

MERIDIAN

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21 STORIES DOWN: SAR Team Hoists Elevator Passengers

ICAR Medical Report
Smart Device Alerts and SAR





MOUNTAIN
RESCUE
ASSOCIATION

Spring 2023

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ON THE COVER: A rescue system used to hoist stranded elevator passengers west of Flagstaff, Ariz. (Coconino County Sheriff’s Office)

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President's Message

Saving lives is not easy work. And yes, mountain rescue is about saving lives. You all know the difficulties- the anxious call outs, the search before the rescue, the long approaches, operating technical systems in the dark, the blood, and sometimes worse. Then there is paperwork, training, recruitment, equipment maintenance, the budget and all the other administrative work that is just as crucial to a high-performing team.

As we ease out of the pandemic and into 2023 I am looking forward to the MRA Winter Business Meeting and the Spring Conference and the opportunity to see so many of you face to face. These meetings allow us to showcase what the MRA provides to its members and develop strategic initiatives. There is great networking, hospitality suites, training events and storytelling; and providing these opportunities is also not easy work.

The wonderful thing I have seen in SAR is how selfless and hardworking so many of you are. As in every SAR team, the hard work of the MRA is inevitably done by a dedicated few. These are our leaders. As the MRA leans into inclusion, leadership development, and the professionalization of our volunteer organizations, I want to acknowledge and praise all our hardworking MRA members, especially the leadership, for their outstanding efforts. I also want to challenge them to *train their replacements*.

At last year's Estes Park conference there was much discussion and multiple presentations on leadership

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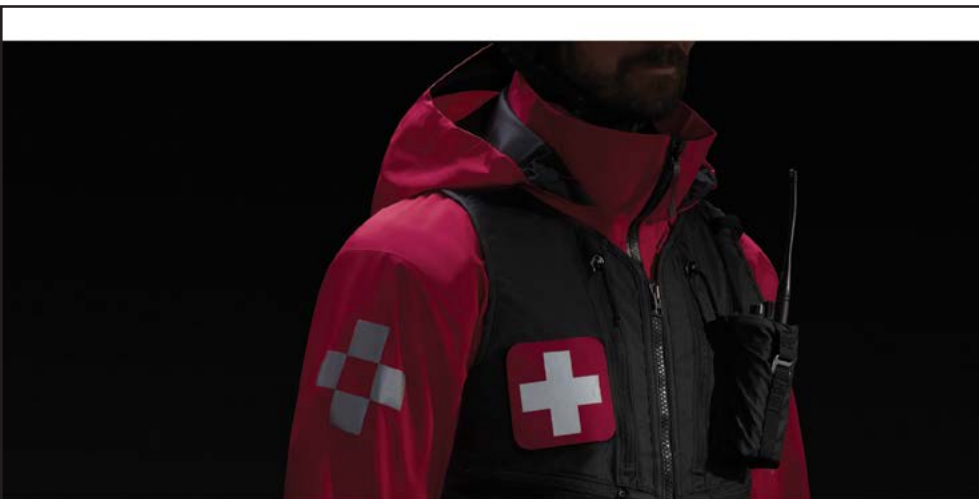


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development. High quality, thoughtful mentorship is a vital skill in a leader. No one lasts forever. Promoting advancement in an organization is investing in its future and longevity. It motivates newer members and gives them goals. It helps prevent stagnation.

As you read this consider where you fit in your SAR team (and the MRA). Just getting started? Look to the leaders you admire and reach out for advice or suggestions on where your energies would be most helpful. Middle management? Ask the expert to help you develop your weaknesses. Use your strengths to improve team performance. Already leadership? Don't be intimidated by the new talent. Mentor them and help them advance; it gets you closer to retirement! If you love what you are doing but are not ready to retire, please consider mentoring your successors anyways. Share your knowledge and experience, support growth and innovation. You may leave a legacy, like saving a life.

Alison Sheets
President, Mountain Rescue Association




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A SAR team member works on a rope system in an elevator shaft at Grand Canyon Caverns. (Coconino County Sheriff's Office)

A Long Lift: SAR TEAM, FIREFIGHTERS HOIST STRANDED ELEVATOR PASSENGERS

Rick Lindfors - Meridian Editor in Chief

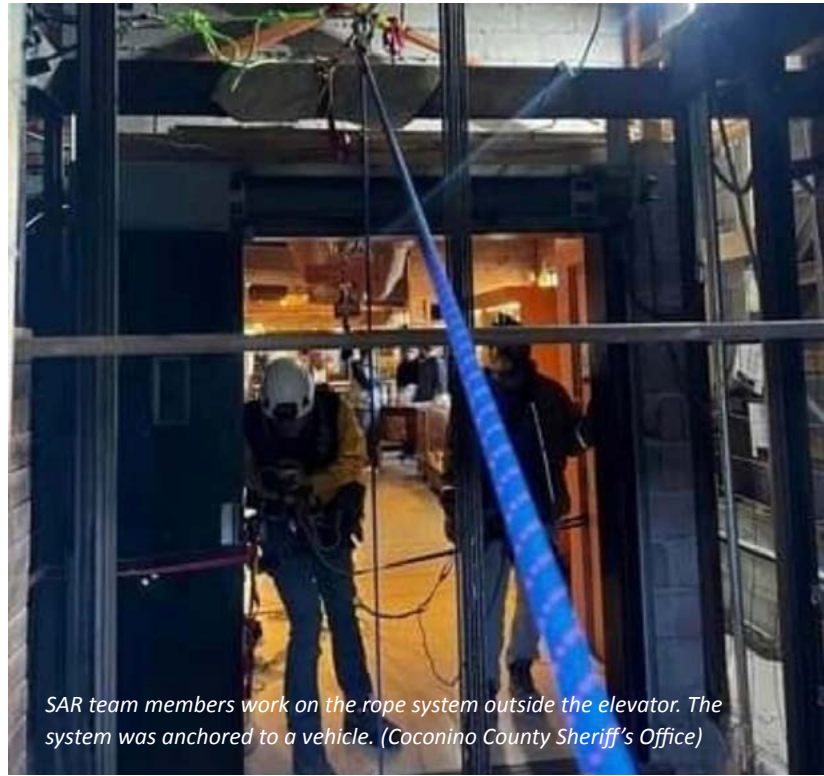
FLAGSTAFF, Ariz. - A mountain rescue team brought their skills deep into an elevator shaft to rescue stranded passengers. On the night of October 23, 2022, an elevator at Grand Canyon Caverns suffered a malfunction, stranding several people 21 stories below the surface. According to the Coconino County Sheriff's Office, some passengers were able to use an emergency staircase in the shaft, but three were not comfortable with making the ascent. The stranded party was able to spend the night in a hotel room in the caverns while repair crews attempted to fix the elevator. The repair efforts did not succeed, with CCSO deciding to hoist the passengers up the shaft.

"We thought the best device [for the situation] was an AVED seat," said Sgt. Aaron Dick, the incident commander for the rescue. The AVED seat is a hammock-type harness used for hoisting patients. Dick says the mountain rescue team was confident they could pull off the operation despite the unusual mission setting. "We were comfortable we could do the rigging, but we had never trained in an elevator shaft," he said, adding that technical rescue staff from the Flagstaff fire department assisted in setting up and executing the hoist. "We do a lot of training with Flagstaff fire and Sedona fire," said Dick, adding that the SAR teams and

fire rescue teams routinely work together on rescue missions.

The rescue team built the system by rigging up the elevator shaft and through the lobby of the surface building. They rigged a high directional to the steel beams in the shaft and anchored it to a vehicle outside. They rigged a belay line to a nearby tree. The main rope was 600 feet long, allowing the rescuers to avoid knot passes while raising their subjects. Once that system was prepared, subjects were put into the AVED seat and raised. A rescue team member would ascend the fire escape next to them to provide reassurance. Raising each subject took about 15 minutes. Once at the top of the elevator shaft, they received a medical evaluation and all subjects were cleared.

The mission to raise the subjects 21 stories through an elevator shaft proved to be an example of the relationships between the rescue agencies as well as adapting to an unusual mission space. "It was a relatively simple system, just a unique location with some problem solving," said Dick.



SAR team members work on the rope system outside the elevator. The system was anchored to a vehicle. (Coconino County Sheriff's Office)



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ICAR MEDCOM 2022, Montreux, Switzerland

REPORT TO MRA

Dr. Alison Sheets, Dr. Christopher VanTilburg

ICAR 2022 was the first in-person conference since the Covid-19 epidemic and generated a great turn out with around 500 attendees. All commissions had great participation and the venue in Montreux was excellent. The MEDCOM activities began with a pre-conference in Lausanne- The VIIth International Symposium on Accidental Hypothermia. Advances in treatment of accidental hypothermia as well as physiology and prognostication of hypothermic victims were discussed over the one-day

symposium. Much of the information presented was also reviewed in the regular working sessions of the MEDCOM later in the week and have informed our recommendations. A few takeaways include that ECMO (extra-corporeal membrane oxygenation) has enormous superiority to cardiopulmonary bypass and emphasizes that there is no more indication for internal rewarming. Most of the discussion was regarding the in-hospital evaluation and treatment of hypothermic patients and is less relevant for MRA



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members. The lowest core temperature of a survivor of hypothermia was 11.8 degrees C with the patient being a child.

The first day of the ICAR Congress was a practical day in the mountains above Montreux. Dr. Oliver Reisten, aeromedical doctor from Air Zermatt, gave a thought-provoking presentation on risk and resource management. Several topics reviewed were familiar including rescuer safety first, anyone can call a stop, and developing a team culture where mistakes can be openly discussed. He also called out the need to adjust focus for the situation, for example, if one team member must focus on a specific task like a medical intervention or difficult technical problem, the rest of the team should unfocus, as that is where the best situational awareness lies. Team members should unfocus and free up resources as soon as the task is complete. Rescues are fluid situations and depend on a well-trained and connected team. Dr. Reisten introduced "The Pareto Principle" which is the relationship between effort and result. Eighty percent of the maximum result is accomplished by 20% of



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the effort and the extra resources needed to get to 100% are better used elsewhere. In other words, don't let perfect get in the way of good enough.

Multiple manufacturers had litters on display for comparisons during the practical day. These were all bag-

type litters intended for helicopter operations. Interestingly, in Europe, these litters are considered medical equipment and must go through certification like other medical devices (expensive, complicated).

This year much of the MEDCOM work at the conference was in "development sessions" to bring recommendations and work in progress before the committee for discussion and critique. A great deal of time was spent on Medical Management of Avalanche Victims and an update on the avalanche resuscitation algorithm. Much of the discussion was related to hypothermia care and differentiating the asphyxiated avalanche patient from the hypothermic one. The survival of critically buried

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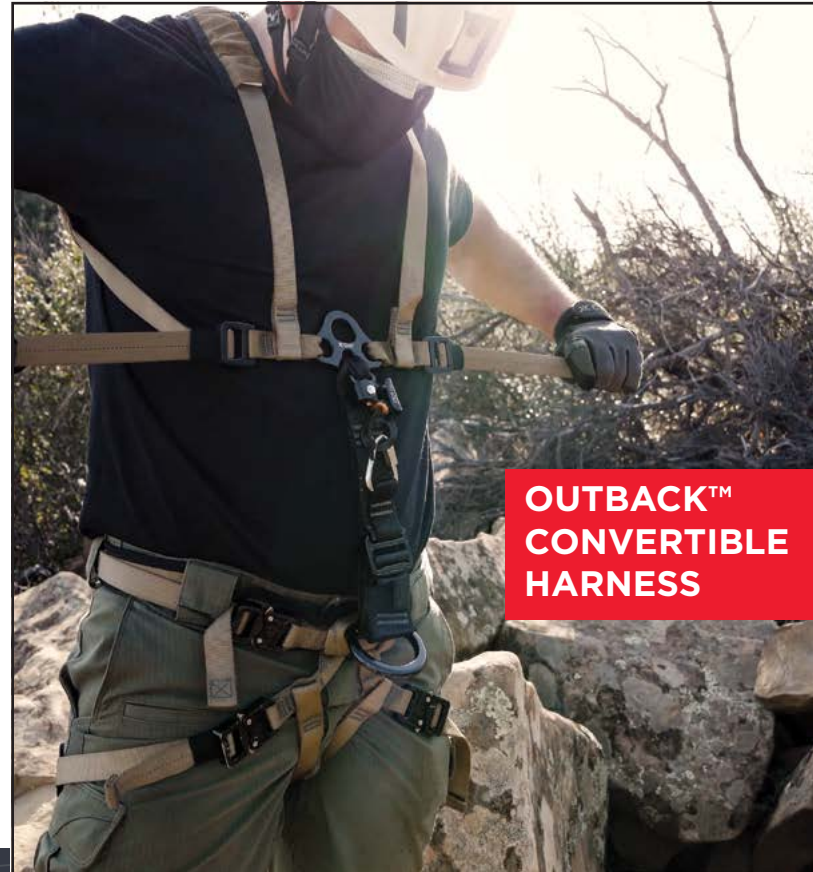


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avalanche victims in cardiac arrest is, and has always been, grim. Once the recommendations are published, they will be available to the MRA as ICAR members. The basic decision point remains at 60 minutes. Any avalanche victim with signs of life is treated according to well established trauma and emergency care protocols. The **cardiac arrest** victim is assessed as follows:

- Critical burial less than 60 minutes, initiate resuscitation with emphasis on rescue breaths unless OBVIOUS signs of death from trauma.
- Burial greater than 60 minutes and open airway, assume hypothermia and resuscitate per hypothermia protocols.
- If burial time is greater than 60 minutes and airway is obstructed (nose and mouth packed with snow or debris), assume asphyxia, and do not resuscitate.

There are many details about measuring temperature in the field, use of monitors and ultrasound, witnessed vs unwitnessed arrest. The reality is that avalanche victims



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with *unwitnessed* cardiac arrest have an extremely low chance of survival. The working group admittedly states they are looking for the unicorns, those hypothermic patients that look dead but can survive with good neurologic outcomes. Wisely, there is a strong recommendation for medical directors to establish protocols for the SAR teams that address their specific environment, resources, EMS, and hospital systems as there is significant variability worldwide.

Faster but less furious; Implementation of Medical Operative Workflow in the Royal Norwegian Air Force

Presented by Dr. Sven Christjar Skaiaa (RNoAF).

In Norway the public assumes that the Air Force has provided the best possible care since 1972 with the beginnings of their Sea King Helicopter based rescue. With 45,000 rescues a year they were certainly getting much practice but on close consideration in after-action reviews,

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many areas for improvement were found. Through a nationwide retooling of every detail of cabin configuration, crew task assignments and kit efficiency they were able to reduce on scene times 16-21 minutes and improve crew performance. Videoed simulations allowed careful critiques and fine tuning to achieve these improvements. Communications, always an area for inefficiencies, were also a crucial area for reworking. While harder to achieve this kind of nationwide program in the USA, the use of simulation training and attention to the choreography of a medical resuscitation team are great takeaways.

Epidemiology of Emergency Medical SAR in North Shore Mountains Vancouver, BC 1995-2020.

Presented by Dr. Alec Ritchie, North Shore SAR team member and medical director.

As one of Canada's busiest SAR teams, North Shore SAR reviewed occupational accidents of the all-volunteer SAR team. They found that 59% were sustained during training, 96% were traumatic injuries although most minor. There were 24 fatalities in the line of duty from 1969 to 2020. This included 3 during training and 6 other fatalities in two separate helicopter crashes.

There were several joint sessions between MEDCOM and other commissions including amazing case reports from Poland and important new work from Responder Alliance's Laura McGladrey on pre-incident planning and major incident response. Dr. Sheets led a development session on a psychosocial and psychological first aid recommendation paper that's in progress. [Responder Alliance \(RA\) is an organizational partner with the MRA.](#) Operational stress from SAR work continues to get a lot of attention and recommendations are being developed currently. If this topic interests you, look at the

RA website for tools, links, and educational opportunities. Resilience and good mental health help you and your team provide more compassionate patient care, promote team member retention, and prevent stress injury in major incidents.

Other development sessions which are in progress include guidelines for Termination of Resuscitation and the updates to the Diploma in Mountain Medicine course requirements, which is co-sponsored by ICAR, ISMM and UIAA.



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Editorial: Smarter Alerts, Faster Rescues

Rick Lindfors - Meridian Editor in Chief

This year Apple introduced new features for its new smartphone and that caught the eyes of many. iPhone 14 series users could now use an Emergency SOS feature to call for emergency services even when outside of cell phone range. The system uses a satellite connection to share basic location and incident details and pass them along to the appropriate agencies to respond. An early example of success came from Alaska in December. On December 1, 2022 Alaska state troopers received an iPhone SOS alert that a man had become stranded while traveling in a snow machine. Apple's emergency response center provided GPS coordinates to search and rescue teams who were able to locate and retrieve the man. Since the system's introduction, there has been a steady stream of incidents where people were able to get help in areas where they otherwise wouldn't be able to call due to lack of cell service. The latest generation of iPhones and Apple Watches can also send out an alert in the event of a car crash, which can potentially bring someone life-saving care if they are incapacitated after a major incident.

The introduction of these features brings features to the everyday consumer that were normally available on separate satellite-connected devices. Backpackers and climbers are very familiar with devices like SPOT beacons, Garmin communication devices and other brands that offer satellite connectivity for emergency alerts in the backcountry. But the casual hiker or commuter may not have or consider owning these devices unless they regularly go off the grid. Overall, the broader access to this type of communication could likely improve the response time for search and rescue and rural fire agencies to crashes or outdoor enthusiasts in an emergency.

The caveat, of course, is that we're talking about a system that is based on a iPhone or Apple Watch, which have limited battery life. While battery life continues to

improve with new generations of devices, SAR agencies have often advised people to carry an additional communication device when going off the grid. Smartphones in general are also relatively delicate compared to dedicated satellite beacons. However, the Apple system is based on sending a satellite message with coordinates once an incident happens. Provided that the person involved in the incident does not change locations, rescuers will still be able to locate and provide assistance even if their device runs out of battery before the person is located. Another catch is accidental activation. I and several colleagues have seen our apple devices ask if we've had an emergency after falling while skiing or snowboarding. As reported by GearJunkie earlier this year, 911 centers around some popular ski resorts have had to sort through accidental activation of SOS after falls that didn't constitute an emergency, putting a burden on dispatchers.

All things considered, preparedness outside of having a smartphone will always improve survival odds, and this will constantly be a staple in the education provided by search and rescue agencies in hope of preventing these incidents to begin with.

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Letter from the Editor

We've all been the "new guy" a few times in our lives. All of us were the newest members on the team when we joined and we had to learn a new set of skills with a new group of people. Every now and then, we get to be the new person again whether that's being the junior member of a gathering or joining a new team altogether.

Those experiences can be intimidating at first but represent a major opportunity for growth and development. It goes without saying that it's also one of the most important times to make an impression on our teammates as someone who is willing to learn and operate with the group. We have to understand these concepts as we work into our new groups and ensure that our first day sets us up for future success.

I recently got to be the "new guy" again after moving across the country and testing the water with a new K9 team (no mountains for mountain rescue in my new home). I brought both my certified K9 and my puppy who was ready to begin his training. The first thing I did was learn as much about the group as possible. I read up on their social media and websites about what they did, how they operated and what they used. I then spoke with the team's vice president about their relationships with other teams, state, local and federal agencies as well as their training regimens. The group presented a wealth of K9 knowledge and great personalities.

After learning about them and shadowing some of their teams on exercises, I took my certified K9 out to demonstrate her skills and kept in mind one of the most valuable pieces of advice from my old team: shut up and let your dog work. She did a wonderful job. I then introduced them to my pup who explored tracking and human remains detection exercises. At the end of the day I knew this was a team I would want to stick around with. The people were great. The dogs were pretty darn great.

The new guy experience for me was a good one because I knew what I needed to do for it to be productive. I listened, asked questions, learned and when I got the chance I demonstrated what I knew. I'm now training on a totally new K9 discipline: tracking. I've never trained a tracking dog, but I'm surrounded by experienced tracking handlers and my younger pup has gotten a grip on the tracking game. It's exciting to watch him learn and grow just a few feet away from me on a long line in all kinds of conditions (at the time of writing we're getting a good dose of snow in Minnesota) with great instructors. And I've been shutting up and letting him work.

So for those of us who are on the "new guy path," I bid you good luck and good times.

Cheers,

Rick Lindfors

Meridian Editor in Chief



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