crevasse using the Maestro off the first anchor. When ready to be hauled out, a Petzl ASAP and Absorbica Lanyard (for the 2 person load) was used to attach the load to the haul line, and the winch was then activated. The Maestro protected the load in the event of a haul side rope failure, and the ASAP would activate and hold the load if the rappel/static side anchor were to fail.



Twin Dyneema Rope System for Technical Rescue

TOPR, the Polish host team for this year's conference, uses this twin tension rope system in the high mountains both for the weight savings of the 8mm dyneema, but also for the high strength and abrasion resistance that dyneema offers. They have done 600m litter lowerings in the Tatras using this system.

A dynamic rope with at least 3 separate anchors is always used to construct the focal point anchor for this system. The twin dyneema main lines are controlled by Munter/Italian hitches on matching steel HMS carabiners, with industrial shock absorbers protecting the litter and the two attendants from an inadvertent dynamic load. All end connections are spliced instead of knotted. After a patient is loaded in the litter, extra friction is added by converting to Super Munters on both lines. Though the dyneema ropes looked a bit more than well used, TOPR stressed that they used strict retirement criteria when inspecting the ropes, and retire them when more than 20% of the 8mm diameter rope is lost due to wear.



Neosoft SAR Phone Locator

The technology for creating portable mobile cell phone towers has existed for a long time. The Neosoft innovation adds a directional antenna which allows the rescuer to isolate a single phone signal and, much like using a Recco detector, follow the strongest signal to find the phone. This was presented as a possible avalanche search strategy, as in testing they were able to find phones even 1.5m under the snow. Of course, the phone has to be on and transmitting (not in airplane mode). Though an interesting possibility for the European market, FCC regulations prohibiting the application of this kind of technology in the U.S. would make it difficult for this product to be approved and utilized for use in the States.



Cave Rescue Litters/Packaging Equipment

Led by the Med-Com's Dr. Roger Mortimer with the National Cave Rescue Commission, this station focused on the challenges of packaging, immobilizing and transporting subjects in the caving environment using various litters and techniques.

Crew Resource Management

A scenario was acted out by the participants, with roles including a helicopter pilot, a mountain rescuer, and a physician. In the scenario, each participant was only focused on their particular needs without acknowledging the others, and the point was made that each member of the rescue crew needs to communicate better with the others. Tips on team performance from Rall and Gaba (2005) were discussed. Techniques that included anticipation, calling for help early, using all available information, remembering to double check, trying to avoid fixation errors, using cognitive aids (e.g. checklists) and distributing the workload were stressed. The station facilitators encouraged rescuers to take a 10 second "time-out" if things don't seem to be going well, allowing the team to re-calibrate priorities and re-assess the available information.

Terrestrial Rescue Commission Assembly of Delegates Thursday, October 10th, 2019

Several important topics were addressed at the opening of the Terrestrial Rescue Commission meeting. Lots of discussion was had in regards to having ICAR publish knot strength reduction in ropes. Since age, construction, pull speeds and diameters all affect knot strength, should ICAR just make a recommendation of 50% reduction for all? Discussion was tabled until a working group could be created and present more information.

Several existing ICAR TER-COM recommendations were reviewed, as is ICAR policy for all commission recommendations every 5 years. Here are a few recommendations that were discussed:

- Which is preferred, double overhand knot vs bend? No changes
- Redundancy for lowering or raising with fiber ropes? No changes
- Static rope brakes? No changes
- Rope differentiation: Static, Low stretch, dynamic? No changes
- Winter rescue equipment? No changes
- Systems in mountain rescue, no changes

Cave Rescue Workshop Debrief

Eddy Cartaya (U.S.) and Kuba Hornowski (Poland) discussed the cave rescue workshop, which took place just before the start of ICAR. They presented the possibility of cave rescue being a sub-commission of the Terrestrial Commission.

Polish and Slovakian teams discussed cross-border teamwork on Tatra mountains and caves, mentioning the 25 joint operations via helicopter last year. They also do avalanche forecasting together, stressing that, “mountains have no borders.”

ICS and ICAR

The pros and cons of the Incident Command System were addressed in a few different presentations and working groups.

Alistair Read (Wales), presented a case study, “ICS Features, Functions and Failures.”

- Missing helicopter, tracked cell phones to discover search area, land SAR then involved, delay of 8 hours
- Multiple agencies on land & sea from Wales and Ireland
- Would ICS implementation have helped the incident? Cited multiple shortcomings of search efforts, but also some good things

Dan Hourihan (U.S.A) outlined the progress of the ICAR ICS Working Group in regards to:

- LAST (Locate, Access, Stabilize, Transport) for SAR
- Workgroup goals: List of best practices and basis for ICAR recommendations
- 5 countries gave input
- Several common themes common to each incident, including: Chaos, Lack of Information, Bad Information

ICS Work Group member Asgeir Kristinson (Iceland), noted that when using ICS, there are several key considerations:

- Good soft skills crucial to successful implementation of ICS
- Needs to be scalable and modular
- Should be able to hold up to cross-border use
- Should work on small and large incidents, land, sea and air
- Should integrate into other national systems
- Be timely with info sharing
- Share common language/terms



Terrestrial Rescue Commission General Assembly Notes

Friday, October 11th, 2019

Listed below are several Terrestrial Rescue-themed presentations. Presentations that address Air Rescue, Avalanche Rescue or MedComm themes can be found within each respective ICAR Commission's report on the MRA website.

Rescue After a Bear Attack, Lessons Learned from a Multiple Agency Response, Anthony Stevens (Teton County SAR)

Stevens presented a report on how interagency teamwork was called for when a bear attacked and killed a hunting guide and wounded his client in remote Wyoming near Terrace Mountain. With no pre-plan for this kind of call, rescuers were not familiar with other involved agencies, which presented challenges for all when both responding for the rescue of the client and the subsequent recovery of the guide. Lessons learned:

- Delay of recovery for rescuer safety was key. Teams had to wait till dawn to find guide for fear of another attack. Inserted by helicopter, they needed armed state game warden to accompany field team
- Teamwork crucial for success and safety. When inserted, one field team member inserted with 3 long guns and a medic, searchers worked under armed supervision
- Deceased guide located 50 yards from attack site. He had used his bear spray and his body was still intact after initial fatal attack

Takeaways for all of the organizations involved in the rescue and recovery included: Everyone needed better training for non-routine rescues, SAR Teams needed to create a big game rescue plan and all responders needed to improve inter-agency communications on future multi-agency calls.

WOLFHOUND, Olivier Favre (France)

A cellphone based search technology, created in France where 94% of French citizens have cell phones. Challenges in implementation included education on how to use cell phones for SAR within legal restrictions. The PGHM currently uses this technology, which was originally used to locate inmates in prison by finding their phones.

- Gendloc, a phone location tool web-based, used more than 6,000 annually
- Wolfhound Pro used to find someone who is reported missing by a third party, used from helo, 2 year trial period
- 2 lives saved, 10 uses
- Need phone number, need to make the phone ring, need to have the device relatively close, line of sight

Disadvantages of the technology include its 1,600 meter range, Wolfhound quickly drains batteries quickly, the fact that it takes at least two well-trained people to use, need to know cell number and searchers need to have a known, defined search area.



Petzl Maestro and Dual Tensioned Mainline Systems, Sylvain Couloumy (DCCRS-CNEAS in France)

As demonstrated during the Practical Day Scenario of the same name, the Petzl Maestro was unveiled as a key component of a Dual Tensioned Mainline System for lowering and raising a rescue load. For the raise, they did dual 3:1s with the Petzl Rescue-Cender rope grab and pulleys. A redirected through an extra pulley on the Maestro becket allowed for a better inline, downhill pull. Though the Maestro is 95% efficient when used as a progress capture pulley, it is not recommended for use as a personal descender.

Canyon Rescue, Pino Antonini (Italian National Canyon Rescue School)

Speed is an important consideration during canyon rescue because of moving water and hypothermia. The main point of this presentation was that by reducing the time needed to perform a canyon rescue, you can reduce the risk to both the subject and the rescuers. Using highly skilled, fit rescuers in small teams with small diameter ropes and lightweight, recreational gear, Antonini showed a video recreating a multi-pitch canyon rescue that depicted rescuers using human high directionals, guiding lines to float the litter over uneven terrain to reduce rescuer fatigue and lots of human counterweighted anchors.

Civil Liability for Alpine Rescue Teams, Rick Lorenz (MRA)

Lorenz, an attorney himself, discussed how and why rescuers need to better assess and mitigate risks with SAR. Lorenz noted that:

- Green Amber Red (GAR) Model often used to assess risk, but it's very subjective
- Civil action is different than criminal action, it's between two people, one who usually seeks financial commendations
- Non-paid rescuers are looked at differently than paid rescuers

The Good Samaritan Law covers someone who renders aid on a voluntary basis. Common law jurisdictions protect these volunteers. Civil Law jurisdictions usually afford volunteers more protection. Lorenz cited a May 2019 rescue on Mt Hood, which had a four hour delay that may have contributed to a fatal outcome, which resulted in the family of the fatality being awarded \$25,000 in a subsequent civil suit.

Cave Rescue Team Leader Training, Darko Baksic (Croatian Mountain Rescue Team)

In Croatia, Cave Rescue falls under the Croatian Mountain Rescue Commission, which has 952 volunteers. Croatia has roughly 9,000 caves, with 4 deeper than 1,000m. There are 2 pits more than 500m drops, and some very long caves (@17,000 meters long).

In addition to providing education for caving clubs and small party rescue courses, the CMRS also assists in the dangerous job of the removal of leftover or un-exploded war-era bombs from caves.

To date, they've had more than 500 rescuers finish basic cave rescue training. Their cave rescue team leader course is dedicated to cave rescuers with lots of caving experience, with self-sufficiency and problem solving in harsh environments being important considerations.

The team leader class utilizes both French (short segments) and Italian (longer segments) litter movement techniques, many anchoring and SRT skills and bivouacking skills. This is all

accomplished by the successful completion of a complicated mock rescue. Done over three weekends, 24 rescuers needed to staff the rescue training, which targeted completion times of 72 and 96 hours.

European Cave Rescue Association (ECRA), Dinko Novosel

Comprised of 22 member organizations, mostly from Europe, ECRA is a non-profit educational organization and not an actual cave rescue team. ECRA was instrumental in supporting the Thai cave rescue, as well as many other large scale international efforts.

Their Technical Commission tests bolts in caves and makes recommendations, as does their Cave Diving Commission.

Small Part Assisted Rescue (SPAR) Cave Rescue Techniques used for Alpine Rescue Situations, Eddy Cartaya (NCRC)

SPAR techniques, which were originally utilized for high urgency cave rescues within remote and difficult to access cave sites, can be adapted for use within the Alpine environment, as Cartaya explained. SPAR, a philosophy and set of techniques which can be used to resolve unplanned technical rope rescue problems with minimal gear, has been previously taught in both Europe and North America. Styled after caving expedition rescue techniques, but now adapted to mountain rescue, SPAR uses fewer people, lighter gear, smaller ropes, lower loads (hopefully) for faster rescue times due to hypothermia and motionless suspension concerns. Though Single Rope Technique (SRT) has been used for years in caves, Cartaya noted that some common misconceptions plague SPAR techniques. The mistaken notions that these techniques are extreme, dangerous, have a lack of redundancy, use too much SRT sometimes present difficulties when presented to above-ground rescuers.

Three main families of techniques are used with SPAR:

1. Closed Loop
2. Counterweight
3. Traveling Hauls

Also, Cartaya said that he often asks three important questions for each system. “#1. Does it work? #2. Is it efficient? And #3., Is it safe ENOUGH?” he said. Noting that speed alone is a significant risk reduction technique, Cartaya also said, “The enemy of good is better, and a small, skilled team can often do more than a large moderately skilled team.”

Terrestrial Rescue Commission General Assembly Notes Saturday, October 12th, 2019

Simulation in Mountain Rescue 2.0, the Future Has Begun, Matthias Jacob (Bergwacht Bayern)

Bergwacht Bayern is the mountain rescue service for Bavaria in Germany. Founded about 100 years ago, they respond to approximately 12,000 missions per year with 3,500 volunteers distributed in 40 operational units. Their indoor training facility in Bad Tölz has the capacity to simulate rescue missions from dispatch all the way through delivery of the patient to a hospital. This 1,700 square meter building has indoor trees, a climbing wall, a waterfall and pool, buildings, gondola cars from a ski lift, and helicopters hanging from the ceiling with fans to simulate rotor downwash. Mountain weather conditions can be replicated as well, including rain, snow, and temperatures down to as low as -20C. High fidelity mannequins are used to train responders on first aid and medical care, and a separate part of the facility is constructed as the hallways and resuscitation room of a receiving hospital. New rescuers are oriented and trained here, and are not eligible to respond to actual missions until they have achieved satisfactory performance in this practice environment.



Suspension Trauma Recommendations, Dr. Giacomo Strapazon (EURAC)

Based on some newer research performed at EURAC, the recommendations for approaching and treating a patient with suspected suspension trauma have been revised. The pathophysiology of syncope, or passing out, is now thought to be most likely vagally mediated, and unpredictable as to the timing of onset.

The new draft of MedComm Suspension Syndrome recommendations includes; a prohibition of solo rope work alone; establishment of provisions for prompt, onsite rescue of suspended persons; a recommendation that anyone suspended in a harness should try to keep their legs moving until rescued and that responders should consider hospital evaluation for muscle breakdown (rhabdomyolysis) and evaluation of kidney function for anyone who is suspected of suffering from prolonged motionless suspension.

The ICAR MedComm will likely have a final draft of their recommendations for Suspension Syndrome next year.

Cave Rescue: Differing Patterns of Rescues and the Responses Between Europe and North America, Roger Mortimer (NCRC) and Inigo Soterias (Spain)

Although causes of caving rescues are similar, the injuries seen are different between the two continents. More upper extremity injuries are seen in European cave rescues. Possibly this is related to the fact that North American caves tend to be more horizontally oriented, whereas caves in Europe can be quite deep and inability to ascend out on your own can create a need for rescue.

Falls were the most common reason for needing a rescue, followed by equipment failure, rockfall and getting stranded.

No Easy Weeks – Busy August in the Polish Tatras, Andrzej Gorka and Jakub Hornowski (TOPR)

You thought your team was busy? In one 4-week period in August of 2018, the host team for ICAR responded to 436 tourists who were stranded in the mountains when a cable car broke down, a lightning storm on the summit of Giewont peak resulting in 150 injured and 4 deceased climbers, and the largest cave rescue mission in their 110-year history. While all this was going on, they also conducted 117 other rescues of 134 total people, including 37 helicopter missions! The cave rescue alone involved over 6500 rescuer hours; they pointed out that none of this was possible without the teamwork involving the assistance of multiple other agencies.



Teamwork for Missing People in Austria, Martin Gurdet (OBRD)

Searching for missing subjects with the helicopter mounted Recco detector in Austria involves collaboration between the police and the rescue agency. The police have pilots and the aircraft, and the detector is operated by a mountain rescuer. They presented two cases in which missing subjects were found using the reflections from a digital camera and cell phone, including a skier who was 3m deep in a crevasse. The increased power over the hand-held device allows a search corridor of 100m, covering a lot of ground in a short time, and sometimes enabling detection even if the subject is not wearing a Recco reflector.

71st ICAR Assembly of Delegates Sunday, October 12th, 2019

The final day of the 2019 conference was dedicated to the ICAR business meeting, the vote for new member organizations as well as planning for future ICAR conferences.

All members agreed that the 2019 conference was a huge success, with more than 400 attendees representing 34 countries. TOPR did an amazing job of organizing such a large and complex event.

ICAR's growth remains at roughly 10% annually, bringing the total number of member organizations to more than 120. Much discussion has revolved around the sustainability of ICAR with such a steady rate of growth soon eclipsing the venue spaces available for future conferences.

The following MRA ICAR Delegates were present:

Air Rescue Commission:

Charley Shimanski, Air Rescue Commission President (Alpine Rescue Team)

Avalanche Rescue Commission:

Oyvind Henningsen (Everett Mountain Rescue)

Michael Finger (Salt Lake County SAR)

Medical Commission:

Alison Sheets, MedComm Vice President (Rocky Mountain Rescue Group)

Christopher Van Tilburg (Crag Rats)

Terrestrial Rescue Commission:

Tom Wood (Alpine Rescue Team)

Dale Wang (Rocky Mountain Rescue Team)

The following organizations were approved for membership in 2019. Note that A Category members receive 4 votes, B1 Category members receive 2 votes, B2 Category members receive one vote, and other membership categories do not receive voting privileges.

C Category:

GREMM – Grupo de Rescate Médico en Montaña

GRIMM – Groupe d'Intervention Médicale en Montagne

JR – Jandarmeria Română

SMX – SiriusMedX

B2 Category:

KOMOAAP – Cyprus Mountaineering Federation

PHSB – Polizeihubschrauberstaffel Bayern

B1 Category:

BMRA – Braemar Mountain Rescue Association

DEE-AAD – Dept. of Environment & Energy / Australian Antarctic Division

GC-GRAE – Generalitat de Catalunya / Bombers GRAE

NSR – North Shore Rescue

Future ICAR Conference Locations:

ICAR Convention 2020 in Thessaloniki, Greece, ICAR Convention 2021 in Vösendorf / Reichenau an der Rax, Austria, ICAR Convention 2023: South-Tirol, Italy