

Minutes of the Presentations in the Terrestrial Rescue Commission

- Location: Montreux, Schweiz
- Date: 14. Oktober 2022
- Tine: 08.00 Uhr
- Present: Delegates of the Terrestrial Rescue Commission from 09:00 to 10:00,
11:30 to 12:00 and 15.00 to 15:30
- Delegates of the Terrestrial Rescue Commission and Subcommission
Dog Handler From 08:30 to 09:00
- Delegates of the Terrestrial Rescue Commission and Avalanche
Commission from 08:00 to 08:30, 16:00 to 16:30
- Delegates of the Terrestrial Rescue Commission, Avalanche
Commission, Air Rescue Commission and Subcommission Dog
Handler from 10:30 to 11:30
- Delegates of the Terrestrial Rescue Commission, Avalanche
Commission and Subcommission Dog Handler from 14:00 to 14:30
- Delegates of the Terrestrial Rescue Commission, Alpine Emergency
Medicine Commission and Subcommission Dog Handler from 13:30
to 14:00
- Delegates of the Terrestrial Rescue Commission and Air Rescue
Commission from 15:30 to 16:00
- Head: Gebhard Barbisch, Kirk Mauthner
- Minutes: Fabienne Jelk

Italy Glacier Accident Claudio Artoni, Maurizio Dellantonio TERCOM / AVACOM Joint Meeting

In recent years, temperatures have been rising steadily due to climate change. In June and July 2022, temperatures were above 0 degrees for 23 days. The amount of snow, which was already low due to the lack of snow in winter, and the ice volume decreased massively.

The accident happened at the Marmolada glacier. This is located in the northeast of Italy. The meltwater penetrated between the crevasses and caused water infiltration, which acted as a sliding layer between the ice and the rock. The formation of a water pocket increased the pressure between the crevasses and the base of the ice, further destabilizing the ice. This pocket of water, which could not drain, was probably the main cause of the glacier breakup.

Questions/comments: None.

Presentation-File: 20221014-01-Marmolada-Accident.mp4

Earthquake in Croatia 2020 Croatian Mountain Rescue Service / Josip Granic TERCOM / DOGHANDLER Joint Meeting

HGSS - CMRS is a national non-profit organization on a voluntary basis. There are 25 teams/stations spread across Croatia. HGSS-CMRS is legally responsible for all non-urban SAR (mountains, caves, rivers, canyons, search operations, helicopter rescues, disasters and all events whose management requires special knowledge and equipment to save lives).

The earthquake occurred on December 28, 2020 at 06:28 in the morning with a magnitude of 5.2 on the earthquake scale. The next day at 12:19 another earthquake occurred with a magnitude of 6.2, affecting 272 villages, 7 dead, more than 30 injured, 58,000 damaged buildings, 13,000 uninhabitable buildings, 15,000 people without shelter.

The teams were informed by WhatsApp, telegram, etc. a few minutes after the earthquake. However, they had no information about the extent of the earthquake's impact. It was not known where or what was happening, what was the condition of transport routes and infrastructure, and what the affected

people needed. The CMRS base in Sisak was destroyed. At 1:30 p.m., 286 rescuers from 23 teams were available, 2 helicopters, 45 vehicles and 13 search dog teams were on the field. The problem was that it was not a limited incident like an avalanche, it was an event over a large area.

The search dog teams were very successful. They worked with UAV mapping Copernicus. Cultural objects were also brought to safety by the rescuers. Water, food and medicine were missing. Chimneys had to be flown from the roofs, these were no longer stable due a further earthquake. These chimneys were removed from the roofs for several months. Ambulant pharmacies were set up. This was all in Covid times, vaccinations had to be done. 5 to 7 people were responsible for logistics. Information was disseminated via a QR code. Help came from other countries, such as Slovenia.

The following problems existed: Lack of information at the beginning, this led to dubious decisions, vacation time, accessibility, social media (people posted e.g., no one helps me etc.), media (after an interview people either said the Red Cross works well or then the opposite, that everything is bad), shifting responsibility, local authorities and re-planning. Many people wanted to help, but the difficulty was to coordinate this.

Alistair Read: Were there plans for such events?

Answer: In the beginning it was not possible to plan exactly because you had no information.

*Presentation-File: 20221014-02-EQ-Croatia.pdf
20221014-02-EQ-Croatia.mp4*

SAR - Emerging technologies for the Early location of Entrapped victims under Collapsed Structures and Advanced Wearables for risk assessment and First Responders Safety in SAR Operations HRT / Nektarios Parmakis and Asterios Chatzikas

The Hellenic Rescue Team is a non-profit organization in Greece and consists of 2000 volunteers.

The "Search and Rescue" project is a project to develop new technologies for early location of trapped people under collapsed buildings and advanced computer technologies to be worn on the body for risk assessment and safety of first responders in SAR operations. In total, organizations from 12 EU countries are participating in this project. The main objectives of this project are to collect data, manage the data and flow information between all those involved in an operation. The data from different sources will be merged. This will create a common situation picture to support emergency and crisis management decisions.

As an example, an airplane crash in Greece (Thessaloniki, at Mount Chortiatis) is shown. The plane had to make an emergency landing due to technical difficulties and was difficult to locate.

Various systems were tested during the pilot phase. The plane had to make an emergency landing due to technical difficulties and was difficult to find.

Further tested was COncORDe, an emergency communication app. This is a cloud-based crisis management platform. There is also a device for first responders that can alert, monitor heart rate, measure oxygen levels, etc. Through the SA Model, first responders and everyone involved in the response should be immediately informed of critical situations in the field. A 3D Mixed Reality Command Centre has been developed to visualize the situation. Via the Volunteer Application the command center is informed about who is available. There is further an e-learning based platform. The knowledge and safety management of the members should be improved and they should be prepared for field operations.

Expected from the system are the following: Smaller, lighter rescue tools, early detection of toxic environments, shorter response time, shorter planning time, reduction in severity of injuries to victims, garments equipped with sensors, engage population in crisis management, conduct full-scale exercises and

demonstrations of simulated complex crisis management situations, provide solutions that EU bodies and national organizations can use to test different response frameworks to enable better operational and societal adaptation to rapidly evolving threats, training of end users.

Questions/Comments: None.

Presentation-File: 20221014-03-Search and Rescue project.pdf

Drones - New Perspectives in Mountain Rescue Salvamont Romania / Sabin Cornoiu and Ciprian Zamfirescu

Salvamont rescue organization consists of 1100 rescuers and 42 national rescue stations. More than 65000 people have been rescued in the last 10 years.

Romania is 31 percent covered with mountains and has 25000 km of mountain trails. One problem is how to generate radio network coverage in the remote areas where people are missing. A device had to be developed that was portable, easy to deploy, would run for a long time, met legal requirements and was not too expensive. The solution were drones. Lives can be saved 10 times faster because time is one of the most important factors in a rescue operation. A mobile network is established via a drone. This allows for 5G coverage in the area being searched. The drone also takes photos and videos. The photos are then analyzed at the National Data Analytics Center. The photos are analyzed visually. In bad weather, thermal imaging cameras are used. Thus, two to three drones are used in a search operation. Different technologies are combined. Drones are also used to search in water.

Note: On March 21-23, 2023, the Mountain Rescue Race Romania will take place. The competition will be carried out in different sports disciplines and rescue techniques. The first 10 registered teams can participate for free (travel expenses must be covered by the teams). All are warmly invited to this competition.

Questions/comments:

Martin Gurdet: How will those who fly the drones be trained?

Answer: The person who operates the drones must have a license to do so.

Presentation-File: 20221014-04-Salvamont RO SAR Drone team.mp4

Interdisciplinary Drone Workgroup An Open Discussion about Drones as Assets and Hazards (TERCOM / AVACOM / AIRCOM / Doghandler -Joint Meeting)

The group was established in 2020. There are two delegates from each commission (TERCOM, AVACOM, AIRCOM, MEDCOM).

Terms: UAS - unmanned aerial system,
UAV- drone.

Risks and benefits of drones in SAR:

Drones can be used in the air, in the water, on the ground, also for avalanche operations, for 3D mapping and for risk assessments. In addition, various materials can be transported such as AED, blood, antidote for spider bites. Telemedicine is possible.

Drones also be a danger, for example in 2018 when Gatwick Airport was shut down by a drone. The biggest problem is the airspace. Many countries are developing U-Space tools to avoid conflicts in the airspace. There are certifications/regulations from EASA (Open, specific and certify category for UAS) and the Federal Aviation Administration (Part 107, remote pilot certificate with small unmanned aircraft systems (UAS)). The limitations of drones are battery life, certain flight conditions (altitude), payload, airspace conflicts, equipment and drone pilots.

In the medical field, drones can help especially in cases of cardiac arrest. The drone is used to bring the AEDs to the patient. The AED can be with the patient faster than with the ambulance. Certain tests with this have already been done in urban areas. AED's can be critical to a patient's survival. In addition, medical

equipment and blood can be delivered. This has already been done in Africa, not yet in the mountains, but that would be a possibility.

Questions/Comments:

Delegate: How are drones in rescue stations funded?

Answer: some receive support from the regions. "Grant" would be a possibility. However, this has not been investigated.

Presentation-File: 20221014-05-IDWG update ICAR.pdf

Cell Phone Tracking Systems SAGF / Lt. Col. Alessandro Alberioli and LIFESEEKER / Héctor Estévez (TERCOM / AVACOM / AIRCOM / Doghandler -Joint Meeting)

Alessandro Alberioli:

The Guardia di Finanza has 13 helicopter bases in Italy. The Guardia di Finanza is a military police force that is trained in rescues and also does investigation in mountain accidents.

"Flight Nesie" is a new system. It is an IMSI/IMEI catcher which is applied in missing person searches. The IMSI catcher is used to simulate a cell phone network (gives a false signal) where the cell phone can dial in. The cell phone must be switched on and not in flight mode. Smartphones, tablets, modems, Wi-Fi routers, cars can be found this way. The IMSI catcher weighs 17 kilos. It looks where the cell phone last dialed in and thus narrows down the area in which it is searching. This area can be very large. The cell phone can be found at a distance of 35 kilometers.

Héctor Estévez, Lifeseeker:

Lifeseeker is a system that allows missing people to be located via their cell phones, even in areas without network coverage and in adverse weather conditions

Lifeseeker works with civilian and military organizations worldwide with the goal of saving lives.

Lifeseeker has been used in the following cases:

An 87-year-old man in Hanover, who suffered from dementia, went missing. He was found alive by Lifeseeker from a helicopter. The search lasted a total of 25 minutes.

The second example is a dehydrated 38-year-old woman who went missing in La Gàrdia. This gave an alarm at 10:00. Firefighters began searching with a drone and were able to locate the woman alive within 15 minutes.

Another example: an injured 55-year-old woman made an emergency call via WhatsApp at 8:00 p.m. in the Aosta Valley. The police first searched visually with helicopters. At 02:00, the air force was called in and was able to locate the woman with Lifeseeker within 10 minutes. Unfortunately, any help came too late. In rescue operations, it is not only time that counts, but also the right technology.

Questions/Comments:

Question: what happens to other cell phones in the area?

Answer: You need the IMSI number.

Presentation-File: [20221014-06-Guardia di Finanza-cell tracking system.pdf](#)

[20221014-06-Guardia di Finanza-cell tracking system.mp4](#)

[20221014-06-Lifeseeker_Presentation.pdf](#)

[20221014-06-Lifeseeker_Presentation.mp4](#)

Emergency Drones HORYZN - TU München / Balázs Nagy

Horyzn is a group of more than 80 students at the Technical University in Munich. The students come from 32 different countries. Their goal is to develop drones that can save lives.

In the last two years, 18 drone prototypes have been developed. A first project was the drone "Silencio Gamma". Following this project, the "Mission Pulse" project was launched. In Germany, 115,000 people suffer cardiac arrest every year. The ambulance needs on average 9 minutes to get to the patient. 89% of the

patients do not survive because the ambulance takes too long. Therefore, a defibrillator is transported to the patient by drone. This can increase the survival rate by three times. The goal is to establish a network of stations with drones in rural areas to ensure that a drone with a defibrillator can be with the patient in 6 minutes at a time. In these areas, an ambulance can take up to 30 minutes to arrive at the patient's home. In Bavaria, 60 such stations are sufficient to cover 90% of non-urban areas.

A new project is to develop a system of drones for mountain rescue to improve safety and operational performance in mountain rescue. There are already several drones for different areas in rescue, such as search, communication with patients and diagnosis and transport of medical material. However, there is not yet an efficient solution for all these areas of rescue. The goal now is to develop a system that covers all these areas. Several requirements must be met. The system must be lightweight, work over a certain radius, always be ready for use, take up little space, be efficient, fast, user-friendly and cost-effective, and be able to work in parallel with other systems. To solve these problems and develop an appropriate system, close cooperation with mountain rescue teams is needed.

Contact details: Balazs-nagy@horyzn.org

Questions/comments: None.

Presentation-File: 20221014-07-Horyzn.pdf

A Weekend of Cardiac Incidents TOPR / Andrzej Gorka TERCOM / MEDCOM / Doghandler Joint Meeting

On the weekend from 11 to 14 November 2022 there was nice weather in the Tatras. It was an longer weekend due to a Polish holiday (Independence Day).

On November 12, at 2:40 p.m., TOPR HQ received an alarm that an approximately 50-year-old man had suffered cardiac arrest near Ciemniak Peak (2096 m.a.s.l.). Attendants already started cardiac massage, which was performed very well. At 14:52, the rescue team was on the scene and began resuscitation with defibrillation. At 2:55 p.m., an IV was placed in the right leg (lignocaine 40 mg, fentanyl 50 + 50 mcg, midazolam 2 mg). At 3:15 p.m., the man

regained consciousness. At 3:30 p.m., he was winched into the helicopter and transferred to the hospital at 3:42 p.m. The patient made a full recovery.

At 2:56 p.m., another alarm was received that a 64-year-old man was suffering from acute chest pain. A second rescue team was deployed, arriving on scene at 3:22 p.m. At 6:35 p.m., the patient received Cath-lab-treatment.

On November 14, 2022, an alarm was received at 11:08 a.m. that a 50-year-old male was in cardiac arrest. The helicopter was already in the air for another rescue mission. At 11:21 a.m., the rescue team was on the accident place. At 11:33 a.m., the patient was stable (R=SC, post defibrillation, 100 mcg fentanyl, midanium 5 + 5 mg, rocuronium 50 mg), evacuated by winch at 11:51. The patient made a full recovery.

Conclusions:

All patients survived without permanent damage.

Paramedics were involved in the actions, not directly doctors. At least two people with medical training are in each helicopter team, who are also fully trained mountain rescuers, sometimes more. The TOPR helicopters only do rescue missions. This allows them to do multiple rescue missions in parallel and to be diverted if needed. A local ED and cath Lab in the mountain environment allows for quick handover and specified treatment of patients.

TOPR's paramedics are also trained in hospitals. The missions in which people with health problems need help without prior accident are increasing, All members of a helicopter crew must have knowledge in this regard. All mountain rescuers should have knowledge of first aid, not just medical team members.

Questions/Comments: None.

Presentation-File: 20221014-08-GOPR-Cardiac.pdf

Three Hikers Stuck in Avalanche Terrain TOPR / Andrzej Gorka and Marcin Jozefowicz TERCOM / AVACOM / Dog Handler Joint Meeting

This rescue mission was on January 21, 2022. At 5:21 p.m. TOPR HQ received an alarm that three hikers (!) were blocked. The three wanted to climb Kopa Kondracka (2005 m.a.s.l.) and got into bad weather. They were young, inexperienced, poorly equipped and had no way to navigate themselves back. They were able to transmit their exact location via the app "Ratunek". The top of the mountain is flat, but it turns into steep slopes and rock faces.

From 6:35 p.m., no contact could be made with the hikers. For the rescue, two groups of 7 people each started with skis from TOPR HQ via Hala Kondratowa (hut). At 9:30 p.m. the TOPR UAV team was deployed. The weather was getting worse and worse, wind up to 100 km/h and snowing. The avalanche danger increased steadily. The temperature dropped to - 17 degrees. Above the tree line, rescuers came to a first avalanche at 22:21. It was impossible to continue to the blocked people. The rescuers went back to Hala Kondratowa.

At 11:18 p.m., the TOPR UAV team arrived at Hala Kondratowa. It was decided to fly equipment to the hikers with a drone. At 01.24 the first drone took off with 3 rescue blankets and 6 thermal bags (about 2 kilos). The drone pilot could only fly with the map, he could not see anything through the camera. The first flight attempt did not succeed and ended 300 meters from the place where the hikers were. The drone was able to fly back to Hala Kondratowa. A second flight at 01:44 also failed due to the storm. The weather then improved somewhat. A third flight attempt ended already near the hut. At 05.39 another flight attempt was made, which was successful. It was possible to bring material against hypothermia to the hikers. At 06.55 another flight was made with two kilos of material (telephone, radio, tea, bars). The drone reached the hikers, but had to make an emergency landing on the way back. The reason was icy rotor blades.

At 06.08 the rescuers started with skis. The wind decreased and visibility improved. But then the weather became worse again and the wind increased. The use of the helicopter was still not possible. At 11:23, the rescuers reached the hikers. The three were exhausted but only slightly hypothermic. They said they survived because of the rescue blankets and thermal bags that were flown to them by drone. They were able to descend on foot together with the rescuers.

The operation involved 36 rescuers. The drone made 14 flights before it had to make an emergency landing. At 3:30 p.m., the hikers were handed over to the hospital. By 4 p.m., all rescuers were back at TOPR HQ. The drone was found and repaired.

The drone used was the M300RTK model. TOPR has a total of 11 drones in operation. In October 2021, the first rescue mission with drones took place. Currently, 45 rescuers are trained to fly drones. Drones have been used in a total of 19 rescue operations.

Conclusions:

The safety of rescuers must always come first. The question is, where is the limit? With an unclear delimitation, you can get into dangerous situations too quickly. Who decides in a team where everyone is equal? With a good outcome, the discussions fade quickly, too quickly? That's why debriefing and analysis are important.

Questions/comments: None.

Presentation-File: 20221014-09-GOPR-Stucked-Hikers.pdf

Mobile Alarm and Command & Control Management for Styrian Mountain Rescue Teams ÖBRD - Styria & LWZ Styria / Sebastian Stepfer Projectmanager MOPS GmbH

Sebastian Stepfer presents a software for alerting the teams and subsequently for managing and documenting operations. This software is already successfully used by the Austrian Mountain Rescue Service in Styria.

It is an integrated solution. Processing already begins when an emergency call is received. The location of the emergency call and other data of the emergency caller are entered.

Subsequently, text-oriented data can be entered, but also a good overview can be generated by displaying maps.

The software can be used both on the desktop and via tablet or mobile phone.

Questions/comments: none

Presentation-File: 20221014-10-MOPS.pdf

Helicopter Long Rope Rescue Techniques 330 Squadron / Morten Sandvic and Torgeir Kjus

There are 7 helicopter bases distributed in Norway. The weather in Norway is often bad, there is a lot of rain and temperatures from minus to plus 30 degrees. Often there is a lot of wind on the coast.

Different techniques are used for alpine rescue:

- Winch with cable, standard operation (fast, small risk). The cable has a length up to 90 meters. 98% of rescues are made with this method.
- Super Long Line (SLL). The method was developed at the beginning of the 90s. It needs at least 4 to 6 rescuers to operate the system, no limit in the rope length, realistic is 800 to 1000 meters. This method needs a lot of time.
- Directly Delivered Super Long Line DSLL: Was developed in 2021. It requires 1 to 2 rescuers or rescuer and physician. It is faster than SLL. The rope is dropped directly from the helicopter. The length of the rope is limited to 400 meters. Directly.

Why Long Line systems: safety, efficiency. The helicopter can stay above the rock walls. So there is no danger of the rotor touching the walls or being hit by falling ice or rocks. The helicopter can avoid the winds over the mountain tops and the casualty is not endangered by the downwash.

Subsequently, the technique with the devices is shown.

1. The rope is lowered to the stretcher.
2. The rescuer is lowered down, attaches the long line to the stretcher.
3. The stretcher is lifted.
4. the stretcher is pulled up until the stretcher is at the helicopter.

To prevent the stretcher from turning around, the helicopter is put into forward flight.

Questions/Comments: None.

Presentation-File: 20221014-11-Helicopter Long Rope Rescue Techniques.pdf
20221014-11-Helicopter Long Rope Rescue Techniques.mp4

ATC - Prevention Work from Alpine Rescue Organizations ÖBRD - Tyrol und Girsberger / Markus Rainer TERCOM / AVACOM Joint Meeting

There are more and more rescue operations and they are becoming more and more complicated. From May 1 to July 31, there were 876 rescues in Tyrol alone. Through more prevention work, it can be achieved that risks are avoided, dangerous situations are prevented and attention in certain situations is increased. In this way, accidents can be prevented.

One example of prevention is the ATC (Avalanche Training Center) in Tux. This was set up in December 2021 by the mountain rescue service and comes from "Girsberger Mountain Rescue Technology". On a terrain of 100m on 100m the avalanche transceiver search and probing can be trained. Between 5 and 16 buried subjects can be simulated. The training center is open to everyone, free of charge and easily accessible. Many, including local mountain guides, ski schools and also elementary school need the training center for their workshops.

This is a good example of prevention work done by the mountain rescue service, an offer to everyone to train. Prevention work can be a way to find mountain rescuers in the future.

Questions/comments: None.

Presentation-File: 20221014-12-atc_prevention.pdf

End of session: 17:00 PM