International Commission for Alpine Rescue

Presentations Commission for Terrestrial Rescue

Place:	Jackson, Wyoming
Date:	10. Oktober 2025
Time:	08.00 Uhr
Present:	Members of the Terrestrial Rescue Commission
	Members of the Avalanche Rescue Commission (from 08.30 to 09.00, from 11.00 to 16.00)
	Members of the Air Rescue Commission (from 09.30 to 12.00)
	Members of the Alpine Emergency Medicine Commission (from 08.30 to 10.30 Uhr, from 11.30 to 12.00 Uhr, from 14.00 to 15.00)
	Members of the Doghandler Subcommission (from 10.30 to 12.00, from 15.30 to 16.00)
Chair:	Stefan Blochum
Minutes:	Fabienne Jelk

Mountain biking accidents in the Polish Carpathians – old activity, but a new rescue challenge - Pawel Kroh/GOPR

Last year (2024), there were 202 accidents involving mountain bikers in the Beskidy Group. In 2012, there were 23. In total, there were 728 accidents in 2024.

The infrastructure for mountain bikers (bike parks) has developed enormously in recent years. This has led to an extreme increase in the number of mountain bike accidents, access to the accident site is often complicated, evacuations are difficult, and accident victims are often seriously injured. There are also dangers for the rescue team in the forest, which must be taken into account, just as on the ski slopes. Mountain bikers travel very fast on single tracks and thus pose a danger to accident victims and rescue teams who block a single track during the rescue operation. Often, the accident site cannot be reached by vehicle. Technical problems, on the other hand, are rare. Victims can be transported away on stretchers. Evacuation also usually does not pose any technical problems, but requires many rescuers, which is a problem when eight evacuations per day have to be carried out, sometimes simultaneously. The injuries are serious, as bikers often collide with trees at speeds of 30 km/h. Accident victims often suffer multiple injuries.

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Another problem is financial and legal responsibility. In winter, the government is responsible for mountain accidents, while the ski resort operators are responsible for accidents on the ski slopes. So who is responsible for mountain bike accidents in the ski resort in summer? Another problem is what qualifications rescuers need to have if they want to reach the accident site by bike. There are entrance tests for rescuers for skiing, fitness, etc., but not yet for mountain biking. Another problem: what to do with the bike of the mountain biker who has had an accident? The bikes are often very expensive and cannot be left in the forest. The bikers also very often insist, if they are still able to do so, that their bikes be handled with care.

Possible solutions:

- A map showing the easiest access routes to the single tracks and evacuation routes.
- Publish an access guide for each rescue station.
- Set up additional rescue stations at hotspots during the summer.

Do we need a BIKECOM? 😊

File: 20251010-0800-MTB accidents2.mp4

Preventing Stress Injury and Developing Resilience for SAR Teams - Scott Hammond & Deb Yokshas/Utah County SAR MRA

What can be done to prevent mental health issues in rescue teams and develop resilience?

The nine qualities of HRTs (Highly Reliable Teams) are as follows:

1. Shared purpose (why are we doing what we do? This question is discussed within the team).

2. Free flow of communication (clear communication protocols, transparent decision-making, team members have access to feedback, team members receive the information they need).

3. Enthusiasm for learning (regular team training, mistakes are seen as opportunities to learn).

4. Accident prevention (the safety of team members is the top priority).

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5. Restraint in simplifications and blame (individual team members feel responsible for the team's performance).

6. Adaptation to complexity (team members are encouraged to understand the entire mission while performing their specific tasks).

7. Welcoming expertise (the team knows that there is someone with the expertise to carry out the operation).

8. Measurable performance evaluation (each team member must master certain core competencies and specific expertise).

9. Commitment to resilience (team members know where to get psychological help, team members care for each other, stress can be discussed with other team members and the leader without fear of negative consequences).

Book: Highly Reliable Teams by Scott C. Hammond

File: 20251010-0830-Preventing-Stress-Yokshas.pdf

Drones in Aviation SAR - Will Smith; ICAR Interdisciplinary Drone Workgroup Chair, Teton County SAR (USA), Renaud Guillermet, AirCom Vice President

The working group is led by Will Smith, Teton County SAR (will@wildernessdoc.com, +1(307)699-0230).

The use of drones is regulated by the federal government.

What are the best practices in flight safety?

- Crew Resource Management (CRM): The effective use of available resources to ensure safe operation, avoid errors and stress, and increase efficiency.
- Threat and Error Management (TEM): A comprehensive safety management approach that assumes that pilots will make mistakes and encounter risky situations during flight operations. Instead of focusing on trying to avoid errors, TEM focuses on teaching pilots how to deal with these problems so that they do not compromise safety.

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The role of UAS in SAR:

- They are used for search operations. UAS can be used to search areas where the missing person is most likely to be found based on Last Person Behavior (LPB). The drone can also search areas that rescuers cannot access, e.g. due to natural hazards.

- They are needed for support. Support can be provided in many ways, e.g. through light, transport of radio equipment, first aid supplies, water, etc.) and by finding extraction routes.

The example of the rescue of Nala (dog) on Christmas morning shows how many ways the drone can be used. The drone was able to locate Nala whenever she ran away from the rescuers. Furthermore, the drone illuminated the path for the rescuers on their way back.

- The drones have an IC Overwatch role.

Heavy lift drones can be used to lift heavy loads, e.g., stretchers/bars to the accident site.

Why drones in SAR:

- Find patients faster and more efficiently.

- Rescues become faster.

- Rescuers are exposed to danger for less time.

- Reduces the time patients have to wait without help and exposed to the elements.

- Increases the likelihood of everyone getting home safely.

For questions/comments:

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Rescuer and Aircrew Safety when Connected to the Helicopter and Ground - Dave Weber; Mountain Rescue Collective (USA); Charley Shimanski, AirCom President

There is no perfect solution to this problem.

Common techniques:

1. Quick Clip - Advantages: inexpensive, relatively simple, familiar use of equipment. Disadvantages: requires training, no auto release, change in communication frequency.

2. Releasable Hitch (detachable knot) - Advantages: inexpensive, relatively simple, familiar use of equipment. Disadvantages: requires training, no auto release, a knot must be tied, requires rope binding.

3. Cutaway - Advantages: low cost, simple, use of familiar equipment. Disadvantages: no auto release, requires training, blade and rescue ropes, may require a partner.

4. Petzl Lezard - Advantages: auto release, Petzl curriculum, standardized training, less time pressure. Disadvantages: expensive, Petzl curriculum, requires training, 10-year lifespan, special equipment, device cannot be modified.

Conclusion:

Each method has advantages and disadvantages.

The right solution depends on: team, terrain, type of rescue, resources.

Each technique requires training.

For questions/comments:

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File: 20251010-1030- WEBER - HelicopterConnections.mp4

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Lessons from Scotland; Challenges of Operating Drones in Mountain Rescue - Tom Nash, Search & Rescue Aerial Association (SARAA) (Scotland)

What are the challenges of using drones in SAR?

- Establishing a drone unit (legal hurdles, costs, limited time available to volunteer rescuers, etc.).

- Environment (no drone can cover everything that might be needed, e.g., large areas, rivers).

- Operating a drone unit (skills versus portability versus affordability, requires skills, costs, advances in technology, staying up to date (volunteers' time is limited), knowledge of regulations).

- Training, skills, trust, supervision (different geographical locations, the risk of bad habits developing over time, supervision is needed, more than one pilot, legal regulations must be known).

- Natural coherence and ensuring the effectiveness of searches (a national team in Scotland, the UK does not support this, which is frustrating).

What are the remaining obstacles?

- Legal regulations.
- The time available to volunteer rescuers is limited. A full-time drone operator is needed.
- Many different situations during operations. The development of methods is slow.
- Risk tolerance. Technology and training can help.

But: In 7 years, we went from nothing to 33 pilots who can operate drones, and a 75-page manual was developed.

File: 20251010-1100 - SARAA Scotland_Drones.mp4

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Applying the International Recommendations for Stress Resilience to Alpine Rescue - Laura McGladrey, University of Colorado, Stress Trauma Adversity, Research and Treatment Center

In order to assess existing stress levels, a model was developed for both individuals and teams:

The four levels for individuals are as follows:

Green: You are healthy. Effective communication, socially and spiritually active, calm and confident, strong environment and family, emotionally and physically healthy -> Stay ready for missions (through good sleep, good appetite, staying relaxed).

Yellow: You react to certain situations, your normal behavior changes, you are irritable and pessimistic, temporary stress, fatigue, loss of motivation, isolation from others -> Recover and build resilience (good sleep, talk to someone you trust).

Orange: You are hurt, unresolved loss, trauma, inner conflict, nightmares, physical symptoms, exhaustion, isolation, burnout -> Heal (talk to a clergy member, counselor, or doctor).

Red: You are in a critical state, permanent stress, insomnia, broken relationships, depression, hopelessness, feelings of guilt, suicidal thoughts -> get help (medical treatment).

The same pattern applies to rescue teams. The use of these patterns should be routine in rescue teams. Dealing with stress should be a topic in all medical training, and talking about it should be normalized. Rescuers should be supported in combating stress.

After an event that triggers stress, the following steps should be taken:

- Develop a plan for the next 24 hours.

- Name a trusted person.

- Normalize: Communicate that it is normal to have certain feelings and reactions in the coming days/weeks, which may arise unexpectedly (crying, trembling). However, it is also normal to feel “normal.”

- Protect yourself until you are ready to talk about it.

Responder Alliance wants to make rescuers and rescue teams aware that anyone can be affected by stress. It is important to be aware of this and to talk about it. Responder Alliance offers various courses and guidelines that train organizations and rescuers in

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dealing with stress factors. The courses are designed for individuals (rescuers) and rescue teams and offer a variety of content.

www.responderalliance.com

File: 20251010-1130-ApplyingtheSRGuidelines.McGladreyV2.pdf

New satellite based 3D technic based on the existing standard - Michael Vogt, Nivia Partner

The Nivia will be launched in 2026. The aim was to develop a device that everyone can use. A new technology, satellite-based 3D technology, will be added to the existing technology.

Thanks to new 3D technology, the device enables searches to be up to 30% faster, regardless of which device is being searched for. You can reach the buried person directly and quickly without having to cross out. As soon as the search begins, the device sends an emergency SMS via smartphone and the SOS EU app.

The Nivia 3D search device is an avalanche transceiver with patented technology. In addition to the conventional magnetic field lines, a GPS grid is established. With this and the patented algorithm, the position of buried victims can be determined very accurately from the very first signal. With the GPS grid, it is possible to add a second source that enables triangulation and calculates the position of the buried person. This increases accuracy in the imprecise magnetic cloud, as defined fixed points are used. As with a navigation system, the route to the buried person is displayed directly – with centimeter precision and without the detour of the conventional magnetic field line, regardless of which avalanche transceiver is being searched for. This saves time (over 30 percent compared to conventional avalanche transceivers) and thus increases the buried person's chances of survival.

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CASE STUDY-Helmet development - Stein Møller/Norsk Luftambulanse

A study was conducted on rescue helmets for SAR and HEMS rescues. The ideal helmet is one that is suitable for all types of rescues. Helicopter crews usually wear pilot helmets when they arrive at the scene of an accident. Once there, they change to a different helmet. No helmets could be found that were suitable for all types of rescues.

After reviewing various rescue operations, it was concluded that the optimal helmet meets the following EU standards:

- EN 1385 for canyoning and whitewater sports.
- EN 1077 Class B for alpine skiing and snowboarding.
- EN 12492 for mountain rescues.

The helmet must be certified and impact tested with all accessories and equipment normally attached to the helmet.

Result of the study: Development of the Sweet Protection North America

- Triple-certified SAR helmet.
- Strong carbon fiber hybrid construction.
- Multi-density shock-absorbing structure.
- MIPS to reduce rotational forces on the brain.
- Lightweight and small volume.
- Compatible with Clockwork SAR protective goggles.
- Mounts for headphones and goggles.
- Mounts for lamps, cameras, and NVGs on the front.
- One helmet for all operations.

For questions/comments:

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File: 20251010-1400-SAR helmet_SNLA_v4.pdf

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Rope Rescue Tactics in Alpine U.S. National Parks - Terrestrial Approaches to Diverse Mission Profiles - Nicholas Armitage / National Park Service USA

Due to factors such as the alpine terrain, varying financial resources, and high visitor numbers in national parks, NPS climbing ranger programs have become the standard solution for rescue operations in national parks.

The terrain varies from park to park. Rescue techniques are adapted to the terrain. The decision on which technique to use is also adapted to the team, the duration of the operation, and the geographical location.

Two-rope systems are standard. Single rope guiding/partner rescue techniques are increasingly being used for patients who can be treated on an outpatient basis.

In Denali National Park, techniques are used that are adapted to the glacier terrain with crevasses.

In the other national parks, too, the techniques must be adapted to the terrain:

Mt. Rainier National Park: active volcano with glaciated summit.

Yosemite National Park: big walls.

Rocky Mountain National Park: Longs Peak, Diamond, 2395 to 4346 meters above sea level.

North Cascade National Park: 1800 to 2750 meters above sea level, mixed alpine terrain, partly glaciated.

Grand Teton National Park: 2000 to 4199 meters above sea level, mountains, partially glaciated

In the future, the question arises as to whether AI can and should be used.

The NPS has standardized the techniques used. Ten years ago, the rigging systems used were still very different.

File: 20251010-1500-US-NP- Rope Rescue Tactics in Alpine.pdf

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“Triangular Mountain Rescue Operation”: 40 Years of Cross-Border Cooperation Between France, Switzerland and Italy - Oceane Vibert/La Chamoniarde and PGHM, Anjan Truffer, Rettungsstation Zermatt

The Triangulaire serves to exchange rescue techniques and conduct exercises across national borders (Switzerland, Italy, France). Similar conditions prevail in all three countries: high altitudes with extreme weather conditions, glaciers, and many mountaineers. Many rescue operations are carried out in these areas.

The Triangulaire has been in existence for 40 years and is carried out between three rescue organizations (PGHM, Air Zermatt/Zermatt Rescue Station, and Secours Alpin Valdotain). Since rescue operations often have to be carried out jointly across borders, cooperation is extremely important. The aim of the Triangulaire is to strengthen cooperation, discuss intervention protocols, compare rescue techniques and equipment, and conduct joint training in realistic cross-border scenarios. In Zermatt, Beat Perren of Air Zermatt and Jelk Bruno, who developed various rescue equipment, were the driving forces behind the introduction of the Triangulaire.

An annual meeting is held with realistic exercises, technical forums, and innovative workshops. In 2024, the Triangulaire took place in Chamonix. The focus was on climate change and rescue.

Joint rescues in emergencies become more efficient when people know each other.

Conclusions: the Triangulaire enables operational cooperation, perspectives are developed (e.g., AI), and it is a concrete and reproducible model.

The language spoken is usually English.

File: 20251010-1530-Vibert-Triangulaire du secours en montagne.pdf

Wildfire Backcountry Evacuation and Fire Fighter rescue in Jasper National Park Canada - Cory Boschmann / Parks Canada

Jasper National Park offers a wide range of activities, which means that rescue operations also vary. Fires can also occur. The video shows the response to such a fire on July 22. Jasper had to be evacuated within five hours of the alarm being raised. Poor visibility was one of the problems encountered in fighting the fire. It took several days to bring the fire under control. The fire caused extensive damage. On day 13 (August 3), a firefighter had to be rescued.

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After the operation, the following conclusions were reached:

The following is important for backcountry evacuation:

- Establishment of predefined evacuation plans for the backcountry.
- Improvement of communication methods.
- Introduction of a comprehensive system for tracking evacuees in the backcountry.
- Ensuring suitable PPE and training.
- Training on existing guidelines

Important for the rescue of firefighters:

- Coordination of helicopters.
- Improved placement of helicopter landing pads.
- Clarification of roles and expectations.
- Reporting structure of the medical unit.
- Communication.

End of meeting: 16:30

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