ACCESS & RESCUE

E-MAG 46

2020

covering TECHNICAL RESCUE, WILDERNESS SAR (PARK RANGER) & ARB CLIMBER print magazines

ACCESS & RESCUE Emag 46

EMAIL ADDRESSES

We've got a shed-full of email addresses so if you get mail bounced, try another one - they all work at some point!

admin@rescuemagazines.com
arbclimber@aol.com
rescuemagazine@aol.com
accessandrescue@aol.com
ade@trmedialtd.com

COVID'19
A Dollar short and a day late?

Some politicians still exclaim that this pandemic was unprecedented and who could have predicted it.....
YOU could have, EVERYBODY could have.....

This pandemic had been widely predicted for decades; on a regular basis since 1918's mis-named 'Spanish' Flu. In 2016 and 2018 UK/European governments' large-scale SARS-like simulations where a vaccine WAS available, predicted the likely equipment and operational shortfalls. Government agencies around the world had alerted their own political masters before AND at the very outset of this particular event and if that was all too difficult for some politicians to follow, Hollywood had given an alarmingly accurate depiction of what could happen with the film 'Contagion'.based on the very US govt briefing documents that had been ignored. FIVE months on from the first deaths, US and UK politicians insist that tests and masks are or were available to EVERYONE that needed them.....

NO THEY WERE NOT, NOT FROM THE START OR THROUGHOUT

but they should have been and this and the speed of response will be a damning indictment post-Covid.

Most politicians aren't experts in anything at all let alone medicine so they naturally require advice from medical experts. In the US and Brazil, such experts have struggled to be heard and have even been the subject of abuse and attack while every other country understands the importance of medical and scientific expertise. The Lancet, which is perhaps the world's pre-eminent medical Journal, went so far as to advocate a regime change in the US after the bizarre undermining of advice and funding for the World Health Organisation and the US's own CDC. The much decried WHO were too slow off the mark but even they managed to give this single most important piece of advice months ago... TEST, TEST, TEST. Only a few listened and acted back then. The worst affected countries, the US, Brazil, Russia and the UK have certainly been 'a day late' medically but the US and UK haven't been 'a Dollar Short' with a truly laudable economic aid package which may yet be unsustainable and undermine the necessary medical measures. Only time will tell if Sweden's herd-immunity approach from the outset which aimed to protect their economy rather than the people, will show success or devastating failure after the winter resurgence. In an era of 'the Emperor's New Clothes', we can only hope that the least successful governments learn from their mistakes and do better in the coming winter. It may seem like we've come through but COVID'19 IS STILL HERE.

Cheers ***ADE SCOTT***

ON THE COVER


Pic by Wesspur

THIS issue's front cover by Michael Oxman, comes from our Article in ARBCLIMBER #17 on an Aerial Rescue Challenge/ Competition (ARC) in the US in which the participants are arborists NOT professional rescuers. It shows an injured arborist being positioned for evacuation on a highline (zipline). For the front cover of AC17 the casualty looks suspiciously like a fallen firefighter ironically being rescued by an arborist performing a pick-off rescue. Arborists have begun to realise that, for many forms of tree injury, they cannot afford to stand around waiting for the regular fire and rescue services which may not even have an adequate tree-rescue capability. That's not always the case obviously and spinal injuries in particular are best dealt with using larger fire service hydraulic platforms and ladders. But for traumatic cut/ amputation and hit-by injuries, speed is of the essence and that means relying on nearby workmates. Both of the above front covers and the three larger images here are from Tom Schumacher's article in AC17 on last year's ARC in Washington. As you can see from the arborist on the right, they certainly go prepared. Below left is mass pick-off training in preparation for the competition attempt shown bottom right and on the front cover of AC17.

With many now returning to work, Emag#46 covers operational aspects of the Covid '19 pandemic as it relates to emergency services and climbers but it is otherwise a **COMPETITION SPECIAL**. Every facet of our industries from rescue to rope access to tree work, now has competitions designed to hone specific skills. Like Tom Wood in his piece of GRIMP USA 2019, we were initially sceptical of competitions when they started to appear around 30 years ago thinking that they would lead to speed at the expense of the casualty. But I ended up on the panel of judges for the first two international rope rescue competitions held in South Africa and immediately appreciated that the mere act of practicing for a competition against the clock and then against fellow competitors provided an element of urgency that could be lacking in normal training. In the case of arborists, such intensive training might be lacking altogether as they leave college or their training course and hone their skills (or otherwise) on the job. Some of our own fine folk on these magazines went on to have great success in extrication competitions with a few World Champion Medic and Team awards under their belts and it's ironically the medical element that we were initially concerned about that has been the big winner in ALL forms of competition. ADE SCOTT


Pic by Joshua Daile


Pic by Wesspur

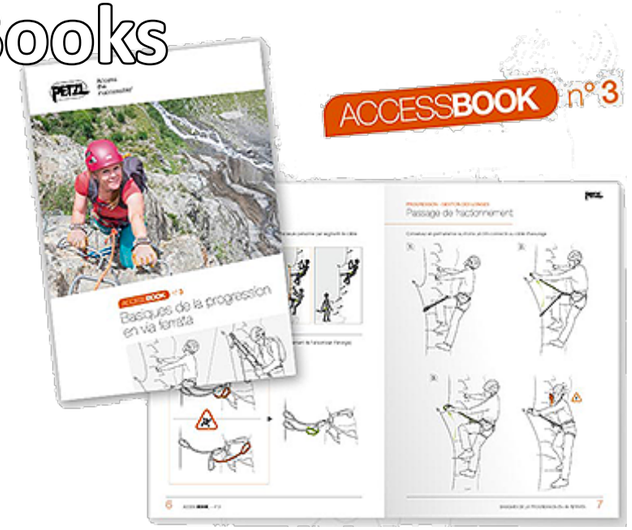
by Ken Osterkamp aka GEAR FLOGGER
Ken is a veteran mountaineer and annual Denali resident (a 20,000ft/6000m peak!) so his review items undergo a slightly different type of abuse than our usual reviews.

PETZL Access Books

Petzl does a really fantastic job of getting basic technical and safety information out there, and for free to boot. If you're going stir-crazy in quarantine it's a great time to build your knowledge base or just review the basics. If you're looking for content to share with your adventure-minded kids that you are now the proud teacher of - joy! fun! - Petzl can help you out. Their ebooks, posters and online tips can form the basis for a quick and easy outdoor studies curriculum at home.

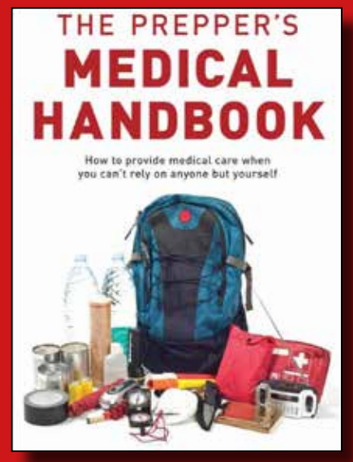
On the Tech Tips section of their website you can browse advice by activity, by product or our favorite, by technical news. The last section contains info on topics like how to inspect your helmet, what CE markings mean and how to perform co-worker rescue, among many other items. The downloads page has a link to Access Books that detail techniques for various activities with extremely clear illustrations.

These are trying times, but Petzl's free info can help you come out of it more prepared to get after it.



https://www.petzl.com/INT/en/Professional/Downloads-eBooks

The Prepper's Medical Handbook



And speaking of timely, this title from William Forgey, M.D., certainly fits the bill. The Prepper's Medical Handbook is a very handy one-volume reference for anyone who wants to be prepared to solve their own medical emergencies, written by someone who knows what's what. Forgey is a full-time doctor of family medicine, past president of the Wilderness Medical Society, author of a number of wilderness medicine books (including Wilderness Medicine 7th Edition from Falcon, a favorite of ours and upon which TPMH is based) and a decorated combat veteran. So yeah, let's go with this guy. TPMH has prepper in the title, but this is a good resource for anyone to have at home. These days when most of us are practicing social distancing even if we're not in outright quarantine, it certainly doesn't hurt to be prepared. And let's face it, being able to look up a condition in the table of contents or index and flip to the appropriate page can be much quicker than finding - and vetting! - a piece of internet advice. Assuming your internet connection is up, that is.

Organization is the strong point of TPMH. Right off the bat the author tells you how to use the book: start with your initial assessment (pages 6-8) and progress to your focused assessment (pages 8-9). These pages include redirects to appropriate treatment options, and there are additional diagnostic aids in each chapter. Need more? At the end there's a Clinical Reference Index that allows you to cross-reference symptoms, conditions and treatments.

We won't go into detail on the various sections, suffice it to say it's all in there and well-organized to boot. The last chapter will be of particular interest to gearheads as it covers the assembly of an off-grid medical kit. Forgey starts off the chapter with a quick word about alternative medicine: in short, he sees some value there but it's too complicated and environment-specific to cover in any detail, so he focuses on what you can get from the grid to prepare for when there is no grid. He takes a modular approach, with five different "sub-kits" for topical bandaging, non-Rx oral medication, Rx oral/topical medication, Rx injectable medication and Rx cardiac medication. For each module Forgey shows what you'd need for a bug-out bag (2 weeks), settlement stock (1 year) and 5-year supply.

For the price there's no reason you shouldn't have this book at home, ready to grab when you need it. You'll find yourself consulting it early and often, and that its utility extends far beyond TEOTWAWKI.

$14.90 at Amazon

CAMELBAK Coronado Backpack

Our love affair with small backpacks shows no sign of abating, and the latest object of our affection is the CamelBak Coronado. Why? Let's start with the latest camo pattern, multicam black. Camo is a religious topic among some - not us, but some other fanatics out there! - and multicam black will give you some serious cool guy points, for what it's worth. And OK, it's not worth that much, but the Coronado has some other cool features to recommend it.

The Coronado is what military types call an admin bag. It's tough, but not something you'd take into the field for operational work; it's something you use in garrison and on base, which makes it ideal for school, work and travel. What makes the Coronado unusual is the combination of a slick exterior, organized interior and a stiff clamshell deisgn that provides a little extra protection to contents.

Let's start with the exterior. There is a single zipped fleece-lined pocket on the top front, big enough for a Kindle, paperback book, small tablet or notebook. Behind the MOLLE panel is a very thin 8.5"x11" sleeve that will fit a standard sized magazine or small stack of paperwork. That's it, no bottle pockets or anything else, which makes it ideal for sliding under seats and into overhead bins without creating a yard sale. If you do need more carrying options, you can find pretty much anything you want to attach to the MOLLE panel.

The slick exterior belies what awaits within: pockets galore! Padded and fleece-lined sleeves for a laptop and a tablet, another larger paperwork/ magazine sleeve, pen and phone pockets, you got 'em all. The tablet sleeve is suspended about an inch above the bottom of the pack for protection. The laptop sleeve goes all the way to the bottom, but the bottom is padded as is the entire exterior of the pack. Another nice touch is the clamshell design, with material at the bottom that allows the pack to open at about a 45 degree angle, making it easy to work out of but difficult to accidentally dump the contents.

The adjustable shoulder straps are contoured and have just enough padding to be comfortable even under a heavy load of books, etc., and there's a reinforced grab handle on top along with a couple of D rings in case you need to lash something onto the Coronado, or the Coronado onto something bigger. Overall the Coronado is a tough, practical pack that can be as slick or as complicated as you want to make it. If there's one thing we'd add, it's a single stack of MOLLE along the sides to mount bottle pockets or other small MOLLE bags, but for that CamelBak also makes the Quantico, a similar pack with built-in side pockets if you're looking for just a bit more.

$160.00 at CamelBak

KONG
Introduce EXTENDED VISOR

The Personal Protective Device category III 997.046 VISOR is an optical class 1 eye protector in compliance with standard EN 166:2001, to be attached to compatible helmets and intended to protect the user from:

- liquid splash and droplett spray
- high velocity projection (120 m/s) of particles/liquids at room temperature (class B)
- molten metals and hot solids splash
- electric arc caused by short-circuiting

WARNING, this device is **NOT** suitable for protecting the user from high-speed projections of particles at **EXTREME TEMPERATURES:**

- radiation (welding, ultraviolet, infrared, laser, nuclear, x-rays, etc.)
- high pressure liquids
- powders
- gases

FEATURES:

1. Anti-fog treatment on both internal and external side, scratch-proof.
2. Long version that allows to completely cover the operator's face.
3. Weighs 125g and is extremely robust
4. Conforms to CE EN 166.

The included mounting kit is compatible with Mouse, Spin and Leef helmets thanks to the pre-marked holes in the shell. Helmet visor made of high-quality polycarbonate of Japanese origin.

www.kong.it

Ambu® AuraGain™
Disposable Laryngeal Mask

- Superior seal pressure up to 40 cmH2O helps decrease the risk of virus aerosolization
- Adjustable cuff helps mask adapt to each patient's unique anatomy
- Gastric access channel accommodates a wider range of gastric tubes
- Navigation marks help facilitate intubation and provide guidance during endoscopy
- Ready-to-use out of the packaging when seconds matter

AuraGain is the only anatomically curved SGA with integrated gastric access and intubation capability, taking patient safety and airway management efficiency to a new level. The AuraGain is Ambu's 3rd generation laryngeal mask, satisfying 3 fundamental airway management needs by integrating gastric access and intubation capability in an anatomically curved single-use device that facilitates rapid establishment of a safe airway.

RAPID PLACEMENT: The original anatomical curve is pre-formed to follow the anatomy of the human airway, and the soft rounded curve of the AuraGain ensures rapid placement and guarantees long-term performance.

HIGH SEAL PRESSURE: The thin and soft cuff of the AuraGain is designed to deliver high seal pressures - documented up to 40 cm H2O.*

GASTRIC CONTROL: The integrated gastric access channel is designed with a low friction inner surface to facilitate easy placement of a gastric tube. Introduce a gastric tube through the device and into the stomach of the patient to enable active and passive management of gastric content, and prevent gastric insufflation.

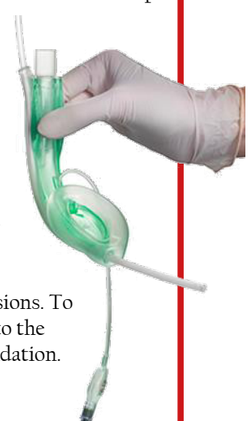
INTEGRATED INTUBATION CAPABILITY: The AuraGain provides the added safety feature of intubation capability. This means that in case of an unexpected difficult airway, or a "Cannot Intubate – Cannot mask Ventilate" (CI-CV) situation, where the end-game is to intubate the patient, AuraGain can be used as conduit for direct endotracheal intubation assisted by a flexible scope (such as the Ambu® aScope3).

ALL-ROUND VERSATILITY; Rapid placement, high seal pressure, gastric access, and intubation capability make the AuraGain the obvious and safe choice for every procedure where a laryngeal mask is indicated.

UPDATED MAX GASTRIC TUBE RECOMMENDATION : Ambu has updated the max gastric tube recommendation printed on the device from 14 Fr to 16 Fr. The version with 14 Fr written on the device is fully compatible with gastric tubes up to 16 Fr.

As we switch to the new version, you may receive both versions. To learn whether a product is of the new version, please refer to the label of the product, where you can find the size recommendation.

* Data on file



www.ambu.com

EDELRIDTREE
REX

[ED:A design we first heard about last September so it's taken a while but Edelrid are taking on the Treemotion with what they reckon is the most versatile harness in the world. It gives you modular options from single and double bridge to SRT and a mixture of all. This is a great way to future-proof your work systems. We've been using their TREE-CORE for a few years so if this is as good as that, they're onto a winner]

Arborists place many different requirements on their harnesses. They have to allow as much freedom of movement as possible, while also being robust and fitting well in order to ensure maximum comfort during free-hanging work. Finally, they need to offer multiple attachment options for neatly holding arborists' many pieces of equipment. The TREEREX Triple Lock fulfills all of these criteria to perfection—and more. 'The most versatile tree-care harness of all time?' With a variety of rope bridge configurations and optional SRT BRIDGE for safe and comfortable working on single ropes. The innovative 3D Vent Technology, in combination with the wide, semi-rigid padding, ensures unsurpassed hanging comfort and at the same time good breathability. 4 large gear loops, numerous attachment possibilities for gear carabiners as well as a device for suspending a chainsaw round off the complete package of this unique climbing harness.

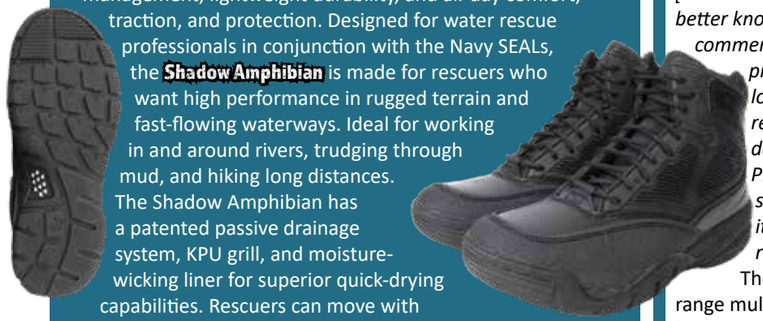
The TREEREX is supplied pre-assembled with an adjustable rope bridge in the lateral eyelets and an aluminium connecting ring.

- 3D Vent Technology: unbeatable support and comfort through three-dimensional molding, with extensive force distribution and maximum breathability
- All load-bearing straps are equipped with indicator tape; red fibers become visible in the event of damage and signal to the user that the harness should be replaced
- Triple Lock buckles on the waist belt and leg loops allows it to be easily put on and taken off
- Leg loop straps with textile abrasion protectors made from Dyneema®
- Lateral fastening eyelets in the leg loops for installing up to two rope bridges or for workplace stabilization
- The angle of the lateral fastening eyelets can also be adjusted under load thanks to a smart adjustment mechanism for an optimum working position in the tree
- Two color-coded rope bridges and one anchor ring for maximum lateral freedom of movement
- CE
- Made in Vietnam

COST: €369 / £328

www.edelrid.de

Lalo WATER RESCUE BOOT



Full featured water rescue boot with outstanding moisture management, lightweight durability, and all-day comfort, traction, and protection. Designed for water rescue professionals in conjunction with the Navy SEALs, the **Shadow Amphibian** is made for rescuers who want high performance in rugged terrain and fast-flowing waterways. Ideal for working in and around rivers, trudging through mud, and hiking long distances. The Shadow Amphibian has a patented passive drainage system, KPU grill, and moisture-wicking liner for superior quick-drying capabilities. Rescuers can move with confidence across wet surfaces with traction from the DuPont™ injection molded rubber outsole. Protection is added by a carbonized rubber toe cap and puncture-resistant composite plate footboard. An articulating heal and patented dual-zone, multi-density EVA improve gait efficiency and reduce fatigue. The Shadow Amphibian has heal grabs, friction areas, and a sleek vamp profile for compatibility with swim fins.

FEATURES

- Patented drainage system with dual direction drainage ports
- KPU Grill keeps out debris while increasing breathability
- Moisture-wicking, antimicrobial ceramic bamboo lining
- Swim fin compatible heel lock, friction area, vamp profile
- DuPont™ slip-resistant injection molded rubber outsole
- Lace pocket and KPU lacing system for lace security
- Carbonized rubber toecap for abrasion resistance
- Puncture-resistant composite plate for protection and fatigue reduction
- Multi-density EVA to cushion foot-strike and propel during toe-off
- Articulating heel, contoured metal arch, and Achilles flex notch for all-day comfort
- Full grain leather upper and rip-stop nylon accents
- Seamless, lightweight quarter protection construction
- Available in 5” model for lightweight ankle support
- Weight (Men’s Size 9.5): .56 kg (1.23 lbs)
- COST: $280

www.lalo.com

CREWSAVER SWIFTWATER PFD

[ED: Crewsaver may be better known as a sailing and commercial shipping PPE producer but it has a long and proven track record in rescue from decades ago with products like the Yak Zambezi PFD and even the venerable Imperial Immersion suit first produced in 1969. This one isn't new but it replaced the Zambezi as their top-of-the-range rescue model]

The Swift Water Rescue Jacket is a top of the range multi-purpose rescue and emergency response 80N buoyancy aid. The jacket features pockets and attachment points so you can easily store and access your tools and equipment, so you always have the gear at hand for the job you need to do. User friendly and with waist supports ensuring a one size fits all solution, this is a great and efficient choice for rescue teams.

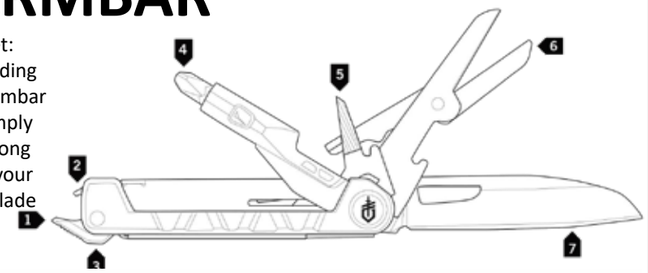
- Side flaps for impact protection which can also be folded to stop build up of heat
- Reflective print to aid visibility
- Specially positioned handles to enable a swift retrieval
- VHF radio pocket with side zip entry for easy use
- ID Flag to allow own branding
- Quick release buckle with toggle
- Custom one size fits all fit to enable swift donning
- Anti snag buckle cover
- Velcro tab for cowtail attachment

www.crewsaver.com

new for 2020

GERBER INTRODUCE ARMBAR

Get your multi-tool out of the truck and into your pocket: the Armbar is a smart design that fits in pocket like a folding knife and operates like a fully capable multi-tool. The Armbar features tools to handle the tasks that a pocket knife simply can’t handle: an awl, pry bar, bottle opener, and a 2.5” long driver with a double-sided bit. It also handles anything your pocket knife could with a one-hand opening fine edge blade and scissors.



1. Pry bar
2. Bottle opener
3. Hammer
4. 2-1/2” extension bit driver with 2-sided bit
5. Awl
6. Scissor
7. 2-1/2” fine edge blade w/ frame lock

COST: $39 / £40
Width: 0.7" / 17.8mm
Length: 3.6" /91.4mm
Weight: 3.1 oz / 88g

www.gerbergear.com

GERBER IMPROMPTU TACTICAL PEN

Danger has a way of presenting itself when you least expect it. That’s why Gerber, in collaboration with law enforcement professionals, developed the Impromptu Tactical Pen. Sure, it’s a pen and it’ll serve to take notes like a good pen should, but it’s not your average writing implement. Made from machined steel with a tempered window-shattering tip design, the Impromptu Tactical Pen can be used to break a windshield or defend yourself from an unexpected attack.

- Rugged, machined steel body with Cerakote™
- Stainless steel pocket clip
- Integrated glass-breaker tip
- “Rite in the Rain” ink cartridge works in all conditions, inside and outdoors
- Reliable push-button mechanism deploys ball point mechanism
- Limited lifetime warranty
- Length: 5.59" /142mm
- Weight: 2 oz /57g
- Made in USA
- COST: $73/

PETZL

Recommendations for disinfecting your equipment

Petzl have released the following statement globally regarding current advice on disinfecting Petzl products.

'To clean PETZL PPE or other equipment, please follow the instructions provided in the technical notice for each product. As a reminder, chemical cleaners damage plastics and textiles, breaking down the compounds and the fibers. The only cleaning products tested and recommended are soap and water.

In the specific case of COVID-19, hospital disinfection methods involve high temperatures (>150°C) or low temperatures (<100°C) and using bleach. We cannot apply these protocols to Petzl PPE or other equipment.

To date, no health authority has announced an official, reliable disinfection protocol using low temperatures (<100°C) and without bleach.

With this in mind, we recommend using the following protocol: • Respect a 72 hour quarantine period • Hand wash products with soap and water, at a maximum temperature of 65°C (Warning: these are exceptional measures during the COVID-19 crisis. Otherwise, under normal circumstances, please wash your equipment at 30°C as indicated in the technical notice). • To dry your equipment, please follow the instructions provided in the technical notice.

This protocol will highly reduce the risk of contamination, but of course is not 100% guaranteed. You can also request further information from your local health authorities concerning low temperature disinfection protocols.

PLEASE NOTE: Cleaning products developed by ECOLAB, when applied as instructed, are also compatible with all Petzl helmets and can be used. However, we do not know how effective ECOLAB's products are in killing the coronavirus. Here is the link to the ECOLAB website for more information: https://en-uk.ecolab.com/

Original document below

Stability of SARS-CoV-2 in different environmental conditions

We previously reported the detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in different clinical samples.[1] This virus can be detected on different surfaces in a contaminated site.[2] Here, we report the stability of SARS-CoV-2 in different environmental conditions.

We first measured the stability of SARS-CoV-2 at different temperatures. SARS-CoV-2 in virus transport medium (final concentration ~6·8 log unit of 50% tissue culture infectious dose [$TCID_{50}$] per mL) was incubated for up to 14 days and then tested for its infectivity (appendix p 1). The virus is highly stable at 4°C, but sensitive to heat. At 4°C, there was only around a 0·7 log-unit reduction of infectious titre on day 14. With the incubation temperature increased to 70°C, the time for virus inactivation was reduced to 5 mins.

We further investigated the stability of this virus on different surfaces. Briefly, a 5 µL droplet of virus culture (~7·8 log unit of $TCID_{50}$ per mL) was pipetted on a surface (appendix p 1; ~cm^2 per piece) and left at room temperature (22°C) with a relative humidity of around 65%. The inoculated objects retrieved at desired time-points were immediately soaked with 200 µL of virus transport medium for 30 mins to elute the virus. Therefore, this recovery of virus does not necessarily reflect the potential to pick up the virus from casual contact. No infectious virus could be recovered from printing and tissue papers after a 3-hour incubation, whereas no infectious virus could be detected from treated wood and cloth on day 2. By contrast, SARS-CoV-2 was more stable on smooth surfaces. No infectious virus could be detected from treated smooth surfaces on day 4 (glass and banknote) or day 7 (stainless steel and plastic). Strikingly, a detectable level of infectious virus could still be present on the outer layer of a surgical mask on day 7 (~0·1% of the original inoculum). Interestingly, a biphasic decay of infectious SARS-CoV-2 could be found in samples recovered from these smooth surfaces (appendix pp 2–7). 39 representative non-infectious samples tested positive by RT-PCR[3] (data not shown), showing that non-infectious viruses could still be recovered by the eluents.

We also tested the virucidal effects of disinfectants by adding 15 µL of SARS-CoV-2 culture (~7·8 log unit of $TCID_{50}$ per mL) to 135 µL of various disinfectants at working concentration (appendix p 1). With the exception of a 5-min incubation with hand soap, no infectious virus could be detected after a 5-min incubation at room temperature (22°C). Additionally, we also found that SARS-CoV-2 is extremely stable in a wide range of pH values at room temperature (pH 3–10; appendix p 1). Overall, SARS-CoV-2 can be highly stable in a favourable environment,[4] but it is also susceptible to standard disinfection methods.

This work was supported by National Institute of Allergy and Infectious Diseases, National Institutes of Health (contract HHSN272201400006C). LLMP was supported by the Croucher Foundation. We declare no competing interests.

*Alex W H Chin, Julie T S Chu, Mahen R A Perera, Kenrie P Y Hui, Hui-Ling Yen, Michael C W Chan, Malik Peiris, *Leo L M Poon*
llmpoon@hku.hk

School of Public Health, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong Special Administrative Region, China.

1 Pan Y, Zhang D, Yang P, Poon LLM, Wang Q. Viral load of SARS-CoV-2 in clinical samples. *Lancet Infect Dis* 2020; published online Feb 24. https://doi.org/10·1016/S1473-3099(20)30113-4.

2 Ye G, Lin H, Chen L, et al. Environmental contamination of the SARS-CoV-2 in healthcare premises: an urgent call for protection for healthcare workers. *medRxiv* 2020; published online March 16. DOI:10·1101/2020·03·11·20034546 (preprint).

3 Chu DKW, Pan Y, Cheng SMS, et al. Molecular diagnosis of a novel coronavirus (2019-nCoV) causing an outbreak of pneumonia. *Clin Chem* 2020; published online Jan 31. DOI:10·1093/clinchem/hvaa029.

4 van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N Engl J Med* 2020; published online March 17. DOI:10·1056/NEJMc2004973.

Lancet Microbe 2020

Published Online
April 2, 2020
https://doi.org/10.1016/S2666-5247(20)30003-3

See Online for appendix

COVID '19 EQUIPMENT CARE

KONG s.p.a.
via XXV Aprile, 4 23804 Monte Marenzo (LC) - ITALY tel +39 0341.630506 info@kong.it
certified UNI EN ISO 9001

DISINFECTING KONG PRODUCTS FROM SARS-CoV-2

KONG S.p.A., on the basis of the scientific studies currently considered to be most reliable (the references of which are given at the bottom) defines in this document the methods of disinfecting its products from the SARS-CoV-2 virus, leaving to the users the choice the method they consider most appropriate to their needs.
These methods, even if carried out several times on the same product, do not alter its strength characteristics.

- **Disinfection in hot water**

Immerse the product for at least 30 minutes in hot water at a temperature of 58-60° C (136-140 °F) and then leave it to air dry avoiding direct exposure to the sun or heat sources.

⚠ **Do not use this method for disinfecting Dyneema® and aramid products (ex. Kevral®).**

- **Soap wash**

Wash the product for at least 15 minutes in lukewarm water at a temperature of 30-32° C (86-90 °F) with soap (pH 5.5-8.5) and then leave it to air dry avoiding direct exposure to the sun or heat sources.

- **Quarantine period**

Place the device in a well-ventilated area, avoiding direct exposure to the sun or heat sources, for at least 7 days.

⚠ **Due to the lack of established and reliable scientific studies, what is reported in the "General Information" attached to Kong products is to be considered general in nature, but does not guarantee reliable results in the fight against the SARS-CoV-2 virus**

Scientific references

- Test results published on April 2, 2020 in the supplementary appendix of the article "Stability of SARS-CoV-2 in different environmental conditions. Lancet Microbe 2020"
- The study "Effects of pathogen decontamination on the strength of climbing rope and harness equipment" conducted by the United States Department of Agriculture, Forest Service and National Technology & Development Program.

Monte Marenzo, 22 April 2020

KONG S.p.A.
President
Dr. Marco Bonaiti

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singing rock

COVID-19 DISINFECTION STATEMENT

Singing Rock hereby has an intense to clarify a situation about possible means for SARS-CoV-2 virus disinfection due to numerous requests, which we receive from our Partners.

- Ethanol.
  - At the moment, the most easily accessible disinfection with approved destructive effect against coronavirus in our region has following contents: 83% of denatured 95% ethanol; 11,3% of distilled water, 4,2% of 3% hydrogen peroxide and 1,5% of glycerol.
  - Numerous tests of repeatedly immersed textiles into the above-mentioned liquid with subsequent air drying didn't show any detectable strength reduction.
  - Nevertheless, we do not recommend to apply the above-mentioned chemicals on your gear more than 3 times.
- Isopropanol
  - Due to similar properties and tests, performed by some manufacturers, isopropanol or isopropyl alcohol can be used for disinfection with insignificant degenerative effect to exposed materials.
  - We do not recommend to apply any chemicals on your gear more than 3 times.
- Hot water
  - Test results, published in the Supplementary appendix of the article by Chin A W H, Chu J T S, Perera M R A, et al. Stability of SARS-CoV-2 in different environmental conditions. Lancet Microbe 2020; published online April 2., indicate a high virus sensitivity to heat. Virus is not detectable after 30 min. in 56 ˚C hot water.
  - Based on studies "Effects of Pathogen Decontamination on the Strength of Climbing Rope and Harness Equipment" performed by U.S. Department of Agriculture, Forest Service, National Technology and Development Program, it is possible to increase the water temperature to 55 ˚C with no effect to strength of the textile gear.
  - We recommend to use 55 ˚C hot water for a non-destructive disinfection of your polyamide or polyester gear or metal components.
  - This solution is not applicable to gear made of HMPE (Dyneema®, Spectra®, Dynex® or similar)
- Hand soap
  - Singing Rock allows to use hand soap with pH range 5.5 and 8. 5.
  - According to the above mentioned article "Stability of SARS-CoV-2 in different environmental conditions. Lancet Microbe 2020", it is necessary to wash your gear in 30 ˚C water with soap for at least 15 minutes in order to destroy the coronavirus.
- Air dry
  - SARS-CoV-2 can be detected on some smooth surfaces within 7 days from the contamination according to "Stability of SARS-CoV-2 in different environmental conditions. Lancet Microbe 2020"
  - Therefore, we recommend to leave your gear aside in a well-ventilated place away from all sources of direct heat for at least 1 week for disinfection.
- Dilution of Potassium permanganate or ammonium salts
  - Although Singing Rock recommends to use dilution of potassium permanganate or ammonium salts in user manuals, we can't guarantee positive disinfecting effect in relation to SARS-CoV-2 due to lack of reliable scientific studies.
  - Therefore, Singing Rock does not recommend to use the above-mentioned means for SARS-CoV-2 disinfection.

The above-mentioned disinfecting solutions are advisory in nature. Singing Rock assumes no liability for improper use of the gear. Singing Rock edifies that the user has to inspect his gear before every use. In case of any doubts about your gear, retire it immediately.

SINGING ROCK s.r.o.
With the registered office at Poniklá 317, 514 01 Poniklá • Czech Republic
entered into the Companies register held by the Regional Court in Hradec Králové, Section C, Insert 36256
tel.: +420 481 585 007 • fax: +420 481 540 040 • e-mail: info@singingrock.com • www.singingrock.com
ID: 03741044 • VAT no.: CZ03741044

COVID '19 EQUIPMENT CARE

'*Rescueclean S1*' from SKYLOTEC enables fast cleaning of infectious PPE

Personal protective equipment (PPE) should be carefully maintained. In times of a corona pandemic it is very important to clean it regularly to prevent pathogens from settling. This applies in particular to PPE used by emergency services or by several people at the same time. Here, SKYLOTEC offers a solution with the decontamination agent "Rescueclean S1", which is virucidal with limited effect - and also fights the corona virus SARS-CoV-2, the trigger of COVID-19 infections.

Pathogens such as the coronavirus are mainly transmitted from person to person. Indirect transmission is also conceivable, for example when an infected person coughs into his or her hand and then touches the door handle or the back of a chair. The viruses can stick to the surface and spread to healthy people. This is also possible with PPE such as helmets, harnesses or gloves. In such cases there is a risk of carry-over and an increased health risk. It is therefore important, especially in times of crisis, to clean PPE regularly and carefully. This may be necessary, for example, for emergency personnel that have come in contact with infected persons and whose equipment has been contaminated. However, cleaning can also serve preventive purposes - for example, if several employees share a safety harness for work in the work basket of an aerial work platform or if PPE is hired out in high-ropes courses and the platform therefore changes its wearer regularly. In order to prevent hygiene problems after use, a decontamination agent should be used - as in the other application examples. It must be ensured that this does not damage the PPE and, in particular, does not reduce the strength of PPE against falls from a height. SKYLOTEC's product range not only includes harnesses, ropes, and clothing, but also solutions for the correct treatment and cleaning of PPE, such as "Rescueclean S1".
The decontamination agent can be used immediately, dilution is not necessary in advance. "Rescueclean S1" is suitable for hand washing of PPE which is not suitable for washing machines. It is either applied directly to the piece of equipment to be cleaned or the PPE is placed completely in the solution. The strength and service life of the cleaned PPE is not negatively affected. The advantage: "Rescueclean S1" is virucidal with limited effect- and kills all known corona viruses undiluted within one exposure time. This is the result of extensive laboratory tests carried out by the supplier of the decontamination agent. Thus, an effect against the novel SARS-CoV-2, which causes the COVID-19 disease, can be assumed. "Rescueclean S1" is available in 5-litre containers. As it is not classified as a hazardous material, it can be transported without safety restrictions. After the cleaning process the PPE should be rinsed with clear water and dried. This means that it can be used again by persons comparatively quickly. This is an important factor in times like the Corona crisis, when PPE is quickly out of stock and can sometimes have long delivery times.

"The decontamination agent 'Rescueclean S1' from SKYLOTEC also kills 99.99 percent of all known corona viruses."

www.skylotec.com

GRIMP (RESCUE) USA 2019

USS Iowa

The next few spreads round up some of last year's rope and extrication competitions because there are unlikely to be any this year. So we can remember better times, especially for Harken Industrial, who provided this report on GRIMP USA since their invitational scratch team won the event then went on to get 7th in the June GRIMPDAY2019 event in France. GRIMP USA took place on the WWII battleship USS Iowa permanently moored in the Port of Los Angeles in California.

ABOVE: The winning team, H-Elevated: Nate Paulsberg, Ross Chapman, Tom Wood, Sean Cogan, Dale Abbinanti and Joe Rogat.

The CMC GRIMP North America Challenge took place from March 28th to the 30th 2019 in Los Angeles on the historic Battleship USS Iowa. This prestigious rope rescue and confined space challenge attracted ten teams from around the world to compete against one another.

Harken Industrial, merging with Elevated Safety and other rope access professionals, took part in the event and created their own team, known as H-Elevated (pic top right). Our man on the ground and H-Elevated team member, Tom Wood, reflected on this historic occasion by providing a roundup for each day in the following post. So, from here on in it's over to you Tom.....

The Road to GRIMP

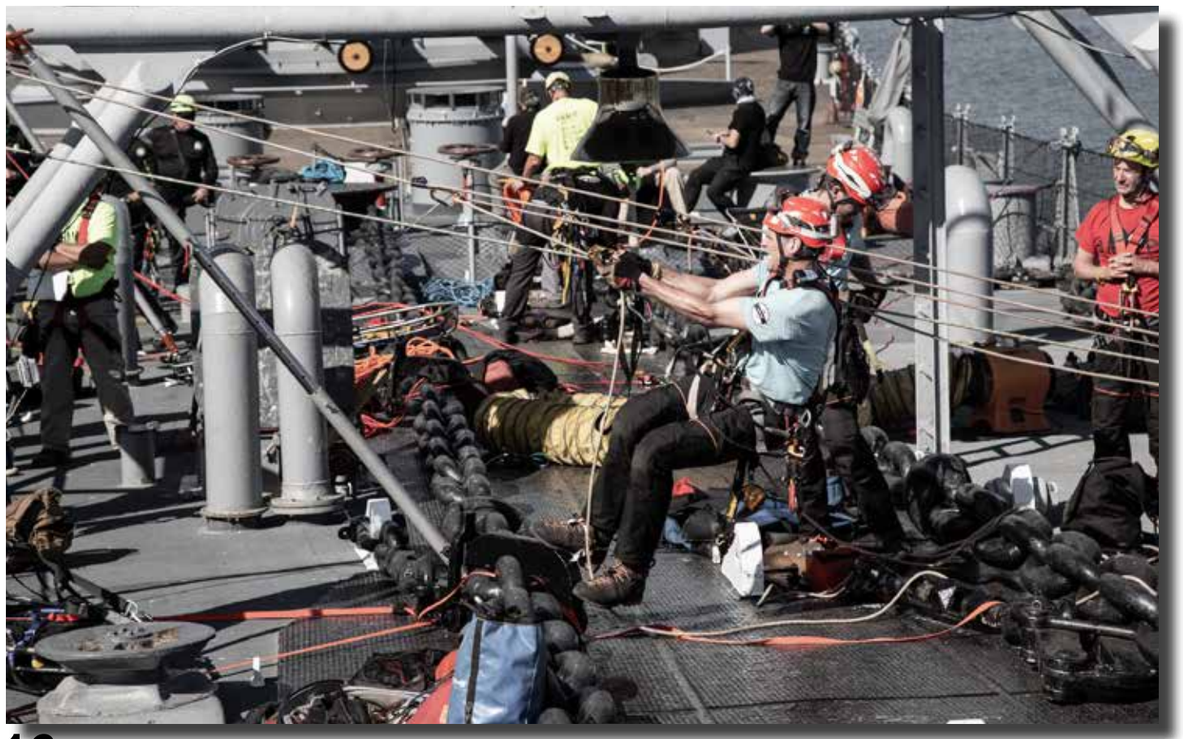
Hosted by CMC Rescue (thanks!), [last] year's GRIMP competition marked the first time in the event's 14-year history that it was held in North America. Ten teams from around the globe were challenged to complete five technical rope rescue and confined space scenarios over two days.

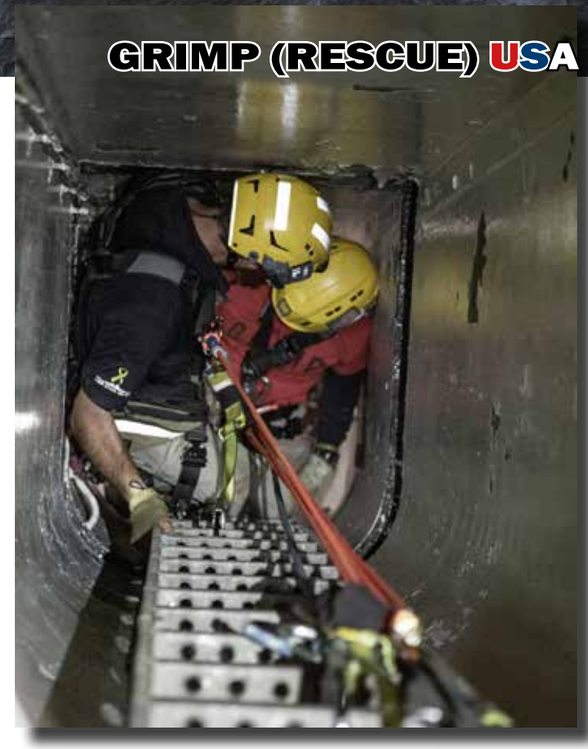
Over the last several months, the Magnificent Seven (which is my super-unofficial and Clash-inspired moniker for H-Elevated, our OFFICIAL name) trained hard to sharpen our skills in preparation for this event. We all have informally assigned roles on the team, each of us specialized in a certain aspect of technical rope rescue. Navy veteran and Palatine Firefighter Nate Paulsberg was our fearless team leader. Harken Latin American Sales Manager Joe Rogat shared lead rescuer duties with rope access veteran Sean Cogan. Ross Chapman put his even-keeled nature and extensive confined space knowledge

to good use as the H-Elevated evaluator. Young buck Dale Abbinanti and myself (the team's designated old fart) were the team's riggers. And Harken CEO Bill Goggins temporarily abandoned corporate America to serve as our designated victim, a role that earned him no small amount of good-natured ribbing.

Now, when my good friend Sean Cogan approached me several months ago about joining the merry band of rescuers that he was putting together for GRIMP, I'll admit to having some reservations.

I've been a mountain rescuer with the Alpine Rescue Team in Colorado for the last 20 years. What in the wide, wide, world of sports was I getting myself into? A rope rescue competition?





In my experience, rope rescues have been serious business. At first blush, I thought the notion of turning the unique, life-saving skillsets required to plan, build and execute rope and confined space rescues into a timed competition sounded about as crazy as having teams of heart surgeons competing against each other under the watchful eyes of black and white striped shirt clad referees.

But upon closer inspection, I came to realize that maybe the idea of having rope rescue and confined space rescue professionals pitted against each other in head-to-head competition wasn't as crazy (or dangerous) as it first appeared. Hollywood, which is down the road from this year's competition, usually portrays rescues as being chock full of high drama and rescuers as being larger than life, well-muscled heroes. Consequently, that is often the rep assigned to us. Which is (almost) not true.

In reality, the 21st century rope rescue professional doesn't care for drama and most of us don't consider our work as being especially heroic. It's a job, and we approach it as such. As for being well-muscled, I can't personally speak to that, but let's just say a few of the H-Elevated team members could do push-ups with a pack of Cub Scouts on their backs and still do burpees till the sun goes down (to be honest, I don't even know what burpees are, I just know that Nate, Joe and Ross do lots of them).

But seriously, we ALL love helping people, and we all geek out on rope work. Rope is, both literally and figuratively, the common thread that keeps us safe and allows us to access and rescue our fellow human beings. Once I came to the realization that training for GRIMP would make us better rescuers and that head-to-head competition would force us to step up our rescue game to a new level, I understood that I wanted to be a part of GRIMP 2019. Challenging our comfort zones on the international stage taught us how to be more open-minded about the tools and techniques of rope rescue.

In the last several months, all seven of us worked and trained hard. We didn't want to let our teammates down, but at the same time, we didn't want pride to trip us up. We lugged our collective experiences in rope access, fire rescue, rock and ice climbing, mountain rescue, cave rescue, confined space rescue and sailing to the field of competition. In reality, we did not compete AGAINST the other teams. We competed WITH them. Our stiffest competition came from within. We were successful and the cross-pollination of skills, tools and techniques we experienced has enriched us and we can take home a duffel bag full of tips and tricks that will help us to save lives in future. THAT is what is most important.

We cannot thank Harken Industrial and Elevated Safety enough for supporting our efforts. They stood behind us from day one and enabled us to become the first-ever American team to win a GRIMP competition. Cascade Rescue, Courant, CAMP Safety, Truewerk and Sterling Rope were ENORMOUS contributors to our success as well.

Roundup - Friday, March 29

All ten international teams had their first taste of competition on the Friday, with everyone attempting to complete one event. The H-Elevated team tackled a challenging confined space rescue scenario deep within the bowels of the battleship USS Iowa. Though each scenario was allotted 90 minutes, the H-Elevated team needed less than 40 minutes to complete their assigned task. No one knew how the scoring would play out until the end of the last scenario on Saturday, so we were all cautiously optimistic that we scored well on safety and efficiency, as well as time. Saturday's stoke-meter would doubtlessly peg out in the red as everyone pushed their limits to safely complete the final four scenarios and walk away from the event stronger and wiser than when they arrived.

Roundup -Saturday March 30

The hard work paid off! Harken Industrial's team, H-Elevated, took first place in the 2019 CMC GRIMP Challenge. Ten awesome rescue teams from around the globe fought hard in the competition that consisted of both confined space and rope rescue scenarios.

RESULTS

1st - H-Elevated (USA)
2nd - Special Rescue Association (Germany)
3rd - Namur FD (Belgium)
4th - Rescue Methods (USA)
5th - Exxonmobil – BRPP (USA)
6th- 49th Parallel Rescue Team (Canada)
7th- Las Vegas (USA)
8th- County of Los Angeles Fire Department (USA)
9th – CYRRT (Taiwan)
10th - Red Rock Training Group – Northwest Fire District (USA)

ANATOMY OF A GRIMPDAY ROPE RESCUE COMPETITION

Namur - Belgium
Annual Rope Rescue event

Petzl's amazingly diverse ROPETRIP competition runs every two years following qualification events in numerous countries and has been postponed to 2021 but we should just report that the winning team for the 2019 qualifying round in the US included a certain Keith Thorne. Never was the saying 'a chip off the old block' so appropriate for the son of TECHNICAL RESCUE magazine's world leading authority on technical rope work who is also an accomplished stone-mason.

Another competition that Petzl actively support but has also been cancelled is Grimpday 2020 which has been held in Namur, Belgium since since its inception in 2006. This is a highly regarded competition with some fantastic scenarios in a wide variety of settings, from bridges and cliffs to ancient buildings and tunnels. Imaginative but realistic scenarios like evacuation from trees atop a scarp to a precariously balanced car provide both stiff competition and a great learning opportunity. As a real incident these are rare but could occur but is too complex and expensive to set up yourself back home. Such an event therefore has pretty strict entry requirements and competition rules so it's interesting to take a look here at how they organise this day; not only from the perspective of setting up your own regional competition but with great general safety rules for ANY rope-activity. .....

1. DESCRIPTION/OBJECTIVE OF GRIMPDAY

1.1. DESCRIPTION

Grimpday is an international rope rescue challenge taken up by emergency services around the world (firefighters, civil protection, army, police). The teams face one another in workshops focusing on the specific features of the profession of rescue worker in dangerous situations.

1.2. OBJECTIVE

Grimpday is above all a friendly event where the main aim is to enable rescue workers from all across the globe to meet and exchange ideas on techniques, equipment, etc. Although a healthy emulation is welcome, the ultimate aim behind the philosophy of the challenge is also for participants to excel themselves.

2. TEAM COMPOSITION

2.1. GENERAL RULES

Each team must include the following:

- 1 team leader
- 4 team members
- 1 victim
- 1 observer

The teams have to prepare a photo gallery based on the model received and send it to the organisers before the event. In particular, ANATOMY of a ROPE RESCUE COMPETITION this should indicate the qualifications (rope access or rescue and training) of the various team members.

No role changes are authorised. If one of the team members is injured or ill, the organisation must be informed and a decision will be made if necessary.

The team members must display the marking of the organisation so that they can be identified throughout the trials.

All the team members must be trained and physically capable of carrying out rescues in dangerous, confined and physically demanding environments.

2.2. TEAM LEADERS

The team leader must be specifically trained to lead a rescue team or have similar experience. He directs and coordinates his team. He guarantees the safety of his entire team. The team leader must understand and be able to express himself clearly in French or English.

2.3. VICTIM

The victim must:

- Be of age at the latest on the day of the event.
- Weigh at least 60 kg.

The victim will be weighed at the PPE check. Victims who are not heavy enough will be weighted.

2.4. OBSERVER

The observer must have a high level of technical competence. He must be able to judge the overall safety of a rescue. He does not take part in the assessment of the team. However, he may be asked to give an opinion should a problem of communication/ understanding arise between the trial director and the team leader.

The observer must have a good level of understanding and expression in French or English.

The observer must be open-minded and may not try to give his team an advantage in any way.

Any observer who fails to meet these criteria will be automatically excluded. The observer judges the performance of the teams in the light of these regulations, which he understands and accepts unreservedly. Any behaviour incompatible with the principles of fair play on the part of the observer may lead to his exclusion.

The observer is asked to take pictures of any situation which may be deemed contrary to the safety rules laid down in these regulations.

3. COMPULSORY EQUIPMENT

3.1. INDIVIDUAL EQUIPMENT

All the rescuers must wear the following equipment during the trials:

- A helmet with individual lighting
- A safety harness
- Long trousers
- Closed shoes

Gloves must be worn wherever a moving rope is handled.

3.2. GROUP EQUIPMENT

Each team must bring its own equipment. There is no limit on the quantity of equipment, but this will be carried by the five team members only from the start to the finish of the trials, otherwise penalties will be imposed (no 'sherpas' authorised).

Minimum equipment:

- A stretcher
- Six 100-m semi-static ropes (diameter 10.5 mm or more)
- 1 throw-bag with cord (minimum 60 m)
- The equipment necessary to make an 80-m zip line on two load-bearing ropes and convey the stretcher horizontally and vertically via this zip line
- A vehicle that can transport the team and the equipment for each trial

The use of a thermal, electric or hydraulic winch is prohibited, with the exception of the trials for which this will be provided by the organisation.

The use of an offset arm or a tripod is prohibited, with the exception of the trials for which this will be provided by the organisation.

The equipment must be used in accordance with its specification sheet and within the limits imposed by the manufacturer.

3.3. VICTIM'S EQUIPMENT

The victim must wear the following equipment during the trials:

- A helmet
- Eye protection
- A safety harness
- Long trousers
- Closed shoes

The victim is not permitted to communicate with the other members by radio/telephone.

3.4. Observer's equipment

The observer must wear the following equipment during the trials:

- A helmet
- A safety harness with the equipment to secure himself and move along at heights
- Long trousers
- Closed shoes

3.5. EQUIPMENT CERTIFICATION

The equipment admitted for GRIMPDAY must comply with the official standards in force in the team's country of origin, such as:

- CE marking
- NFPA 1983 classification 'G' or 'T'
- UIAA certification

Certain types of equipment without any marking may be accepted after analysis. Otherwise, such equipment may not be used during the event. Teams planning to bring such equipment (including prototypes) must inform the organisers of this in advance and plan an alternative should the PPE inspectors refuse it.

3.6. EQUIPMENT INSPECTION

The equipment must be in good condition. A PPE check will be carried out on the first day, following a predetermined schedule.

Equipment that has not been inspected may not be used during the trials under any circumstances.

The teams must fill in a table listing all their equipment. The teams will be offered time slots for the PPE check. The teams will have to indicate their date and time of arrival in order to plan the inspections as well as possible.

A copy of the equipment list will be filed at the Command Post. Each team will have its PPE list with it. This list may also be checked at each trial at the request of the post

director.
Random checks will also be carried out during the trials. The organisers reserve the right to exclude any equipment that is non-compliant or in poor condition for the duration of the challenge.

4. INSURANCE
In accordance with Belgian regulations, the Grimpday organising structure has taken out 'organiser's' civil liability insurance. The organisation does not offer any individual insurance for physical accidents. The incriminated team will bear liability for any failure to abide by the Belgian regulations and/or the safety standards in force. Consequently, all seven team members must be covered by the insurance of their employer.

5. TECHNICAL
5.1. GENERAL RULES
The teams are free to use the techniques that they wish. Nevertheless, in accordance with the Belgian regulations on working at heights, all rescues must be carried out on a minimum of two ropes measuring at least 10.5 mm in diameter.
The following exceptions apply to the use of two ropes:

- Stretchering a standard load on a slight incline
- Work among trees
- When a secured rescuer has both feet on the ground (example: observation of the manoeuvre by the team leader equipped only with a retention device).

The three exceptions given above may be carried out on a single rope, on the basis of a risk analysis undertaken by the team leader and in accordance with the information provided by the post director.
In addition, the teams must pay particular attention to the following rules, otherwise penalties may be imposed:

- The equipment must be used in accordance with the manufacturers' instructions
- The fall factor must always be as close to zero as possible and may not under any circumstances be higher than 1
- No unsecured rescuer may be in a zone designated as dangerous
- The work axis must be free of threatening environmental factors
- The ropes must not be trampled on
- The rope friction zones must be protected or eliminated
- Offset arms/tripods must be used with a belay system that minimises the fall
- factor should the device fail
- Rope tension for zip line:

1. The ropes must be blocked on a load brake that can be used to releasethe tension (never on barbed appliances)
2. If a single hoist is used, it may only be manoeuvred by a maximum of two people
3. If a double hoist is used, it may only be manoeuvred by a maximum of one person

- The victim must be properly secured on the stretcher (if appropriate);
- The victim must always be handled with caution. Shocks must be kept to a minimum when moving the stretcher.
- Particular attention must be paid to the position of the stretcher (the head must not be down, the victim must not be compressed, etc.)
- Penalties will be applied for non-textile equipment forgotten, lost or dropped onto a hard surface. Equipment that has suffered a serious fall must be withdrawn from the equipment that may be used for the challenge
- Smoking is strictly forbidden on the trial site and/or in the presence of ropes and harnesses

5.2. WHISTLE TEST
All the installations, including the recalls, must be self-blocking. The officials in charge of the trials may ask participants to let go of the ropes at any time and the systems put in place must block, preferably thanks to mechanical means, or otherwise due to self-blocking knots.

5.3. REDUNDANCY
The following equipment does not have to be systematically duplicated if it is used in accordance with the manufacturer's instructions:

- Steel hooks
- Pulleys
- Rigging plates
- Industrial lifting straps (used only to rescue people)

A reliable anchor does not have to be systematically duplicated. For example, a sturdy tree can be used to lash the main rope and the safety rope. However, artificial attachments (piton pads, etc.) may not be considered reliable and must be systematically duplicated, with the load distributed over all the points.

6. ASSESSMENT
Each trial is marked on the basis of an assessment grid including the following criteria:
1) General safety (victim, team, site, etc.)
2) The comfort given to the victim
3) The quality of the manoeuvre and the means deployed
4) Management of the team
5) Communication
6) The general behaviour of the team, that is:

- Respect for the organisation and the volunteers
- Respect for the other teams
- Compliance with the instructions
- Fair play

7) TIMING
The assessment grid is attached to these regulations.[ED: no it's not!]
The final classification is established by adding up the points obtained for each trial.
The trial timing starts when the trial director gives the signal and stops on his order.
The rescue time ends when the victim has reached a zone established for this purpose.
The team then has a limited time to repack their equipment and make way for the next team.
For each manoeuvre, a time will be determined and the team leader will be informed, with the stipulation that if the victim has not been 'conveyed' after the device has been tensioned, the manoeuvre is quite simply stopped.
If the manoeuvre is 'stopped' or is not completed within the set time, the team does not receive any points for the manoeuvre in question.
When the ropes bearing the stretcher are tensioned and before they are released, a 'SAFETY CHECK' is carried out by:

- The post director (or his representative)
- The observer
- The team leader

The stopwatch is stopped during the 'Safety Check'. The safety and compliance of the assemblies are checked (that is: hooks closed, no rope friction, etc.). When the 'SAFETY CHECK' is complete, the stopwatch is started again and if appropriate, the team leader has to make the necessary adjustments.
If any dispute arises and in general, the final decision is taken by the post director and/or a member of the organiser's technical staff.
If a team member is injured during a manoeuvre, the team will be given a penalty.

Any disputed situation will be settled by the organisers. Disputed situations must be photographed during the trial. The pictures will then be analysed by the organising jury at the end of the day. Their decision is not open to appeal.

7. PENALTIES
All the participants undertake to know these regulations and to comply with them unreservedly.
Any behaviour that is contrary to this will be penalised (penalty, downgrading, exclusion). The organisers alone are competent to apply these regulations. Failure to comply with orders given by the organisers along the route and during the trials will result in the downgrading of the team concerned.
Moreover, the following are considered unfair:

- Sending the observer(s) to anticipate the next manoeuvre
- Disclosing advice or photos intended to give a team an advantage

Such conduct will be penalised.

8. CATERING AND REFRESHMENTS
To protect the environment, all participants are asked to manage waste appropriately. With this in mind, the use of water flasks is recommended.

9. TOILETS
Worksite toilets are installed near the trials wherever possible. Participants are requested to use them.

10. RIGHT OF PERSONAL PORTRAYAL
Each GRIMPDAY participant accepts by default that in the context of GRIMPDAY, the organisation uses photos, videos and testimonies which may be collected during the event and in which the participant may appear or be quoted. Should a competitor not agree to this, he must inform the organisation of this by recorded delivery at least 20 days before the event.

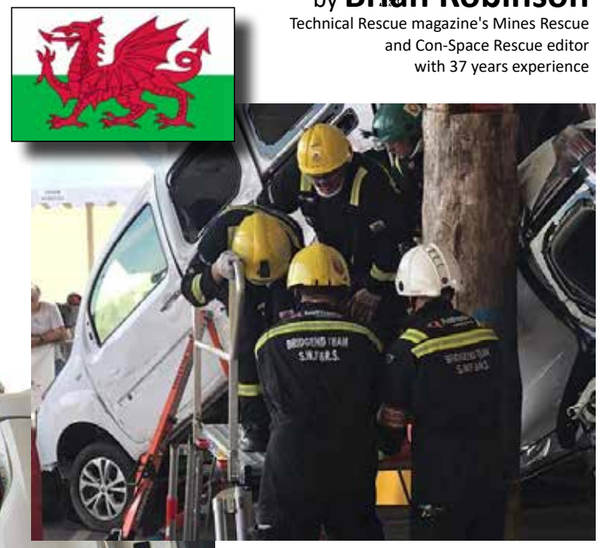
Entry for next year's event was full with the following entrants but it may be worth checking as availability to attend the rescheduled event may have changed for some of these teams.

N°	TEAMS	COUNTRIES
1	Hampshire Fire and Rescue	United Kingdom
2	SSO HART1	Hong Kong
3	Seilfrei	Germany
4	Grimp 51	France
5	Grimp 54	France
6	JAPAN WEST 9PM	Japan
7	GARS Kranj (Fire and rescue service Kranj)	Slovenia
8	Soltcsaba	Romania
9	Steven WMFS	United Kingdom
10	NZ-RT1 RATS	New Zeland
11	Grimp 974	Island of Reunion
12	Sauvetage Odyssée	Canada
13	Shenzhen	China
14	Risc 31 Bruxelles	Belgium
15	Delta Fire Department	Canada
16	Chongqing Fire & Rescue	China
17	Höhenrettung Feuerwehr Berlin	Germany
18	Grimp 16	France
19	BWz Rivierenland Mechelen	Belgium
20	Hulpverleningszone1 Brugge	Belgium
21	South Wales Fire Service	South Wales
22	Leicestershire Fire & Rescue service	United Kingdom
23	Bomberos Sévilla	Spain
24	Gasilska brigada Ljubljana	Slovenia
25	Höhenrettung Feuerwehr Dusseldorf	Germany
26	KR2U	Republic of Korea
27	G.F.T.R	Republic of Korea
28	ISU Brasov	Romania
29	RCBM Malaga	Spain
30	Elevated Safety	USA

Tales of Success
Tales of Dedication

by **Brian Robinson**
Technical Rescue magazine's Mines Rescue and Con-Space Rescue editor with 37 years experience

[ED: *Brian (Welsh as Rarebit) Robinson gives an unbiased analysis of how South Wales Fire lead the world in everything, always.....was that OK Bri?*]



For me, this is a local story, this is the small part of South Wales I grew up in and worked with family and friends of some of the featured team members; a place we know as “God’s Country”, and where the common word is “butt”, “alright butt?”, “yes butt, you butt?”, to the uninitiated it’s just another word for mate, pal, buddy or whatever.

South Wales Fire & Rescue Service has no fewer than five competing extrication teams, but the focus of this article, the Bridgend team, seems to be doing things right with extraordinary success in both the UK and the World Extrication Challenge. After chatting with the team it’s fairly easy to see why, *dedication*, to each other and to the service as a whole.

Initially formed in 1999, the team has obviously had folk come and go over the years, but knowledge has been passed on rather than diluted. During my visit with them, I was pleasantly surprised to see that the younger element, world class as they are, happily took on board advice and tips from the older, more experienced team members. Just the little things that would mean extra points in competition, and more to the point, a better outcome in a real life situation when they’re out on the trucks, which is their whole ethos; it’s not just the competing, it’s making themselves better all-round fire-fighters too. The team's knowledge is happily passed onto to regular crews on all stations with out a hint of the usual resentment you see with special teams. No mutterings of “oh he’s a know-all”. The training sessions are well accepted enabling specialist knowledge to filter right back to everyone.

The Bridgend team split training between two locations, their home station in Bridgend, and the luckily nearby Cardiff Gate Training and Development Centre, managed by Babcock for South Wales Fire & Rescue Service. This has ideal facilities and equipment to train with and the restaurant is pretty good too.

Although called the *Bridgend Extrication Team*, current members come from a range of stations, as far afield as Cardiff Central and is under the general guidance of Station Commander Andy Morgan from the Barry / Llantwit Major stations. One of the team members is actually a retained Firefighter, rather than wholetime, which is unusual in the competition world. Team members train in their own time and unpaid with one driving 30 miles, 45 minutes or so each way.

The year's training starts in late February or early March through to October, two sessions per month depending on availability as long as six attend out of the nine or so trained team members, this includes evenings, weekends and bank holidays, see what I mean about dedication? PPE funding comes from collections, crowd-funding and manufacturer support, this is partly to give them some autonomy from the SW Fire Service in terms of equipment choice but also in limiting costs to the service which, in common with virtually all fire services will have significant financial constraints. Training vehicles is a typical logistical problem for all extrication training, not just competition teams and Bridgend is no different, making do with just six vehicles a year. Careful planning will make a single vehicle last three, four or five sessions by concentrating on various specific elements before it finally goes to scrap, with not much that actually is salvageable at that point.

Selection of new members is from internal application and from identifying particular aptitude and knowledge in firefighters on the run. The current age range is 24 to 55 with the younger element taking on the more physical tasks and diving in through the windows for casualty stabilisation as it should be.

The guidelines offered by the United Kingdom Rescue Organisation (UKRO) / World Rescue Organisation (WRO) dictate what equipment will generally be available during competition, so training obviously follows with that same equipment, either borrowed from the Service or in Bridgend's case Holmatro kindly loan a set of cutting / spreading tools. The team rarely turns away sponsorship or donations of equipment, but the list obviously includes cutting / spreading, cribbing, stabilisation struts and straps, casualty protection gear, oxygen therapy, longboards and other casualty medical equipment. Never forget the really basic stuff that also gains points is very important, glass and edge protection etc. with rescuer protection as important as casualty protection.

TITLES

Points make prizes and Bridgend has been quite successful; generally always within the top 5 in the UKRO, on the winners podium, and in the WRO field, having come first for the previous four years, the last one, 2019 being held in La Rochelle, France, the culmination of the season, with the WRO challenge having a creditable 36 competing teams. During their time they have competed in Europe, North America, New Zealand and Australia. That requires a lot of fund-raising!

COMPETITION

Typically, the main scenario in “the Pit” is set up by the organising country/service and is kept as secret as possible until the team gets the word to 'GO'. The one thing they can be sure of is that it will involve a vehicle and a casualty or casualties.
They then have 10 minutes in the ***Rapid Scenario***, 20 minutes in the ***Standard*** with 1 casualty, 30 minutes in the ***Complex*** with 2 casualties, one of which is time-critical. In each case they resolve the situation completely or as far as they can go before the whistle blows. always under pressure. This is all overseen by three expert; very experienced assessors- Incident Command, Technical and Medical, continually observing, continually marking, but if at any time something appears dangerous, they will call an immediate halt to the exercise for safety purposes, not that this happens a lot with the experience these crews have.

SHARED KNOWLEDGE

It became apparent that competitions come with a “win, win, win” attitude but the knowledge is also magnanimously shared between competing teams, little tips here and there for whatever reason, I can’t see that happening within UEFA or in the NFL.

So, Roger, Les, Rob, Big Al from Braichycymmer and the rest of the crew carry on the good work, never just for the sake of winning, but also the much enhanced rescue capability out on the street.

Environmentally-Friendly Arb Lowering Rope

MARLOW ROPES INTRODUCE THE FIRST 100% RECYCLED PLASTIC LOWERING LINE

Marlow Ropes, the world leading UK based rope manufacturer officially announces the introduction of their latest 'technically better' innovation; the BLUE OCEAN® RAPTOR, a first in the Tree Work and Arboriculture industry.
The Blue Ocean® Raptor is a Lowering line made from Marlow's trademarked Blue Ocean® yarn - manufactured using 100% recycled plastic bottles.

Rope Diameter (mm)	12	14	16	18
Weight (Kg/100m)	9.94	12.4	16.3	21.1
Av. Breakload (Kg)	3610	4510	5860	7670
Min. Breakload (Kg)	3,250	4,060	5,280	6,900
Breaking Load (kN)	35.4	44.3	57.5	67.7

The Blue Ocean® product range was created in-line with Marlow's environmental and sustainability mission of reducing single-use plastics, whilst aiming to raise awareness of the detrimental effects it has on the oceans and the environment.
Jon Mitchell, Marlow's Managing Director, commented on the company's progress.

"It is clear that people are becoming more environmentally aware, and we are working to provide our customers with sustainable rope options in all of the industries we operate in. We hope by introducing these products it will encourage our customers to think more consciously before purchasing their ropes and inspire other manufacturers to act too."
Blue Ocean® Raptor is available at Marlow stockists as from June 2020!

www.marlowropes.com

STIHL ANNOUNCES NEW BAR AND CHAIN UPGRADES FOR 20% FASTER CUTTING PERFORMANCE

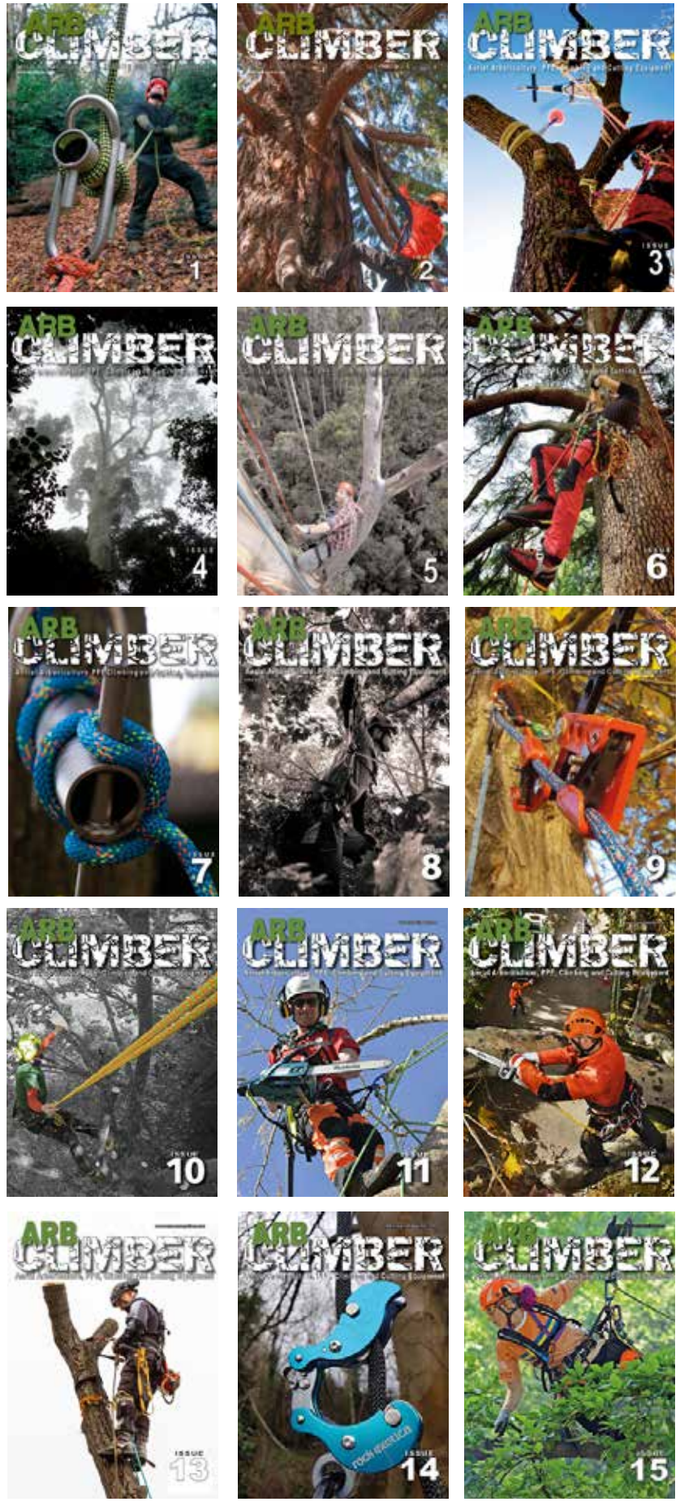
STIHL continues to offer professional forestry and agriculture chainsaw users enhanced performance with the introduction of a newly designed guide bar and saw chains for 20% faster cutting performance, with lighter weight.

Standard fitment on the MS 261 C-M forestry and MS 271 agriculture chainsaws, the Light 04 chainsaw bar features a new innovative slim contour design that means it weighs up to 200g less than the previous Rollomatic E bar, ensuring forestry and agriculture workers can benefit from easier manoeuvrability, improved balance, and less fatigue when cutting. The new guide bars weigh 10% (40cm bars) to 20% (50cm bars) less than previous versions, while the slimmer profile and bar tip allows for faster plunge cutting.

As part of the new chainsaw upgrades, the MS 261 C-M will now come fitted with .325" RS PRO and the MS 271 with the RM3 PRO saw chain as standard. The 1.3mm gauge chain, which matches the 1.3mm bar groove, offers up to 20% greater cutting performance when compared to .325 RS saw chains, which are 1.6mm thickness. The faster cutting comes from the thickness of the cutter tooth that is reduced from 7.7mm to 6.8mm, meaning less wood is removed from the cut for more efficiency.

The MS 261 C-M and MS 271 are available from May 2020 with the new Light 04 and new RS saw chains.

www.stihl.com www.stihl.co.uk



COVID'19

RESILIENCY in the TIME of COVID'19:

Psychological First Aid

and Operational

by **Laura McGladrey**
PMHNP, FNP, MSN, FAWM
(with thanks to Tod Schimelpfenig, NOLS Wilderness Medicine)
March 2020

Much is now understood about the psychological impact of unexpected events, such as illness and natural disasters. There is clear consensus, both expert and in the literature, that one's level of social connectedness will likely be one of the determining factors in how well individuals and communities overcome an overwhelming or unexpected event. What is unusual about a quarantine as it relates to other natural and man-made disaster events is the need for physical distancing and social isolation to contain the illness, creating an unprecedented opportunity for

COVID-19 Stress Continuum

Minimize exposure – Avoid unnecessary exposure. Schedule exposed check ins.

Potential – Awareness of stress injury formation
[MOI: overwhelmed, emotional connection, helplessness, error/guilt, isolation, near-miss, fatalities]

Signs & Symptoms – Ready I Reacting I Injured I Critical *(See below)*

Follow up – On-site debrief, one-on-one, peers/leadership, incident support

Plan for exposure – Utilize peer, leadership and provisional help (for you & team members)

IMPACT → INJURY
Signs & Symptoms

READY	REACTING	INJURED	CRITICAL
COVID-19; *This is going to be hard, but we can do this.*	COVID-19; *and the government isn't doing anything.*	COVID-19; *I'm going to hide until this is over.*	COVID-19; *My life is over.*
•I'm concerned (*and I'm going to look for resources*) •Sense of Mission •Realistic, concerned but moving forward •Appropriate cleaning and social distancing •PBR – Pause, Breath, Repeat •Supporting other team members •Creative connection •Outward focus •Motivated to respond •Awareness and planning •Solution Driven •Kindness to self/others •"We're all in this together" •Practicing Gratitude	•I'm alarmed (*and there's not enough to go around*) •I don't like Teleworking •Short Fuse •Fear based cleaning and isolation •Communication breaking down •Feeling there is a lack of communication •Changes in personality •Fatigue/weariness •Teamwork breaking down •Decrease in high performance •No longer sharing ideas or •Temporary sleep issues, eating issues, distress •Spinning at work, not able to complete tasks	•I'm scared (*and I can't stop watching the news*) •Lack of motivation to leave the house •Physical symptoms •Exhaustion •Withdrawal •Emotional numbness •Increased use of numbing tools such as alcohol. • Performance degrading •Defeatist attitude •Complaint Driven •AVOIDANT- "this doesn't involve me, so I don't need to engage." •"This is never going to end." •Highly Individualized- every person for themselves."	•I'm terrified (*and I can't breathe*) •Hopelessness •Can't sleep •Depression •Thoughts of Suicide •Damage to relationships •Feeling lost or out of control • Unable to work •Complete disengagement •Giving up •Paranoia and Isolation •Panic •Can never get enough supplies •Feelings of scarcity •Blaming others •Panic •Beating yourself up

ED: :Laura will be explaining and expanding further on this graphic n WSAR#8

We lean here on expert consensus for simple and powerful tools, things we all can do, that support emotional health and even post traumatic growth in the face of uncertainty, decreased contact and a rapidly changing situation.

Many rescue teams have been using the Stress Continuum, first utilized in Combat Stress FIrst aid in the military context for an operational snapshot of stress impact in unpaid professional and career rescue teams. Early during the Pandemic, Responder Alliance, with help from many in NPS and NOLS calibrated the stress continuum for COVID. The idea was to keep the conversation open to the day to day changes in how individuals and teams were responding. The continuum needed to be changed for this unique moment, given that everyone would likely be impacted by stress, with a goal of not being injured. The continuum allowed for folks to recognize distress and mitigate when able. For examples of the rescuer stress continuum, go to https://responderalliance.com/stress-continuum/

Many rescuers and first line responders, as well as rescue teams, have developed a **RESILIENCY PLAN** for yourself, your family, and even your smaller communities. Pandemics are unusual in that they hit each person, family and community in different ways and at different times. Planning resiliency actually counters the feeling of helplessness and allows us to remind each other, that there are many things we can do to support ourselves and each other, thereby reducing the feeling of helpless so often at the core of the development of emotional trauma. Rocky Mountain Rescue Group,, PNWSAR, Juneau Mountain Rescue, Portland Mountain Rescue and Alpine Search and Rescue, to name a few, have all moved toward embedded resiliency teams and plans.

Consider building a plan for the next two weeks that has elements known to support and mitigate traumatic stress in real time. t Planning and sharing it with someone else on your team or in your life supports carrying out the intentions. The following elements, adopted by many teams, include the principles of Psychological First Aid: **SAFETY, CALM, CONNECTION, EFFICACY** and **HOPE**

This moment represents a phase change- we often discuss this concept in rescue- a time during the rescue when you revisit the original goal and recalibrate the direction and mission of the team. This is what is needed in this moment. We can't move forward as we always have. We can't lean on old ways of doing things. Many of those ways don't apply to this moment. We have to create new priorities, and a mission for enduring through this moment and beyond. You can always change it. This is particularly helpful for kids, but it helps all of us in times of uncertainty.
Get creative. You could think about making a star chart or playing bingo with younger kids to see if you might be adding each element every day. Create friendly competition (that's connection!) with your neighbor, families or co-workers to see who is fueling their social and emotional immune systems the most.

Stress Impact Mitigation (PPE)

SAFETY
- Address identified safety concerns proactively- Encourage planning for personal life
- Encourage teams to be creative and make decisions to increase their safety
- Protect people from additional stress exposure when possible
- Establish a clear plan and communicate it often, through many channels
- Protect from rumors, continuous news updates by scheduling updates

CALM
- Safe zones: Create windows of time when folks can work uninterrupted by news, and allow for creativity, effective work, calm and connection during these times.
- Demonstrate and model calm & empathy
- Adjust priorities as needed to reduce conflicting demands
- Prioritize importance of teamwork and building morale
- PBR - Pause Breath Repeat

EMPOWERMENT
- Provide sideboards and resources for decision making and encourage/foster creative solutions
- Seek ideas and input from the team
- Permission to be creative with work assignments and flexibility
- Create structure: Including sleep and mealtimes, new work routines, plan for work from home or established practices, planned connection via meetings and check ins
- Encourage self-advocacy

CONNECTION
- Check in with individuals regularly
- Acknowledge the impacts to family and communities. Plan for sustaining connection.
- Encourage new and creative means of connections with peers, family, others.
- Practice "social distancing" without creating "social isolation"

HOPE
- Lay out the path ahead, even if just short-term steps
- Model and encourage individual and shared gratitude practice.
- Sustain a resourced view that this will end
- "Lend" hope/if when someone runs out

RESOURCES

www.responderalliance.com
www.samhsa.gov www.ptsd.va.gov
https://store.samhsa.gov/system/files/nmh05-0210.pdf
*based on COSFA stress continuum, adapted by Laura McGladrey
With contribution from Notional Parks Service

SAFETY

Protect yourself from misinformation and fearful stories.
Plan your interaction with the media and the world around you. Choose one reliable news source and be level-headed. Check in once- daily about what you need to know. Create times twice daily to check e-mail and allow for 'protected spaces' or "Corona Free Zones' where you are not responding to media and texts when you might otherwise have a chance to engage in something important, connect, or do something for yourself. The Denali Mountaineering rangers elected one team member to sift through all the e-mails and information flooding in about COVID practices to summarize important points so that all would not need to be inundated with information and could work toward other things.

Plan moments to be present
Plan moments to check in on life around you at set times, perhaps when you brush your teeth in the morning and night. Are you healthy right now? Moments where you are reminded that you personally are not at imminent risk can help your nervous system relax and gives your immune system a boost. Share these moments with someone else.

Stay in your own lane
Many folks are worried about family members, loved ones and even other cultures impacted by this moment. Other folks can't help but worry about the future and what it all means. Give yourself permission to take care of only yourself or your own family for one window in the day. Acknowledge when the uncertainly is more that you can handle and spend time doing something that feels good to you.

Protect yourself from the virus
This means different things to different people. In a moment of changing Corona requirements for social distancing, mask wearing and engaging in social outings, determine what feels 'safe' for you, and give yourself permission to follow guidelines and ask for what you need. Some of these decisions are intensely personal, and following your own guidelines and systems on rescue and while out with others creates a sense of safety and routine.

CALM

Be active
Plan for an activity, at least once a day, that helps your body relax. This might be a shower, going outside your apartment, calling a friend, watching a funny show, walking in nature. Consider a goal of getting out of your house every day, even if it's snowing, even if it's just a walk around the block. Look for evidence of life while you're out there. Make it a scavenger hunt. Look for the green bud or early crocus coming up. You don't usually need to be in contact with others to go out of your doors.

Exercise
Yep. Even if it's not your thing. We lean hard on the evidence that tells us that exercise decreases arousal and lowers our cortisol secretion – that means it's great for our immune systems. It also helps us to secrete calming chemicals that help keep our levels of arousal lower. You don't have to run a marathon. Just walk.

Sleep
It might seem like you don't need sleep if you're not leaving your home or attending to work or school life.

Not true! Sleep is restorative, boosts our immune system and we process much of our stress while we sleep. Sleep helps to support production of the neurotransmitters that keep your brain healthy. Give extra points for winding down slowly with a book and avoiding media in the hour before bed. More bonus points for an 8-hour sleep opportunity.

Breathe
Yep. Again, you might think, don't I already do that? You do, and you have since you were born, but now, let's do it with intention. Set your timer. Plan at time to look out the window and pay attention to your breathing, even for 2 minutes, twice a day. When you exhale long, slow breathes, you actually tell your brain to send out the chemicals that calm your body down (parasympathetic nervous system.

Turn off the ping
If the constant tempo of electronic communication, personified by alert pings and vibrations on your devices, is getting to you, shut them off. Scheduled checks for messages can move you from constant reaction to proactive control.

Efficacy
Efficacy is empowerment, engagement, and a way to tell your brain you're not helpless. You practice efficacy by putting a plan together. Start close to home. It's what you can do. If you have enough efficacy to share, let's call this service, this tells your brain that not only can you get yourself out of this, but you have enough for the people around you. This is a powerful and not-so-subtle message to yourself, your family and your community that you've got this moment. It is the antidote for the feeling of scarcity and fear.

The possibilities are endless. Making a plan for a meaningful project you can do at home. Check in with an elderly neighbor to see if you might shop for them or run an errand. Make menus for the next two weeks. Make a donation to a local group that is serving the homeless or hardest hit by this situation in your community. Make a plan to reach out and connect or send a letter to someone you know is sick or in quarantine. Play a game or give your full attention to a family member who needs distraction.

Get lost in a project- OR don't. Organize your closet. Go through that pile of papers. Make a menu based on the food you have in the house right now; you might be surprised what you find at the back of a pantry. Many find that their friends and neighbors feel productive and are rattling off new projects while they can barely brush their teeth. This is ok, too. Many will find that when the energy it takes to adjust and really feel what's happening starts to pass, new creativity and energy gets freed up. Efficacy for now may just be rocking the self care and getting good sleep.

CONNECTION

Yep, this again. This is reflected across all the literature in times of crisis. Normally doing times of crisis, we huddle together and help each other. We bring meals, we show up. Quarantine and social distancing create new barriers for connection, so we have to build connection into our plan. We need each other. We are wired to lean on each other for support, calm and even give and receive hope from strangers. We'll have to do this – create connection - with intention. Get creative and plan for connection on a daily basis.

Schedule connections
If you working from home, consider scheduling meetings with your team to check in on each other. If you are missing church, consider attending online or creating a text group with a few people you most enjoy seeing.

Plan to get old school
A letter in the mail, or art from a kid, to someone who you are thinking about or worried about, is good for both the giver and the receiver. These analogue connections really matter. It may mean a drive by birthday party, distance porch sit or walk, or driving to drop off plants and wave. It all matters. There's something about good ole connection that can't be replaced virtually.

Plan check-in's
Create a small team of folks that care about you. Ask for them to check in on you every day, or make a calendar to check in once a week with a different person. Send an e-mail to your classmates, school mates, or friends or family far away to connect.

Buddy system
If you are separated from the folks you love or normally work with, forge a new connection with folks who truly understands your situation. Lean on each other, plan a daily check in, even by text. Plan to reconnect with someone you have been meaning to reach out to. This can be especially important for aunts and uncles and folks in the community you are thinking or worrying about.

HOPE

How do you plan for hope? In times of uncertainty, it can start to feel like there's no moment but this one. Planning for the future can be an act of defiance when everyone around you is *panicked. Planning for the future and finding your creativity, and offering hope to others also tells your brain there is life after this moment. Even creating structure and planning is a way to create hope.*

Plant for the future
Plant a few seeds in a garden or out front of your house. Summer is coming. Those seeds will sprout. Have children write in journals to gather and write about their experience in a pandemic and put this in a time capsule for their children.

Share inspiration
Share encouraging stories with each other- stories of hope, things you hear that neighbors are doing for neighbors, the stories that inspire you to rise up to this moment and do what you can.

Make a list of the movies and books that remind you of what others have already overcome.

Deliver art projects to neighbors and leave them on their doorsteps. Do yardwork for someone who can't get outside.

Plan a gratitude practice
This might be a journal, chalk board, slips of paper or a practice before meals or bed. Practicing gratitude changes the wiring in our brain to focus on and look for the things that are working are good in this moment. It moves rescuers, in particular, who are wired to look for the ways things could go wrong, to start noticing all the things that are actually still going well. This is called a practice because it takes time to develop the pathways in our brains, the same way rigging takes effort at first, then comes naturally.

This is psychological first aid for an unusual moment- simple, tangible, powerful things you can do to support the mental health of yourself and others in these challenging times. This moment calls for a new set of rules and routines, and for some, a new mission. Take the building blocks, get creative and share with someone else on your team.

You've got this.

Hobfoll, W. P. (2007). Five essential elements of immediate and midterm mass trauma intervention: empirical evidence., Winter;70(4):283-315.

Further Resources:

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30460-8/fulltext

https://responderalliance.com/covid-19-specific-resources/

https://amga.com/stress-resilience-coronavirus/

See **WILDERNESS SAR** issue 8 for more from Laura and the Mountain Rescue Association (USA)

Holmatro launches a new series of high-tech cordless rescue tools, designed to outperform all other tools on the market, regardless of whether these are battery-powered or connected to an external pump by means of a hose.

UNPARALLELED SPEED
The Pentheon Series offers a much higher speed than other rescue equipment. This is thanks to a new and patented mechatronic system inside these tools. This system continuously optimizes the motor and pump settings to deliver a maximized oil flow over the full pressure range. Where all other rescue tools show a significant decrease in speed when switching to another stage to deal with higher loads, Holmatro Pentheon tools stick to the ideal stepless speed curve.

ULTIMATE CONTROL
Being much faster than previous generations of rescue tools Pentheon tools are equipped with a two-mode control handle for ultimate speed control. This enables rescuers, at any time during the rescue operation, to choose between the tools' high-speed and low-speed modes. Within these modes, the speed is still proportional to how far you turn the control handle to its left or right.

BATTERY MANAGEMENT MADE EASY
With Holmatro Pentheon tools battery management is as easy as just plugging it in. Thanks to On-Tool Charging you can charge the battery while it remains on the tool. This means you don't need to swap batteries all the time. Simply connect the tool to the charger and the whole charging process will regulate itself. The battery on the tool always has priority over the one on the charger, which will resume charging when the battery on the tool is 100% full. Three chargers can be connected in series to be powered from a single outlet. This allows you to charge a total of 6 batteries without any management, whether placed on a charger or on a tool connected to it.

AVAILABLE PENTHEON TOOL MODELS
The Pentheon Series consists of the following rescue tool models: Inclined Cutter PCU50, Spreader PSP40, Telescopic Ram PTR50 and Combi Tool PCT50.

NEW EXTREME GRIP SPREADER TIPS
The tips on the spreader have pointed teeth on both sides that bite into the material. The middle row of teeth is taller and offers instant grip. The teeth on the outside alternately point in the opposite direction, which allows for a superior grip over the full spreading range. Finally, an interlocking profile results in reduced insertion dimensions.

SMART RAM EXTENSION
Another user-friendly feature of the Pentheon Series is the Smart Extension of the telescopic ram. As soon as you connect the optional extension pipe, the ram will automatically adapt its force to the new maximum length of 1804 mm / 71 inches that can be achieved. Thanks to this solution Holmatro can offer you one compact ram for all applications, including cross ramming over a large distance.

MORE BENEFITS
There are many more unique features & benefits of Pentheon rescue tools, such as temperature management technology (which allows you to keep working in extremely hot conditions) and underwater use.

www.holmatro.com/pentheon

CUT-RESISTANT GLOVES

HexArmor Gloves are based in Michigan, USA. Building the perfect safety glove for the toughest first responders takes a lot of work, so HexArmor asked their rescue customers for their input. It's a good thing they did; it helped them create a line of products - the HexArmor® EXT Rescue® Series, suitable for any rescue application.The following four types all have SuperFabric® brand material palm provides industry leading cut resistance (interior layer)

EXT Rescue 4011

- Full impact Exoskeleton™ with high-performance IR-X® impact guards
- Full TP-X® palm with reinforced stitching
- Neoprene cuff with pull tab and Velcro® closure
- Available in sizes 7/S through to 11/XXL

EXT Rescue 4012

- Back-of-hand impact guards
- Durable TP-X® palm with reinforced stitching
- Elastic cuff with pull tab and Velcro® closure
- Available in sizes 6/XS through to 11/XXL

EXT Rescue 4013

- Durable TP-X® palm with reinforced stitching
- Enhanced palm construction for increased durability between fingers
- Back-of-hand impact guards
- SlipFit® and anti-debris cuff
- Available in sizes 7/S through to 11/XXL

EXT Rescue 4014 Barrier

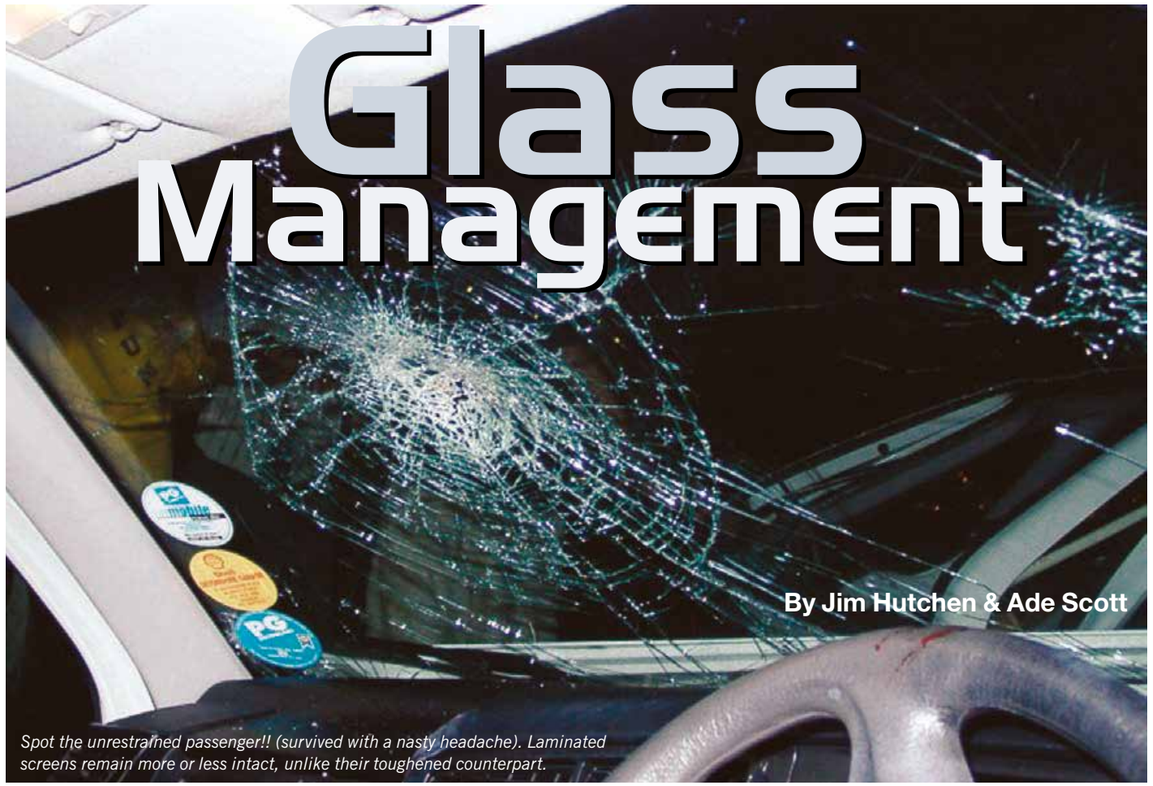
- **Waterproof H2X® barrier** meets ASTM F1670/F1671 for bloodborne pathogen resistance and fluid-borne viral resistance (interior liner)
- Back-of-hand impact guards
- Durable TP-X® palm with reinforced stitching
- Neoprene cuff with pull tab and Velcro® closure
- Available in sizes 7/S through to 12/XXXL

www.hexarmor.com **www.rescuetools.co.uk**

FROM THE ARCHIVES

This article is from TECHNICAL RESCUE issue 46 in 2006 and it's interesting for those involved in vehicle rescue to see how our thoughts from 13 years ago differ from now. Glass itself hasn't progressed far from various types of laminates with embedded sensors and electronics for things like head-up displays. With laminated glass now in all windows, not just the front and rear screens, you'll be hard pressed to find any toughened glass outside of classic cars but they do still exist and you still need to check!

Glass Management



By Jim Hutchen & Ade Scott

Spot the unrestrained passenger!! (survived with a nasty headache). Laminated screens remain more or less intact, unlike their toughened counterpart.

The term *Glass Management* is normally applied to this particular stage of extrication. It is important to recognise the type of glass you're dealing with, the characteristics of that particular type; where you might encounter it, the time frame you are working to and the risk it presents and to whom. Then come up with a generic solution or task-specific one. If your policy is to smash and cut every piece of glass out of the car then I suggest you call this stage *Glass Removal* and move on to another article! Here we are concerned with careful 'removal' with the least degree of hazard to the casualty and rescuer. We seem to have gone full circle since Ade Scott and Andy Clark discussed dealing with the windscreen in the first issues of Technical Rescue over a decade ago! We still have the same discussions about airborne glass particles but we do have a few more toys with which to deal with the problem!

Toughened Glass

Glass is actually a viscous silicate (made from sand) that is almost a solid but not quite because it has a degree of flex in it. However, in vehicles the glass has usually been toughened by heating and cooling rapidly which then gives it a shape, usually a bend or a curve, this glass is called **Tempered, Toughened** or **Hardened** glass. This technology is employed to give added aesthetics to cars and increased aerodynamic performance. There are many older cars on the road still fitted with flat Toughened glass windows all round the vehicle including the front windscreen, however they are less common. Many cars have Toughened glass as side windows, rear windows and sunroofs, as it is cheap, replaceable and conforms to safety regulations. Chevrolet, Smart car, Peugeot, BMW, Mercedes, Mini and Toyota all have cars in their range that employ Toughened glass as part of the roof structure of their cars which look great but represent a tangible hazard, as we will see.

When broken, *Toughened glass* fractualises into many thousands of pieces, (usually no bigger than one's thumb nail) plus a significant amount of dust. When the surface tension of glass is initially released there is a slight but significant explosive release of energy. The glass pieces can travel many feet and are very sharp and capable of causing facial injuries, sadly cutting short many a rescuers modeling career. It can get into clothing, down boots, in helmets and always seems to end up in trauma packs and over oxygen equipment. It represents a sharps hazard to rescuers, some of whom might only be wearing latex gloves and it can even 'contaminate' the patient's injuries, which can cause all sorts of complications later in hospital. Glass fragments also present a slip hazard on tarmac/concrete. The dust however, is far less predictable and rescuers can inhale a sharp, inert and non degradable contaminant into their lungs. In a strange quirk the casualty will suffer least as they will hopefully have a oxygen mask on by now It would also be best practice to put the casualty and medic or attendant under some kind of protective lightweight sheeting to further protect them from the ingress of glass and swarf resulting from the actions of the rescuers. How much glass dust has been created and inhaled in the name of training and the long term effect of this on the health of rescuers is still unknown but it is certain that dust masks are a wise precaution to protect rescuers and their employers from future legal action!!

Older *Toughened Glass* can be *Bonded* to the vehicle by weather strips which attach to both the glass on one side and vehicle on the other providing a wind and waterproof fix that can be replaced and removed by cutting the exposed seal away with a knife or dedicated Bonded Windscreen cutter and pushed from the inside out, bringing the whole unit out in one, in the UK these increasingly rare animals are usually marked with a Safety Kite mark in the corner. More often than not, modern vehicles have the added complication of having heavy glue adhere it to the frame; this will be hidden from view as it is quite unsightly so it is usually cleverly hidden by a blackened outer fringe of the glass, which is then graduated out by a dot matrix to the clear colourless or tinted glass we are used to looking through.

The problem being that the broken glass will remain in the glue and that most unenlightened rescuers will remove the glass with their gloves and not a tool such as a screw driver or pry bar, not only does this shred your gloves but it leaves a lot of nasty sharp hazards in your gloves. This could result in injuring/contaminating a casualty or yourself at a later date.

Imagine wiping your sore dripping cold nose a night after your last extrication drill only to find your gloves have several hundred glass needles embedded.

Due to toughened glass residing mainly in side windows, the first Glass Management action should be to wind the window down into its door cavity if possible, this has been a mantra of many rescue agencies for many years but countless times it has been overlooked by personnel due to over - enthusiasm or stress. At this point we diverge into two schools of thought: do you

1) apply the same actions to every incident or
2) allow a certain degree of autonomy to the glass managers.

OPTIONS FOR MANAGING TOUGHENED GLASS

A) Even when you wind the window into its cavity there is usually a section of glass that sits proud of the door. This can be broken in place with a centre-punch and with either a tarp or job-specific sheet covering it to prevent the glass flying around the inner cordon (2 metre zone in and around the car/cars involved hi the incident) or place a length of duck/gaffer tape along this glass to hold all the shards together when breaking it.

B) Cover the toughened/tempered window with Fablon or similar transparent adhesive sheet. These are the type usually used to cover maps for waterproofing. Once covered, an action that should take seconds, either use the centre-punch to break the glass or leave the glass intact. If you're sticky-backed plastic application is neat enough you may even be able to wind the window down. Either way, the sheet will be tough enough to capture and retain as a whole the entire window should it break.

C) Wind the *Toughened/tempered* side window into the door cavity , cover it with a tarp of chimney sheet and leave it at that.

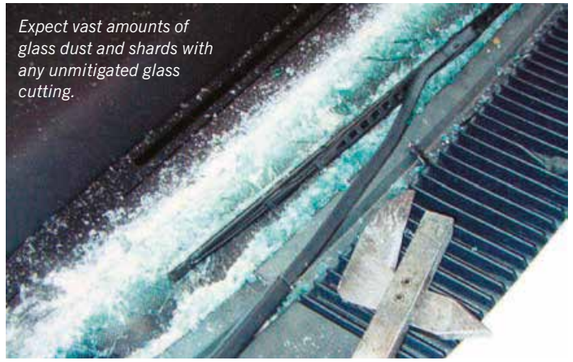
D) Leave the window glass up, open the door and break it into a receptacle. In the picture below a collapsible canvas pouch/bucket made by Ruth Lee Ltd in the UK conforms to whatever shape it is next to and is a neat way of collecting glass in a controlled manner.

But the key point is that any option that calls for the glass to be broken creates glass debris and dust hazards, perhaps needlessly. Obviously if the door is going to be removed by hydraulics the controlled release of glass is preferable to a surprise part-way through the extrication. In Option B) the application of Fablon is a tricky business, most mortals with gloves on will struggle with getting a length of Duck/Gaffer tape off the roll, let alone a sheet of 2ft x3ft in a breeze. Perhaps with some pre-planning you can come up with some pre-cut sheets (not straight off the roll) for the commonest window sizes?

As we eat into the vital golden hour we should also consider other methods.

Option C) gives us an identified hazard and in the best practices of Integrated Risk Management we have put in a control measure (that doesn't create another hazard) in an instant, which is not manpower or tool intensive. This is most relevant when considering using reciprocating saws, with a higher frequency vibration and negligible tension release, unlike hydraulic tools which can cause that explosive release of force. This simple expedient is also applicable to rear doors, or those that will be unaffected by the method of release being used. It should, in any case, be the back-up plan for all other options because nobody likes egg on their face or even glass should you not be ready when an immediate release is called for. Keep that sheet handy!

Where *Toughened* glass being used as a roofing material this will obviously require managing with some resourcefulness and ingenuity, canvass equipment bags, sheeting and Fablon have all been employed to deal with troublesome location of glass, mainly due to it being over the casualty and space to work highly limited.



Expect vast amounts of glass dust and shards with any unmitigated glass cutting.

Sun roofs, although in a similar location can usually be wound into the roof housing, unscrewed and removed intact or in the case of the now more common electrical sunroof, captured with its own integral, sliding sun visor and/or small sheet. If you are not lucky enough to have flash, job-specific equipment that tired old canvas sheet will work just fine!

Laminated Bonded Glass

Laminated glass is the norm for most modern car windscreens. There will always be exceptions but laminates are also becoming the norm for rear screens. Because they are incorporated into the structure of the car as an inherent strengthening feature their presence is made obvious by the black bonding strip or in the UK there may be a kite mark and details of the glass in the screen corner. . Laminated glass consists of 2 layers of glass sandwiching a layer of tough plastic sheet, with the whole assembly glued securely to the frame of the car. When cut, Laminated glass produces the worst amount of glass dust by far regardless of the type of saw you use. Whether it be the old-fashioned shears and Keetch tool (giant 'tin-opener' see pic above) or modern reciprocating saw or specialist glass cutter there is a problem with dust and shards that has to be dealt with. Hopefully there are less instances of axes being used to scare the entire glass screen to bits but they are still often required to get a starting hole. A number of dust suppressant options have been tried and debated from the fine water spray of a hose reel jet to gaffer tape, engine oil, shaving foam and spray-on insulation foam (too sticky for the tools!). At the end of the day this author is inclined to agree with previous Technical Rescue articles and opt to leave the screen intact, put in a control measure and work around it. But the point is that your standard reaction to a roof removal need not entail an immediate rush to cut the windscreen, there are options open to you that circumvent

the problem and may be worth experimenting with eg: roof flap forward or backward from the top of the A-pillars. But if you still want to cut the glass makes sure your casualty and personnel inside the vehicle are properly protected from invisible airborne dust particles. Also, in this modern age we can thank technology for a few attempts to answer the dust problem when cutting the screen: Holmatro have a manual glass cutter that requires an entry hole

Electric reciprocating saws have become the norm for many services . A starter hole is made and the saw simply runs around the circumference of the screen. You can see a green tarp on the internal dash to capture the debris and the casualty (you can't see) has an oxygen mask on so his airway is protected but make sure your personnel also have adequate ventilatory protection. Wear a dust mask!

but once it has this it surrounds the cut top and bottom with a set of brushes and collects much of the debris as it crunches across the screen. In Australia a design awarded kit for the CFA uses an electric diamond blade cutter with an on-board water supply.

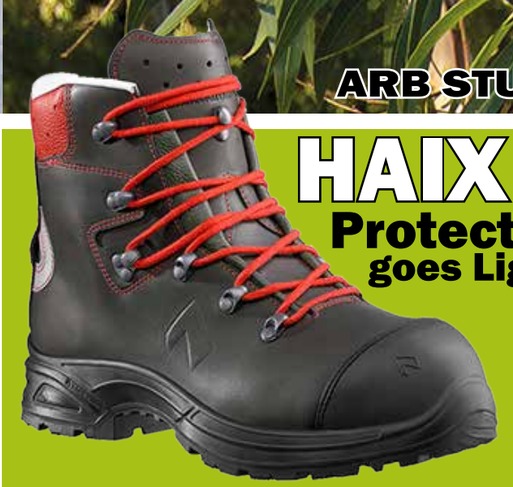
Laminated Non-Bonded Glass

In the manufacturers quest to increase safety and satisfy car security problems door window glass was identified as a major weak spot. In response to this, *Laminated Non Bonded glass* was developed. It's all in the name really, the *laminated glass* is not fixed within a door-frame because most consumers found it beneficial to have door windows that wound up and down to order at the drive through. So in effect we have mini windscreens that are not fixed, the result being that thieves can no longer smash and grab your bags, phones and CD players from the car. You'll still be landed with a bill for the broken glass but it won't be all over the interior with a gaping hole to the world. It forms an effective barrier... to thieves and us rescuers! This technology has only become to cars made after early 2002, in the UK you can look for the kite mark and labeling and treat accordingly. A control measure should be put in place and if it is suspected as being Laminated Non Bonded, it can be tested with a window punch and if it crazes (zig zags radiating from point of impact) then it is perfectly acceptable to leave the control measure in place and move on as if part of the car structure. It would be a fruitless exercise to try and battle on to remove this glass; you could still be there whilst the recovery crew are loading up.

Double & Triple Glazed Glass

Usually found in cars of Scandinavian and German origin that routinely deal with cold temperatures as they have found double or triple glaze especially with a bonded layer of plastic and a heating matrix of wires running through the layers works well in sub-zero temps. Saab and Volvo are leading this technology and will become more widespread in the windscreen and rear window especially.. The implication to rescuers is that there may be more glass to cut producing a comparable amount of extra dust and shards and that screens will become even tougher.

In conclusion there are many types of glass out there and more to come! Your chosen strategies for dealing glass need to be flexible enough to cope with new developments - don't simply plough on with old techniques because your service has invested money in one particular option - if it doesn't work it doesn't matter how much it cost!! There are many products out on the market that now cater for glass and sharps protection, but if they are beyond your budget then make sure you've got tarps and dust masks - these simple measures work and may pre-empt possible litigation!! Time is critical and the glass hazards that should be well known to the extrication team with attendant Personal Protective Equipment may not be so familiar to attending medical crews or the casualty!! Provide adequate protection for ***EVERYONE*** working or being treated within the inner cordon of the incident. TR



HAIX Protector goes Light

Continuing the evolution of its industry-leading range of protective forestry footwear, HAIX announces the launch of the Protector Light 2.0 forestry boot – optimised for warmer weather while retaining high levels of protection and comfort.

The Protector Light 2.0 is an example of the HAIX commitment to balancing safety and protection with wearer comfort. Constructed from high-quality materials including oiled nubuk leather, the boot is certified to the S3 standard (EN ISO 20345:2011), ensuring a high degree of water-resistance, toe protection, antistatic properties and enhanced midsole-penetration resistance. The Protector Light 2.0 is further certified with Class 1 Cut protection, giving added protection to outdoor and forestry workers.

Working outdoors provides wearers with seasonal challenges including warmer weather in the spring and summer. The Protector Light 2.0 works to maintain an optimum foot temperature, with the HAIX Climate System using the pumping movement of every step to circulate cool air into the boot via vent holes in the top. The anatomically formed footbed absorbs moisture and dries quickly, keeping feet dry and fresh throughout a long day's wear.

While optimised for warmer weather, a stringent series of wear-tests conducted by the Board of Trustees for Forestry and Forest Technology has certified that the Protector Light 2.0 achieves the KWF-Level Standard, guaranteeing the boots support and protect forestry and outdoor workers year-round.

"The new sole unit on the Protector Light 2.0 provides improved slip resistance and durability, alongside the tried and tested safety features of the original Protector Light, while decreasing overall boot weight," says Simon Ash, HAIX UK sales manager. "We're dedicated to helping forestry and outdoor workers make light work of seasonal tasks like felling and clearance by ensuring their footwear offers high levels of protection, reliability and comfort."

www.haix.com

CMC CLUTCH update

The Latest Evolution in Rescue and Rope Access Hardware

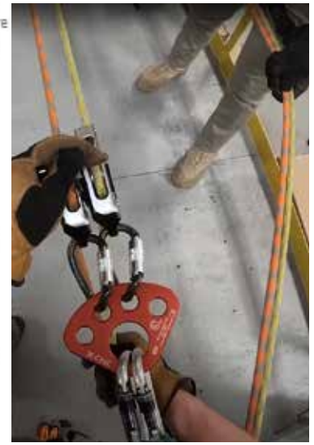
USA MADE | NFPA 1983 GENERAL USE DESCENT CONTROL, BELAY, & PULLEY | ANSI/ASSE Z359.4; EN 12841: 2006/C; EN 341: 2011/2A; EN 15151-1: 2012/8 | PATENT PENDING

The highly versatile CLUTCH allows technical rope professionals to do more with less. This wearable, multi-purpose tool is designed for intuitive and efficient operation, ease of use, and optimal control. It is well suited to a multitude of rigging operations, including:

- Efficient Hauling
- Controlled Lowering
- Smooth Personal Descent
- Easy Ascending
- Belaying
- Twin Tension Rope Systems

CMC CLUTCH Features

- A stainless steel ratcheting and rotating sheave provide efficient and audible progress capture.
- Rope loading and unloading is secured with a double-latched side plate that operates independently of the device's attachment point.
- Anti-panic brake and force limiting features ensure operational safety and overload protection.
- The machined aluminum chassis clad with stainless steel wear guards ensures light weight and durability.
- An integrated becket allows for the direct connection of mechanical advantage systems.
- Allows main and belay lines to be mirrored, twin-tensioned, or nested in Double CLUTCH technique (handles controlled by single operator).
- Replaces 8 pieces of traditional equipment: pulley, rescue rack, anchor plate, load release strap, prusik cord, and 3 carabiners.
- The CLUTCH is the only 10.5-11 mm rope diameter compatible device certified to NFPA 1983 General Use, ANSI Z359.4 and EN 12841/C, 341/2A, and 15151/8.
- The CLUTCH and CMC's new G11 Lifeline (see page 60-61) can be used together to build NFPA G rated systems using 11 mm rope, saving space and reducing weight.



RIGHT: ***CMC uses Kong's DNA carabiner to enable the Clutch to orientate well for their Twin Tension Rope System***

1/2" / 13mm version

COMING SOON

Item #	Rope Size	Color	Dimensions	Max Load	3 Sigma MBS	Weight
335011	10.5 – 11 mm (7/16 in)	Graphite	208 x 112 x 47 mm (8.2 x 4.4 x 1.9 in)	272 kg (600 lb)	Pulley: 40 kN (8,992 lbf) Becket: 22 kN (4486 lbf)	836 g (1.84 lb)

TWIN TENSION ROPE SYSTEM KIT

New! Built around the all-new CMC CLUTCH™ by Harken Industrial™, the Double CLUTCH Twin Tension Rope System (TTRS) Kit delivers best practice twin tension hauling/lowering for any rescue or training operation. This kit comes with two color-coded RigTech Packs™ that each carry independent hauling/lowering systems designed to work together in mirrored or nested configurations. Rescuers can use these components to build mechanical advantage systems on both 200ft 11mm CMC G11™ Lifelines simultaneously including a 3:1, 3:1 with change of direction, or complex 5:1. These ready-to-go systems minimize gear sorting and allocation. Rescue teams can shoulder their RigTech Packs knowing they have everything they need to quickly and efficiently deploy a best practice TTRS.

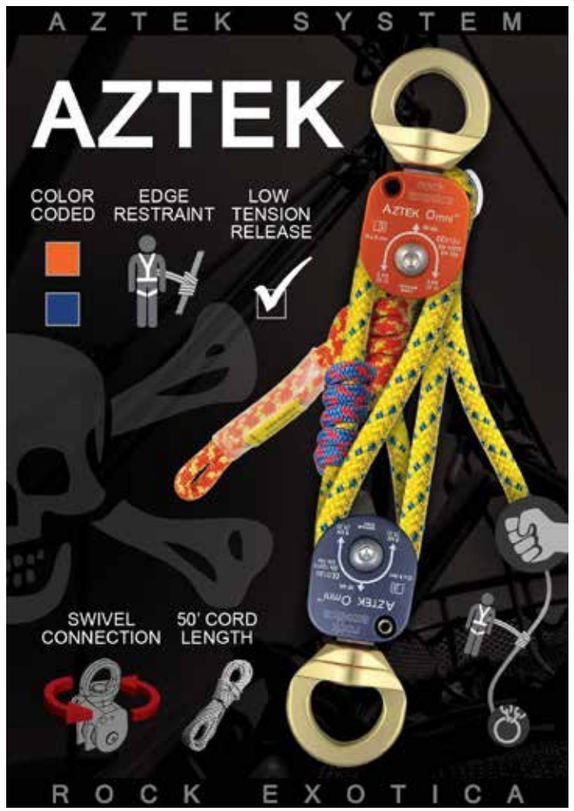
The smooth, efficient action of the CLUTCH allows rescuers to haul more easily and lower with more control. Additional built-in features of the CLUTCH make it ideal for this kit including the ratcheting rotating sheave, Anti-Panic brake, force limiting protection, and integrated becket. When two CLUTCH devices are brought together in the Double CLUTCH Technique (aka "Double CLUTCH-ing"), rescuers can maintain nearly equal tension on both lines so that the load, often involving a rescuer, litter and a victim, is shared across two

rope systems, reducing the risk of a single line failure. If a catastrophic event such as single line failure does occur, the Double CLUTCH Technique is preferable to a traditional slack belay because it prevents 100% load transfer on the slack belay line and thereby limits shock and extension in the system.

The Double CLUTCH TTRS Kit includes CMC DNA ANSI Carabiners to align two CLUTCH devices on an anchor plate. This setup allows a single operator to manage both CLUTCH handles at the same time for simultaneous twin tension control. While the Double CLUTCH TTRS Kit can be deployed in a variety of ways, rescuers who combine kit components in the Double CLUTCH Technique will run a hauling/lowering system that meets current best practices, minimizes failure risk, and offers the potential to reduce personnel requirements.

KEY FEATURES

- Two self-contained, ready-to-go hauling/lowering systems with MA of 3:1 and 5:1
- Color-coded components including RigTech Packs, CMC G11 Lifeline, and webbing
- Compatible kit components for deploying a variety of twin tension rope systems
- CLUTCH ratcheting, rotating sheave increases hauling efficiency and lowering control
- CLUTCH Anti-Panic brake and force limiting features increase rope system safety
- Kit is designed for combining two CLUTCH devices in Double CLUTCH Technique
- Includes CMC DNA ANSI Carabiners for CLUTCH alignment on a single anchor plate
- Double CLUTCH Technique meets best practices while reducing personnel and risk
- NFPA G Rated CLUTCH and NFPA G Rated CMC G11 Lifeline 11mm (7/16in) = strength with less weight and volume
- COST - kit as shown left= $3,966 **www.cmcpro.com**



Search & Rescue during COVID'19

by **Roland Curll**
NSW Police Rescue

COVID'19, a specific, new form of Coronavirus has, at the time of writing, no vaccine and is unlikely to do so in mass quantities until 2021. This is very tough on frontline medical personnel and care workers but is also a serious concern for rescuers in the field.

Right now, lockdowns are beginning to be lifted but local, regional or even national spikes will cause it to return. People will again be advised to stay at home except for essential personnel, such as doctors, nurses, and first responders. This includes Search and Rescue Teams.

Although it has been used before including in the film Contagion from several years ago, 'Social-Distancing' is the watch-word for 2020. This is being interpreted as staying at home as much as possible and maintain a certain distance from other people so that this virus cannot be passed from person to person.

To maintain isolation, people should be avoiding places that will involve large numbers of people and if that's not possible to wear a face-mask to reduce the chances of getting it but more particularly to stop you spreading it if you are asymptomatic and don't even realise you have it. Transmission in such circumstances is very low but you can still cough or sneeze due to hay-fever, dust, inhaled biscuit crumbs or any number of reasons not associated with colds, flu or Covid'19. That's how it will continue to spread in the absence of social distancing and the use of masks even in the summer. As a reaction to weeks of lockdown many are heading out to the beach and to wilderness areas. On one hand, wilderness makes sense if you want to avoid people – it's not called 'wilderness' for nothing - but when everyone has the same idea, that aim of maintaining isolation has failed. Many National Parks and recreation areas opened up only to be swamped and closed down again. Coastal parks and beaches had the same problem. During lockdown, rescues were few and far between but with increasing numbers comes increasing likelihood of callout except this time around

we have to assume that <u>everyone</u>
we come across has Covid'19

.....including team mates unless they have been tested very recently and isolated in the interim. This is something that many teams and services aren't able to mitigate so well except to wear a mask ALL the time so for many, just like rescue itself, there is a degree of acceptable risk tolerated in order to perform the rescue as best as possible.

Around the world, some teams are have been and in some cases, still are, unavailable due to infection within their own ranks and the associated 2 week isolation for team members that have been in contact but it is VERY UNLIKELY that members of the public will understand the increased risk involved in going outdoors when a rescue team is unavailable or short-handed. Southern Hemisphere ski resorts have been closed for instance, and these are often the places that provide rescue for skiers and snowmobilers.

A vast majority of Search and Rescue Teams around the world are made up of volunteers and a great many of these are Doctors, Nurses, Paramedics, or other First Responders already fully committed to the Covid '19 effort and despite the welcome slowdown are already overworked and overstressed . These are often key members of the team that may currently be unavailable further diminishing the team structure and perhaps its ability to respond to a callout. Further (wo)manpower problems can arise because a volunteer can't attend a rescue callout without the fear of losing their job if they are expected to maintain social distancing during home-working or even furlough. This is tricky indeed for volunteers who, by their very nature have a strong sense of civic duty or community spirit which is why they signed on in the first place and why they answer the call at any hour.

Answering any call now means that additional precautions need to be taken. Team leaders are already taking important steps to ensure the safety of their personnel. Members of the team should be be up to date with the latest information about COVID'19 but so much of it is contradictory, especially in federal systems where state or regional law may take precedence over national guidance. Make sure you're all on the same page because this is definitely a work health and safety issue.

Because teams are stretched thin already, there may well be a delay in how long it takes to perform the rescue compared to how long it usually takes. This means additional equipment may be needed to maintain the team and the patient in the field for an extended amount of time. More food, more water, more fuel, warmer equipment, and more batteries. If we get a resurgence of Covid'19 that begins to overwhelm hospitals and transport options, you may be required to remain with the patient in the field a lot longer than usual.

Additional personal protective equipment (PPE) is already being used by so many people right now, and due to 'panic buying' and the sheer scale of international requirements, some of these items are in short supply making it difficult for teams to remain properly equipped. Nitrile gloves are standard for all teams and supplies should be adequate but face masks not so much. Some face masks are designed for single use only, but what is the definition that these manufacturers are using to describe single use? Obviously, it means you can only use it once, but is there a time limit for that one use? An Ambulance responding to a medical case in town may only need to wear the mask for about twenty or thirty minutes and then they are back in a 'safe zone'. A Search and Rescue volunteer could be involved in a rescue for eight hours and may need to keep this mask on the whole time. If the mask is not designed to last that long because it is a disposable one, procedures will need to be followed regarding changing masks, and proper disposal of the old one whilst still in the field. Sticks, leaves and other debris in the field can also cause problems by brushing against or damaging the mask and render it ineffective, requiring it to be replaced.

An ambulance is big enough to carry a large amount of PPE to help take preventative measures during this pandemic, but for search and rescue teams this equipment needs to be carried into the back country. The degree of physical exertion required for some rescues also makes the constant wearing of face masks difficult and downright irritating. Once the team has located the patient, predetermined protocols need to be followed to treat the patient under Covid'19 conditions. Such precautions will need to be taken by base personnel as well as those in the field. After the rescue and the PPE has been used it needs to be cleaned or disposed of correctly. Decontamination and removal of masks, coveralls, visors, gloves etc. are all steps not usually taken outside of an urban-industrial HazChem incident and cause extra time and work.

Drones may be particularly helpful during this time. A drone can be used to locate and communicate with the patient reducing the time-on-scene required of a rescuer as well as speeding up the initial search and reducing time in the field. Speakers can be retrospectively attached to drones if not already a feature. WSAR issue 6 included a paper on simple expedient of attaching a cell-phone for listening or even two-way comms on a drone. Should a patient be lost and not injured, a drone may be able to complete the whole process of location and talking-them-down with a 'follow me' hailing over a speaker without ever needing to commit a team. There need be no fear of being completely usurped by a drone as a field injury could easily occur during the talk-down and that drone is not going to be self-loading and transporting any time soon.

Education and requests to the public to stay away from these areas can help reduce the need for Search and Rescue Teams during this pandemic.

Personnel can can use any remaining or future lock-down time wisely: There are many novel ways to maintain health and fitness in the confines of your own home and garden if you have one. Use this time to also: update your SAR knowledge by reading; reconfigure all your kit for the Covid'19 risks - gloves, masks, visors etc.; go through your personal equipment;empty out SAR and Go-packs and check all the equipment; replace batteries and out of date PPE/equipment; make sure everything is clean; re-treat or re-waterproof all the contents that need it; go through each piece of equipment and make sure your skills are up to date; refresh GPS skills; practice using a map and compass; practice tying knots; practice rigging skills even if it means laying out systems on your floor. Most of these things will be undertaken regularly anyway but increased down-time means there is no excuse! Another suggestion if to re-read the protocols of the team. Team leaders can use this time to update their documentation and procedures for Covid'19. A list can be put together of what needs to be done for search and rescue once this pandemic is finally over and close contact is safe again. The idea is to use this time wisely and maintain focus in a positive direction.

This is an unusual time for the whole world. When a search and rescue call comes the enforced preparation time can ensure that things run smoothly and additional safety measures are adhered to. Overall, the work of the search and rescue volunteer needs to be commended that even during these scary times they are still taking pride in what they do and still willing to unselfishly help those in need.

Could Sea Foam be Complicit in Mass Surfer Deaths?

Pic by EPA

[ED: In high risk work like rescue and arborism and in adrenaline sports we expect occasional fatalities like the recent tragic death of a Glenville-Cashiers Rescue Squad veteran during a rescue in North Carolina. But a mass-death like this involving experienced surfers NOT novices or trainees is very unusual. Again we might not be surprised to have multiple rescuers taken out in one go if it was something like an avalanche, a helo crash or a water craft sinking, but five or more separate surfers/kite-surfers, in the same area, in the Netherlands (not known for Hawaiian-style surf) is an unexpected tragedy for the surf and lifesaving community. Foam would be an unusual cause of death but I guess it provides no buoyancy so if you're in the water and come up under a thick enough layer made up of very fine bubbles/particulates, it could compromise breathing. These reports are from the UK's Guardian newspaper and Dutch News:]

Pic by Eddie Lansink

At least five experienced surfers have drowned after going out in stormy weather off the coast of The Hague, Dutch authorities have said. The group of men, aged between 22 and 38, were among 10 surfers and swimmers who took to the water in Scheveningen on Monday evening in heavy weather that generated a thick layer of sea foam and hampered rescue efforts. Three of the bodies were not found until Tuesday morning and police remain unclear if more would be discovered, after the coast guard picked up more surfboards than victims. The fifth body was spotted but had not been recovered by Tuesday afternoon.

Rescuers could be seen searching through the foam, which was waist deep on On Tuesday evening, people gathered at the nearby surf school to lay tributes to the dead, who reportedly included surf school instructors and lifeguards. “This is beyond comprehension. They are boys who know what they are doing,” one visitor told De Telegraaf.

The Holland Surfing Association thanked rescue workers for their efforts and said the shock went throughout the country’s surf community. “We are deeply mourning this loss,” it said.

A spokesman for the lifeguard service KNRM said in a statement: “The strong wind from a northern direction and strong sea current due to the spring tide made the joint search actions a tricky job.”

In Belgium, flags at surf clubs were flown at half mast.

Scheveningen is a popular North Sea surfing spot that relies on storms near the coast to generate rideable waves.

The Hague’s night mayor, Pat Smith, said he knew two of the victims very well, and told a local radio station: “Like me, they were internationally trained lifeguards. They have worked in Australia and received heavy training from an international water sports association. Yesterday they were training on the water. They got lost in the foam.”

Three of the victims were from the Hague – aged 24, 30, and 38 – and two were from Delft, aged 22 and 23.One other man, aged 40, was treated in hospital on Monday and later released.

- ***The Guardian***

Dutch sea research institute NIOZ is investigating the possible role of a thick layer of sea foam in the death of five surfers off the coast of Scheveningen on Monday evening. Several experts have suggested the surfers may have become disorientated in the foam, which according to some eyewitnesses was over two metres high as it approached the harbour wall. Sea foam is formed when sea water has a high concentration of dissolved organic matter from algal blooms and is whipped up by the wind.‘There was a lot of foam and this may be due to the large quantity of algae,’ researcher Katja Philippart told broadcaster NOS. ‘This might be due to the good weather of recent days, combined with the strong winds.’However, Philippart told NOS she is not aware of any cases in which people have been suffocated by sea foam. One body has not yet been recovered and the search resumed on Wednesday morning. Two other bodies were found earlier on Tuesday morning and two others died after being pulled from the sea on Monday evening. Three of the men who died came from The Hague, the other two from Delft. The Hague mayor Johan Remkes told reporters at a press conference that a thorough investigation into what happened would now take place. ‘How can it be that people with so much experience and who knew this place so well came to die,’ Remkes said. In total, 10 people are thought to have been in the water at the time, a group of six, a group of three and one single surfer.

- dutchnews.nl

Pic by Robin Utrecht/REX

WAR ZONES to SEARCH AREAS

[ED: Most of the drones or UAV's we feature for rescue are of the smaller, multi-rotor type but this one is a long-range, military grade UAV aimed more at the military and larger rescue agencies than SAR teams unless yours is a very, very rich SAR team? Already in use or trialling with Australian, Belgian, Canadian, Spanish, Korean, Norwegian and UAE naval or army forces amongst many others, this is a battle hardened option that has been around for many years. It may be a significant investment but is still considerably less than a full size helicopter when it comes to search-only operations. It's not going to replace primary rescue aircraft tasked with rescue and recovery though that day will come but it's certainly well able to increase search areas and decrease search times. This report is by Eryl Crump for the Daily Post in North Wales....]

The UK's first trial of a new search and rescue drone is taking place in North Wales. Bristow Search and Rescue, the provider of the HM Coastguard search and rescue helicopter service, is working with Schiebel Group to test unmanned aerial vehicles (UAVs) for life-saving operations in maritime and land environments at Caernarfon Airport. They say the airport in Gwynedd offers a "dynamic operational area" for testing of the Schiebel Camcopter S-100 system, as it's near mountainous and maritime environments and is close to RAF Valley , which offers a complex airspace environment.
Capable of travelling 200 kilometres from its home base, the S-100 is flown by a pilot in a remote location using digital control and imaging technology to allow them to see through the eyes of its on-board cameras.

The Camcopter S-100 is already used extensively around the world in land and maritime environments, by international agencies such as the European Maritime Safety Agency.

The trial is complementary to the work by the Maritime and Coastguard Agency to develop regulations under which UAVs can operate in a range of scenarios where the pilot cannot see the aircraft and where other aircraft are operating.

Alan Corbett, chief executive of Bristow Helicopters Ltd, said: "This trial allows us to carry out demanding evaluation of the aircraft, the broader system capability and future suitability as an evolutionary step beyond the current helicopter-focused approach to search and rescue missions.
Schiebel's technology has already been operationally proven globally. Integrating unmanned aircraft with our current capability is the logical next stage in the development of search in support of rescue activities. Our teams have undertaken significant training and testing of these aircraft in less active environments.
"The opportunity to evaluate the platform, safely integrating with different types of air traffic found at and around Caernarfon , while accessing mountain and maritime operating environments, allows us to prove their potential for operational public service."

Neil Hunter, business development director at Schiebel Group, said: "In total, we have collected more than 82,000 flight hours so far and we're looking forward to demonstrating the full range of our capabilities to Bristow in the UK."

Roy Steptoe, managing director at Caernarfon Airport , said: "Without doubt, unmanned aircraft are the way of the future. I am pleased to assist Bristow in these trials, which will allow them to look at the potential to integrate the technology safely into operations in and around a busy airport where private and commercial air traffic is present."

Bristow took over the search and rescue role from the RAF in 2015 and have two Sikorsky S-92 helicopters at Caernarfon airport. Their purpose-built hangar is alongside that of the Wales Air Ambulance , and they have carried out hundreds of rescue missions at sea and in the mountains of Snowdonia.

Schiebel S100 CamCopter	
Origin:	**Austria**
Top speed:	**222 km/h**
Weight:	**110 kg**
Range:	**180 km**
Wingspan:	**3.4 m**
Cruise speed:	**185 km/h**
Engine type:	**Wankel engine**
COST:	**If you have to ask, you can't afford it**
WEB:	**www.schiebel.net**

emergency services during pandemic

Estonian Air Navigation Services, (EANS) has enlisted the support of unmanned aerial systems (UAS) manufacturer, Thredo Systems and safety-critical technology provider, Frequentis, to support Estonian blue-light forces with a series of essential drone operations during the COVID-19 lockdown. The operations are supporting Estonian emergency services with medical transport and information gathering.
Thredo Systems, an innovative Estonian UAS manufacturer, was approached by Estonian public health organisations and the Police and Border Guard Board. Frequentis, a renowned air traffic management (ATM) and unmanned traffic management (UTM) systems provider, who worked with EANS on its SESAR Gulf of Finland (GOF) unmanned airspace (U-space) trial in 2018 and 2019, was contacted to again provide its flight information management system (FIMS) which provides the Common Information Services (CIS) function to the operation.
In several regions of the country, the Police, together with the Estonian Academy of Security Sciences, have used drones to inform the public of the lockdown rules and to monitor activity. Local authorities also require support with transporting medical supplies to remote or island locations.

"Severe movement restrictions were implemented for Hiiumaa with the mainland of Estonia, among other islands, during the lockdown to stop any virus spread.", explained Mikk Murumäe, Co-Founder and Lead Software Engineer at Thredo Systems. "Thredo Systems set out to support local authorities with medical and other urgent transport to the mainland, including forwarding COVID-19 test samples. This served as a very successful proof of concept to provide an alternative and relief to manned emergency air lifting services, which are urgently required elsewhere during these types of situation."

ONE AIRSPACE FOR ALL USERS

EANS continues to safely and reliably operate Estonian airspace, providing services to manned flights and international manned COVID-19 relief flights, but the need to safely integrate drones for this special mission meant reactivating the Frequentis FIMS from the previous drone trials. The FIMS provides real-time situational awareness to air traffic controllers, enabling both manned flights and Thredo drones to safely share the same airspace, providing controllers with the complete air situation picture.
"We gained extremely positive experience from all parties during the SESAR GOF U-space trials during 2018 and 2019 and therefore feel very well-prepared to appropriately respond to the challenges during COVID-19 times," noted Maria Tamm, GOF Project Manager for EANS and now UTM development lead in Estonia. "In order to enable the safe and secure integration of unmanned and manned aviation, all parties who use the airspace, must be aware of each other."

EANS is currently developing the concept of operations for accelerating the roll-out of Estonian U-space. These drone operations supporting public safety during lockdown were another step closer outline the roadmap for enabling safe and secure integration of unmanned and manned aviation into Estonian airspace. www.frequentis.com

FROM THE ARCHIVES

This article from ARBCLIMBER issue 4 in 2013 had a full page image on the left of the titles (pic right). Mechanical prusiks or hybrids are unique to the arb industry but others will be interested in the concept and execution. This article pre-dates the arb terminology revision for SRT/ DRT = SRS, DdRT = MRS. Not that this has been universally adopted since it only applied to the tree industry and increased cross-pollination with other rope disciplines means that SRT will never really disappear as a term.

SRT

Mechanical Prusiks

By Kev Bingham

The friction hitch has been a part of climbing for a long time. The taut line hitch is an ancient knot used at sea and likely in the building of the pyramids. Most likely discovered soon after the invention of rope itself. Nothing can beat a rope as far as its versatility and its strength to weight. A friction hitch is basically a cheap ascender, or rope grab. A friction hitch is exactly what the name implies, it utilizes friction to hitch something or someone to a rope.

The options are limitless and the amount of different hitches with their own names is staggering. Multiply that by the different types of ropes and cordage available and the combinations are infinite. They are like snowflakes and fingerprints each identifying their creator.

The friction hitch need not be restricted to rope as a material in our experimenting. With the advancement of manufacturing and our understanding of metals and alloys, mechanical friction hitches are becoming more and more common.

The world of ascenders and descenders is vast. Visiting the archive of the Vertical Devices website by Gary Storrik is a must for any fledgling gear head. www.storrick.cnc.net

Thousands of devices from the simple figure eight to the most intricate and complicated designs document the history of rope tool innovations. Most of these devices allow the climber to go up a rope or down a rope. Few allow for both. The additions to the history of rope tools just keeps on expanding. Yet, through all of this innovation, the friction hitch has stayed with us a valuable tool.

In the arborist community, the friction hitch has reigned supreme much more than in other rope access disciplines. Because an arborist is constantly changing from up to down and works horizontal as well, the friction hitch is well suited for the task. Used in a doubled rope dynamic system the friction hitch easily allows a climber to ascend and descend without building up slack throughout the canopy. Cavers, rock climbers, and rope access climbers have for the most part abandoned the hitch in favor of tools that work very well in ascent or very well for descent. These tools are light and simple and can be easily taken on and off of the line. Climbers in these disciplines are usually headed in one direction at a time, up or down.

In theory, one of the benefits of mechanical devices over friction hitches is that mechanicals take some of the individual skill and competence out of the equation. Hitch tying requires learning and understanding the nuances of infinite combinations of different cordage and hitches while a mechanical device is theoretically consistent and measurable, all the climber needs to do is install the device and operate it. This is very appealing to regulators and owners of large businesses as it is more easily codified. In practice, most mechanicals require more skill to operate and use correctly than using a traditional friction hitch.

In the world of rope access, the use of poly-bollard descenders is quite common and include devices like the Petzl GriGri, the Petzl RIG, and the Petzl I'D . These tools allow for limited ascent because once the climber weights the line below the descender, it cannot be moved up the line. Out of all these poly-bollard devices, the RIG is the most popular amongst arborists. The climber will often use efficient, smaller ascenders for the initial ascent and then change over to the RIG for working the tree. For smaller ascents within the tree a RADS system can be used. To advance the RIG, the tail below the device cannot be weighted and it must be pulled upward. For this reason, the RIG is impractical for longer ascents. The RIG is mainly used as a single line device and rarely used in a doubled dynamic situation.

In 2002, ART really began a new direction with the Lockjack (see main picture opposite) . This was the first marketed device that really sought to replace the humble friction hitch in tree climbing. Climbers who have made the financial sacrifice to acquire an ART mechanical device have rarely complained. The big advantage to a Lock Jack is that there is little to no friction during ascent and the climber can control the friction easily during descent. This is referred to as self-tending. ART also offers the spiderjack which trades the convenience of being midline attachable for a less cumbersome and more responsive action. The ART devices are designed for DdRT only. They can be used as rope grab devices while ascending a single line but they respond much like hitches and seize up if one tries to descend on a single line.

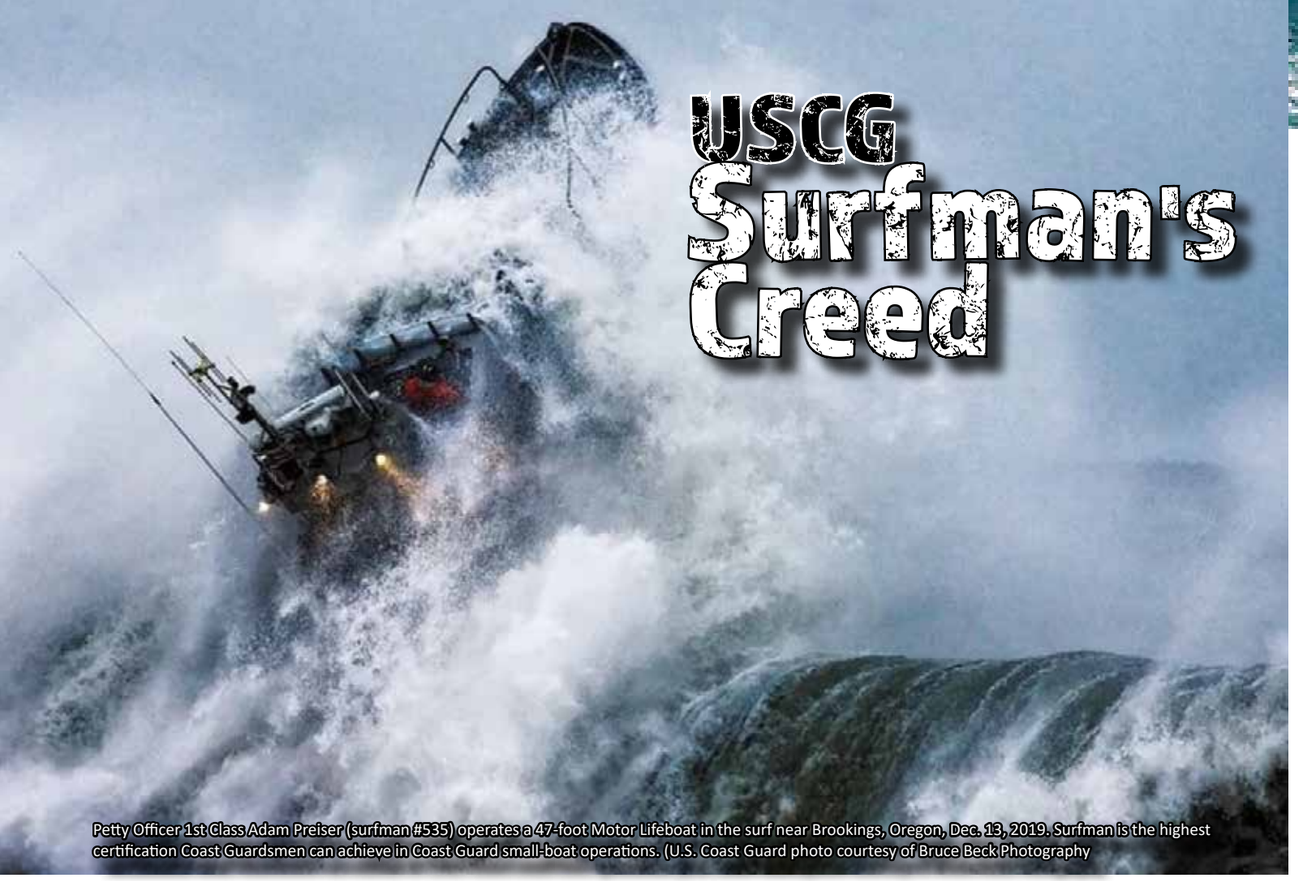
All of the ART mechanical friction hitches have aluminum clutches that need to be replaced as they wear out with usage. As the clutch wears out, the climber will begin to slowly slide down the rope. The inability of the ART products to be used in a single static line configuration limits the user to the constraints of a doubled line.

Not so long after the arrival of the ART mechanical friction hitches the Unicender appeared on the scene. The Unicender was designed by Morgan Thompson and is now made by Rock Exotica. The Unicender is very midline attachable. It is threaded on to the rope through alternating plates. Morgan found that he could incorporate a built in friction bollard into the device that would provide additional friction and allow the climber to descend on a single static line. Many report that the Unicender is marginal as a DdRT climbing tool but excels as a light weight and versatile tool for ascending and descending on a single static line. The Unicender is aluminum and wears over time and must be rebuilt depending on how aggressive a climber climbs among other factors. The climber will begin to slide as the aluminum wears out. This tool has withstood the test of time and gained an avid and growing fan base worldwide amongst arborists. For the most part, few climbers use it in the doubled rope configuration mainly because of the lack of a tending pulley underneath the device. To further aid SRT enthusiasts the Unicender now has a barrel attachment [ED:see this issue's Product News] which improves friction control, makes, changeovers smoother and increases durability of the plates.

Assuming it is successfully relaunched after its recent recall the Petzl Zig Zag appears inspired by the Unicender but is more targeted to steal away ART Spiderjack climbers. Like the Spiderjack, It is not recommended for use on a single line without applying additional friction. It is also not mid line attachable. The Zig Zag replicates the intuitive action of the friction hitch more than the Spiderjack, but it does not achieve the high level of self-tending. It is very new on the market and has excited many while others worry about premature wear of the device and its effect on ropes. Nobody expected an early recall resulting from failure of an eye so the true verdict has yet to be reached on this tool. The ability to effectively pair the Zig Zag with other devices to make it work fluidly on a single static line will be the long-term test.

Recently I began designing the ultimate mechanical climbing device. To design this tool I approached it as if I were employing a friction hitch. The difference is that I use aluminum instead of rope. The result is the *SINGING TREE* Rope Runner. It is a midline attachable device that ascends and descends on a single line. There is little friction during ascent, the rope self-tends though the device. Because it utilizes pulley sheaves, damage to the rope is minimal. The descent is controlled and a one-handed-swinging-descent is quite natural. The Rope Runner works by employing three points of friction against the rope in separate ways. The first point of friction is the "Bird", see if you can spot it in the picture right! The "Bird" works in the same way that a Singing Tree Rope Wrench functions. It is pressed into the rope by two separate torsion springs. The Bird will engage every time the Rope Runner is weighted. There is a quadruple acting lock pin to secure the Bird in place. When the Bird engages, it pulls up on a lever arm clamping the rope between the pulley sheave and the body of the Rope Runner. This acts as the second point of friction. The third point of friction comes when the tending pulley is pulled into the body by the 45 degree carabiner attachment point. The combination of these three friction points secures a load of up to 700 pounds depending on the size of rope used. To descend, the climber uses the "beak" of the "Bird" to capsize the rope wrench, this releases the friction on all of the friction points in a controlled fashion. The Rope Runner is also unique amongst the mechanical devices in that it can descend on a weighted line. This means that it can be used as a rope zip-line device. To use the Rope Runner on a zip-line, the zip-liner just disengages the bird, when the climber wishes to stop, the bird is released, this engages all points of friction and the zip-liner comes to a comfortable stop

As we humans do, we tend never to be satisfied with a good thing and are always working to improve. The exploration of mechanical hitches is bound to continue. These devices can glide up the rope in a way that a friction hitch never can. This can save a lot of physical exertion in the long run. The downside will always be cost, wear, and weight. A friction hitch has the unusual Triple Crown distinction of being cheap, strong, and light. No matter what the future of mechanical devices is, the age old reliable friction hitch is not going anywhere.



USCG Surfman's Creed

Petty Officer 1st Class Adam Preiser (surfman #535) operates a 47-foot Motor Lifeboat in the surf near Brookings, Oregon, Dec. 13, 2019. Surfman is the highest certification Coast Guardsmen can achieve in Coast Guard small-boat operations. (U.S. Coast Guard photo courtesy of Bruce Beck Photography

Years ago a visitor from Central Oregon stood on the Depoe Bay Bridge, which runs along the Pacific Coast Highway, otherwise known as State Highway 101. She looked out to see a silver boat zipping around in the ocean, and thought to herself 'that looks fun and I want to drive that boat.'

"I had no prior knowledge of the Coast Guard, but at that time in my life I was looking for a purpose," said Petty Officer 2nd Class Kelsi Dozier, (surfman #561) from Coast Guard Station Yaquina Bay in Newport, Oregon. "After that family vacation to Depoe Bay and a little video research on YouTube, I reached out to a Coast Guard recruiter."

The Coast Guard has certified 10 surfmen during the past 8 months. In order to earn the surfman qualification a Coast Guard coxswain requires a lot of hours at the helm while operating in the surf. These weather and sea conditions are most often found between the months of October and April.

"It requires a lot of extra time outside of normal duty hours," said Petty Officer 1st Class Adam Preiser (surfman # 535), Coast Guard Station Chetco River in Brookings, Oregon. "I had to break-in at two different units and came in on baby leave to scout conditions and push for training opportunities. Surfman training conditions hold a very tight window and you have to get out there when the window is open."

Preiser's baby leave wasn't any normal baby leave either, because his newborn needed to get life-saving heart surgery. Station Chetco River is a 7-hour drive from where the heart surgery was taking place at Oregon Health and Science University in Portland, Oregon. While visiting with his wife and newborn, he saw a weather system forming and knew it would bring the surf needed to train, and so he raced home.

Resiliency is a key factor for both member, family member, and mentor. Coast Guard service members need spouses and support systems to be strong and in place, so when they are on duty, their whole body and mind are on the job.

"Mentors put in a ton of hours to push you toward the qualification," said Petty Officer 2nd Class Enrique Lemos, (surfman #559), Coast Guard Station Umpqua River. "They put in the same time as me."

Surfman mentors consistently preach patience, determination, and humility, because earning the surfman qualification isn't an easy or quick process.

"The most important thing I learned from my mentor was to continue to learn and develop," said Petty Officer 2nd Class Aaron Hadden, (surfman #560), Station Umpqua River. "Making surfman is not the end result. I have to continue to act like I haven't made it yet."

Mentors share mistakes and successes. They offer learning experiences and offer a 360-degree perspective. There is an awful lot of tough love as coxswains work toward the surfman qualification, but that ends up creating a very close bond.

A member's resiliency is needed most when stick time is at a premium.

"It's really hard to share stick time," said Preiser. "It's like a double-edged sword. On one side it's healthy competition, and on the other, you want to be greedy because weather changes and boat casualties occur, and you don't want to miss out."

The healthy competition spoken of by Preiser was especially present while Hadden and Lemos were trying to qualify at the same time. They ended up earning the qualification on the same day and receiving their pin on the same day. Petty Officer 1st Class Raymond Aguilar (surfman # 557) and Dozier also had to share stick time at Station Yaquina Bay.

"You share a different bond with somebody who is operating at the same level as you are," said Aguilar.

"Time is divided up fairly in my opinion," said Hadden. "It's a friendly competition. You just have to be always there pursuing sign-offs and asking to go out."

This brotherhood turns into a community composed of past, current, and future surfman and they all live by a creed:

"Taking care of people and taking care of the crew are key factors in every successful mission," said Lemos. "You have to invest in that philosophy."

This is a once-in-a-lifetime process," said Aguilar. "I will pay it forward on the positive side and will avoid paying it forward with the bad experiences."

"I want to save people as well as their property," said Dozier. "I also look forward to being able to pass the knowledge that I've gained to the next watchstander, crewman, and coxswain. Part of my job is to teach others the energy and movement of the waves and how to look at the weather. A surfman has to look at everything and recognize how it will come together and affect the mission."

For Preiser, The 'surfman community' is strong and it goes outside of the Coast Guard. He has known a fellow surfman since he was 5 years old and another surfman was in his wedding.

"The brotherhood begins while training because regulations state we can't go out in the surf without another boat out there," said Preiser. "That boat and that crew is our lifeline if something goes wrong."

Regardless of the different backgrounds, these five surfmen have all come together to protect mariners in the Pacific Northwest.

I WILL, to the best of my ability, pursue each mission with the commitment, compassion,and courage inherent in the title of Surfman.
I WILL endeavor to reinforce the worldwide reputation of our forefathers in the Lifeboat Community.
I WILL maintain a guardian's eye on my crew at all times, and keep a cool, yet deliberate, hand on the throttle.
I WILL give of myself, and my knowledge as those who gave to me; so as the line of Coast Guard Surfman will live forever.
I WILL ensure that my supervisors rest easy with the knowledge that I am at the helm, no matter what the conditions.
I WILL never unnecessarily jeopardize myself, my boat, or my crew; But will do so freely to rescue those in peril.
I WILL strive with dedication and determination to bring credit upon Coast Guard Surfman, past and future.

Preiser hails from The Outer Banks of North Carolina, the birthplace of the original Coast Guard surfmen, the Midgett family. But he didn't realize or know the significance of his hometown before joining the Coast Guard.

Aguilar joined the Coast Guard out of Santa Clarita, California, and spent time at two different units, Coast Guard Cutter Boutwell and Station Seattle, before deciding to pursue the surfman qualification at Station Yaquina Bay.

"Research showed the challenge of becoming a master at boat driving skills," said Aguilar. "But the original draw to the Coast Guard was the humanitarian efforts as first responders."

Hadden began his military career in the Army, where he worked with explosives. He was deployed in Afghanistan for a year before joining the Coast Guard.

Lemos from central California, learned of the surfman career path at boot camp where his company commander, a surfman, told stories of his career at surf stations. His first unit was aboard the Coast Guard Cutter Pamlico, and then he attended Boatswain's Mate A-school before arriving at Station Umpqua River.

Dozier's journey began shortly after that trip to Depoe Bay.

Her first unit out of boot camp was Station Chetco River in Brookings, Oregon. This was also her first up-close experience with the 47-foot Motor Lifeboat, the silver boat that she saw during her trip to Depoe Bay. She started her career in the engineering department before going to Boatswain's Mate A-School. She then earned coxswain and heavy-weather coxswain qualification at Station Jonesport, Maine.

"As you begin to understand the surfman community, that is part of what keeps you in it," said Dozier. "Most public knowledge of what surfman are comes from imagery of boats crashing through waves, but a surfman's knowledge of history, areas of responsibility, ability to read the ocean, understanding the dynamics and know where the dangers come from, is what sets a turfman apart. It isn't all about boat driving, there's also the other side of it that is based around knowledge, experience, and understanding."

Most cases don't occur in the surf, but surfman and the crews of the motor lifeboats are the people who can get through any conditions to help the disabled mariners offshore, who would otherwise be drifting helplessly.

Last summer Dozier sat at the helm of a 47-foot MLB and watched the ocean swells approach the Depoe Bay entrance, known as the Hole in the Wall. As a now experienced boat operator, she intently watched the ocean to understand the dangers of entering this particular port. Although intently studying she remembers thinking, "This is pretty wild — a few years ago I was up on the bridge thinking they were nuts for trying to go in there. It looked too small and shallow."

Petty Officer 2nd Class Enrique Lemos (surfman #559) operates a 47-foot Motor Lifeboat near the entrance to the Umpqua River in Winchester Bay, Oregon. (U.S. Coast Guard photo courtesy of Petty Officer 2nd Class Enrique Lemos)

Dozier loves the history of the surfman and lifeboat community, which in turn heightens her appreciation toward the elite community she is now a member of.

"I enjoy hearing the history of the surfman that came before me like Master Chief McAdams," said Dozier. "History shows why we are here and why we do what we do. One thing I have learned about being a surfman is it's not one person or a number, it is a representation of the entire crew."

Dozier may just be a self-proclaimed country girl, but with her inherent amount of compassion and drive to help others, she carries on the legacy of the creed as one of the Coast Guard's newest surfman.

Understanding ATEX markings

[*ED: Always a fountain of useful info, here is Petzl's brief on what we used to call intrinsic safety for lighting which I'm told is not only an outdated term, it was never technically correct in the first place!*]

An ATEX certified headlamps allow you to work in environments with potentially explosive atmospheres, and can withstand the wear and tear related to risk areas or confined spaces. ATEX certification markings for headlamps often rival the most difficult brain teasers, yet understanding the information indicated is important in order to choose the right headlamp and stay safe in a high-risk work environment. An ATEX zone is in area that presents the potential risk for an explosion to occur. An explosion occurs when the following six conditions come together:

ATEX distinguishes the different types of zones based on two parameters:

- The type of combustibles encountered (dust or gas),
- The duration or frequency that an explosive atmosphere will likely form.

WHAT DEFINES AN ATEX ZONE?

While ATEX headlamp markings define the areas of use, it is important to understand ATEX markings beyond simply limiting a device's use to a specific zone.

Avoid only reasoning by type of zone!

You should avoid the following reasoning, "I need or I bought a headlamp for ZONE 1, which means that I can work in any zone 1/21." This would be a mistake: ATEX headlamp classification is more precise and defines for each zone the specific types of gases/dust from which the headlamp is protected.

Explosive atmosphere	Gas type combustible substance	Dust type combustible
Present permanently or for long periods (more than 1000 h per year)	ZONE 0	ZONE 20
Present occasionally (more than 10 h and less than 1000 h per year)	ZONE 1	ZONE 21
Present accidentally (less than 10 h per year)	ZONE 2	ZONE 22

UNDERSTANDING ATEX MARKINGS

The marking provides several pieces of information, and is divided into two parts:

- The first part applies to the type of industries and the zones for which the product is designed.
- The second part details the type of protection used, the type of substances (gas and/or dust) from which the product is protected, and the device's maximum surface temperature at which it can operate. Detailed examples below:

ATEX marking definition

Zone where the headlamp can be used

ATEX materials category	Use zone
IM1	-
IM2	-
II 1D	20
II 2D	21
II 3D	22
II 1G	0
II 2G	1
II 3G	2

Gas group	Gas representative
IIA	propane
IIB	ethylene
IIC	hydrogen
Dust group	
IIIA	
IIIB	
IIIC	

II 2G Ex de IIB T6

- II: Type of industry (I Mines, II Surface industries)
- 2G: Protection method
- T6: Temperature class

Temperature class	
T1	450° C
T2	300° C
T3	200° C
T4	135° C
T5	100° C
T6	85° C

A product can be both G and D, and be protected against both gas and dust for a given zone.

Each temperature classification should be used when the gases and/or dust present in the environment are not sorted into a class of gases and/or types of dust. The temperature classification defines the hottest surface temperature at which the device is allowed to operate. Make sure that you use a product with a temperature classification below the ignition temperature of the gases and/or dust types present.

It is important to consider all information a product's marking indicates to correlate the intended use with the type of zone, as well as to determine the level of protection provided for a given type of gas and dust.

	ZONE 0 gas ZONE 20 Dust	ZONE 1 Gas			ZONE 21 Dust			ZONE 2 Gas			ZONE 22 Dust		
		IIA	IIB	IIC	IIIA	IIIB	IIIC	IIA	IIB	IIC	IIIA	IIIB	IIIC
DUO Z1	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗
DUO Z2	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✓	✓	✗
PIXA Z1	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗
PIXA 3R / PIXA 1, 2, 3	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✓	✓	✓

www.petzl.com

EDITOR'S NOTE PRINTING SIT-REP

TECHNICAL RESCUE #77 and ARBCLIMBER#17 came out in digital (pdf) form near the start of the Covid'19 crisis but print was on hold as we were unable to mail in bulk or indeed access magazines in our mailing warehouse. Besides that, mailing to agencies, teams, stations and companies was very uncertain and, as we've found with the subscriber back issues we've been sending out via regular mail, a very protracted process. With little or no commercial activity, advertising was the first thing to fall by the wayside and it's hard to tell when that will recover. We are 'lucky' to have been streamlined by previous flooding and hacking and despite being the oldest international rescue magazine in the world we are probably the smallest outfit in the rescue and arborist publishing worlds so we can easily weather a protracted economic event like this. But we do need to see some ad recovery in order to be able to print and bulk-send mail which are disproportionately expensive outlays. As with all other publications we have seen a much higher take-up of digital subscriptions but we do consider printing to be the finest form of readership and would never want to be a digital-only publication. We aim to have the next Emag out in November but having gotten used to a less hectic pace of work life it's touch and go whether we get two or three editions out a year! We'll still pretend to get out 4 issues of each print mag a year but regulars will know that it's rarely been more than 3 in any given one year period! That's why you buy a 4 or 8 issue subscription and not an 'annual' or 'bi-annual' subscription.

As you read this we're entering the Northern Hemisphere Summer and infections are slowing radically in a**ll countries that are observing common-sense precautions. We plan to resume printing this month (June) and will first get the two stalled issues TR#77 and AC#17 printed and sent although bulk mailing doesn't return to work until July 1st. We will then begin printing the new magazines in July** assuming there are no radical changes to the Covid'19 situation and state of economic recovery. However, we do need to alter the order of these by bringing out TR#78 and AC#18 before WSAR#8 but we may be able to get at least WSAR#8's digital version out sooner:

JULY	TR#78
AUGUST	AC#18
SEPTEMBER	WSAR#8
OCTOBER	TR#79
NOVEMBER	AC#19
DECEMBER	WSAR#9
JANUARY	TR#80
FEBRUARY	AC#20
MARCH	WSAR#10

Until there is a broadly available vaccine we may see localised lockdowns implemented in the Autumn/Fall as regular colds and flu increase and assist in re-spreading Covid'19. However, everybody knows what to expect this time so we don't anticipate the same economic disruption except in places like Brazil where herd immunity AND no infection-spreading precautions whatsoever have been their leader's preferred option. Where's Darwinism when you need it?

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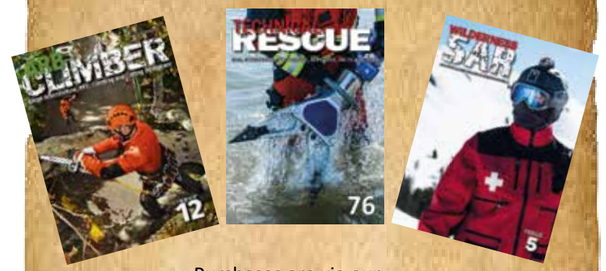
You can purchase our magazines in print or pdf/digital format. Print subscriptions can get the pdf version for free, previously that has been by request but we will now make it automatic unless you ask NOT to receive it.



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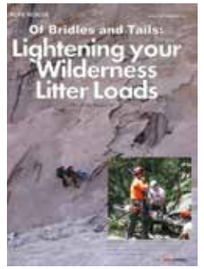
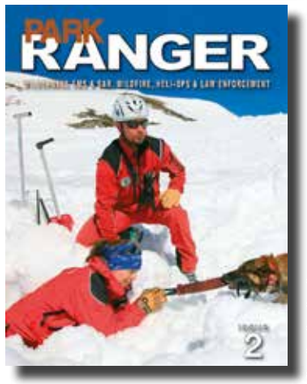
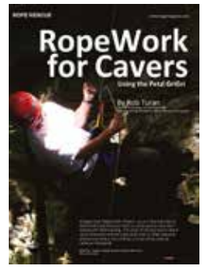
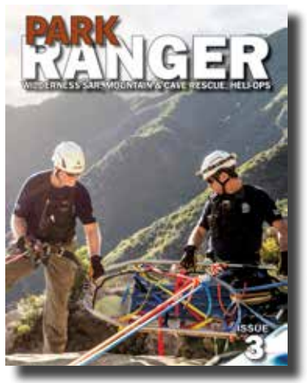


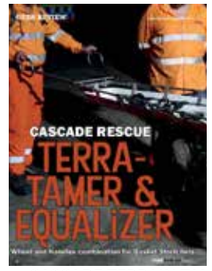
- (it's a)WOMAN'S WORLD-Salute to the Bag Lady
- SPECIAL - Speak Up! by Ken Phillips
- GEAR REVIEW- Princeton Tec Apex Headlamp
- ROPE RESCUE - Litter Bridles
- GEAR SPOTLIGHT - REACH Rescue System
- SAR HELOs - Things that go bump in the flight
- MARKET GUIDE - Rigging Plates
- SPECIAL - Unmanned Aircraft
- GEAR REVIEW- Wolverine ICS Boots
- SEARCH DOGS - Getting to know their capabilities

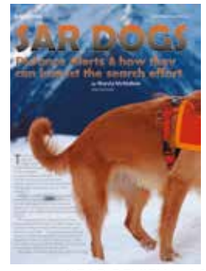




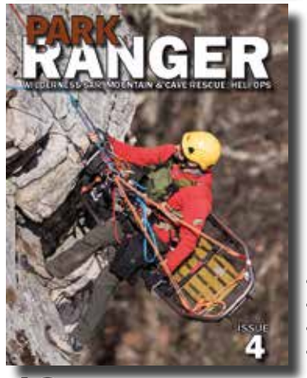
- GEAR SPOTLIGHT - Yamaha Rhino ATV
- (It's) WOMAN@S WORLD - The greatest Job
- GEAR REVIEW - Arcteryx Alpha SV Jacket
- ROPE RESCUE - Rope Work for Cavers
- WATER RESCUE - Pinned Rafts
- SAR HELOs - An Inconvenient Death
- INCIDENT: Grand Tetons 2010
- MARKET GUIDE: Low Stretch Ropes 10-10.9mm
- GEAR REVIEW - Savvy Female Body Armour
- SEARCH DOGS - K9 102 for Search Management

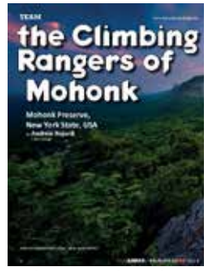






- CASCADE TERRAIN TAMER & EQUALIZER review
- TRADITIONAL SKILLS FOR TODAY'S RANGER
- WATER RESCUE - PWC Training course
- ANIMAL RESCUE - Improvised Rescue
- SAR DOGS - Distance Alerts
- GEAR REVIEW - Mammut El Cap Helmet
- MISSION REPORT - Meteor Crater, 2013
- MARKET GUIDE - <10mm CANYONING ROPES
  TRAIL NOTES -Who works for who?
- GEAR REVIEW - Peli Urban Elite iPad Backpack





- Montecito 2018 Debris Flow Incident Report
- Helicopter casualty strop/packaging options
- Climbing Rangers of Mohonk Preserve NY.
- Cave Rescuer Kit Profile
- GUIDE to 7/16" , 11-11.9mm Low Stretch Ropes
- GEAR REVIEW - Haix Nevada Pro Mid Boot
- GEAR REVIEW, Garmin Fenix 5X Plus GPS watch

Issue 7 is FREE in its digital/ version but is also available in print for that proper paper feel. Please note that we will be switching the print order of our magazines after Covid'19 so WSAR#8 will be delayed.

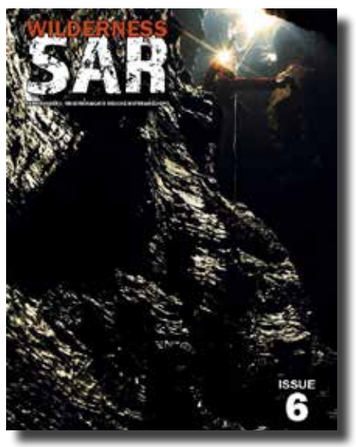
This issue's **cover** again featured ARS's MagnaPulleys - two single pulleys that sit flush together (via magnetism) to create a double sheave, double becket and other options. It's about the third time we've featured them because it's a great concept and as a small outfit we were keen to help it get wider recognition. Now available via some Arb outlets so it's catching on.

Also in this issue we have two **MARKET GUIDES**: One is the completion of our three-part series on HEADLAMPS with those packing less than 100 lumen - good for close-in work and confined spaces. The second is LIGHTWEIGHT DESCENDERS, most of which double as belay devices. For this we used the rather arbitrary weight limit of 300g/11oz to define 'lightweight' and rope diameters above 7mm to stay within descender/belay definition rather than simply escape devices.

Greg Toman begins a serialisation of his excellent Churchill Fellowship report on Safety issues within Search & Rescue beginning with pre-requisites (qualifications/ requirements) and clothing/PPE.

Andrea DeVries helps continue our drive to level the sexism playing fields across rescue and arb with a look at **water rescue gear** while our man **Roland** goes old-school with a review of the Silva Explorer compass and how best to use a map and compass.

Finally we have some interesting **rope test** procedures showing how Sterling came up with a compatible cord for the AZTEK pulley system.



WHAT'S in TECHNICAL RESCUE 76

TR76's **cover** features the Lukas eWXT series of waterproof electric tools, an excellent and obvious development of the future of hydraulic cutting, spreading, pushing and pulling tools. Also on extrication we look at the necessary steps *prior* to creating space for the removal of a trapped casualty.

Reed continues his technical unravelling of the pulley system universe with part 3 on the difference between Simple, Complex and Compound systems.

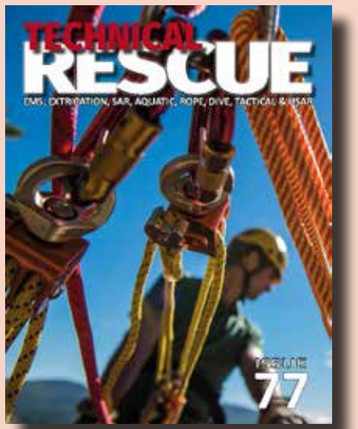
We had a centre-spread pullout for **Paul O'Sullivan**'s **water rescue** article on Weirs/Low Head Dams pretty much the same thing depending on your country. The centre 3 spreads could be removed to provide a risk assessment template for low head dams on your operational patch.

Our Market **Guide** is Escape/ Bail-out devices used mostly by fire rescue services but also by tactical teams and rope access workers. Some kits also make excellent ancillary rigging/edge-restraint systems easily carried by any rope rescuer.

Roland Curll looks at a whole heap of Petzl hardware and how the latest stuff differs from earlier models including the ID , Astro Bod and ASAP.

Brian Robinson revives the old BVM vs Auto Ventilators debate using his highly favoured MicroVent system to make the case for technology.

WHAT'S in TECHNICAL RESCUE 77



The Digital/pdf version of issue 77 is free to all because print has been held up by the Covid'19 lockdown.

The **cover** features the Sterling version of the Aztek pulley system and WSAR readers will recognise this as one of a series of excellent photos by Joe Klementovitch that we used in the rope test article in WSAR#7. While the Aztek system by itself is NOT a compound system this cover goes nicely with **Reed**'s next instalment on Pulleys looking at Compound systems which would require one Aztek connected to another Aztek!

Paul O'Sullivan has a rest and hands over **water rescue** duties to his R3 colleague Josh O'brien for the first of two articles on the handling of (primarily inflatable) paddle boats in water rescue and flood response in particular.

Also on water rescue, honorary Canadian Brit Gary Foo talks us through the evolution of an urban flood response from preparation to initial call to deployment.

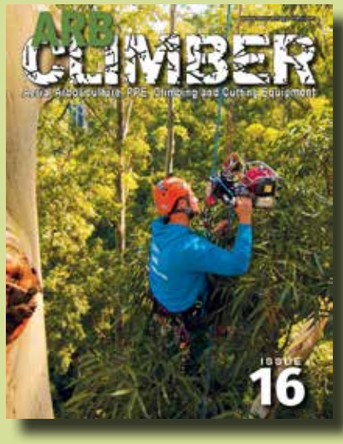
Our veteran **extrication** team Nick and Rich continue the Space Creation theme with a look at a modified dash-roll just to prove that some things never change, they just need tweaking.

In a departure from our string of rope-related **Guides** we start a quite large series on waterproof, heavy-duty cases beginning with wheeled cases because they are often the most useful type of case for rescuers able to be moved more easily from storage to vehicle to incident.

Our resident SAR specialist from Australian Police Rescue, **Roland Curll** looks at Tactical Bailout kits which goes nicely with our previous guide to Fire-Rescue escape devices.

Californian **Drone** specialist David Daly walks us through 5 of the best drones for general rescue surveillance as distinct from equipment delivery which is certainly where things are heading.

WHAT'S in ARBCLIMBER 16



ARB CLIMBER issue 16:

Our **Market Guide** in #16 is Powered Rope winches hence the front cover and a final opportunity to use one of Dak Wiles' great rain forest photos particularly since this is Actsafe's sole petrol/gas version rather than their predominantly battery versions which, as a genre of tools, continues to evolve and be adopted for more and more tasks. These particular winches are of course, designed to be powered ascenders but they do both jobs admirably.

Chris Girard runs us through a tricky job requiring dismantling of a fire-hollowed tree set on fire lightning.

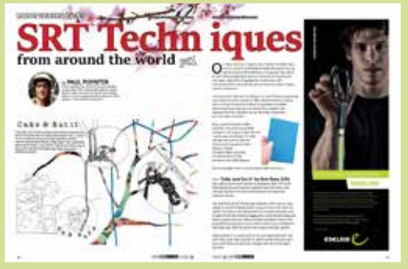
Honorary Japanese Brit **Paul Poynter** was kind enough to serialise his excellent World SRT techniques booklet with hand-drawn tips from the likes of Lawrence Schultz, Ben Rose, Sam Evan Turner and Valentin Dresely. Part 2 is in #17.

TC looks at large scale community tree care, usually a municipal contract but logistically a lot different to your average domestic job.

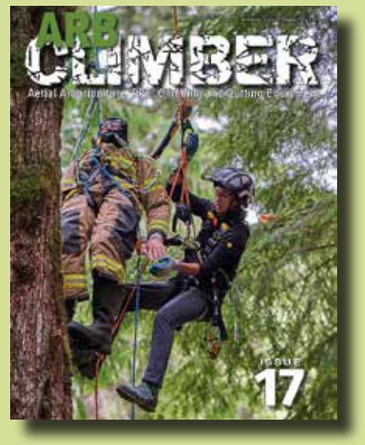
Our penultimate Petzl Gear Review for this year is the updated ZigZag with its Chicane adjunct, a manufactured and certified response to the many ad-hoc SRT/SRS conversion tools we mentioned in issue 15.

Also in issue 15 we touched on the Woman's Arb Camp event in Finland which went off well and is reported on here by Bo Hammarstrand one of the many key female climbers pushing through this otherwise largely male-dominated discipline to encourage more woman into the industry.

Finally, Thomas Schumacher reports on the NAOM competition and on how competition in general is a very positive thing for the industry, something we mentioned in our introduction to this Emag and will continue to report on.



WHAT'S in ARB CLIMBER 17



ARB CLIMBER issue 17:

Our cover shows a 'burly firefighter' being rescued by a female arborist during last year's inaugural Aerial Rescue Challenge competition in Washington state. **Thomas Schumacher** attended and tells us what he learned.

Our **Market Guide** moves away from winches and lowering and onto a more affordable piece of hardware, the handled ascender. We had foot ascenders in issue 13 and will have Rescuescender-style rope grabs in the next issue but these handled ascenders are the business end of ascending for most rope disciplines.

Top man, Chris Girard talks us through another tricky job, this time some leaners and hangers brought about by the infamous US Nor'easter.

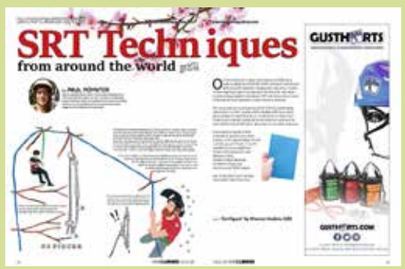
Our other top man TC gives a gentle introduction to the art of cabling a skill that helps preserve valuable amenity and ornamental trees.

Two ropes or not two ropes, that is the question.....that has annoyed arborists for decades. Up to now they have largely dodged the bullet but not necessarily for much longer. The UK's Arb Association has been on the case for a while, seeking arborist feedback on each step that may end up as legislation. Here, Simon Richmond lays it all out.

Paul Poynter concludes his two part work-of-art....literally, with another set of top tips from well known names: Kev Bingham, Marcus Undery, Taylor Hammel and Eric Whipple.

Our final outing this year for new gear reviews from Petzl (before the next set of new gear from Petzl) is the Sequoia SRT harness. Adam has this one on the go for so long it's almost up for renewal.

Issue 18 will be out later this Summer



Words of wisdom from STERLING ROPES courtesy of Tony Tresselt, NATS.

Rope Elongation

One of the most critical elements in the specification of any rope is its measure of elongation: how much the rope stretches under varying degrees of load. Elongation is not a bad thing. For example, one good way to reduce force in a rigging system is to use a rope with greater stretch. For climbers, in the event of a slip or fall, rope elongation helps absorb impact energy that would otherwise be transferred to the climber, which could potentially be a source of injury. However, it is important to point out that even our most elastic arbor climbing lines are still low stretch, by definition.

The often-missing number for an arborist in the field is the load. Without a load referenced, the elongation percentage is all but meaningless. There are two key metrics for evaluating rope elongation with a load:

- Percent elongation at 10% of MBS: Works well for evaluating
- elongation in rigging lines.
- Percent elongation at 300 lb load: Best for evaluating climbing lines.

Elongation Categories, as defined by the Cordage Institute:

LOW STRETCH: A rope whose elongation is greater than 6% and less than 10% at 10% of its minimum breaking strength (MBS).

STATIC: A rope whose max elongation is less than 6% at 10% of its minimum breaking strength.

PIC ABOVE: Sterling Rope's 16-strand **ELEMENT** offers a tried-and-true construction with the quality you've come to expect from Sterling. Available in two colors allowing you to easily identify which rope you've designated for climbing and which for rigging. The Element is abrasion-resistant and durable, offers exceptional handling and hitchability, has zero sheath slippage and is spliceable.

Diameter:	1/2"	12.8mm
ABS Rating:	7,190 lb	(32.0 kN)
MBS:	6,740 lb	(30 kN)
Sewn Eye MBS:	5,732 lb	(25.5 kN)
Weight	7.8 lb /100'	
Elongation@10%:	5.2%	
@540 lb	4.3%	
Impact Force	6.0 kN	
Sheath Slippage	0%	
Sheath Percentage	72%	

sterlingrope.com

Arb supply stores that stock **ARBCLIMBER** ALL have a wide range of rope-related equipment, including ropes, hardware, harnesses, helmets etc. as well as chainsaws, boots, clothing etc. Now that SRT/SRS is an accepted area of tree work, the rope-related equipment s often the same and even if it's not they can get it in for you. In the case of suppliers shown in red (opposite) that stock **TECHNICALRESCUE** and **WILDERNESS SAR** magazines as well as ARB CLIMBER, these are already rescue and access equipment suppliers of note so they can sort you out whether you're an arborist or a rescue agency.

For rope-related equipment in particular, you should check out your local ARB supplier or Rescue supplier, if you haven't already, and be amazed by the amount of kit you recognise.

If you would like to stock our magazines (and aren't located next door to our existing stockists), email us: **admin@rescuemagazines.com**

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and **PROTREE** in Hong Kong

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AUSTRALIA	RISE	Unit 7, 593 Withers Rd,	**Rouse Hill**	NSW 2155	risepacific.com
BELGIUM	K2 PROFSHOP	Cleydaellaan 10, Unit 8	**Aertselaar**	2630	k2profshop.be
BELGIUM	CONDOR SAFETY	Krommebeekstraat 44	**Menen**	B-8930	condorsafety.be
CANADA West -ALBERTA	ARBORIST SUPPLY CO	Bay 8, 141 Commercial Drive	**Calgary, AB**	T3Z 2A7	arboristsupplyco.ca
CANADA West -BC	UNIVERSAL FIELD SUPPLIES	605-1515 Broadway St	**Port Coquitlam, BC**	V3C 6M2	universalfieldsupplies.com
CANADA East -ONTARIO	UNIVERSAL FIELD SUPPLIES	1645 Bonhill Road #1 & 2	**Mississauga, ON**	L5T1R3	universalfieldsupplies.com
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DENMARK	VERMEER DANMARK	Agenavej 22	**Greve**	2670	arboristudstyr.dk
GERMANY West	BENK/CLIMBTOOLS	Lahnstr.30 A	**Mülheim an der Ruhr**	45478	climbtools.de
GERMANY South	FREEWORKER	St. Gilgen 15	**Gilching**	82205	freeworker.de
HONG KONG	PROTREE	Shop 2A, Transport Plaza, 2-6 Fung Cheung Road	**Yuen Long,**	**N.T.**	protreehk.com
JAPAN	ODSK	5513-2 Nishi-machi	**Nagano-Ken**	396-0026	works-odsk.jp
LATVIA	ABORIST SHOP Ltd	Dzelzceļnieku str. 6-1	**Liepāja**	LV-3401	arboristshop.lv
MACAU	MORIKAWA PRO Garden & Tree Supplies	Rua Dua Barca N87	**Macau**	999078	morikawapro.com
NEW ZEALAND	TREETOOLS	8a Kerwyn Ave East Tamaki	**Aukland**	2013	treetools.co.nz
UK South-Central	HONEY BROTHERS	New Pond Road, Peasmarsh	**Guildford**	GU3 1JR	honeybros.com
UK South Coast	TREE KIT	Unit 3, Building 446, Aviation Business Park	**Christchurch**	BH23 6NW	treekit.com
UK North Central	NORTHERN ARB SUPPLIES	Unit 12 Parkway Close, Darnall	**Sheffield**	S9 4WJ	northernarbsupplies.co.uk
UK North East	GUSTHARTS	Milkhope Centre, Blagdon Seaton Burn	**Newcastle upon Tyne**	NE13 6DA	gustharts.com
UK North West	SKYLAND EQPT	Unit 17 Wheathill Ind.Est. Holt Lane, Netherley	**Liverpool**	L27 0YA	skylandequipment.com
UK South West	SORBUS INTERNATIONAL	L1- L3, Commerce Park, Marshall Way,	**Frome**	BA11 2FB	sorbus-intl.co.uk
USA North-East	ARBORTECH SUPPLY	11494 James Madison St	**Remington**	**VA** 22734	arbortechonline.com
USA North-East	GAP ARBORIST SUPPLY	835 PA-41	**Gap**	PA 17527	gaparboristsupply.com
USA East	MOUNTAINTEK	1034 Maple St,	Hendersonville	NC 28792	mountaintek.com
USA North West	WESSPUR	2121 Iron Street	**Bellingham**	**WA** 98225	wesspur.com