

TERRESTRIAL RESCUE REPORT

International Commission for Alpine Rescue



IKAR-CISA



Bol, Croatia, 16-20 October, 2013

Prepared By:

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INTRODUCTION The International Committee for Alpine Rescue (IKAR-CISA) met for its annual Congress in Bol, Croatia, 16-20 October, 2013.

Bol is a town on the south of the island of [Brač](#) in the [Split-Dalmatia County](#) of [Croatia](#), population 1,661 (2005).^[1]

Bol (its name derive from the Latin word "*vallum*") is renowned for its most popular beach, the [Zlatni Rat](#) ("Golden cape").^{[2][3]} It is a [promontory](#) composed mostly of pebble rock that visibly shifts with the tidal movement, a unique sight. The sea at Zlatni Rat and, indeed, the entire area is quite crystalline (and somewhat colder than usual), due to the strong current of the strait it is situated in. On a still day the stones on the sea-floor that are 30 feet down look only an



Bol, Croatia

arm's length away, and there are spectacular pine trees that grow down the middle of Zlatni Rat (there is a beach on either side of the horn). Bol itself is a very popular tourist destination and has a number of harbourside bars and restaurants. Bol is a popular place in the [Adriatic Sea](#), known for good [wind surfing](#) conditions. (Wikipedia)

The Congress: Presenters from around the world were required to submit proposals and papers in advance, with a standard 20 minute presentation period followed by 10 minutes of questions. The theme of this year's congress was the interface between air and terrestrial rescue, The decision to address this theme was prompted by the desire to expand safe practices regarding helicopter cliff pick-offs; a technique that has resulted in a number of high profile accidents in recent years .



Air Zermatt Bell 429

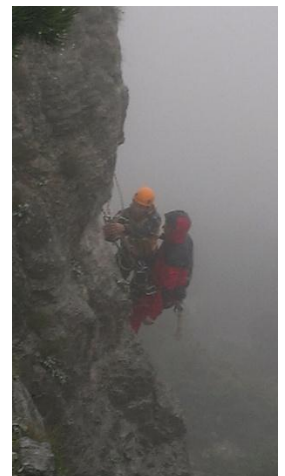
This year's congress drew more than 300 rescuers from over 30 countries. Representing the MRA at Bol were Casey Ping (Air Rescue Commission), Dr. Ken Zafren (Alpine Medicine Commission), Dale Atkins (Avalanche Rescue Commission), Dan Hourihan (Terrestrial Rescue Commission) and Tom Wood (Terrestrial Rescue Commission). Simultaneous translation was provided for all major sessions in English, French and German with the latest equipment and headphones, as well as sound proof booths for the translators. Attendance of the U.S. delegates was made possible by

support from **CMC Rescue, Goodrich Corp., RECCO, MRA** and a significant private donor wishing to remain anonymous. The U.S. MRA delegates are grateful to our sponsors for the long term support of this important international exchange.

Many delegates arrived in Bol on the afternoon and evening of Tuesday, October 15. A day of Terrestrial Rescue field demonstrations and exercises was held on Wednesday, October 16 and regular sessions began with a grand opening and welcome on Wednesday evening. Delegates were housed and fed at the Elaphusa Hotel and Resort and the general meetings were held in a first class conference hall at that location. There was a vendors exhibition with displays of outdoor and rescue equipment.

Wednesday Sessions:

Battling the elements, mountain rescuers demonstrated their dedication to their craft by performing four separate morning scenarios in a torrential downpour for the nearly 200 rescuers who attended the IKAR preconference workshop. Each demonstration performed by a different mountain rescue organization, demonstrated different tools and techniques used by rescuers when attempting a helicopter rescue of a stranded climber. The helicopter/terrestrial rescuer interface was the theme of the day's exercises. Using ground-based anchors set up above the "stranded" climber, a helicopter hoist system was simulated. When the weather cleared for the afternoon, exercises using two helicopters operating with live loads recreated the morning's scenarios.



The first morning demonstration, performed by Swiss mountain rescuer Theo Maurer, demonstrated a technique often used by the rescuers in Switzerland.



For this particular rescue, after being lowered to the climber, the rescuer connected a 3 meter long rope to the climber and then to the anchor on the rock. This is a releasable system, using an Italian (also known as a Munter) hitch is a way to release both the rescuer and the climber from the wall as they are hoisted up by the helicopter after the rescuer cuts the climber's rope. Sewn lanyards were used by the rescuer to connect himself and the climber to the hoist.

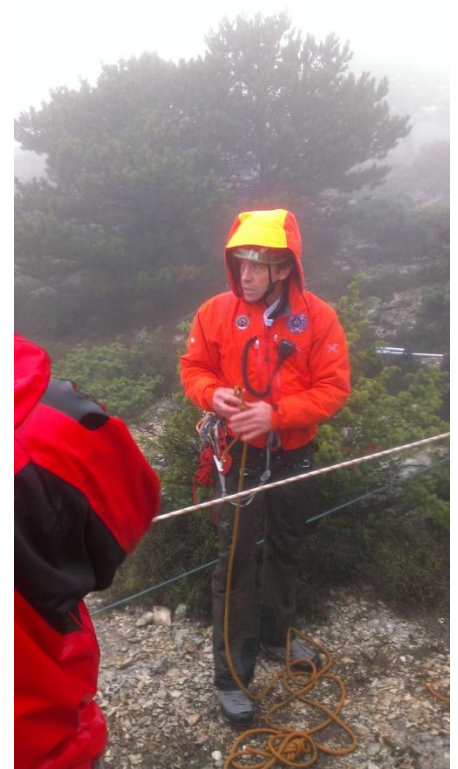
The second demonstration, performed by Bruno Jelk, another Swiss mountain rescuer, illustrated a similar technique using different equipment. The rescuer was first lowered to a position roughly 20-30 centimeters above the stranded or injured climber. Once in position, the rescuer attached one end of a Petzl Grillion to the hoist, while attaching the body of the device to the climber. This created a theoretical 2:1 mechanical advantage, allowing the rescuer to lift the climber off his system and transfer most of his weight onto the hoist system. The rescuer then used a pair of scissors, not a knife, to cut the climber free from his system. Once both the rescuer and the climber were completely detached from the wall, they were hoisted up by the helicopter.

The third demo was by the SAGF team from Italy using the Pneuspine Stretcher, which was an inflatable litter that was inflated by compressed air, thereby immobilizing the subject. Once the litter was inflated and rigid, it was lifted from the ground with a single rescuer. Raising and lowering of the head and foot of the litter was managed by the single litter attendant.

The fourth demo was by Brian Webster, a ranger from Parks Canada. After being lowered to the climber who was hanging from a rope, the rescuer attached a 5 meter cord first to the climber, then to an anchor on the rock face. Using an Italian hitch, the rescuer pulled himself and the climber closer to the wall, then tied off the Italian hitch with two half hitches. Once they were both stable the rescuer used scissors to cut the climber's original line. Then the rescuer reattached both himself and the climber to the hoist lines, and communicated to "the hoist operator" above that they were ready to be lifted. As they were lifted out and away, the rescuer untied the two half hitches, and then lowered both rescuer and climber out and away from the cliff face. (Tom Wood)

The video including action from this demonstration will be posted to: topographmedia@gmail.com.

It will be active and updated to this report as a link when available.



Brian Webster, Canada

Thursday Sessions: The Terrestrial Rescue Commission met for its opening session. Terrestrial Rescue Commission President Gebhard Barbisch made opening comments and thanked the Bol organizers. After these general comments, the Commission proceeded with its established meeting agenda and scheduled presentations.

Terrestrial Rescue Commission Issues: The minutes from last year's meeting in Krynica, Poland were read and approved.



Gebhard Barbisch

All existing Terrestrial Rescue recommendations and standards were reviewed and reaffirmed (see below). This was a valuable exercise, as many of these recommendations have been on the books for years and, in their reaffirming, validates the conservative approach undertaken by IKAR regarding their development.

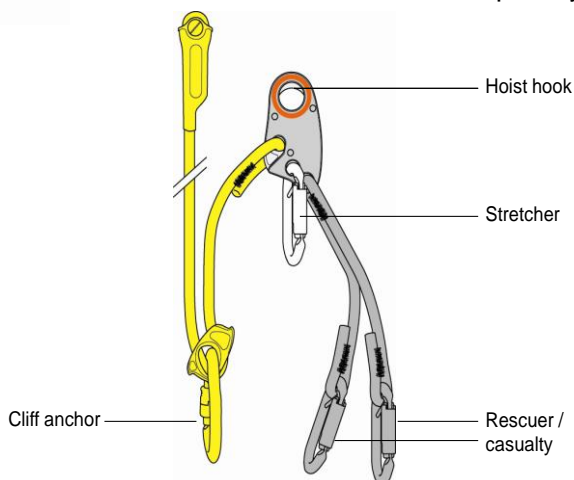
Commission President Gebhard Barbisch, Austria, summarized the new statistics collection methodology. It is not ready for posting on the IKAR website, but should be finished and posted in late 2013.

The Terrestrial Rescue Commission will cooperate in next year's practical field day in organized by the Avalanche Rescue Commission. Next year's congress will be held on Lake Tahoe, USA, and hosted by the Mountain Rescue Association (MRA).

Comment: You can find a list of existing IKAR Recommendations and Standards at the publicly accessible website at www.ikar-cisa.org. IKAR is facing some of the same issues as the MRA in terms of standards and increased government regulation. Most IKAR countries rely primarily on volunteer teams, with the exception of the professional mountain police in France.



LEZARD prototype



New Hoist Interface Device-Le Lezard:

Jean-Baptiste Estachy, GSM, France

Helicopter and terrestrial rescue interfaces are often a dangerous proposition, especially when attempting the rescue of climbers stranded mid-wall. Often, when rescuers are lowered to the stranded or injured climber, there is a brief moment when the helicopter's hoist or long line is attached to the climber while that climber is still hanging from a rope or fixed anchor on the cliff. Rescuers must often use Italian hitches (or cut a rope) to release both the climber and the rescuer out and away from the rock face as the helicopter lift them. But if there is an entanglement issue or poor communication between the rescuer and the helicopter above, accidents are likely.

To help remedy this situation, Petzl unveiled their new prototype hoist interface device known as Le Lezard, or The Lizard. Mr. Estachy explained that the name is derived from the lizard, which can lose its tail as a survival mechanism when it is captured by a predator. Like the lizard, the device can release one of its tails if the helicopter suddenly pulls away from the cliff wall while the climber and rescuer are still attached to the other end of the device.

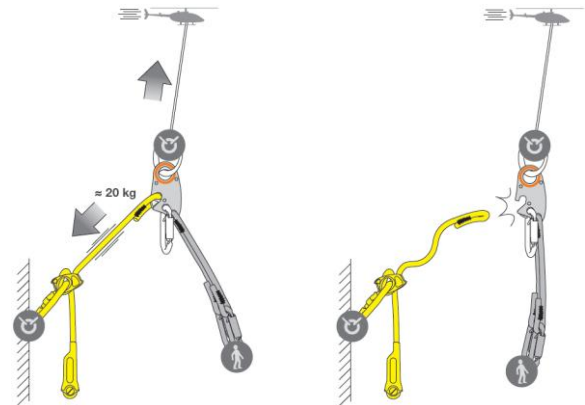
Only 20 kilograms of force is needed to release the tail, said Mr. Estachy. He went on to explain the three main rules for The Lizard's use: It should only be used when necessary, it should only be attached to the helicopter's hoist hook, and no human should ever be attached to the tail rope (only a fixed anchor point).

The prototype device is scheduled for additional testing by the French military, and Petzl's engineer cautioned that though the device is easier and safer than traditional releasing hitches used in these types of helicopter rescues, there is still a human element to the process that could contribute to misuse if the user is not properly trained on the device. (Tom Wood)



LEZARD prototype

Drop off and pick up - Emergency situation



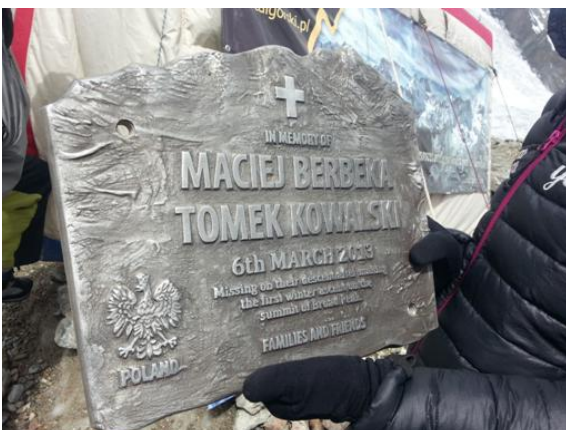
Recovery Mission on Broad Peak: Jacek Jawien, GOPR, Poland



Mr. Jawien detailed the first winter ascent of Broad Peak (8047m) in the Himalayas by a Polish team in March, 2013. The successful ascent was accomplished by a team of four, but only two returned. Maciej Berbeka and Tomek Kowalski perished due to exhaustion during the descent.

In mid-June, a recovery effort led by Maciej Berbeka's brother, Jacek, and Jacek Jawien, both of GOPR was launched. Their sole goal was to find and properly bury the deceased climbers. An extensive media debate ensued in Poland regarding the wisdom of undertaking such a hazardous effort for a recovery. Jawien and Berbeka countered with the personal and voluntary nature of their decision and proceeded. On 20 July, Kowalski's body was discovered at 7950m in a couloir on the main route. The use of a Recco R9 was instrumental in the discovery.

It took 6 hours to lower Kowalski 100 meters to an acceptable bury site and Maciej Berbeka was not located. A memorial plaque carried from Poland was placed at the location of the team's base camp. During this recovery mission, 22 climbers died in other areas of the Himalayas.



Crisis Operations in an Extreme Environment: Jorgen Modin, Jamtland County Police, Sweden

Inspector Modin, the K-9 Lead of his police force, detailed the recovery and investigation of the crash of a C-130 Hercules on Sweden's highest mountain, Kebnekaise Massif (2102m), on 15 March 2012. The weather was very bad the day of the crash and the crash site was not discovered until 16 March. The site was located approximately 100 meters below the ridge top connecting the north and south summits and the aircraft appeared to have impacted at cruising speed.

The site

- Sweden's highest point, 2,102 meters above sea level.
- two peaks, the south and the north peaks
- the crash site is located on the ridge between the two peaks
- free overflight approx. 100 meters up



Images from Kebnekaise

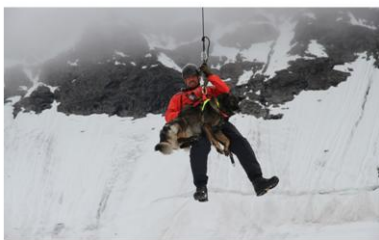
Izor's task was sometimes very difficult and demanding.

The search operations were often carried out on an almost vertical slope.



The plane had a crew of five and all perished instantly upon impact. The terrain was extremely steep and near vertical in places. The debris field covered one square kilometer and included numerous crevasses, which became visible during continued operations in the fall of 2012. The entire mission and associated field investigation lasted six weeks split between the Spring and Fall of 2012.

Images from Kebnekaise



Of significant note in this operation was the work of Izor, a Human Remains Detection (HRD) canine, which worked under the direction of Inspector Modin. Izor worked 8 hour days, much of it on roped belay, during all of the recovery effort. This was a truly amazing effort under extreme conditions. The debris field was densely littered with jagged metal and aircraft fuel. Despite this most, if not all, human remains were recovered and a field DNA testing was established on the ridge top.

At the conclusion of this operation, much of the doomed aircraft, including the "black box", was recovered and moved to a large hanger for investigation. The final report of this tragic accident is pending.

Comment: This is the most extreme use of a HRD canine resource I have ever heard of. The length of the mission, combined with the extreme terrain and weather, make this an incredible story and effort. Inspector Modin plans to attend IKAR 2014 at Lake Tahoe. (Hourihan)

Confined/Vertical and Trail Rescue w/Pneuspine: Major Alberto Tartaglia, Nicola Campani, Guardia Finanza, Italy

Maj. Tartaglia and Mr. Campani detailed the merits of the Northwall Pneuspine litter (EN 1865-1:2010) produced by Northwall Innovations, an Italian company (www.northwall.it), in partnership with



IKAR/CISA
Island of Brač
CONGRESS 2013
Croatia

Nicola Campani
Magg. Alberto Tantaglia

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Tyromont. First introduced at IKAR 2012 in Krynica, Poland, the litter system has now been tested in a wide variety of environments. These include high altitude, trail, cliff, swiftwater, confined space, cave and helicopter. Essentially an inflatable backboard, the device is very light and adaptable.

Easily inflated with any gas, a single use canister is recommended. The low pressure litter provides excellent thermal protection and has a unique “spider” system that very easily transitions from vertical to horizontal. The litter weighs 4 Kg. and is 55 x 12 x 12 CM deflated.

Croatian Cave Rescue: Darko Baksic, Croatian Mountain Rescue Service (CMRS), Croatia

Croatian Mountain Rescuer Darko Baksic spoke to the role that Croatian Cave Rescue Commission (CCRC) plays within the Croatian Mountain Rescue Service by explaining the history of both organizations and detailing a recent dramatic, large-scale cave rescue that took place in one of Croatia largest cave systems.

Though the Croatian Mountain Rescue Service was formed in 1950, it wasn't until 2001 that cave rescue was officially included under the auspices of the nationwide, all-volunteer Croatian Mountain Rescue Service. Of the nearly 700 mountain rescuers in Croatia, Mr. Baksic explained that more than 300 are trained in cave rescue at present. Since its inception, he said the CCRC has rescued about 130 people, averaging three to five rescues annually. “There is no golden hour in cave rescue,” he said.

For example, by the time the CCRC was notified that a caver's anchor plate had failed, dropping him onto his back and injuring his third lumbar vertebra on June 7, 2012 in the massive Kita Gacesina cave system, four hours had elapsed. The subject, stranded more than three kilometers from the cave entrance, had to wait 13 hours for the first team of medically trained rescuers to arrive. The communications team followed the medical team into the cave, spooling wire and setting up an intricate communications network that linked the rescuers in the cave to the operations team above via old military-style battery operated phones. Subsequent teams worked to blast tight passageways to accommodate the litter, which had to be moved in a vertical orientation due to the nature of the injured caver's injuries. Thirty hours after the accident, the 79 rescuers delivered the subject to the crew of 35 rescuers stationed outside the cave. It still took an additional 11 hours until the last rescuers crawled out of the cave.



Mr. Baksic credited the Croatian Mountain Rescue Service's support of their cave rescue program as the main reason for the successful integration of the cave rescue discipline into the existing structure of their existing mountain rescue organization. (Tom Wood)

Comment: This presentation resonates strongly regarding the discussions currently taking place within the MRA concerning the possible inclusion of cave rescue as a fourth accreditation discipline. The precedent of traditional mountain rescue teams conducting cave rescue operations is well established internationally. (Hourihan)

Swiftwater and Flood Rescue: Josip Granic, CMRS, Croatia



Mr. Granic detailed the swiftwater and flood rescue services provided by the CMRS. The CMRS has statutory responsibility for all non-urban SAR services throughout Croatia. In 2003, it was estimated that there were 20,000 rafters per year throughout Croatia. In 2013, that number is 500-600,000; an increase of 1500%.

An incident in April, 2001, in which the recovery of a drowned rafter in a half meter deep hydraulic took 3 days, triggered the need for the CMRS to develop advanced training and preparation. A relationship with Rescue 3 International was begun. Currently, the CMRS

has six instructors organic to the service and 220 trained and certified rescuers. In addition to swiftwater rescue, the CMRS provides extensive service nationwide during flood events.

Comment: This presentation highlights a consistent theme in IKAR congresses in recent years. That theme is the use of traditional mountain rescue teams in a broad variety of SAR scenarios. Due to their training and expertise in SAR operations, organization, communications, risk management and technical rescue disciplines, they are a go to resource in time of need. (Hourihan)

Materials Testing of Slings, Knots and Dyneema Loops: Thomas Koller, Austrian MR, Austria



Mr. Koller detailed the results of extensive strength testing of three materials used in rope assisted mountain rescue. The three materials were polyamid (nylon), Dyneema (polyethylene) and Kevlar (aramid). To summarize, he found that knots in Dyneema reduced its breaking strength by up to 80%. Hence the need to splice loops in Dyneema and to provide specific training in its use. The best material with knots proved to be the polyamid (nylon). Overall, Mr. Koller stated that he believed that Dyneema with a polyamid sheath was the best combination.

Vortragender:

Thomas Koller
 > Sachverständiger beim TÜV AUSTRIA
 > Mitglied der Bergrettung OO

Swedish Mountain Rescue: Rickard Svedjsten, Swedish Mountain Rescue, Sweden

Mr. Svedjsten presented an overview of the Swedish Mountain Rescue (SMR) organizational structure. It is an all-volunteer service supported by the Swedish National Police (SNP), headquartered in the SNP National Center in Ostersund. The SMR has 400 rescuers embedded in 27 units nationwide. It maintains 25-30 avalanche certified canines and provides four season service,

with extensive winter operations supported by snowmobile. Although, the SMR provides SAR services they additionally have two units which are considered alpine-type teams and two units which specialize in cave rescue.



Swedish Mountain Rescue

Rickard Svedjesten, Swedish Mountain Rescue



Comment: The IKAR 2011 congress was hosted by the SMR organization in Are, Sweden. An opportunity to visit the National Center in Ostersond was provided on the Practical Day. The Center utilizes cutting edge technology and the passion for providing best practice SAR services to those in need is very apparent, (Hourihan)

Risk Analysis and Management: Col. Blaise Agresti, GSM, PGHM, France

Col. Agresti, Director, National Mountain Rescue Training Center, Chamonix reviewed the fatal accident that took place in March, 2013 during crevasse rescue training. A veteran rescuer died when he jumped from a helicopter on to the surface of the glacier and collapsed an overhanging snow bridge over the training crevasse.

In the history of the PGHM, 61 rescuers have lost their lives; 21 on missions, 40 during training. During the past 10 years, all deaths have been training related and subsequent investigation has determined that 90% were the result of human error.

Based on this, the PGHM is undertaking an extensive review of their risk management protocols. A presentation will be provided at IKAR 2014 at Lake Tahoe. As noted many times and places through the years, accidents are typically the end result of many small errors and factors. Col. Agresti quoted French author Rene Char (1907-1988):

“The essential is always threatened by the insignificant.”

Summary: This year’s IKAR Congress provided many demonstrations of rescue technique, as well as new equipment and devices. These have been excellently reviewed in the video referred to earlier in this report produced by Topograph Media, you are encouraged to view it.

On Friday, October 18, a joint Terrestrial Rescue and Avalanche Rescue Commission meeting was held with presentations focusing on both specialties. The presentations by the Terrestrial Commission are included in this report and those specific to Avalanche can be found in the Avalanche Rescue Commission report posted on the MRA website at www.mra.org.

Delegates’ Meeting, Saturday, October 19

IKAR President Gerold Biner invited each of the Commission Chairs to summarize the activities of their commission during the Krynica congress (see individual Commission reports on the MRA website at <http://www.mra.org/index.php/training/ikar-reports>). Additionally, he cited the various accomplishments of the individual commissions, as reported in the MRA delegate commission reports. A complete copy of the minutes of the Delegates’ meeting can be found at: <http://www.ikar-cisa.org/ikar-cisa/documents/2012/ikar20121215001029.pdf>.

The 2014 IKAR Congress will be held October 5-10 at Lake Tahoe in Stateline, Nevada. IKAR President Gerold Biner announced that he would resign his position at the conclusion of the 2014 congress, due to his increasing responsibilities as the CEO of Air Zermatt. There will be a day of field presentations coordinated by the Avalanche Rescue Commission. The overall theme of the Congress will be "Multi-Casualty Incidents in Mountain Rescue". Dan Hourihan, with the assistance of Topograph Media, made a presentation regarding the 2014 IKAR Congress. This will mark the first IKAR Congress held in the United States. The IKAR flag was officially transferred from the hosts in Croatia to the MRA delegation.

Respectfully Submitted,

Dan Hourihan, MRA
Tom Wood, MRA
U.S. IKAR Terrestrial Commission Delegates

