International Commission for Alpine Rescue

2026 ICAR CONGRESS – INNSBRUCK, AT AIR RESCUE COMMISSION FINAL REPORT



By Eva Sophia Shimanski, ICAR Air Rescue Commission Executive Secretary

The ICAR 2026 Congress took place in Innsbruck, Austria, hosted by Austrian Mountain Rescue Service (ÖBRD).

The ICAR Air Rescue Commission (AirCom) presentations and workshops were developed under the direction of ICAR Air Rescue Commission President Renaud Guillermet and Vice Presidents Clayton Horney and Nigel Harling. The AirCom program was supported by its Executive Secretary Eva Sophia Shimanski, who has supported the AirCom in this role as a volunteer for the past 7 years.

102 men and women registered for the AirCom sessions, with more than 125 rescue personnel participating in the AirCom room for multiple sessions.

- 82 of the AirCom registrants came from 38 ICAR Membership Organizations
- Our 102 AirCom participants came from 22 Countries
- Our AirCom Registrants came from 47 Partners and Organizations

AIR RESCUE COMMISSION PRACTICAL DAY:

PERSONEL CARRYING DEVICE SYSTEMS



These discussions with ARA Flugrettung and ÖAMTC crews examined each operator's Personel Carrying Device Systems (PCDS), aircraft and operating procedures up close. Delegates were able to inspect the harnesses, rescue bags and other carrying devices used in hoist and short-haul operations, and to discuss how each operator selects, configures and maintains this equipment for its mission profile. The crews walked participants through their aircraft configurations and explained the procedures behind the morning's demonstrations, from crew briefings and task allocation to communication and safety checks during HEC and HHO operations.

DRONES



This station focused on the capability and capacity of drones, and on the practical applications they can support across a range of rescue scenarios. The session included a detailed briefing on a small drone fitted with the RECCO R9 detector, demonstrating its search capability for both avalanche and open-ground searches. Participants then examined the load-carrying capacity of the FC 40 and FC 100 heavy-lift cargo drones, discussing how these platforms could deliver equipment and supplies to rescue teams in terrain that is difficult or time-consuming to reach. The station linked directly to the week's drone sessions in the AirCom room, giving delegates a hands-on view of technologies that are increasingly becoming part of operational search and rescue.

EUROPEAN SAFETY PROMOTION NETWORK – ROTORCRAFT

Presented at the Practical Day, this session introduced the European Safety Promotion Network – Rotorcraft (ESPN-R) Sling Load Operations Safety Promotion task force, a mixed committee of authorities, manufacturers, and aerial-work trainers and operators. The task force was formed in response to service evidence showing that about 400 sling load events between 2018 and 2025 were operational rather than design-related. These events are grouped into clusters for analysis, with guidance published as simple sketches to make it clear and memorable. The focus was Human External Cargo (HEC), the carriage of persons outside the rotorcraft using a Personnel Carrying Device System (PCDS). The session compared the EU Part-SPO HEC levels with US FAA Part 133 Class B HEC and Class D operations. For dual-hook installations, an asymmetric rope was recommended, with the shorter leg on the weighing-equipped Main Hook 1 so that the displayed load matches the actual load.

The session also addressed PCDS certification. European rules distinguish simple systems, which carry no more than two persons and are qualified only to PPE standards, from complex systems, which are certified against aeronautical requirements. In the US, no simple/complex

distinction or dedicated certification exists, and belly band systems are now highly restricted. The session closed with HEC examples from search and rescue, evacuation and construction.

HELICOPTER SHORTHAUL AND HOIST DEMONSTRATION



During the lunch break at the Seegrube (1,900 m), Practical Day participants observed a series of live helicopter demonstrations by the two host operators. ÖAMTC opened with a short-haul demonstration involving ICAR participants, evacuating 17 people in screamer suits in quick succession. The demonstration highlighted the throughput short haul can achieve in mass evacuation scenarios when ground organization, rigging and crew coordination are well rehearsed. ÖAMTC then performed a short-haul patient extraction from steep terrain, showing the precision and ground-to-air communication required to recover a casualty where landing is not possible. ARA Flugrettung concluded with a hoist scenario recovering a patient from similar steep terrain. Seen together, the demonstrations offered delegates a direct comparison of short-haul and hoist techniques in a real alpine environment. They also showed how both Austrian operators adapt their methods to terrain, mission profile and the number of people to be moved.



RISK IN RESCUE OPERATIONS FROM GROUND AND AIR PERSPECTIVES

A facilitated discussion brought participants together to examine the elements of risk in rescue operations as seen from both the ground and the air. Delegates considered how ground teams and aircrews perceive and manage hazards differently, from terrain, weather and rotor downwash to crew workload, time pressure and decision-making under uncertainty. The discussion explored where these perspectives align and where they can diverge, and how gaps in shared understanding between air and ground teams can increase risk during a mission. Participants shared experiences from their own organizations, emphasizing the value of clear communication, joint briefings and training together so that both sides understand each other's limitations and priorities. The session reinforced a theme that ran throughout the Congress: safe rescue depends not only on technical skill but on a common operational picture between everyone involved.



CONGRESS SESSIONS:

LOCAL RESCUE TEAM PRESENTATION

By Michael Schweiger (ARA Flugrettung), and Bernhard Obholzer and Mario Papes (ÖAMTC)



The host region's two air rescue operators introduced their services. ARA Flugrettung operates three hoist-equipped H145s from three bases and flies around 2,500 missions a year. The presentation traced its growth from a single BO-105 in 2002 to year-round operations with night hoist capability, and named weather, alpine terrain and decision-making under time pressure as its defining challenges. The ARA section closed on its guiding principle: *It's not the helicopter that saves lives. It's the people who work in it.*

The other agency, ÖAMTC, launched Austria's first emergency medical helicopter in Innsbruck in 1983. They now operate 30 helicopters from 25 bases and can reach about 98% of the country within 15 minutes. The session covered its hoist and long-line capabilities, night operations with NVGs, and recent innovations such as Point in Space (PinS) procedures and a national network of night-vision weather cameras.

ADAPTING HELICOPTER MOUNTAIN RESCUE OPERATIONS TO CLIMATE CHANGE

By Julien Benet (Groupe Secours Montagne)



This presentation explored how climate change is rapidly transforming alpine environments and making helicopter rescue more complex, framing it as a challenge to raise rather than one with a ready solution. Rising temperatures, glacier retreat and permafrost thaw are increasing rockfall and making terrain less stable, while weather is becoming less predictable, with stronger winds and shorter operational windows. Traditional glacier landing zones are disappearing, higher temperatures reduce aircraft performance, and longer summer seasons bring more, often less experienced, people into the mountains. Together these factors narrow safety margins and increase cognitive load, making CRM and disciplined go/no-go decisions more critical than ever. Drones were highlighted as a way to assess operational areas before rescuers are inserted, supporting rather than replacing them. Because every mountain region worldwide faces the same pressures, the session concluded that adapting is not optional, and that sharing experience through ICAR is key to keeping air rescue safe and effective.

ESPN-R HUMAN EXTERNAL CARGO WITH SLING

By Jakob Uske (Airbus) and Jonathan Hall (EASA)

Following Part 1 at the Practical Day, which covered HEC requirements, system components and operations, this session presented the European Safety Promotion Network – Rotorcraft (ESPN-R) best-practice guidance for sling load operations, organized into seven clusters. These included pre-flight checks of cargo hook release modes, lock indicators and Bowden cables, with any hook that fails to release or re-latch taken out of use until resolved. Correct HEC system set-up was stressed, including careful attachment of the asymmetric rope and never using the secondary hook for non-human loads. Other clusters covered the use of rigid rigging

devices and swivels, and lift-off hazards such as standing on the rope coil or routing the rope over the skids. The tail rotor strike risk was shown to depend on ballast weight, rope length, airspeed and rate of descent, all calling for a thorough risk assessment.



The session also addressed rope condition, noting a typical five-year service life, damage from heat and rough surfaces, and the unsuitability of common static climbing ropes for HEC. On load spinning, caused by the rotor downwash vortex, the guidance recommended increasing forward speed where possible, using ropes at least 1.5 times the rotor diameter, and training rescuers to dampen rotation.

ACCIDENTS AND INCIDENTS IN HELICOPTER RESCUE

Facilitated by Clayton Horney and Nigel Harling (AirCom Vice Presidents)



The session opened by noting that rescuers are far more likely to be injured or killed in an aviation accident than by all other causes combined, and set the tone that the group was there “to learn, not judge.” Time was given for AirCom members to share their own incidents before a regional review of recent events. In the United States, these included a US Coast Guard rescue swimmer fatally injured when the hoist line became entangled in a ship’s mast and sheared, a fatal helicopter strike on a highline in Arizona that has sparked debate over NOTAM reliability, a HEMS crash in which a paramedic took the controls after the pilot became incapacitated, and a brownout rollover at night. Internationally, the panel reviewed a fatal MEDEVAC crash at around 15,400 ft on Kilimanjaro, a main rotor tree strike during a winch operation in Australia, a Peruvian Air Force crash in dense fog during flood response that killed 15, and a whiteout rollover on an unmarked helipad near Everest Base Camp. European cases included a Swiss final report on a ground helper lifted 20 m after his sleeve snagged a longline hook, rotor downwash knocking a physician and patient off balance in the Dolomites, and a midair collision between a paraglider and a Cessna near Zell am See. Several cases centered on entanglement, obstacle clearance and crew communication.

AIRCOM RECOMMENDATIONS PANEL

Facilitated by Dale Wang (Mountain Rescue Association) and Julien Benet (Groupe Secours Montagne)



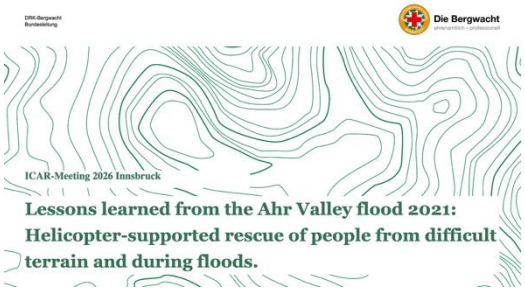
The recommendations session opened with a revision of AIR-REC0011, Human External Cargo (HEC) Safety Check, presented by Bastian Altkofer of the Bavarian State Police Air Service. First issued in 2003 to address entanglement during load operations, the recommendation was found at the 2024 Congress to be too vaguely worded to be fully effective. A working group gathered three proposals that differed on who the recommendation addresses, when the check should happen

and what it should focus on. A 2025 draft adding a crew and mission briefing was judged too long, so the 2026 revision returns to a concise two-step safety check performed by the rescuer during HEC and HHO operations. Delegates agreed to continue with the recommendation.

The ESPN-R Working Group then led a discussion on proposing Recommendation #14 and its PCDS guideline for hoist operations. It examined the risks of the rescue strop and of EN 12277 climbing harnesses, and stressed risk assessment, ground evaluation, training and continuous review over a single new standard. Delegates agreed not to recommend this.

MULTI-AGENCY COORDINATION AND LESSONS FROM THE 2021 AHR VALLEY FLOOD

By Volker Lischke and Gerd Windhausen (Deutsches Rotes Kreuz)



The July 2021 Ahr Valley flood caused 134 deaths and more than 700 injuries. During the response, 12 Mountain Rescue Service air rescue specialists working with state police, federal police, military and DRF helicopter crews rescued more than 300 people from immediately life-threatening situations, while two Water Rescue Service specialists rescued a further 56. A strengths and weaknesses analysis found structural, communicative and operational challenges. Specialists were alerted mainly through the helicopter providers rather than dispatch centers, under arrangements that had never been practiced. Multiple helicopters and drones shared the airspace without coordination, and procedures differed between operators. The flood also peaked at night, leaving many people on rooftops until morning. Proposed solutions include treating hoist helicopters, crews and specialists as a single operational unit in disaster management, setting fixed alerting agreements, briefing dispatch centers on HHO capabilities, and placing qualified HHO and airspace advisors in dispatch centers. The analysis also called for more real-flight and night training and for larger stocks of rescue equipment. It cited a median of 8 minutes per hoist rescue and presented the Swiss MERS system, which can evacuate up to six people at once, as a faster alternative.

The session also presented URFF23, a 2023 full-scale exercise in which six helicopters from four operators and 38 air rescue specialists evacuated about 90 people in five hours. It confirmed the value of an early local operations command, flight corridors and uniform training and equipment, summed up as *train as you fight* and *know the faces before the crisis.*

THE SLOVENIAN APPROACH TO HELICOPTER HOIST RESCUE TRAINING ON CABLE CARS AT VOGEL SKI RESORT

By Damjan Bevk (Slovenian Air Force)

This presentation described a joint initiative, launched in 2023, to validate helicopter hoist rescue of passengers from the gondola lift and aerial tramway at Vogel Ski Resort. The aim was to harmonize procedures, communication and abort decisions across agencies. Training began in November 2023 at the Bad Tölz simulation center, which identified key hazards such as cables, cabin oscillation and door-opening mechanisms and formed the basis for the first SOPs and checklists. The first live exercise followed in October 2024 with the police AW169, and a joint exercise with both aircraft types took place in 2025.



The SOP requires the cableway to be shut down and grounded, and calls for thorough pre-approach briefings covering wind, obstacles and a safe departure direction for every cabin position. For the gondola, rescuers are hoisted onto the cabin roof and into the doorway to evacuate passengers one by one. For the tramway, rescuers enter via a service basket, and each passenger is lifted directly into the helicopter. Site-specific risks include nearby service cableways and power lines, cabin sag, and hover illusions caused by moving cables. The session concluded that the SOP is a living document and that success depends on clear roles, cable tension control and pre-defined abort criteria.

LEZARD EDUCATIONAL PROGRAM

By Jean François Martin (Groupe Secours Montagne)



This presentation shared the joint Gendarmerie and Sécurité Civile standard operating procedure for the Petzl LEZARD, developed over several years of operational use and incident debriefs. Hoisting can include a critical phase when the hoist hook is tethered to the rock face. The LEZARD is a releasable lanyard that lets rescuers work on a wall without rigidly anchoring the helicopter to it: if the aircraft moves out of hover, the tail releases automatically. The lock disengages under a load of about 30 kg, after which the trigger opens at about 20 kg. A key safety rule is that the rescuer must be attached at or below the anchor point, since tension on the tail from the wrong angle risks partial or complete opening. Crews must also verify the trigger is fully closed before attaching to or detaching from the hook, and shift the device laterally to avoid an improper stable position on the hook. The procedure sets out steps for each phase, from arming and briefing in the cabin to clipping in under the hoist, ground work and pick-up, with standard radio callouts such as “LEZARD ATTACHED” and “HOOK CLEAR.” The hoist operator gives a little slack when the hook is received to prevent snagging.

EMOTIONS SAVE LIVES, BUT ARE WE TRAINING THEM?

By Eleonora Avi (Aviation Psychologist) and Renaud Guillermet (AirCom President)



This session argued that non-technical skills deserve the same attention in mountain air rescue as technical ones. Crews provide rescues day and night, and face self-imposed pressure, or “*white knight syndrome*,” especially in emotionally charged missions such as rescuing a child. Rescuers are professionals, not superheroes, and the guiding rule is simple: if three people leave the base, at least three must come back. Because non-technical skills are defined mostly by what they are not, they are harder to measure and easily overlooked, yet they make the difference in high-stakes situations. A 2019 fatal controlled-flight-

into-terrain accident during flood response near Marseille illustrated the point. The investigation identified unchallenged pilot decisions, unspoken and spoken doubts from the crew and groupthink, yet only one of its eleven recommendations addressed non-technical skills.

The session distinguished “sharp” skills, the precise technical skills that must be kept honed, from “smart” skills: noticing change, communicating clearly, regulating pressure and adapting when the plan meets reality. Crews were encouraged to assess whether a mission is worth flying and what the options are if they don’t fly, to keep reviewing the action plan in flight, to speak up assertively, and to debrief. The session concluded that emotional regulation underpins technical performance and that these skills can be trained: “fly safe” is good, but “fly smart” helps too.

EHA, EUROPEAN ROTORS



By Frank Liemandt (European Rotors)

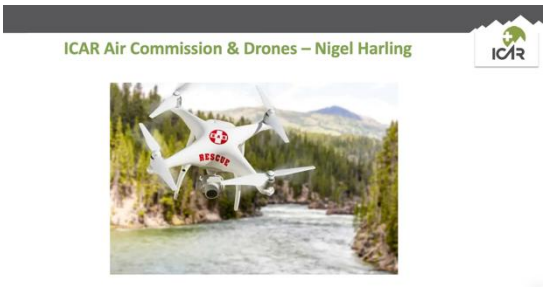
This presentation introduced European Rotors, Europe’s vertical aviation event, which brings industry, operators and regulators together under one roof. Owned by the European Helicopter Association and endorsed by EASA, it is held alongside the EASA Rotorcraft Symposium, giving operators and manufacturers direct access to the regulator. The 2025 edition drew more than 5,400 attendees from over 70 countries, with 260+ exhibitors and 20+ aircraft on display. The program combines theoretical sessions with practical demonstrations. The Rotor Safety Zone will feature live hoisting and sling load demonstrations, and the ESPN-R team will interview exhibitors about safety features. Other highlights include a HEMS Day focused on “How to Say No,” an APSA public safety summit with a presentation by the AirCom President, and workshops on maintenance and finance. European Rotors 2026 will take place in Lyon, France, from November 30 to December 3, hosted by the French Helicopter Association.

HOIST EMERGENCIES AND ABNORMAL SITUATIONS PANEL

By Alexander Weissenboeck (ESPN-R) and Michele Cucchi (Italian Alpine Rescue Team)

This session was an open discussion with delegates sharing examples from their own organizations. The ESPN-R Hoist Working Group framed it around four hazard categories: maintenance, flight operations, hoist mechanics and electrics, and external or environmental hazards. Mechanical scenarios included hoist runaway (uncommanded up or down travel, with downward more common), which requires immediate power isolation, and cable birdcaging or strand damage. If damage is spotted in flight, the operation should stop immediately; regular cable conditioning and checking lubrication help prevent it. Delegates also discussed total electrical loss, electrostatic discharge, hydraulic and generator degradation, and aircraft emergencies such as engine failure in hover, loss of tail rotor effectiveness and autopilot failure. Rotor wash, load oscillation and media pressure were noted as further pressures on crews. Environmental hazards included the hook snagging on trees or anchors, sudden brownout or whiteout, and severe turbulence. This led to a discussion of how crews respond to entanglement and of the last-resort cable cut, initiated with the standard “CUT, CUT, CUT” callout. The session concluded that manuals and OEM procedures exist for good reason, reflecting lessons already learned, and that no shortcuts should be taken in maintenance or operations.

ICAR INTERDISCIPLINARY DRONE WORKGROUP UPDATE



By Nigel Harling (AirCom Vice President)

This session announced that the ICAR Board has brought the Interdisciplinary Drone Workgroup (IDWG) back under AirCom. Drones are now used across the rescue sector, from search to leaving equipment on scene, and their capabilities are developing quickly. The workgroup will support all ICAR commissions, focusing on the safe use of drones in mountain rescue and search and rescue. That includes deconfliction between drones and crewed aircraft and between drones themselves, as well as clear communication in shared airspace. It will also assess drone capability and capacity, recommend best practices, follow research and development, and engage with regulators, bringing together subject matter experts from around the world. The session raised the question of whether human external cargo could become part of drone rescue in the future, noting that a safety net must be in place before such processes can be considered. Delegates were encouraged to standardize training and deployment procedures, share contacts with civil aviation authorities and governments, and work toward greater cooperation, guided by three principles: deconfliction, coordination and communication. The workgroup will meet monthly until the next Congress to share experiences, encourage learning, ensure safety, develop best practices and work together.

DRONE-ASSISTED MEDICAL EVACUATION IN MOUNTAIN RESCUE (DRONE MEDEVAC)

By Michiel Van Veelen (EURAC)

This presentation, part of the joint drones session, explored whether drones could evacuate patients when no helicopter is available. Cargo drones are already used in mountain medicine to deliver medical kits and AEDs to ski patrols, shortening time to defibrillation, and heavy-lift drones carry oxygen bottles, and even a ladder, between Everest Base Camp and Camp One. Medical evacuation, however, is time-sensitive, technically and physically demanding, and risky for rescuers and patients. Existing evacuation drones, such as one developed for the German Army, are large and need big landing zones and easy terrain. A roundtable in Cortina d'Ampezzo examined urgent evacuations without a helicopter, leading to an Interreg study in Austria in which three teams spent three days testing two scenarios: a severely ill or injured patient and an awake patient. A drone delivered a litter, the team loaded a 70 kg manikin into commercial rescue bags, and the setup was tested to prevent spin. Mean evacuation time was 9 minutes 31 seconds by drone, compared with 27 minutes 8 seconds by conventional means. Next steps include adding a rescuer, increasing distance and exploring medical monitoring during drone transport.

DRONE FLEET CAPACITY

By Andrzej Górka (Tatra Volunteer Search and Rescue)

This presentation outlined the drone program of TOPR, the mountain rescue service of the Polish Tatras, operating since 1909. After testing drones in winter and other seasonal conditions in 2021, TOPR certified its first 12 UAV pilots that July, motivated largely by the ability to fly at night and in conditions where helicopters cannot. By 2026 the service had 30 certified pilots, including 14 qualified for heavy cargo drones up to 200 kg, six instructors and its own training facility, providing drone coverage on most days of the year. Activity has grown steadily, from 8 search flights in 2021 to more than 60 search, cargo and reconnaissance flights by September 2026. TOPR found its first missing hiker by drone in October 2021, and its fleet is regularly modernized, now including heavy-lift FlyCart drones and a dock-based Matrice 4TD. Pilots can launch dock-based drones remotely, even from home. In one August 2026 case, an AED was delivered to a hiker in cardiac arrest within 18 minutes of the call, before the helicopter took off. Other missions included delivering survival supplies to a stranded hiker overnight, and two pilots relaying a heavy cargo drone over a ridge to carry medical equipment and a stretcher to an injured hiker. TOPR uses the OGN network for deconfliction, and permanent docks equipped with AEDs will be implemented from 2027.



RECCO DRONE DETECTOR

By Pat Dryer (Mountain Rescue Association)



This presentation explored whether a drone-mounted detector could enhance ground-based RECCO searches, which are effective but require rescuers to move through avalanche debris, steep terrain or dense vegetation. The system pairs a Freefly Astro Max drone with the handheld RECCO R9 detector, a deliberately simple concept that proved complex to integrate. Challenges included shielding the detector from the aircraft's radio-frequency interference, designing a stable payload adapter, and streaming the R9's audio to the ground station in real time. These were brought together in a single interface combining flight controls, detector audio and a detection heat map. Field testing in two areas evaluated range and altitude, canopy cover, flight speed and search patterns, followed by mock searches for reflectors in unknown locations. Reflectors were located repeatedly across environments, altitudes and flight paths, although terrain, vegetation, heading and strip width all influenced detection, and skilled interpretation of the audio signal remained essential. The geo-referenced heat maps document coverage and help direct ground teams to hot spots, and the system extends the R9's use beyond avalanches to year-round searches for hikers, climbers and other missing persons. The session concluded that further testing is needed to quantify search efficiency and probability of detection, and that the tool is not a replacement for ground search but a force multiplier for places rescuers may not be able to reach.

HELICOPTER FLIGHT IN ICING CONDITIONS

By Erik Normann (Norwegian Air Ambulance)

The Norwegian Air Ambulance is the sole HEMS provider in Norway and Denmark, operating 18 bases up to almost 70° north. It has flown IFR since 2006, using more than 100 approved PinS approaches and an extensive low-level route network. With six winter months, it turns down many flights because of icing risk, and pilots have reported around three icing incidents a year in recent years. The presentation opened a dialogue on what “icing conditions” and “known icing” actually mean. It explained how numerical weather models, such as high-resolution model output tailored for the service, now forecast icing far more precisely than AIRMETs and significant weather charts. It also described the aerodynamic effects on the rotor, where ice spreads further along the blade as temperatures fall. The service tells its pilots to expect little effect down to about -3°C, mainly increased drag, and a considerable performance loss at around -6°C, possibly up to half of available power. Below that, the reduction can be dramatic and Plan B must be ready. Its guidance is that icing conditions exist when ice builds on the aircraft, that crews should use the available forecasts, cloud type, outside air temperature and expected performance penalty, and that it is acceptable to “take a look” with an icing contingency plan covering autopilot management, turning around, or climbing or descending. The session stressed that this does not mean it is acceptable to fly in icing; rather, in-flight risk decisions about icing should be based on knowledge, not fear.



MEDICAL OPERATIONAL WORKFLOW

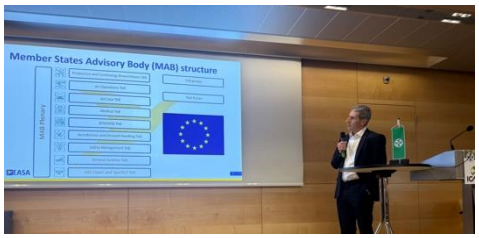
By Sven Christjar Skaiaa and Dag Rune Vatle (Royal Norwegian Airforce 330 Squadron)



This session presented the Medical Operational Workflow (MOW). Every HEMS and SAR mission consists of stages, each made up of tasks that are largely governed by guidelines. The presenters’ hypothesis was that the transitions between tasks have been underestimated, and that unstructured transitions lead to misunderstandings, excess communication and greater cognitive load. Because many missions are predictable, these transitions can be prepared for through pre-defined task allocations, a well-organized equipment layout, and deliberate positioning of crew in the cabin and on scene. In one example, starting advanced medical support took about six minutes before MOW training and about 90 seconds afterwards, a gain attributed to better teamwork. When everyone knows their tasks, a transition takes on average about 20 seconds. A Medical Operational Workflow Manual links existing SOPs and guidelines and reduces unnecessary operational variation. Across 2,000 patients, on-scene time fell even as the number of interventions increased. As a result, the Air Force decided in 2026 to introduce the concept at all its helicopter bases in Norway, supported by a two-day course and annual training that involves the whole crew, including pilots and hoist operators. The session stressed that MOW is not about speed or advanced medicine but about preparedness: being ready for the next step at all times.

EASA UPDATE

By Fabrice Legay and Eric Benett (EASA)



The first part of this session explained how EASA works with its stakeholders, stressing that EASA is not the aviation system itself but one part of a system that includes operators, air traffic, training organizations and member states. Input reaches EASA through two advisory bodies. The Member States Advisory Body consults national authorities, though it currently has no dedicated rotorcraft technical body. The Stakeholders Advisory Body brings in industry, including through a Rotorcraft Community whose activity groups cover certification, flight standards and safety promotion. Stakeholders were invited to engage directly through these groups and at events such as the ICAR Congress.

The second part, “U-Space, Drones, and How to Reduce My Collision Risk,” explained that U-space zones are coming. Member states designate them for dense drone traffic beyond visual line of sight, adding a layer of requirements on top of existing airspace. Because U-space is drone-centric, and its network remote ID can be impracticable in mountain terrain, helicopters entering it must be known to the U-space service provider. The key message was to be electronically conspicuous, since interoperability between crewed and uncrewed aviation remains the main challenge.

STATIC ELECTRICITY HAZARD



By Jostein Rødseth Brede (Royal Norwegian Airforce 330 Squadron)

This presentation addressed electrostatic discharge (ESD), or “static,” during hoist operations, a well-known hazard with surprisingly little medical literature behind it. Helicopters build up charge through the triboelectric effect, as airborne particles strike the rotor blades. A nationwide study of the 330 Squadron’s rescue paramedics and physicians, with a 91% response rate, found that each person experiences around two incidents a year. Events were graded as mild, moderate or severe, ranging from tingling with no effect on performance, to pain and muscle contractions that disrupt the task, to hospital admission, loss of consciousness or falls. In documented operations, ESD occurred in 3.3% of hoists, roughly one in 30, and the risk over water was more than double that over land. Most events occurred with precipitation nearby or temperatures above 3°C. Half of the events were moderate or severe, and two rescue paramedics were hospitalized. The danger lies not only in the shock itself but in what the rescuer is doing at that moment. Surprisingly, 64% of incidents occurred even though the antistatic line had already touched the ground. Many paramedics were also worried about long-term effects. The session recommended considering weather in the pre-hoist assessment, checking discharge equipment and cable condition, including ESD in the pre-hoist briefing, and recording and reviewing every event so that organizations can learn across borders.

ROTOR WING DISASTER RESPONSE

By Steve Soliz (Bell Helicopters)



This presentation drew on Texas disaster experience to outline how rotor wing assets can be used effectively in disaster response. Because no community has enough resources to handle every emergency, success depends on preparedness at every level. Response is organized into four phases: preparedness, response and deployment, operations, and after-action review. Agencies are encouraged to train staff in a National Incident Management System (NIMS) and to run tabletop exercises with regional partners. The lead aviation authority should keep a full list of available aviation resources and give responding agencies landing zone details, communication plans, fuel availability, and current aeronautical maps and terminal procedures based on evacuation points. Responders should know what they can offer and for how long. Once a response is activated, an aviation branch lead with regulatory expertise should coordinate air assets, and crews should be prepared to be self-sufficient, since food, shelter and hygiene facilities may take time to establish. Accurate asset tracking ensures that aircraft with the right capabilities are sent, while the aviation authority manages crew rest, safety and connectivity, including through mobile cell towers. Case studies showed the value of night vision during Hurricane Katrina, when one agency rescued 184 people in 13 hours, 164 of them after dark, and of helicopters restoring access after Japan's 2011 earthquake and tsunami. The session concluded that rotor wing assets are invaluable in disasters when they are planned for, trained for and used properly.

PATIENT AIRWAY MANAGEMENT DURING HOIST MANEUVERS

By Scott McIntosh & Wade Quilter (University of Utah), Jon Fleming & Drew Harrell (University of New Mexico), and Jon Bourke (Teton County Search and Rescue)



This session compared ventilation methods for patients with an iGel airway during helicopter operations. An earlier study with Teton County Search and Rescue during short-haul operations found that automated ventilation was more consistent than manual bag-valve-mask ventilation, and that the operational demands of short haul affected the stability of the bag. The same method was then applied to a hoist study by the University of New Mexico, in which patients were hoisted from about 100–120 ft before the aircraft transitioned into forward flight for around four minutes. The primary outcome was the percentage of tests achieving target ventilation. The key takeaway was that rescue specialists are not reliable at manual bagging, especially while moving and in downwash that can make it hard for the bag to reinflate. The session concluded that manual ventilation is inconsistent, that airway and circuit stability must be secured, and that operational factors, such as where the bag sits and whether the rescuer must hold the bridle, support moving ventilation away from the rescue specialist toward an automated ventilator.

THREE DIMENSIONS, ONE READINESS: AN INNOVATIVE MODEL FOR MOUNTAIN RESCUE TRAINING

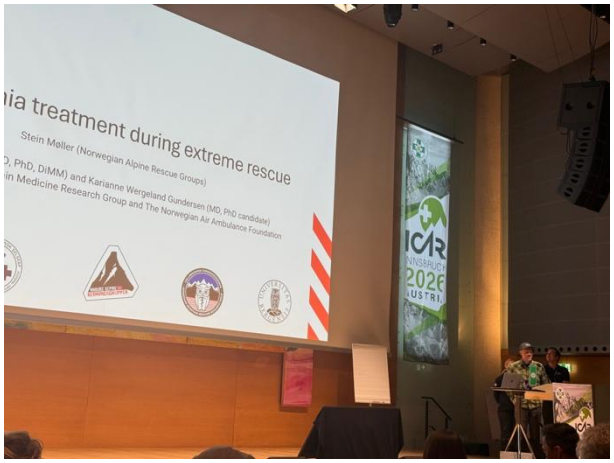
By Claudio Artoni, Maria Chiara Pavesi, and Piergiorgio Vidi (National Alpine and Speleological Rescue Corps)



This plenary presentation opened with the history of avalanche rescue in Italy, which recorded 40 avalanche fatalities this year, mainly from wind slabs and faceted crystals. Climate change is altering the snowpack, with heavy snowfall in short periods and shifting snow levels. Winter conditions in turn shape summer risks, as glaciers retreat and rockfall increases. Against this backdrop, the session argued that technical mastery alone is not enough: mission outcomes depend on decision-making under stress, fatigue and team dynamics. Rescuers must train resilience across sustained focus and motor precision, situational awareness, objective risk evaluation, pragmatic decision-making and emotional regulation. Mental toughness helps rescuers perform consistently under pressure, but it must be paired with metacognition, the ability to reflect on one's own thinking during action, which the brain tends to shut down under load. Rather than being reviewed after a crisis, these skills should be trained beforehand, integrated with technical training and tailored to each rescuer's level of expertise. The session concluded that safety in austere, unstable environments comes not from reading rules but from the human ability to read the terrain while performing the rescue, and that when the mind blanks, awareness and mental toughness bring the team home safely.

HYPOTHERMIA TREATMENT DURING EXTREME RESCUE

By Sigurd Mydske, Stein Moeller, Karianne Wergeland Gundersen (Norwegian Alpine Rescue Group)



This presentation used a rescue on Storen, a Norwegian peak that requires climbing skills to ascend and descend, to explore the medical side of hypothermia and how such cases are changing rescue practice. Two climbers summited late in the evening despite a forecast of heavy rain and thunder. Unable to find the rappel station, with only one rope, no headlamps, little phone battery and no warm clothing, they were stranded overnight in heavy rain. A first team was inserted by helicopter at 4 a.m., and more rescuers followed at 10 a.m., climbing light and expecting to find two fatalities after dramatic overnight calls. Instead, both were alive: the woman was alert, cold and able to assist, while the man was drowsy, no longer shivering and unable to help. Both were brought down amid heavy rockfall and evacuated by helicopter. The case raised questions about whether teams have the right

tools for such conditions, and whether to “load and go” or “stay and play.” The goals of pre-hospital hypothermia care are to preserve life, prevent further cooling, evacuate and rewarm. Forced-air convective warming is standard in hospitals, and with modern batteries and aircraft power it is now becoming possible in the field. Clinical studies and a demonstration video, including a drone delivering a battery-powered warming device, showed the concept. The team is now testing a kit weighing around 8 kg, light enough to carry into the mountains, as a possible use for backcountry mountain rescues. Important technology that is supporting lifesaving care.

UNITED IN RESCUE – PREPARED FOR CRISIS: HOW EVERYDAY COOPERATION CREATES NATIONAL RESILIENCE

By Kjetil Nevøy (Norwegian Red Cross), Elin Seim (Norwegian Red Cross), Stein F. Møller (Norwegian Air Ambulance), Dag Rune Vatle (Royal Norwegian Airforce 330 Squadron)



This presentation compared rescue to an orchestra: each instrument must train on its own and follow shared notes, but all must trust the conductor to bring them together. Norway’s many rescue resources rely on each other’s strengths to handle incidents larger than any single organization. Its preparedness rests on four principles: handling incidents at the lowest effective level, keeping responsibility with the organizations that hold it day to day, making crisis structures resemble normal ones, and giving actors an explicit duty to cooperate, a principle added after a major incident in 2012. Principles alone do not create a good working group, so Norway puts them into practice by building relationships before they are needed through joint education, training and real operations. Responders also share a national radio system, a common operational picture and common methods, such as shared avalanche rescue guidelines. Coordination through a single rescue service means capacity grows in layers: local responders are reinforced by neighboring, regional and national resources rather than replaced, all using the same language and methods. The 2020 Gjerdrum landslide showed this model in action, along with lessons such as expecting a chaotic start, arranging fuel on site early, and drawing on local, regional and national expertise to keep operations safe. The session concluded that well-orchestrated resources can “downscale” a catastrophe to a disaster, and that national resilience is built locally.

THE SHAKY ISLES – AF8: DISASTER PLANNING FOR NEW ZEALAND'S ALPINE FAULT RUPTURE



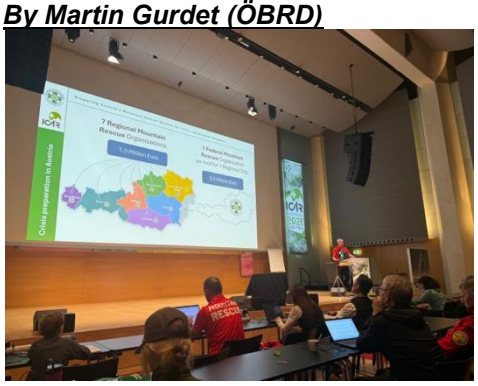
By Sarah Gordon, Dick Price (New Zealand Land Search and Rescue)

This plenary presentation described how New Zealand is preparing for a magnitude 8 earthquake on the Alpine Fault. New Zealand has 5.2 million people, around 1.1 million of them on the South Island, where a quarter live in rural areas. Land search and rescue relies on 3,000 volunteers in 68 groups covering an area similar to the UK, plus a marine search area. The Alpine Fault runs for about 600 km, has ruptured 27 times in the last 8,000 years and is considered overdue. A rupture is expected

to travel along the fault and trigger around 30,000 landslides, so all initial reconnaissance will depend on helicopter access. Planning is built on a science-based hazard scenario for the first seven days and on New Zealand's Coordinated Incident Management System (CIMS), the national doctrine for emergency response at all levels. CIMS operates by function rather than by agency: an incident controller oversees seven functions, police lead all incidents, and other agencies fill the remaining roles, with one agency able to work across several functions. Preparedness also involves the public, through a national emergency app, an annual earthquake drill each October and community geomonitoring, while hospitals have been rebuilt to be self-sufficient for 72 hours. A ski field scenario asking "how prepared are you if an earthquake struck?" revealed varied first aid skills and short supplies of medical equipment. The session underlined that a catastrophic event will demand a very large number of people, and that disaster imagination must keep expanding.

PREPARING AUSTRIA'S MOUNTAIN RESCUE SERVICE FOR CRISIS AND DISASTER RESPONSE

By Martin Gurdet (ÖBRD)



This plenary presentation described how Austria's mountain rescue service, which has operated in the Austrian Alps for 130 years, is preparing for large-scale crises. Recognizing a growing need for crisis preparedness, the Austrian government began funding additional crisis training in 2023, and now provides €22 million per year to the federal mountain rescue organization. The program began by identifying potential crisis scenarios, then invested in communication hardware that lets rescuers stay in touch under any circumstances. It also introduced a centralized incident alarm system with real-time reporting, on a platform that connects mountain rescuers across the country. Exercises, including a nationwide blackout scenario, produced several key findings: organizations must take part in coordination meetings and exercises, appoint backup representatives when key people cannot attend, maintain continuity and knowledge transfer within each regional organization, and keep radios ready by programming the relevant talk groups in advance. The session showed how sustained funding, shared systems and regular exercises are building a mountain rescue service ready to support national disaster response.

ROCKFALL AND AVALANCHE DANGER RESULTING FROM HELICOPTER DOWNWASH

By Dale Wang (Mountain Rescue Association) and Clayton Horney (Colorado Hoist Rescue Team)

The idea for this plenary presentation had its origin when the Colorado Hoist Rescue Team received post-mission feedback about rockfall possibly caused by its helicopter. The program then began researching rockfall linked to hoist operations, reaching out to other helicopter rescue programs and reviewing existing literature. Building on earlier work on litter spin, the team studied how much downwash reaches the surface at different distances and wind speeds. Two examples illustrated the hazard: a hoist on 305 ft of cable where surface downwash still affected the rescuer, and a 2017 rockfall accident during hoist operations in Japan. Moisture and seasonal freeze-thaw cycles also make rockfall more likely. To reduce risk, the team tries to

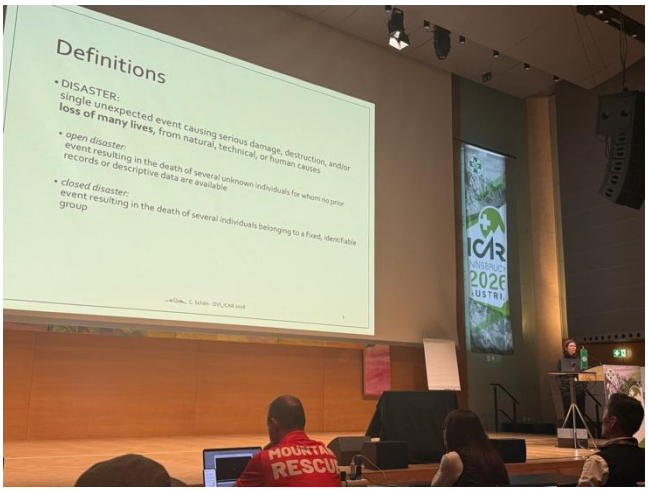
minimize time on scene and follows peer operators' recommendation of at least 60 m of cable where possible, while recognizing that cable length does not always equal distance from the terrain that may release rock. Where rockfall is a major hazard, crews consider whether a larger aircraft is needed and may choose smaller one which often has a smaller overall downwash profile. They identify likely rockfall lines, sometimes insert rescuers offset from them, move subjects to protected locations before hoisting when possible, and ask ground teams to report rockfall concerns. The session concluded that there is no magic solution: crews should try to do the basics as well as possible training to get in and out faster, training with ground teams, planning procedures such as aircraft choice, cable length and helicopter heading, keeping awareness of the whole scene, and communicating clearly within the aircraft.



DISASTER VICTIM IDENTIFICATION IN THE EVENT OF A CATASTROPHE IN THE MOUNTAINS

By Corinna A. Schön (Swiss Society of Mountain Medicine)

This plenary presentation explained how victims are identified after a mountain disaster, defined as a single unexpected event causing serious damage, destruction or the loss of many lives. Examples included plane, gondola and vehicle crashes and landslides. Such events draw in more agencies as they grow, and medical triage remains the first priority. Once rescue work is complete, the difficult task of identifying the deceased begins. In mass disasters, identification relies mainly on primary methods: dental records, DNA, fingerprints and the serial numbers of medical implants. Secondary methods, such as identity documents, jewelry and surgical scars, can support them. Disaster Victim Identification (DVI) is an internationally standardized method overseen by INTERPOL, which recommends that every nation maintain a DVI team to call on when a disaster exceeds local capacity. Once the scene is safe, the process runs in four phases: scene work and documentation, usually by crime scene technicians; post-mortem examination; ante-mortem data collection from personal records; and reconciliation of the two. How long this takes depends on many factors. The key takeaways for rescuers were to leave the deceased where they are, avoid touching evidence unless necessary, and understand the responsibilities and needs of every agency involved.



100 YEARS OF CAMARADERIE: WHY TRADITIONS AND CHANGE ARE VITAL

By Christopher Van Tilburg (Mountain Rescue Association)



This plenary presentation marked the centenary of the Hood River Crag Rats, founded 100 years ago on Oregon's Mount Hood. In its early decades the team combined social events, volunteer service and rescues, taking on complex missions only occasionally. Today the Crag Rats still wear their distinctive black-and-white striped shirts, but much else has changed. The team began accepting women in 1994, and as its mission load grew from six or seven a year to around 30, it created a formal training program, expanded its medical capability, adopted phones for rescue coordination and invested in modern gear. Missions on Mount Hood have also become more complex, with large numbers of visitors and more people attempting fastest-known-time (FKT) routes without the necessary equipment. Looking ahead to the next 100 years, the team must keep modernizing. The session reflected that abandoning traditions is difficult but sometimes necessary, illustrated by the team finally replacing its itchy wool shirts with polyester versions in the same stripes. The key is to choose which traditions to keep and which to let go.

If you have any questions about this report, please contact ICAR Air Rescue Commission President Renaud Guillermet at renaud.guillermet@alpine-rescue.org. For access to the above presentations please email Renaud.

Thank you.