



International Commission for Alpine Rescue

## 2023 ICAR CONGRESS – DOBBIACO AIR RESCUE COMMISSION FINAL REPORT

***By Eva Sophia Shimanski, ICAR Air Rescue Commission Executive Secretary***

The ICAR 2023 Congress took place in Dobbiaco Italy, hosted by Mountain Rescue South Tyrol.

The ICAR Air Rescue Commission (AirCom) presentations and workshops were developed under the direction of ICAR Air Rescue Commission President Charley Shimanski and Vice President Renaud Guillermet. 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 5 years, since the 2018 event in Chamonix, providing AirCom meeting management, as well as this report of minutes of presentations, gathering and distributing all presentations, and Audio-Visual support.

110 men and women registered for the AirCom sessions, with more than 120 rescue personnel participating in the AirCom room for multiple sessions. In contrast, 84 rescuers registered for the 2022 AirCom sessions in 2022 in Montreux.

- 72 (65%) of the AirCom registrants came from 39 ICAR Membership Organizations
- Our 110 AirCom participants came from 20 Countries
- 38 (35%) of the AirCom Registrants came from 24 Partners and Organizations

### ICAR CONGRESS PRACTICAL DAY – AIR RESCUE COMMISSION STATIONS

The ICAR Practical Day included two sessions organized by Renaud Guillermet, Vice President of the Air Rescue Commission. The morning portion of the event included 77 delegates organized into three workgroups. In Workgroup 1, participants discussed rotor strike incidents, highlighting the need for improved operating procedures and standard operating procedures (SOPs), as well as top management engagement in finding technological solutions to enhance safety. Workgroup 2 focused on tracking and localizing individuals before rescuing them, emphasizing collaboration between manufacturers and rescuers, and the importance of contextual information for users of new technologies. Workgroup 3 shared a case example from a Pyrenees rescue operation and addressed various thoughts, including





improving communication with loved ones about backcountry equipment, the challenges of technology usage and standardization, and the role of ICAR in addressing technological advancements. This presentation provided valuable insights into the practical day's workshops and their discussions on safety and technology in rescue operations. The participants underscored the importance of manufacturers being aware of the intended use of devices like Personal Locator Beacons (PLBs) to ensure consistent alerting. They also discussed the need for comprehensive technology utilization in aircraft equipment, standardization, and identifying the technology people carry is highlighted, with a call for mandatory device requirements in certain areas. The importance of collaboration between rescue services and manufacturers to enhance safety through technology adoption and cultural change cannot be overstated.



The afternoon session for the Air Rescue Commission was led by Dr. Will Smith, chair of the ICAR Interdisciplinary Drone Workgroup (IDWG). Using a very large screen to demonstrate live images captured from aerial drones working in the area, Dr. Smith and others were able to address the issues of drones working in support of SAR as well as air space deconfliction issues presented by having unmanned and manned aviation assets working in the same airspace. These presentations led nicely into the in-person discussions on drones in SAR in the days that followed at the Toblach Cultural Center.

## ICAR CONGRESS PRACTICAL DAY – DEMONSTRATION OF 100+ METER LONGLINE FROM DREI ZINNEN

While enjoying their soup lunch at the Rifugio, more than 300 ICAR Practical Day participants experienced a demonstration by Mountain Rescue South Tyrol that included their specialized *Aiut Alpin* and *Heli - Flugrettung Südtirol* rescue helicopters and crew as they demonstrated a joint terrestrial and air rescue off the Drei Zinnen, the prominent peaks that served as the backdrop of the Practical Day.

The demonstration included a longline of more than 100 meters with several rescuers being transported in pairs.





## "HOISTAR" TRAINING IS THE KEY; DRF LUFTRETTUNG

In a 30-minute presentation by Jörg Redetzky (Nominated Person Crew Training) and Sebastian Schneider (Head of Hoist Operation), DRF Luftrettung presented the

importance of new training options for improving quality and increasing safety within hoist operations. With HoistAR, the mobile hoist simulator, this circle will be closed in the future.

## ICAR AIR RESCUE COMMISSION WORKSHOP AT DOBBIACO AIR FORCE AIR BASE

With the extraordinary support of Mountain Rescue South Tyrol, the Italian Air Force, Vita Aerospace, and several rescue helicopter programs in the region, the three-hour ICAR AirCom Workshop took place at the Italian Air Force Dobbiaco Air Base, just ten minutes' walk from the ICAR Congress site. Participants rotated through five 30-minute sessions over three hours.



We are especially grateful to Lt. Col Max Pierucci and Col. Giacomo Zanetti of the Italian AirForce as well as Robert Sartori of Mountain Rescue South Tyrol for their work to support the air rescue operations of this workshop

## ACCIDENTS, INCIDENTS, AND PREVENTION



### **By Renaud Guillermet and Bernd Osswald**

Review of incidents and accidents is paramount in the work we do, yet reports from member and non-member organizations are not as forthcoming as we need them to be. In 2022, ICAR AirCom Vice President Renaud Guillermet noted that there were no accident reports from AirCom members. He shared the need for continuous sharing throughout the year.

This year, an analysis of accidents in France highlighted the importance of individuals questioning the sensibility of a situation and encouraging open

communication to reduce risks. The participation of Bernd Osswald, accident investigator for Airbus was particularly appreciated.

The first case presented involved a fatal Night HHO training mission in 2020 in France, where poor weather conditions led to a Controlled Flight into Terrain (CFIT) incident. The second case featured an AS350 helicopter crash during a flood relief mission, also attributed to CFIT. The importance of pilot decision-making and pressure was discussed. The third example detailed an avalanche control incident in Canada, emphasizing the need for gut feeling and human experience alongside risk management. Safety actions and recommendations were distinguished. Lastly, a description of a Flyboard Air demo flight highlighted the importance of proper flight control systems in accident prevention. The overarching message emphasized the continuous reflection and preparation necessary to mitigate risks effectively, and the need for more incident and accident reports.



## BAVARIAN STATE POLICE AIR SERVICE, PAST-PRESENT-FUTURE

### **By Alexander Pöll and Bastian Altkofer**

The presentation on the past, present, and future of the Bavarian State Police's helicopter rescue operations

offered a comprehensive look at their journey. Founded in 1970 in Munich, they began with traffic monitoring and reconnaissance before expanding in 1974 to establish a branch in

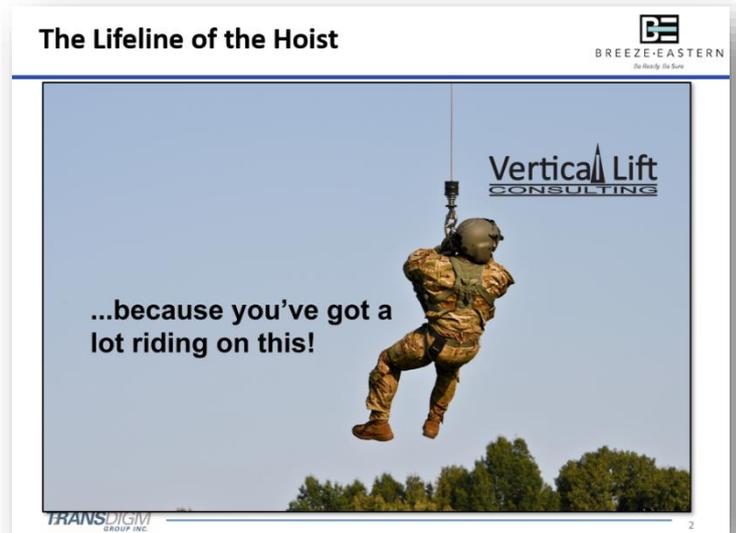


Northern Bavaria. Adding BK117 helicopters in 1984, they widened their operational spectrum, prioritizing night vision goggles (NVG) and introducing NVG and IFR ratings in 1994 for 24/7 service. Transitioning to EC135 helicopters, they emphasized size's importance in their operations. Their diverse helicopter configurations, extensive training, and partnerships enable them to serve in various capacities, including police missions, civil defense, firefighting, and HEMS support. the RECCO SAR Detector and collaborating with the Bayern Rescue Team, they have also ventured into UAV units. Future plans involve acquiring H145 D3 helicopters and ongoing training for night hoist operations, showcasing their commitment to enhancing search and rescue capabilities.

## THE NATURE OF CABLES: DESIGN, OPERATION, AND MAINTENANCE

***By David Creech; Vertical Lift consulting and Breeze Eastern Hoists***

In this presentation, David Creech discussed two types of cables. The 19x7 cable, comprising 19 strands with 7 wires in each, underwent rigorous testing and had not seen updates in 75 years. Cable looseness issues were attributed to bad hook bearings, especially with long cables and fast speeds, and the solution advocated was frequent cable reseating. An alternative, the four-strand cable with varying wire diameters for interlocking, was introduced, gaining FAA and EASA approval. This modern cable offers rotational resistance and competitive pricing, making it a compelling alternative to the traditional 19x7 cable, as summarized on Slide 26.



## ICAR AIR RESCUE COMMISSION RECOMMENDATIONS: A REVIEW AND PLAN TO UPDATE

***By Charley Shimanski, AirCom President, and Renaud Guillermet, AirCom Vice President***

In the presentation, AirCom President Charley Shimanski noted that no updates have been issued by the AirCom since 2016. An overview of all existing recommendations was presented, and a

summary of each recommendation was discussed. Various individuals, including Shimanski, shared their thoughts, with possible categories under consideration. Participants were



encouraged to fill gaps in the recommendations. Fabrice Legay from EASA raised the importance of addressing all accidents, with a focus on Controlled Flight into Terrain (CFIT). Nick Demogines from Collins Aerospace-Goodrich Hoists advocated for recommendations related to personnel carrying device systems (PCDS) for hoists, emphasizing the need for specific system details. Dan Halvorsen from Norway pointed out the age of some recommendations and highlighted the importance of a pre-check before lifting off the ground, which gained unanimous agreement. Additionally, using a pick-up strop for water rescue was discussed, with the need for further clarification on its applicability.

## IS A RESCUE DOG PRECISE AND EFFICIENT IN ITS SEARCHES IN INTERACTION WITH AN AIR AMBULANCE HELICOPTER?

***By Knut Skar and Magnus Wethal***

This presentation highlighted a study that focused on the performance of rescue dogs in searches conducted under a helicopter when the rescuer is connected to the aircraft. The goal was to assess the effectiveness of dogs in this scenario, prompted by previous accidents in Norway that exposed rescuers due to the risk of second avalanches. The study prioritized safety while conducting potentially risky operations. The study's design was outlined in the presentation, with six dog teams and four assessors observing performance. The search was initially conducted without the helicopter, in a stone quarry setting, with the dog handler and dog not connected to the aircraft.

Then, a parallel study was performed using a helicopter. The rescue tech connected the hoist to the tech and lowered both people and dog, using a leash after unhooking the dog. Downwash from the helicopter proved helpful in aiding the dog's scent detection. Once the dog found the scent, they were reconnected and lifted by the long line. The presentation concluded with key findings and suggested future directions for similar studies involving larger helicopters and snow conditions.







missions. The pick-up system was described, and the training for rescuers emphasized the conversion of mountaineers and alpinists into mountain rescuers, with candidates requiring 2 to 5 years of training experience. Medical aptitude tests and mandatory courses were outlined to become an Air Rescue Specialist, and additional information was provided at the end of the presentation.

## INTERDISCIPLINARY DRONE WORKGROUP

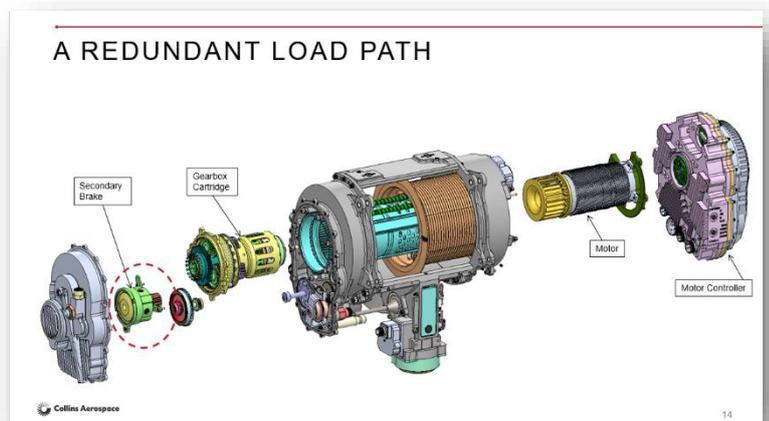
***By Will Smith; Chair of the ICAR Interdisciplinary Drone Workgroup***

This presentation highlighted the efforts of a group formed in 2020 to provide guidance and best practices for managing Unmanned Aerial Systems (UAS), or drones, in Search and Rescue (SAR) operations. The group's primary goal was to ensure the safe integration of drones into SAR missions, both for dedicated rescue drones and other drones in the area. Communication emerged as a key factor, utilizing active and passive methods, real-time drone-to-aircraft visual spatial awareness, and standardized communication tools like ADS-B. The importance of Crew Resource Management (CRM) for UAS drone teams, consisting of multiple crew members, was emphasized, along with the need for trust and coordination between pilots. The presentation recommended creating geo-fences for coordinated missions, defining boundaries for helicopter and drone operations. It also noted that Austria had implemented training programs for drone operators and specific frequencies for drone and helicopter operations. Audience thoughts included the recommendation for an airspace commander to coordinate air assets and the need for tailored drone use guidelines for each jurisdiction. Concerns were raised about unauthorized drones interfering with aerial operations and the potential increase in air traffic due to drone deliveries by companies like Amazon. Additionally, the use of AI in drone imaging analysis to identify objects resembling humans was discussed, along with the South Tyrol team's demonstration of AI utilization during the practical day.

## CHANGING REQUIREMENTS FOR HOISTS – IMPROVING SAFETY

***By Nick Demogines, Collins Aerospace – Goodrich Hoists***

In his presentation, Nick Demogines outlined the historical progression of hoist requirements, emphasizing their initial absence and subsequent development in the early 2000s. He highlighted the collaborative efforts between the FAA and EASA to establish standardized hoist guidelines, resulting in a comprehensive hoist standard with added safety requirements by EASA. This standardized approach now mandates that any aircraft incorporating a hoist complies with EASA regulations, ensuring a more consistent industry landscape. In his thoughtful presentation, Demogines noted that existing hoists have been upgraded to meet electromagnetic and lightning protection standards, while newer hoists designed with higher-diameter cables for increased strength are expected to emerge from 2025 onward. The focus is on obtaining more information from hoist systems, enhancing situational awareness, post-mission analysis, and maintenance without overwhelming operators, with hoist status messages being implemented to meet EASA standards.



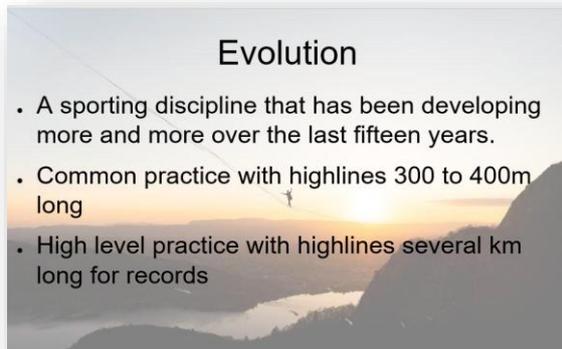


## UPDATE ON EUROPEAN SAFETY PROMOTION NETWORK - ROTORCRAFT (ESPN-R)

**By Bernd Osswald, Alex Weissenboeck**

This summary of work by the European Safety Promotion

Network – Rotorcraft (ESPN-R) the organization's role as an industry authority and collaborative entity focused on advancing safety expertise in groups. ESPN-R aims to connect individuals and organizations to enhance safety in emergency services. They have actively participated in conferences from 2021-2023 and are currently working on various safety-related projects, including the development of hoist training guides, both for operators and pilots. They are exploring innovative concepts while actively seeking feedback and collaboration from the helicopter rescue community to improve safety standards and share best practices within the hoist community.



## HIGHLINE - AN UNSTANDARDIZED PRACTICE IN CONFLICT WITH AIRCRAFT

**By Yannick Hermann**

The presentation discussed highline and helicopter operations, highlighting concerns related to unstandardized practices that conflict with aircraft

activities. Highlining, involving taut webbing secured at height with fall arrest devices, was noted to complicate and interfere with aviation activities, with only about 10 highlines reported to the Gendarmerie annually. The key issues included the risk of air accidents and the difficulty of detecting highlines in shared airspace, as the webbing is narrow. A suggestion was made to require reporting for highliners above 50 meters, but not below. The lack of an official information channel and the challenging access to highliners in remote areas were also discussed. Actions taken included holding meetings between civil aviation, rescue workers, and highliners to identify points for improvement, with a focus on enhancing information exchange.



# LONGLINE RESCUING IN HIGHLINE SCENARIOS - A TECHNICAL CONCEPT PROPOSAL

**By Jacob Bludau, et al**

An experienced highliner AND rescue mountaineer, Mr. Bludau's presentation addressed the increasing popularity of highlining as a sport, which has also led to a higher risk of incidents and injuries, with 68 reported incidents in 2021, two-thirds of which resulted in injuries. The need for considering air rescue in highline situations was discussed due to the challenging terrain often associated with highlines, making traditional rescues difficult. Air rescue can significantly enhance medical diagnosis and provide timely assistance. The presentation outlined a specific rescue procedure used in Austria, emphasizing the importance of risk assessment, including entanglement, twisting of longlines and leashes, and highlines between rescuer and patient as significant risks. The procedure typically takes around 4 minutes, saving time compared to terrestrial rescue. The presentation concluded by welcoming any assistance or support in addressing these challenges.

## Procedure "Kaperbergung" with variable longline

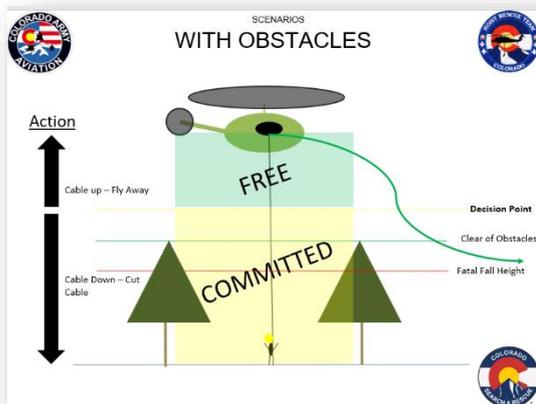
1. Preparation
2. Approach and rappel of rescuer to patient
3. Attaching of patient's harness to longline
4. Load transfer to helicopter
5. Cut of patient's rope/sling
6. Departure in suitable direction

Helicopter fixed

## EUROPEAN ROTORS

**By Dr. Frank Liemandt; Show Director**

Dr. Liemandt described the European Rotors conference, which represents a unique collaboration between an association and a rule-making entity. He provided an overview of what attendees could expect at the 2023 conference in Madrid, highlighting various key events and offerings, including training sessions provided by ESPN-R. Dr. Liemandt emphasized the many compelling reasons for individuals to attend the conference and engage with the European Rotors community, and described the presence and engagement by AirCom Vice President Renaud Guillermet at this year's event.



## HOIST EMERGENCY ACTION PLAN

**By Clayton Horney and Dale Wang (CHRT and MRA)**

This presentation included a discussion of the importance of having a Hoist Emergency Action Plan for helicopter operations, particularly in the context of potential emergencies during hoisting operations. It highlighted the need for pre-approved awareness among pilots and hoist operators about when to cut a hoist in case of critical emergencies.



Factors influencing the decision-making process were explored, including the differing perspectives of pilots and hoist operators, and the presentation emphasized the critical decision point at which it might make more sense for a rescuer to risk a fall rather than attempting to continue with the aircraft during an emergency. The presentation also considered various scenarios, such as those with obstacles or challenging terrain, and discussed how escape routes and decision points vary based on these factors.

In scenarios without obstacles, the decision point revolved around altitude above potential obstacles, factoring in the rescuer's safety. Single-engine climb capability played a significant role in these situations. In scenarios with obstacles like trees, the decision point shifted to an altitude above the obstacles, ensuring load safety. When dealing with challenging terrain, the escape route was down the valley, with a lower decision point due to the aircraft's ability to navigate away from terrain. The presentation stressed the importance of rescuer training and preparedness for worst-case scenarios.

## EUROPEAN UNION AVIATION SAFETY AGENCY (EASA) UPDATE

**By Fabrice Legay, European  
Aviation Safety Agency (EASA)**

The ICAR Air Rescue Commission is privileged to have a strong relationship with the leader of rotorcraft safety at EASA. It is a privilege to have “the regulator and regulated” in the same room, over several days, to discuss points of agreement, and especially to discuss points of contention, both large and small.



Mr. Legay's update on activities in the EASA Rotorcraft division covered several aspects related to hoists and cargo operations. It emphasized the need for hoist certification and introduced new flexibility in HEMS technical command, allowing for the movement from the cockpit to the cabin, which is a recent addition. His presentation also discussed certifications for cargo hooks, including the use of 865 requirements for sling HEC. He touched upon the introduction of new flexibility for belly hooks and HEMS, including legacy dual cargo hooks. The presentation mentioned the evaluation of rappelling hooks' applications for military operators, with a focus on safety measures like auto-blocking systems. Additionally, Mr. Legay briefly mentioned PCDS (Personnel Carrying Device Systems) guidelines and their development in collaboration with operators, OEMs, rescuers, and EASA, emphasizing the definition of PCDS by three simple elements. Finally, the presentation referred to EPAS (European Protocol for Avalanche Search) published by UIAA, indicating potential collaboration between UIAA and ICAR for information exchange and suggestions.



## AIR RESCUE COMMISSION CLOSING CONVERSATIONS

### **ICAR AirCom President Charley Shimanski and Vice President Renaud Guillemet**

At the end of the two days of AirCom presentations, President Charley Shimanski and Vice President Renaud Guillemet wrapped up the presentations with an open discussion on next steps. They summarized how important it is for each of us to share accidents and incidents, asked for any areas that people wish to see us move more towards including discipline specific conversations perhaps (pilots, hoist operator, med crew, other crew).

## HIGH ALTITUDE RESCUE PAPER - DEVELOPMENT SESSION (TERCOM)

### **Kyle McLaughlin**

The presentation on high altitude rescue included a summary of the challenges and concerns related to rescue operations in very high and extreme altitude mountain environments. The presenter, Dr. Kyle McLaughlin, emphasized the need for clear and research-supported guidelines for rescue teams operating in such challenging conditions, where traditional methods and assumptions may not apply. The paper was a collaborative effort involving members from various commissions, representing 10 different countries, highlighting the diversity of skills and perspectives within ICAR. The presentation covered different sections of the paper, including terrestrial rescue, helicopter rescue, and medical care considerations at high altitude. They also addressed unresolved questions and the development of operational checklists for rescuer safety and patient care, considering the effects of high altitude on medications and equipment. The presentation concluded with plans for future work, potential publications, and a timeline for completing the papers.

## Interdisciplinary Drone Workgroup (IDWG) – Update on ICAR Congress Activities of the IDWG

### **Dr. Will Smith**

The final presentation on "Best Practices for Deconflicting UAS/Drones in SAR Operations" introduced a workgroup formed in 2020 with representation from various commissions and organizations. The goal of the workgroup is to establish best practices for managing the challenges of drones and unmanned aircraft systems (UAS) in search and rescue (SAR) operations. They emphasized the importance of addressing the deconfliction problem between drones and aircraft to ensure safe and efficient SAR missions. The presentation highlighted key areas of focus, including communication, command and control, passive communication through transponders (ADS-B), CRM, team size, flight plans, and loss of communication procedures. The workgroup plans to submit a document on deconfliction and best practices by the end of the year, with a focus on planning, qualifications, and tactical operations. They also aim to collaborate with other commissions to expand their work, exploring possibilities like drones delivering essential supplies.



## WHAT ARE THE ICAR COMMUNITY EXPECTATIONS REGARDING THE POPPING UP OF NEW TECHNOLOGIES-BASED TOOLS?

### **Renauld Guillermet and Alexis Mallon; Groupe France**

In their final presentation on "New Technology in rescue," Renaud and Alexis focused on addressing how ICAR (International Commission for Alpine Rescue) should approach and adapt to emerging technology tools. Three workgroups were formed to discuss various aspects of this topic. Workgroup 1 emphasized that technology should be adapted, reliable, and incorporate a "head-up" concept. They also stressed the importance of managing Standard Operating Procedures (SOPs) and training to enhance safety, with a strong emphasis on human factors. Workgroup 2 and 3 highlighted the need for tracking and localizing tools in rescue operations and the importance of collaboration with manufacturers. They emphasized that all rescuers involved in alert and mission management should be informed and trained in using new technologies effectively. The presentation concluded with proposed actions, including the creation of an ICAR workgroup related to tracking and localizing, working meetings with manufacturers, and collaboration with UIAA Safety Committee to establish a common approach.

If you have any questions about this report, please contact ICAR Air Rescue Commission President Charley Shimanski at [charley.shimanski@gmail.com](mailto:charley.shimanski@gmail.com)

Thank you.