

TECHNICAL

E-MAG 20

# RESCUE

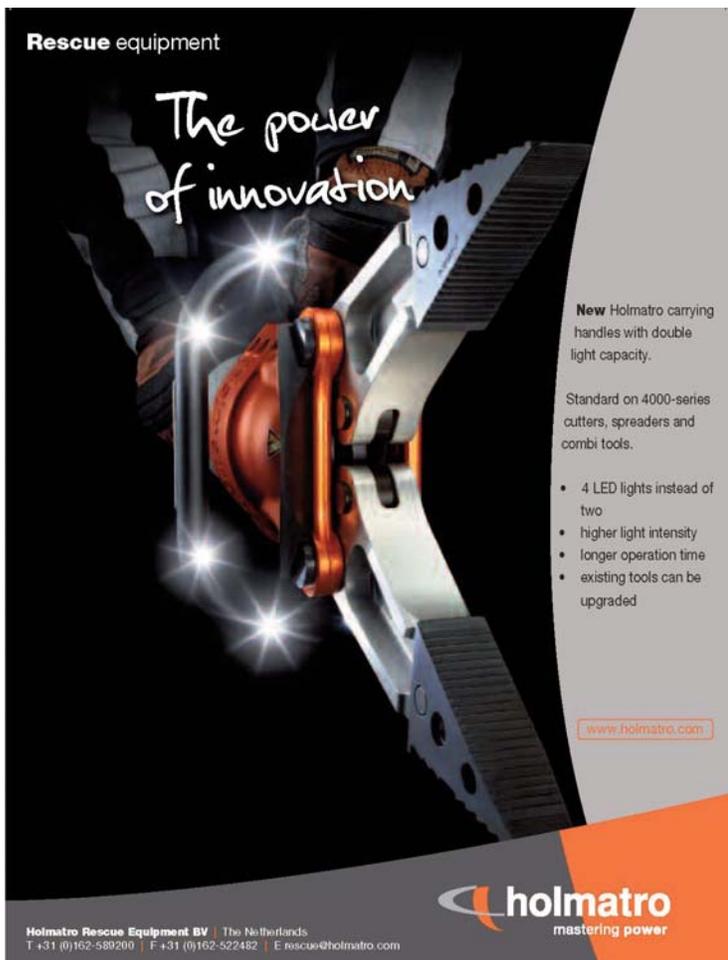
EMS, EXTRICATION, SAR, AQUATIC, ROPE, DIVE, TACTICAL & USAR



Not quite the finished cover of issue 61 as the image isn't a high enough resolution or indeed quite the compilation we want. It shows Busan FD Special Operations Division's full umbilical dive capability.

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We mostly work remote from the office phone so don't expect. However, we will ring you back if your message hasn't been answered. Better still, email us we monitor these regardless of where.

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[rescuemagazine@aol.com](mailto:rescuemagazine@aol.com)

# SC 350 E - One man one tool - no pump



Lukas Hydraulik's new battery powered combi-toll is able to operate in confined spaces, in the open country, on turntable ladders, at a disaster scene or traffic accident as a first intervention tool. To increase the mobility of the SC 350 E the system offers also carrying bags and a water proof storage box for the tool and all accessories. Whenever a rescue scene requires fast response or it is difficult to reach, the SC 350 E shows its strengths. This multi-purpose tool is ideal for use in first response vehicles, helicopters and motorcycles.

### NO SET-UP TIME - READY TO GO

Thanks to the eDRAULIC technology and the on-off principle, the tool is instantly ready for operation. Switch it on and start the rescue.

### PERFECT FOR ONE-MAN OPERATION

No tool needs less staff. One man, one tool, nothing else. No motor pump, no hoses and no equipment changes between cutter and spreader.

### MAXIMUM FLEXIBILITY

Only the SC 350 E combines the benefits of combination tools (spreading and cutting) with the unique mobility of eDRAULIC technology. It is completely intuitively use. Simply push the start button and the tool is ready for operation. Of course the SC 350 E offers the star-grip, the simplest and most intuitive control on the market.

### FACTS

- Cutting and spreading without changing the tool
- Especially suitable for first response vehicles, motorcycles and helicopters
- For use in mass accidents or in rough terrain
- Independent of external power sources
- Ultimate liberty in battery mode
- Continuous operation with power supply at any time
- Significantly reduced space requirements
- Fast work due to short opening and closing times



### ACCESSORIES

- + Carrying bag
- + Battery bag
- + Case
- + Chain set KSV 8
- + Power supply 115 V or 230 V
- + Battery type
- + Battery charger 115 V or 230 V

### TECHNICAL DATA

Cutting force up to	360 kN / 80,935 lbs.
Round steel up to <sup>1</sup>	30 mm / 1.18 in.
Spreading force up to	350 kN / 78,687 lbs.
Spreading distance	360 mm / 14.2 in.
Pulling force up to	41 kN / 9,218 lbs.
Pulling distance	371 mm / 14.6 in.
Dimensions <sup>2</sup>	908 x 225 x 290 mm / 35.75 x 8.86 x 11.42 in.
Weight <sup>3</sup>	19,8 kg / 43.7 lbs.
NFPA- Classes	A6 / B7 / C7 / D7 / E7
EN- Class	BK 28/360 H-20

<sup>1</sup> Diameter referred to EN 13204, NFPA 1936

<sup>2</sup> L x B x H

<sup>3</sup> Without battery

[www.lukas.com](http://www.lukas.com)



# black diamond VaporLock

VaporLock sounds like something you get at 2am after trying to cure a night of heavy drinking with a triple bacon guacamole pepperjack greaseburger from Yak-in-the-Box. Nope, it's just more shiny-shiny from Black Diamond, in this case a smallish screwlock pearabiner.

they haven't seen DMM's Sentinel at 48 grams, but whatever. BD also claims the VaporLock increases friction "up to 30%" when used with an ATC. How is that possible without the ribbing that increases pleasure? Maybe their marketing folks are commissioned by the feature, I don't know.

What I do know is that it is a keylock design, and while they recommend sticking to 9.4mm ropes or smaller for Munter hitching I tried it on a 10mm and it seemed to work just fine. There are a lot of applications where you don't need a monster crew-served 'biner, especially if you're not doing rescue work, and despite the hype the Vaporlock is ultralight and nicely sized for general climbing use.

BD claims their urine-colored VaporLock is "the lightest, full-function pear locker on the planet" at 51 grams. Evidently

\$13.95 at REI



# petzl GriGri2 belay device

Ooh, shiny! Petzl's GriGri is ubiquitous (look it up, rock apes, it's a real word) at gyms and crags everywhere and for good reason: it locks auto-reliably.

At 5.9oz it's two ounces lighter than the original. It's also about an inch shorter on the long axis and half an inch shorter on the short axis, although overall it feels much more compact than that. The big selling point is that version 2.0 handles ropes 8.9mm to 11mm, whereas the original was only 10mm to 11mm.

If you liked the original GriGri you'll love the new version. Aside from being lighter and smaller and handling thinner ropes, the GriGri 2 just works smoother, like buttah. For a truly seamless belay experience pair it with Petzl's Freino carabiner, harder to find but worth it with a little horn that allows full control for lowering a heavier partner. The good folks at Petzl deserve credit for taking a great product and making it significantly better, and extra credit for clear instructions that include detailed drawings of usage in various scenarios.

\$94.95 at REI



# black diamond GridLock belay carabiner

Our suggested name for this product was the RoadRage, but still... GridLock is not bad. Black Diamond's newest screwgate biner is 2.6oz of hot-forged, I-beamed shiny-shiny made especially for the belay slave in your life.

Biner makers are really pushing the envelope these days in an attempt to innovate and differentiate, so here you are.

The GridLock's innovation is the funky gate, which makes the biner look like a figure 8 when closed. At the halfway

open point you can slide your harness belay loop all the way into the small basket, put your belay device - BD hopes you'll use their new ATC Guide - keeper cable in the large basket, and when you close the gate everything is locked into its proper place. The idea is the carabiner can't turn 90 degrees and get cross-loaded, so the load stays on the strong axis as God and Yvon Chouinard intended.

Is cross-loading really that big of a problem? We dunno, but hey, a little extra margin of safety is always welcome. Speaking of safety, one small detail: the edges on the bottom of the gate where your belay loop would rub against it are kind of sharp, but under load it moves away from your body anyway.

Funny note: we were comparing the GridLock to an old BD Pearbiner, and the moving sleeve that locks the gate looks like it hasn't changed in the last fifteen years or more. I guess it's like what they used to say about the door on the Porsche 911 not changing for decades: if it works...

\$19.95 at REI



# petzl Freino

OK, alpha-gear-geeks, your carabiner has arrived. Designed to be used with the Petzl GriGri (but just as effective with any belay device), the Freino belay carabiner is a 3 ounce autolocking unit that has a secondary gate and basket - yes, you may call it a spur to establish techno-superiority - that provides additional braking.

The braking function is particularly valuable with a light belayer and heavy climber, making the whole process safer and smoother. Even partners of similar weights can benefit from the extra friction if they're using skinny ropes.

The Freino can even be rigged off the anchor to redirect the rope for lowering. The downside to all this increased functionality? Price. You be the judge.

\$44.95 at Moosejaw

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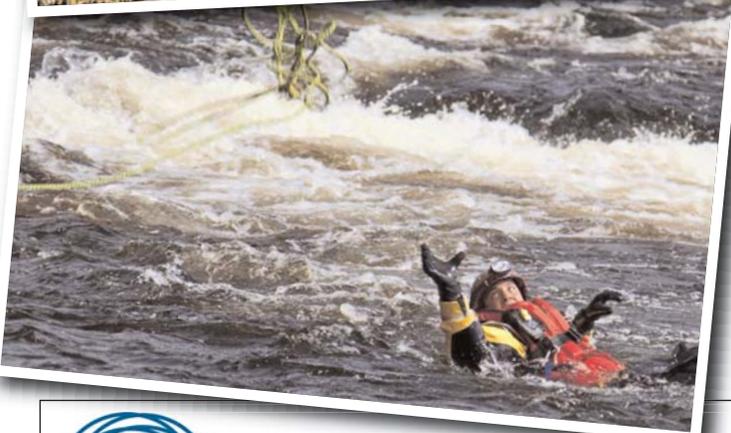
# TECHNICAL RESCUE

## 2011 DIGITAL

# Photo Competition

### PRIZES

NANUK 930 hard case with padded dividers  
 A SYPDERCO Byrdrench multi-tool  
 + PHOTOSHOP5 or LIGHTROOM3 Software  
 or Manfrotto 055 Tripod



Some bright spark in the MRA posted on a forum that TRm required copyright to all photos entered ...for ever. Probably some confused wording on the web site but let us assure all entrants that CanPro don't ask for any copyright at all and TRm only requires to be able to use your photos on competition gallery pages and promotional pages like this one. Copyright to your photos remains entirely yours and should we wish to use them for anything other than competition-related pages we will negotiate directly with you for permissions.

This second year of the competition is again sponsored by **CanPro Global** of Canada and has four categories:

- **WATER RESCUE** (inc boats)
- **HELICOPTERS/ VEHICLES**
- **USAR/EXTRICATION** (including fire, con-space, industrial rescue & disaster response)
- **ROPE RESCUE** (including cave, mountain and wilderness SAR, tactical & industrial)

Winners of each of the four categories will receive a

A Nanuk 930 hard case with padded dividers  
 AND a Synderco Byrdrench multi-tool

AND PhotoShops or Lightroom3 or a Manfrotto 055 carbon Fiber Tripod

GO TO: [www.trescue.com/photo2011](http://www.trescue.com/photo2011) to enter

PHOTOS LEFT: Bedford Fire Department photographer Madonna Lovett Repeta of New Hampshire sets an excellent early standard with a stylized extrication shot and a more familiar water rescue action shot. Larger formats will be shown in issue 61's Competition Gallery.



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# IN THE NEWS - HIGGINS & LANGLEY AWARDS

The 2011 Higgins & Langley Memorial Awards in Swiftwater Rescue, which recognize excellence in the field of flood and swiftwater rescue will be presented at the annual National Association for Search and Rescue (NASAR) conference.

## OUTSTANDING ACHIEVEMENT

**OCOEE RIVER RESCUE** On October 3, 2010, Dr. Michael McCormick seriously injured his cervical spinal cord in a whitewater kayaking incident on the Ocoee River in Tennessee after being flipped in a hole at the top of Slice and Dice rapid. Paralyzed and unable to move, he was rescued by four kayakers he had met only 45 minutes before—Michael Howard, Kevin Sipe, Neal Carmack, and Bryant Haley. After realizing their new companion was in trouble, the kayakers chased him down through two sets of Class II-III rapids and were able to catch and roll him upright just before entering a larger set of rapids. At that point one of the rescuers (trained as a military medic) immobilized his neck while another paddled ahead to phone medical support. The rest got him into an eddy and with the help of a passing raft company evacuated him to the road side, where he was met by an ambulance and subsequently transported on a helicopter.

## PROGRAM DEVELOPMENT

**BREEDING VOLUNTEER FIRE DEPARTMENT TECHNICAL RESCUE TEAM, Columbia, KY** After an incident in 2009 in which a would-be citizen rescuer drowned, the Breeding Fire Department committed to the development of a technical rescue team. Since December of 2009, under the leadership of Captain Chris Taylor and Lieutenant Brandon Harvey, rescuers have put in nearly 1000 man hours of training, consisting of rope rescue and swiftwater technician at the NFPA 1670 and 1006 level. The department has acquired a 26' enclosed trailer, technical rope rescue gear, 2 self-bailing rafts, a Mercury IRB, 10 sets of technician level PPE and 10 sets of operations PPE—altogether nearly an \$80,000 investment in technical rescue gear. The team consists of 5 swiftwater rescue technicians and 7 rope rescue technicians, and trains monthly with Taylor and Green Counties.

**KILLEEN RESCUE TEAM, KILLEEN FIRE DEPARTMENT, Killeen, TX** After dealing with prior flooding incidents in Central Texas Lieutenant Beau Arnold and Fire Rescue Officer/Paramedics Justin Todd and Darren Morphis of the Killeen Fire Dept. developed a flood rescue program meant to deliver safe, effective response for multiple rescues and evacuations. The program was put to the test on September 7, 2010 during a flood where water conditions varied from flooded creeks with moderate debris loads rated at Class III to Class IV-V water in creeks and streets contaminated with raw sewage and major debris including trees, household materials and fire ants. Over an 18-hour period the Killeen Fire swiftwater rescue team performed 83 flood rescues and evacuations, including one individual trapped in a tree in rising floodwaters and four dogs rescued by boat.

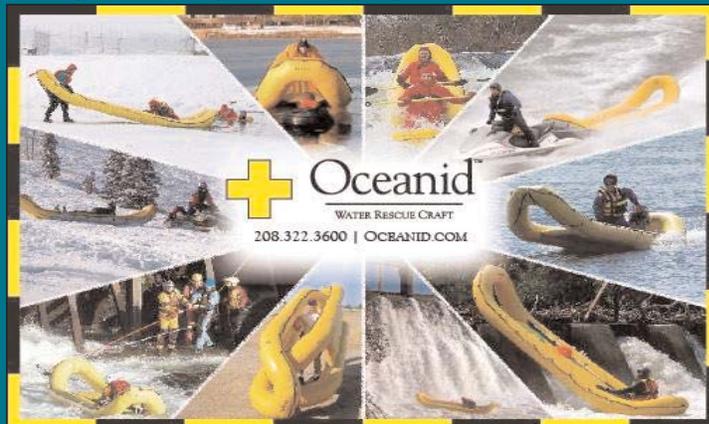
## TEAM AWARDS

**TRAVIS COUNTY STAR FLIGHT, Austin, TX** During the flooding following Tropical Storm Hermine in early September, 2010, Travis County STAR Flight deployed its three hoist-equipped EC-145 Public Safety Helicopters after receiving over 20 requests for search and rescue assistance throughout Central Texas. Thirteen individuals were rescued, including a man clinging to the roof of his submerged vehicle in extremely swift-moving water, three ground-based swift water boat team members whose rescue boat became stranded amongst trees in swift water, a family of four stranded on the second-story of their home, a man stranded on high ground surrounded by flood water, and four individuals trapped in their homes. All were hoisted to the aircraft with an extraction collar by a Helicopter Rescue Specialist (HRS), over half during the hours of darkness using night vision goggles.

**SAN DIEGO FIRE-RESCUE LIFEGUARD SWIFTWATER RESCUE TEAM, San Diego, CA** On December 21, 2010, the Lifeguard Communications Center received a report from the United States Border Patrol of people trapped by water in the Tijuana River Valley. Lifeguard Swiftwater Rescue Team units responded and rescued three individuals from the Tijuana River. Much of the city was flooded in the most severe event since 1980, the major impact falling on Mission Valley, through which the San Diego River runs. Over the next forty hours, all across the city, the Lifeguard Swiftwater Rescue team rescued a total of seventy-three people and 7 dogs, responded to approximately twenty-three other calls, as well as assisting with the evacuations of some sixty people forced from their homes. Incidents included rescues of numerous persons who became trapped in their vehicles after attempting to cross the river. At the Premier Inn in Mission Valley the Lifeguard Swiftwater Rescue Team, with support from Fire Operations, constructed a tension diagonal rescue system to safely and efficiently evacuate all fifty-one occupants.

## SPECIAL COMMENDATION

**MATTHEW S. PEEK, WATER ENTRY TEAM (WET) ASSISTANT DIRECTOR, RENO FIRE DEPARTMENT, Reno NV** On Tuesday, June 8th, 2010 Assistant Water Entry Team Director Matt Peek was instructing WET members on the Truckee River near Mayberry Park in Reno. Because of high water conditions Peek had had the team's training venue changed to the Truckee that day, making it available for rescues if needed. While the class was in session two tubers, neither wearing PFDs, struck a partially submerged log jutting out from the right bank of the river. Both were flipped out of their tubes and one female became entrapped on the log, barely able to keep her head above water. Peek exited his kayak and reached the victim, keeping her head above water until her leg was freed. Shortly afterward a second group of five tubers came down the river and struck the same log. All went into the water, and a teenage boy with the party became entrapped on the same log. He was also rescued by Peek, who then recommended that the log be immediately removed. This was done shortly afterward with a rescue truck's winch. **NB: This was a stop-press item - for full details and background to the awards go to: [www.higginsandlangley.org](http://www.higginsandlangley.org)**



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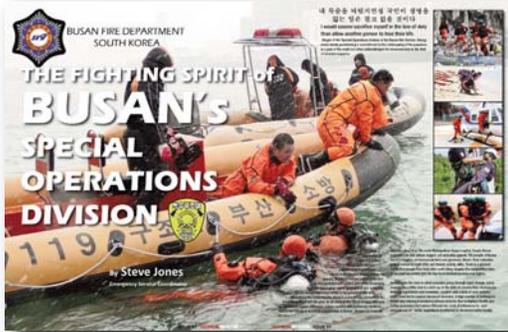
# Who's Who at TRm?

		<b>ADE SCOTT</b> EDITOR - UK - collects coffee vouchers 15yrs Head of Technical Rescue Unit (TRU) (ret) Rescue/Defence conslt. past NASAR presenter			<b>REED THORNE</b> ROPE RESCUE EDITOR - USA Rope Guru, Sedona SAR, ex-Fire/Technical Rescue Team, Stonemason & NASAR presenter
		<b>JIM SEGERSTROM</b> US Editor - USA (died Feb 2007) Water Guru, Founder Rescue3 International, Flight paramedic, Tuolumne County SAR			<b>LEE LANG</b> US EDITOR - WSAR/ Rope Ex-firefighter & EMT, current LCSAR team member and NASAR Board Member
		<b>KELLY MATTHEWS</b> Sales & Admin Director- UK Law Costs Draughtsman, The real Boss of TRm			<b>GREG (CHURCH) CHURCHMAN</b> CANADIAN EDITOR - USAR/ Rope Fire Officer, Pilot, Rope Rescue and extrication Instructor
		<b>DR STEWART BOYD</b> MEDICAL EDITOR -RSA Top Medical Dog - KZN, Trauma Doc, Flight Medic, War-zone junkie			<b>GARY CROSS</b> TRm Senior Chimp - UK Firefighter, HMCoastguard, ex-TRU, Extrication Team Medic, Marine Incident Response Group
		<b>BRIAN ROBINSON</b> Consultant - Con-Space Rescue - UK National Confined Space Rescue Instructor ex-Mines Rescue, ex-TRU			<b>RICH HACKWELL</b> Consultant - SAR/Coastguard - UK HM Coastguard-Head of Technical Rescue, Lifeguard, ex-TRU,(ex Tree Surgeon)
		<b>BEN WALLER</b> Consultant -Water Rescue - USA Water Rescue expert. Battalion Chief, Training Chief, Paramedic, US&R tech & HazMat tech.			<b>MICHIEL WOLTERING</b> Consultant - Police - Holland Instructor at Dutch National Police Academy for access in tactical, USAR, hostage rescue etc
		<b>MIKE PHILLIPS</b> Consultant - DiveRescue - USA Beaumont TX Fire Dept, Publishes PS Diver.com			<b>DOUG KEMP</b> Consultant - Rope, Water/ Cave - UK IRIA Rope & water rescue instructor, IRATA 3, Caver, SAR team member
		<b>NEIL NOBLE</b> AUSTRALIAN EDITOR - Trauma, USAR ex-South African Paramedic, Queensland Paramedic			<b>ROB KEATING</b> NEW ZEALAND EDITOR - Heli/ Trauma ex-South Africa AEMS. Paramedic, Heli-rescue, rescue swimmer
		<b>CHRIS WALKER</b> Consultant - Watercraft - UK National RNLI Instructor (HQ),Regional SAR Team Member, Ex-TRU.			<b>JEZ HUNTER</b> SUB-EDITOR - Rope/water - UK ex-Royal Marines, Water Rescue, USAR & , Rope instructor, now a trainee Doc
		<b>RICH (DINGER) BELL</b> Consultant - UK - Trauma, Hazmat, Dir.Training - Hazardous Area Response Team, West Mids Amb Service, Paramedic, ex-TRU			<b>JIM HUTCHEN</b> Researcher - UK Firefighter, Tree surgeon, Extrication Team Snr Medic, USAR Team, ex-TRU
		<b>KEN OSTERKAMP</b> Guest Reviewer AKA Gear Flogger - prolific and irreverent mountaineering reviewer			<b>TIM GOOD</b> TRm US Admin Office Owns and runs an art licensing company but allows us to abuse his office staff & facilities.
		<b>AL BANNON</b> HFRS & ex-TRU - UK (died April 2010) Caver, climber, kayaker, firefighter LODD fighting high-rise fire			<b>ROY SCOTT</b> Ex-Bordons Director (died June 2010) Much loved uncle without whose support TRm would not exist

# OUT NEXT MONTH ISSUE 61

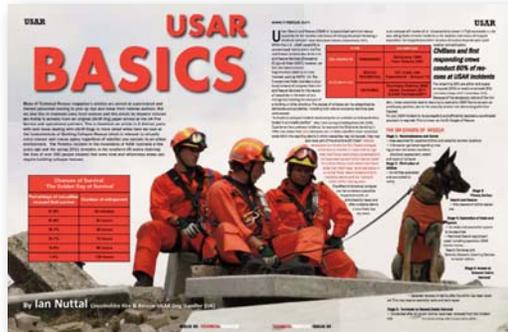
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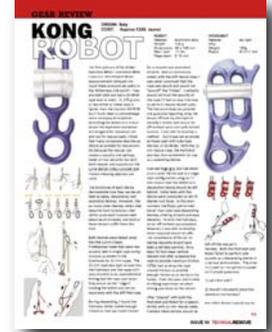
**Above Left & Right:** Our Team article is from South Korea. Busan Fire Department's Special Operations Division has a diverse range of skills including a comprehensive water rescue capability. Steve Jones is our man in Busan but this will not be the cover as it is not quite the correct orientation.

undertaken with the minimum of equipment and back up. **Above:** FlatBottom Boats is this issue's Market Guide but it's proving difficult to break this down into a meaningful sub-category so may well change to just Aluminium or just plastic/GRP. **Right:** Rich Denham and Nick Appleton of London Fire Brigade continue to plunder the depths of their knowledge (somewhere near the bottom of the barrel) for this instructional series called QuickCuts. This issue focuses on how to attack a sliding door as might be found on an MPV or van.



**Left:** The first in an outstanding series on Emergency Management in Antarctica sees Martin Boyle moaning about how cold it is and how his bedding plants never seem to last. **Left:** Although titled 'USAR Basics' this article by Ian Nuttall of Leicestershire Fire Service in the UK is in two distinct parts, the first deals with the fundamentals of building collapse and is relevant to all rescuers. The second part details exactly how USAR Dogs locate victims at a collapse.

**Right:** Lee Lang takes a look at the Kong Robot and Kong Hydrobot but was largely disappointed in their performance in the field. Other Reviews in 61 include Ben Waller on the Force 6 PFD, Ade on Peli's immense Tool Chest and either Mudder-'boots' modelled on a herons foot or was it a flamingo? or a Camp pack. More multitools come under the microscope as we see which scores the most to progress to the final.



**Below Left:** That man looks familiar and doesn't he seem to get everywhere. Ian Plater, just visible to the left of the word 'BASICS' will again feel aggrieved that his job as model has been usurped by Rich Hackwell. In this article we look at First Response Rescue. It may seem strange to have first response as one of the last in this series on rope rescue but we consider rapid response to an injured casualty to be an advanced procedure calling for experience and a cool head as it is often

**Bottom Right:** As our great friend Doc Stewart Boyd moves out of the cauldren and into the relative salad bowl of a Dublin Hospital, South African Paramedic Steve Daley flies solo with a series of articles on ballistic trauma. In this one he discusses the problem with shotgun wounds.



# PRODUCTS

## AV RECIPROCATING SAW

Hilti's WSR 36 Volt Reciprocating saw utilises either a 3.0 or 3.9ah Lithium Ion battery and incorporates efficient anti-vibration technology which is better than other recip saws but will still struggle to combat poor cutting technique which can be responsible for a lot of unnecessary vibration. Here's what Hilti say:



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- CPC Battery technology
- Hilti battery retention system for secure hold of battery

### SPECIFICATIONS:

Weight in accordance with EPTA-Procedure 01/2003 4.37 kg  
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 Power range 900 W  
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 Variable speed switch 1-6  
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 Stroke rate regulation  
 AVR - Active Vibration Reduction  
 Stroke length 32 mm

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MOB 122

## FLOOD CONTROL LEARNING THE LESSONS OF HISTORY

SLIM RAY, wise sage that he is, came up with this inciteful quote from MARK TWAIN, a former river pilot who actually knew something about moving water. For those outside of the USA, US Army engineers have traditionally been responsible for building (& blowing up) flood control measures.

*One who knows the Mississippi will promptly aver -- not aloud but to himself -- that ten thousand River Commissions, with the mines of the world at their back, cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, "Go here," or "Go there," and make it obey; cannot save a shore which it has sentenced; cannot bar its path with an obstruction which it will not tear down, dance over, and laugh at. But a discreet man will not put these things into spoken words; for the West Point engineers have not their superiors anywhere; they know all that can be known of their abstruse science; and so, since they conceive that they can fetter and handcuff that river and boss him, it is but wisdom for the unscientific man to keep still, lie low, and wait till they do it. ... the Commission might as well bully the comets in their courses and undertake to make them behave, as try to bully the Mississippi into right and reasonable conduct. Mark Twain*

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# ISSUE 60

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**Above Left:** Our Team this issue is Queensland Fire Services USAR Task Force 1 at work in Inondsia and Samoa. As we went to print personnel were also busy helping to deal with the extensive flooding that seemed to engulf most of the state.

**Left:** Cris Pasto of Spencer Fire Dept in New York provides some useful instrctional ideas for vehicle stabilisation using extending struts.

**Below Left:** TRm Aquatic Editor Ben Waller gets plenty wet in his testing and review of the NRS Grizzly - the large version of their Extreme SAR drysuit.

**Below:** A comprehensive research article on Prusik deterioration by our own Lee Lang and Dick Borowski of Larimer Search & Rescue in Wyoming together with Michael Onorato and Dr Susan James of Colorado State University. This was pre-

sented at the 2010 Technical Rescue Symposium and is well worth the extra exposure.

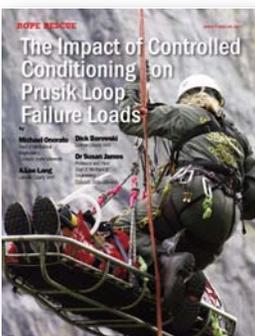
**Below Left:** Steve Daly and Doc Boyd review some unusual trauma cases involving water. As usual, much to be learnt from the experiences of others while fervently hoping that such things never happen to us!

**Below:** We compare three very differnt MultiTools to see what tasks can be achieved by each and where your money should be spent - the CRKT Zilla Tool, Wenger Horn (Hunter) and Leatherman Surge are under the magnifying glass.

**Left:** Our series on the new Rope Rescue system introduced into the UK Coastguard continues with a look at powered winches. TRm's Rich Hackwell and Steve Monks excellent diagrams make it all clear.

**Above:** Wayne Roe of Queensland Fire Service USAR Task Force 1 weilds a Partner K80 disc cutter outside Cairns Fire Stations in Northern Queensland. Our Australian editor Neil Noble (who's wife is a serving member of TF1) was assisted by Steve Smith and Shane Tinsley in compiling our team article this issue. QLD USARTF1 were one of the first international teams into Christchurch which occurred as we were going to print but we stalled long enough to add two pages to their other deployments to Indonesia and Samoa .

**Bottom Right:** The last in our series from London Fire Brigade on dealing with Heavies and here Richard Denham and Nick Appleton, assisted by Big Rig Rescue in the US look at utilising recovery companies.



## Video Integrated Helmets

The Gecko Eye Camera (GEC) is a waterproof audio visual device operated by the wearer. This option can be incorporated into the Gecko Open Face and Full Face helmets as well as the Surf Lid being used by Al Mennie in this picture.

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  - PAL Video
  - MPEG-2 Stereo Audio
  - Digital sampling (PAL) 576 lines by 720px
  - 1/3 inch colour ccd array with 420 line resolution (estimated)
  - Power-up to record time < 2 seconds
  - Record time (approx): v.high quality - 15 mins per GB on an 8GB card
- The Gecko camera helmet system is subject to ongoing research development to further improve its performance and design characteristics. [www.geckheadgear.com](http://www.geckheadgear.com)



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# HEALTH & SAFETY?

Regular readers will know that we have long argued that rescuers should undertake their job accepting that there is a degree of risk attached to what they do and that if they push the envelope too far they could be seriously injured or die. For many, that's part of the attraction. That's not to advocate a gung-ho attitude or defend poor-decision-making simply that when an incident crops up with a life in peril, the experience and skills of the rescuer may be tested in saving that life. We've reported before on some ludicrous non-actions by emergency services prompted by misplaced and often misguided 'health & safety' direction from HQ that has left the services open to ridicule and even contempt by the public.

Most recently a fire crew attended a concrete boating lake following reports of a person motionless in the water. The lake was around 3 feet deep in the middle and conditions in March in the UK were chilly but not icy. We must make it clear that the OIC and crews have to make decisions based on direction from their senior officers and such incidents are as frustrating to them as they are to the public. Often they are given no leeway to make unilateral decisions. This has to change at Command level. In this instance, a 'Risk Assessment' based on Command direction concluded that since the person in the lake was 'probably' dead it was too hazardous for anyone to enter the water for what was, in all likelihood, a body recovery. Fire, Ambulance and Police were all subject to this decision and nobody was allowed to enter the water until the arrival of a specialist water operations-trained fire crew from another station. This crew duly turned up some time after the first crew's arrival and donned drysuits and pfd's to wade into the lake to recover the body.

Needless to say the local and national press had a field day...again. Were it not for the inflexibility of Command direction it's difficult to see what risks the initial 'risk assessment' perceived would stop any person from entering a still water boating lake; no moving water, plenty of wildlife so no overt contamination, a man-made concrete bottom of very limited depth with water chilly enough to give concerns for hypothermia if exposed for long periods but equally impossible to conclude the exact life-status of the victim until 'warm and dead'.

Any non-rescuer would simply wade out with due deference to the depth of water and possible debris/foot entrapment hazards on the bottom. If the latter was deemed a problem perhaps a good old fashioned spell of swimming would avoid them? There is nothing in this incident open to debate. The status of the casualty could not accurately be determined from the bank, especially in chilly conditions. The 'risk' to any able-bodied rescuer was minimal and should the unthinkable (or perhaps embarrassing would be a more appropriate term) occur and a would-be rescuer got into difficulties perhaps one of the dozens of other able-bodied on-lookers could lend a hand.

The public were entirely right to question the interpretation of 'Health & Safety' rules in this instant. One must feel sorry for the OIC and crews who are repeatedly put in these positions and being stopped from making their own decisions on the viability of a rescue by command policy based largely on the assumption that rescuers lives must never be put at risk.. The Health and Safety Executive or HSE is now vilified as the UK

agency responsible for inflicting nonsensical restrictions on rescuers but is this really the case or is it that the interpretation at command level in the individual counties or agencies is at fault? This is the HSE's recent document attempting to clarify the situation and while it doesn't address some of the incidents we've discussed in the past year, particularly where they have related to water or heights without any additional risk like fire or noxious atmosphere, this is an interesting guide for rescuers:

### HEROISM IN THE FIRE AND RESCUE SERVICE

**INTRODUCTION:** [HSE fully endorses the recommendation in Common Sense, Common Safety that individual firefighters should not be at risk of investigation or prosecution, under health and safety law, if they have put themselves at risk as a result of a heroic act. This guidance outlines how HSE defines heroism and explains how HSE will deal with such matters.](#)

### OPERATIONAL REALITIES AND EXPECTATIONS

Striking the balance between operational and health and safety duties in the fire and rescue service recognises the particularly challenging nature of fire and rescue activity and the extremely dangerous environments in which firefighters have to work. It explains how fire and rescue services can comply with health and safety duties while delivering an effective operational service.

The statement makes it clear that fire and rescue services need to manage all foreseeable risk effectively and to review their operational procedures in the light of experience. It also sets out the duty of individual firefighters, to co-operate with their employer, take reasonable care of themselves, and not endanger others. This means that firefighters should act sensibly and responsibly within the command and control of their employer; they should not act recklessly.

It is also important to recognise that firefighters should not be expected to put themselves at unreasonable risk, even in the face of sometimes unrealistic public expectations. HSE views the actions of firefighters as truly heroic when it is clear that they have decided to act entirely of their own volition in putting themselves at risk to protect the public or colleagues and there have been no orders or other directions from senior officers to do so and when their actions have not put other firefighters at similar high risk. Firefighting is a complex activity requiring clear definition of roles and responsibilities on the incident ground and is normally undertaken by teams of firefighters. It is important that command and control discipline is maintained to ensure the safety of firefighters and others. This means that there are few circumstances in which an independent decision by a firefighter to put himself at risk will not result in risk to others in the team. There are some circumstances when firefighters working together, in a fast-moving dangerous situation, may decide to put themselves at risk when they have not received specific orders or there is no relevant safe working procedure for them to follow. In those rare cases when a firefighter does perform an act of heroism, it is only right that the Fire and Rescue Service may sometimes recognise and commend them for their bravery.

### HSE POLICY

HSE will view the actions of individual firefighters as heroic when:

- is clear that they have decided to act entirely of their own volition;
- they have put themselves at risk to protect the public or colleagues;
- and the individuals' actions were not likely to have put other officers or members of the public at serious risk.

In the event of HSE being notified of a serious incident, inspectors may need to make initial enquiries about the nature of the incident and may need to conduct an investigation of the Service's operational arrangements and management of health and safety. If, during this investigation, it becomes clear, however, that the incident involved an act of heroism by individual firefighters, then HSE will not investigate the actions of the indi-

viduals in order to take any action against them.

## CASE STUDY

The following case study is a realistic example of heroic actions by firefighters which illustrate the principles outlined above.

### Attempted rescue from a grain silo

A crew of four retained firefighters provided the first response to an incident at a farm. Two farm workers had entered an old grain silo by placing a ladder into the entrance at the top of the vessel. The farm workers had lost consciousness. After establishing that the estimated time of arrival for the second fire appliance was at least 15 minutes, the officer in charge instructed one firefighter to enter the vessel wearing breathing apparatus (BA) and wearing a harness secured to a rope. After the firefighter had been inside the vessel for a short time, his BA alarm sounded to indicate that he was running short of air. According to the calculations that had been carried out on entry for anticipated air usage time, this happened far sooner than it should have. The firefighters outside the vessel attempted to pull him out but his rope had become detached and communications had been lost. It became apparent to the firefighters outside that by lowering an additional BA set into the vessel there was no guarantee that the firefighter inside could put on the set successfully. The entrance to the vessel was very narrow and none of the other firefighters could fit through wearing their BA sets. Based on his much greater experience the officer in charge of the crew decided he would enter the vessel to attempt a rescue by starting up his air supply outside the vessel but only putting on the cylinder pack once inside the vessel. He had been trained in this procedure some time ago. He took an additional BA set with him for the firefighter already in the silo. He knew that it would not be possible for the others to rescue him if he could not be pulled out. If another firefighter entered then only one would remain outside – it would have been impossible for one firefighter to pull another out alone. So in deciding on this action he was not putting either of the remaining firefighters under any pressure to take additional risks themselves.

The officer descended into the vessel and using the rope system the crew outside managed to raise the farm workers and both firefighters to the entrance.

Sadly, the farm workers could not be resuscitated but the first firefighter was saved.

### Key points

Even though he had not practiced the procedure for some time, the officer in charge placed himself at risk to effect the rescue.

The FRS procedures were implemented as best they could be in view of the circumstances presented to the attending retained crew.

The officer in charge informed service control of his decisions and was put under no pressure by senior officers to attempt the rescues in this way.  
END

This case report addresses Breathing Apparatus entries into hazardous atmospheres rather than water rescue or rope rescue so is not directly related to either the boating lake incident referred to earlier or our previous emag report on a decision not to deploy available rope equipment to rescue a woman from a well but instead wait for a specialist team that arrived too late to save her life. However, if you apply the same principal that HSE repeat in both this case and one we haven't used here, eg.

- 1) All were fully aware of the risks and agreed on their actions without instruction or pressure from officers
- 2) Rescuers' actions did not place colleagues or members of the public at greater risk
- 3) The procedures used did not directly contradict recognised national standards or protocols

.....the implication by HSE is that the only factor that could possibly be applied in the boating lake and well-rescue incident is 3 and that is entirely down to the responding agency NOT HSE regulations. In the case of the well-rescue incident it was clearly fire service policy that only personnel trained to a certain level are allowed to deploy the available rope rescue

equipment for an actual rescue and in the boating lake incident that no personnel are allowed to enter ANY water without a PFD and other water-specific PPE.

Both policies would seem to be wholly reasonable but when placed within the context of rescuing a person at risk of being killed (if not already dead) they can be as ludicrous as the public believes them to be. What is being missed is that trained rescuers are likely to be considerably better trained, equipped and experienced to deal with ANY incident than a member of the public. Therefore, if, in the absence of the emergency services a member of the public (or family member of the victim) was willing and capable of attempting a viable rescue albeit with some degree of risk then Emergency Services personnel should intervene and accept that risk themselves, not be bound by regulations that stop them from attempting a rescue AND THEN stop bystanders attempting rescues as well based on their Service's own protocols. Most occasions in rescue and medical intervention rightly keep the public at bay whilst rescuers do their best to save lives. But in these and other incidents we've reported, rescuers are not only NOT doing their best to save lives they are preventing anyone else from doing it as well. In October last year one of the worst examples of this and a nightmare for the attending crew was headlined in national press as:

### 'Please don't let me die': Drowning man's pleas to watching firemen as they refused to go to his aid.... By Andy Dolan

*A man died after firefighters refused to rescue him from a frozen lake, an inquest heard yesterday. Philip Surridge screamed 'help me, please don't let me die' as he struggled in the water. But a fire crew sent to the scene wouldn't go to his aid because they were not trained in water rescues. Yesterday Mr Surridge's mother accused the firefighters of 'condemning her son to death'. Helpless: An inquest heard firefighters refused to wade into a lake to rescue Philip Surridge and his pal Paul Litchfield because they were not properly trained Mr Surridge, 42, had jumped in to the lake to try to save his friend Paul Litchfield, who had disappeared beneath ice as he attempted to pull his dog from the water. A passer-by, Stephen Smith, heard Mr Surridge's cries for help and dialled 999 before wading in to the water. But although fire crews arrived minutes later, they refused to help him because it was against policy.*

If the men in the lakes or the lady screaming down the well had been my relative and it was clear that no effort was being made to rescue them I would happily risk later arrest in breaking the 'cordon' and attempting it myself, anyone would.

In the case of the well, there was rope, harnesses and hardware. Even if there had only been a rope it was not so long ago that a well trained crew would simply have tied a bowline around the waist of a volunteer and lowered him by hand (and underfoot) using a few sturdy colleagues. Had we known how 'specialisation' would bring with it an unworkable degree of risk mitigation, those of us in specialist rescue teams who used to ridicule such procedures as dangerous and antiquated would wholeheartedly welcome them back!

FOOTNOTE: British national media reported recently on the dispatching of 5 fire appliances and water rescue crews with two inflatables to rescue 12 motherless ducklings from a river - typical of a growing public scepticism that needs to be dealt with were these first public comments to the story on the daily Mail website: *They'd only be at the fire station sleeping, watching TV or playing snooker anyway. Nice to see they made themselves useful for a change. Glad the ducklings are OK.- Julia, Bolton, Lancashire They can save worthless ducks, but not a man in a duckpond.*

# When to Retire a Harness

**CMC RESCUE:** The service life of a rescue harness is closely related to that of a rescue rope—both are used in the same environments, both are made from nylon or polyester, and both receive similar levels of inspection and care. Since harnesses are worn on the body, they are generally better protected than ropes. However, harnesses rely on stitching to hold them together, and because of thread's small diameter, it can be more susceptible to abrasion, aging, and chemical damage than web or rope. Industry standards range from as little as a 2-year service life for fall protection and sport climbing harnesses to a 10-year maximum service life of kernmantle rescue ropes. This suggests a 10-year maximum shelf life for harnesses, with a shorter service life based on frequency of use. If there is any doubt about the safety of the harness, it should be removed from service.

**ADE:** The estimated life of a Harness or rope is arbitrary at best. Everyone always assumed that manufacturers were promoting a low number of years so that they would sell more. I have a coil of rope in plastic that has been properly stored for 12 years. Would I use it tomorrow if I needed to? damned right I would and if it was a wrong call you can carve on my grave stone.. *shoulda listened to the manufacturers.* But until that time I remain skeptical. Whenever we have tested used webbing it has never failed at anything close to a worrying figure, there may be a percentage drop in strength but a 5% reduction (or even 50%) of 3000kg still gives me no cause for concern but I'm sure there will be others out there who say they've had webbing fail in tests at dramatically lower figures.

I bet the webbing in question wasn't well looked after though. Who knows?

I draw a marked distinction between a climbing harness which may take repeated falls as well as lots of rock contact and therefore only last a couple of years and a rescue/access harness which should never take a fall and often



ABOVE :13 years and not a stitch out of place - does that look frayed or weakened to you? Now the buckle in the middle is another matter. It's actually only alloy corrosion due to damp but that in itself is an alloy-weakening chemical process that shows a lack of care and should make you think twice about keeping it. Next, shredded, non-load bearing panels next to solid-looking webbing but is that corrosive damage or high wear or a tear? If you can't rule out corrosion it's a goner, wear and tear and you're probably OK because the fabric panels and integrated jackets are much weaker than the webbing and intended to take a pounding but they do give an idea of what abuse the webbing may have been subjected to. ABOVE RIGHT: A nomex/kevlar version of Reed's beloved Yates 390 adds considerably to the resilience of the webbing and you're probably never going to retire this one due to wear. However, even in the absence of contamination, all fabrics, even Kevlar have a shelf life - bullet-proof vests reportedly see a reduction in bullet-stopping capacity through age so it is not unreasonable to assume that harness webbing will also see a strength reduction albeit not for reasons of stopping a round.

has a metal attachment point which eliminates the webbing belay loop, a key area of concern. My current favourite rescue harness is custom made and by the 10 year rule should have been retired three years ago. I check all stitch-

ing and wear points religiously and have no intention of retiring it until I see a specific problem or suspect contamination that can't be quantified. My rules are: if your rescue harness takes a big hit (and you survived)... bin it, if it gets exposed to any known contaminant or unknown liquid, vapour or dust ... bin it. If your harness is



sight/control such that you don't know what 'abuse' it's been subjected to...bin it. If, however, it's always in your pack, you use it in a controlled, professional manner (e.g. not spray painting graffiti while forward rappelling at high speed off a high rise with the trail rope flailing over the waist band) and you inspect regularly....you should be fine. Look for signs of true fraying of stitching/webbing (some furring of high wear areas is expected), deformation, heat damage or discoloration and if you find no problems and really are that attached to your harness then stretch it to 15 years and change the rules again. You could test it to destruction and breathe a sigh of relief that you survived this long when the waist belt fails at the buckle at under a quarter ton in the constant pull test or grizzle like a girl when it makes it past the 1500kg mark and you realise there were years left in it.

**REED:** I have no time line on [harness retirement]. I just inspect it often. My Yates 390 is over 10 years old. Getting a bit tattered and I will probably replace this year or next. I love my harness like it is but I don't want to wear until it fails like Todd Skinner.

In discussing **ROCK CLIMBING HARNESSSES** which will see considerably greater dynamic stresses than a rescue harness ever should:

**LEE:** If the harness does not show wear and tear, I try to replace it every 5 years. However, not showing wear and tear is not the usual for my harnesses. Climbing tends to impact my harnesses so I look to replace a harness every 2-3 years.

**KEN Osterkamp** knows a thing or

two about freeze-thaw being located in Alaska, here's his advice: On retiring a harness... you're probably aware that Todd Skinner died in 2006 from a fall in Yosemite that resulted from the failure of the belay loop on his harness. A friend of his who had seen the harness prior to the accident said the loop was visibly worn. That's the first thing to check: a little bit of fuzz is probably OK, but anything more and it's toast. Some harnesses have colored threads woven inside, and if you can see them it's definitely worn too much. The visible stuff doesn't worry me, because, well, it's visible. It's the wear and tear that you can't see that is scary. Keep your harness out of direct sunlight when not climbing, away from chemicals, especially in the garage, and wash it a couple times a season to get the grit out. And remember to RTFM, my friend, or at least look at the pictures.

#### Trail.com:

- 1) Retire a harness after every serious fall. Each time you free-fall for several feet before being caught, your harness undergoes extreme stress. This increased stress can permanently damage a harness, making it unusable.
- 2) Examine your harness frequently. Not only will this allow you to catch any flaws quickly, it also familiarizes you with your harness so you notice any changes instantly. Check the harness between outings and after any potentially harmful hit or fall.
- 3) Look closely at the stitching to ensure that all the stitches are solid and holding. Once a stitch begins to fall out at a key point, a chain reaction can occur that leaves you vulnerable to disaster.
- 4) Check for any large abrasions in the harness fabric. Occasionally a few good slams into the side of the wall can cut into the material, leaving it weakened. If you don't see any blemishes, run your hand across any susceptible areas. Occasionally these gashes are more easily felt than seen.
- 5) Switch out your harness every two years for average weekend use and more often for frequent use. This ensures optimal safety. Even without obvious wear, a harness can slowly degrade over time.

**ADE:** Rope is one of those things that is usually bought on the strength of price or what is available in your local store on the day you go in. However, over the years you can identify ropes that you either do prefer and still buy or did prefer and haven't been able to get since. Throughout my rope career my staple ropes have been the *Edelrid Superstatic 11mm* and the *Sterling Superstatic 12.7mm*. for everything from rope access and tree surgery to rescue, caving, dog-walking and car-towing (not all with the same rope I hasten to add). These are my 'go-to' ropes because I can trust their performance to be consistent. But these are not necessarily my favourite ropes, like most people I find softer rope to be far more pleasant to use but it's a fine line because too soft and you can kiss goodbye to overt abrasion resistance and ability to withstand cam abuse so I've never got on well with *Mammut* even though others swear by it and I still use one of their ropes. Nope, it's the *New England KMIII* for me. Now a veteran performer but a great performer nonetheless. Other ropes I use are the *Cousin Spelunca 10.5mm* (rapid access), *Sterling HTP 11mm & 1/2"* (general rescue/access, highlines and heavy duty use), *CMC Rescue Cord 7mm* (a fantastically strong and versatile rescue cord that can be used for emergency access, throw line (sinking), multi-pulley and self-contained haul systems) and finally *Mammut 9mm* (lightweight rope pack and pulley systems).

**REED:** I am partial to *Sterling HTP* for all my rescue related endeavors. It is a very static rope; about half as stretchy as nylon. I even use it in the belay line on rescue loads. For climbing, I use *Sterling Marathon*.

**DOUG:** For general abuse/rescue/access work I use *Beal Antipodes*. It does tend to go a bit hard if you give it a proper seeing to but generally stands up well to most things you throw at it. It's a good work horse that does most things well enough not to give you any concerns whatever the situation. For highlines etc. I tend to use *Sterling HTP* static, it's sturdy stuff and very low stretch.

For Water based applications *Edelrid Canyon*, it's quite expen-

# WHAT ROPES DO WE USE?

sive and there are some cheaper options about, but, all the lengths I own, have been given an absolute flogging in salt and fresh water (sand, clay and ochre etc) and have stood the test extremely well even if it does tend to swell a bit towards the end of its life. In the caves and mines at the moment for moving around I am using *9.5mm Stirling Canyon Tech* and this stuff is absolutely great, very light, super hard wearing which is especially important with thin rope, excellent heat resistance, good handling characteristics and doesn't soak up much water or dirt so stays light and easy to clean.

**LEE:** For trad climbing and sport climbing I like *Sterling* ropes bi-color in the *10.1-10.3mm* range. The thin ropes simply are not durable. For alpine routes and long trad routes I really like my

*Beal* doubles. They are something like 9.1mm, are easy to handle and seem to have less friction than other ropes I have used when climbing with double ropes. For rescue, my team uses *11mm PMI* low stretch rope. For safety reasons, I prefer a little more stretch in my rescue rope because in a wilderness rescue environment things can be a little less predictable and small shock loads can occur.

**BEN:** For all technical rescue top-rope or highline applications - 12.5mm low-stretch nylon *PMI*, *Sterling*, or *Blue Water*. Water Rescue throw bag - *8 mm Sterling Grab Line*. Water Rescue multipurpose, *8 mm NRS Pro Dyneema* core/ polyprop sheath. Climbing - *11mm PMI* or *BlueWater* dynamic. Clothesline - *PMI 4mm* kernmantle utility cord.

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Hard copy Issue 61 is, surprisingly for us, on schedule for the second issue in a row and the the digital version is not only available it's now being read in toilets, on laptops in 61 countries around the world. Issue 57 is still available free to anyone, all you have to do is set up a simple log-in account. This is so the system can be automated and we have to do as little work as possible. Even complaints are handled by a little symbol for bin. Unfortunately, you all know our email addresses so feel free to bypass the mechanical monsters anytime you ned help.

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Having said last issue that a lot of people hate digital versions there doesn't seem to be much evidence of that at the moment with around half of all new subscribers going for Digital. And before anyone asks, our man Lee, who is the whizz behind anything at TR that looks like efficiency or technology, is looking into being able to view on mobiles etc. Watch thi space.....

[www.trescue.com](http://www.trescue.com)

RESCUE?  
 There's an  
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 that.....

CMC Rescue has put its authoritative Rope Rescue Field Guide into a great, full-featured smart phone app. It's easy to use and is packed with valuable charts, diagrams, tutorials and reference information. You can even customize it with your own notes and create a personal reference section in the field! Now you can access technical rescue information instantly in the palm of your hand, with or without Wi-Fi or reception. The CMC Rescue Field Guide app is available free at the App Store for the iPhone, iPad and iPod Touch. An Android version is slated to release in June.



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## QinetiQ North America Sends Unmanned Systems to Japan

### Proven Solutions to Aid in Recovery Efforts

QinetiQ Group's business in North America today announced that the government of Japan has accepted its offer to provide unmanned vehicle equipment and associated training to aid in Japan's natural disaster recovery efforts. QinetiQ North America's technology and services will allow Japan's response teams to accomplish critical and complex recovery tasks while remaining a safe distance from hazardous debris and other dangerous conditions. The equipment being staged in Japan for rapid, on-call deployment includes QinetiQ North America's Robotic Appliqué Kits, which turn



Bobcat loaders into unmanned vehicles in just 15 minutes. The kits permit remote operation of all 70 Bobcat vehicle attachments, such as shovels, buckets, grapples, tree cutters and tools to break through walls and doors. The unmanned Bobcat loaders include seven cameras, night vision, thermal imagers, microphones, two-way radio systems and radiation sensors, and can be operated from more than a mile away to safely remove rubble and debris, dig up buried objects and carry smaller equipment. QinetiQ North America is also staging TALON and Dragon Runner robots in Japan in the event they are needed. TALON robots have previously withstood rigorous deployment and twice daily decontamination at Ground Zero. The TALON robots are equipped with CBRNE (Chemical, Biological, Radiological, Nuclear and Explosive) detection kits that can identify more than 7,500 environmental hazards including toxic industrial chemicals, volatile gases, radiation and explosive risks, as well as temperature and air quality indicators. The TALON robots provide night vision and sound and sensing capabilities from up to 1,000 meters away.

QinetiQ North America's lightweight Dragon Runner robots, designed for use in small spaces, will be available for investigating rubble piles, trenches, culverts and tunnels. Thermal cameras and sound sensors on the Dragon Runners can provide data from up to 800 meters away, permitting the robot's "eyes and

ears" to serve in spaces too small or dangerous for human access.

In addition to the unmanned equipment, a team of QinetiQ North America technical experts will provide training and support to Japan's disaster response personnel.

Leo Quinn Chief Executive Officer of QinetiQ Group said: "Our unmanned vehicles will provide reliable, effective, first responder technology to help protect the brave men and women who are working to save lives and restore critical services. We welcome the opportunity to play a part"

### FUKUSHIMA NUCLEAR REACTOR [BBC-Report]

The operator of Japan's crippled Fukushima Daiichi nuclear plant has said it expects to bring the crisis under control by the end of the year.

Tokyo Electric Power Co (Tepco) aims to reduce radiation leaks in three months and to cool the reactors within nine months.

The utility said it also plans to cover the reactor building, which was hit by a huge quake and tsunami on 11 March. Nearly 14,000 people died and another 14,000 are still unaccounted for.

Tepco unveiled its roadmap as Hillary Clinton briefly visited Tokyo to pledge America's

"steadfast support" for Japan's reconstruction. 'Cold shutdown'

Radiation levels in the sea near reactor 2 rose to 6,500 times the legal limit on Friday, up from 1,100 times a day earlier, Tepco has said, raising fears of fresh radiation leaks.

A UK firm's robots, operated via a standard games console, will go into the reactor Tsunehisa Katsumata, the chairman of Tepco, Asia's largest utility, told a news conference in Tokyo on Sunday they would need up to nine months to bring the power plant to "cold shutdown". He said the plan would allow the tens of thousands of families evacuated from the area around the facility to return home as soon as possible.

"We sincerely apologise for causing troubles," Mr Katsumata said. "We are doing our utmost to prevent the crisis from further worsening."

Tepco said after cold shutdown it would focus on encasing the reactor buildings, cleaning up contaminated soil and removing nuclear fuel.

Japan's government had ordered Tepco to come up with a timetable to end the crisis, now rated on a par with the world's worst nuclear accident, the 1986 Chernobyl disaster.

But the BBC's Roland Buerk in Tokyo says it is still not certain that the nine-month deadline can be achieved.

He says the immediate priority for Tepco is to stop

radioactive water leaking into the Pacific Ocean. The utility said it was sending remote-controlled robots into one of the reactors on Sunday to gauge radiation and temperature levels.

UK defence contractor QinetiQ said it had provided the machines, which are controlled using a standard games console.

The robots can carry out tasks such as rubble clearance, demolition and radiation testing.

Japan is a world leader in such technology, but its robots are not adapted for dirty work such as melt-downs at nuclear plants, experts say.

The QINETIQ UK's GHOST project which manages and runs operations using remote operated vehicles remains on standby to assist in Japan should deployment of the current robots become protracted.

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THE ORIGINALS in Rescue Equipment

Rigging is an art, just ask Reed. It requires insight, clairvoyance some would say, an understanding of rope system dynamics and importantly, structural engineering to best assess the anchor and its substrate. We seconded an abseiling structural engineer to the TRU specifically to impart his structural wisdom to our riggers, that's how important we felt it was to know this stuff when working in an urban/industrial environment. In this article James Fairfield follows last issue's arboricultural rescue article with his thoughts on how we take some anchors and training for granted. We don't really agree with James that an anchor that doesn't 'give' is weaker. An anchor that gives under shock loading may be a useful 'accidental' consequence of your anchor choice but it would be far wiser to build any dynamic shock absorbancy into the system components you bring to the party to maintain control or better still, keep everything loaded such that there is no shock load. But, it's not a perfect world so James' points may be quite valid. An average rope rescuer can get through an entire career avoiding critical rigging duties and anchor assessment decisions. Many teams work so frequently in the same area that the only decision is whether or not the anchor has been used so much in the preceding decades that it is eroding away. Some personnel are more capable at certain tasks than others and rigging tends to fall to the same folk each time, but don't let that make you lazy, heed James' advice on maintaining and expanding your own rigging skills because it is the single most important part of rope rescue. All the glory goes to the face-rescuers but the plaudits should really go to the riggers. Ade Scott

As I was setting up for a confined space watch at a chemical plant shut down, I had one of the contractors doing work in the area come over to see what I was up to. I explained that the hopper I was looking at was going to be inspected in hopes that it will be saved and moved to another plant for use. I told

into with him my reasons and that if I had to I would construct an anchor out of a few different points tied together for safety. Megatron rolled his eyes and told me back in his day that practice was done all the time and that I am just making it harder on myself. He walked away with a handshake and a "be safe".

anchor in so many different ways. It makes me believe that just because a person may have certification saying that they are certified to be a rescue technician doesn't mean they have a clue when it comes to engineering of a solid anchor. Take notice that I have said "bomber" once but I won't be saying it again. For

By James Fairfield

# WHAT AN ANCHOR

the man that I was looking for a good anchor point that would hold my expected load and not be in the way of work being done. The man (let's call him Megatron for future reference) looked at me and said he used to be into the "rope work stuff" when he was in a fire

This got me thinking of what one may consider safe or "bomber" might be considered unsafe to another. In that confined space watch I rigged an overhead off of a six inch water pipe. All points of anchoring for that pipe (in the area of work) were checked and con-

years I have had no issue with this term but after being involved with tree work, I have come to believe that this term has been abused a little too much. For the most part when looking for a good anchor we have in the back of our minds what our load is (and will be if there is a fall with shock load). With what we know as riggers today (and with the nefit of past experientet) there should never be more than a one foot fall/shock load to any system. I have confidence in saying this with all the redundancies that are added into systems that unless there is a mass melt down, in my view this should ring damn close to true. Let's go back to Megatron suggesting we wrap the cluster of small pipes and call it a day. Would that have held in the case that I had to use it....Maybe. Would it have bounced all around and sagged like crazy when a load was applied.... Yes. So if it moves all around but doesn't brake can you still call it a true anchor? If we are going to look at practical rigging purposes then I would say no. So we



Pipe used for rigging. (pipes to the right were those suggested to be wrapped together)

department. He started looking around and said to me pointing above our heads why not just wrap all those pipes above us. I smiled and laughed and told him that was a good joke! He looked puzzled; I then told him although that would most likely work it would not be a safe practice. I then got

sidered in good condition. Although not directly above the opening for the hopper it offered the strength and height we needed to make entry and egress in case of an emergency.

In my journeys doing classes, competitions, and working on an ERT I have seen people

should be saying to new rescuers in classes that not only should your anchor hold but it should also stay within a SAFE tolerance of flex or movement. P.S slap the first person that says an anchor should never move at all. Then let them know that if it has no give to it you are looking at a potential for a complete failure of the

other bad habit I had seen be taught to a student. Student was told to place a small twig leaning against their picket system. If the twig was to fall off due to movement during a load then blow the whistle or yell stop due to over loading of the anchor (picket system)..... Really, how off the mark is this? Of course the twig will fall

# ARE YOU ING TO?



Was the condition of the bolt holding the ladder to the wall checked?

system. Think about it; webbing will stretch, rope will stretch, and thank god for the prussic cord having a good stretch to catch a falling load. Oh, since we all love anchoring to big trees, what do you think they do every time the wind blows???? That's right, move. If things we are anchoring to do not have a certain amount of give they would in reality be weaker. That would also work into the same reason why the people who design buildings make them so they sway in the wind and flex when the earth below them shakes. Hey while I'm on it this plays right into the

down; it's leaning against a round pole that is going to move somewhat due to a force being placed against it. What do you really believe that the dirt you hammered the picket into wouldn't give a little before it was compacted?

Let's start having our riggers learn how to check a potential anchor correctly. Take a tree for example, I don't expect everyone to be an expert in trees but we can use what's in our heads to make a good decision as to whether it is healthy or not. Let's not kid ourselves, most of us would walk to the first good sized tree

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look at it and say “yup its big, this will do”. Well what other than the size of it gave you that conclusion? Did you do a quick 360 of the trunk? Did you look for any rot? Did you look up in the canopy and checked to see if there was any broken hanging limbs that could fall and hurt a crew member? Sounds like I am just being over cautious, but in reality these are some of the big concerns to think about when using a tree for an anchor. I’m sure thou that it wasn’t thought about during your rigging class. OK, I know I keep using trees as an example... Let me leave the poor trees alone and go to a different example. How about car or a truck? Again look at them and see many places to wrap or tie to but what about some of the factors of using them? Size, condition, how about what are they parked on? Is it a sloped ground? Is it on blacktop, concrete, or lose soil? All these things will affect the strength, and hopefully non-movement of the vehicle being used. So let me say again; let’s not just say “it’s big tie off to it” let’s have some kind of method and reasoning to our madness.

Now that you have found a solid anchor to use what will be the method of tying off to it? Most likely you will go right for the old tried and true method of a wrap three pull two, or maybe you have some towing slings and you’re just going to wrap that around something. I have no issue with any of this but again perfect world answers to most likely situations that will (for the majority of us) not present it’s self often. Most of us live in built up areas where the rope rescue will involve an industrial type setting. These areas are going to test your ability to think on the fly “outside the box”. A great example of this is in the top of certain

Death Grip hitch



tower cranes. If you have to remove a person from the top platform inside there is very little or nothing to anchor to. Knowing more than your rescue class knots and hitches will be what saves time and headache of things not holding properly during load movement. As you can see in this picture of the inside top section of the crane the only object to tie off to with height is the hand rails. With small diameter hand rails you will run into the issue of slipping when a load is pulled onto it (using the normal hitches or knots). How many of us have ever tried using a Death Grip hitch or for that matter even heard of one? No matter how hard you pull on this hitch it will not move or slip. Best part of this is there is no issue with untying it after you are done. This hitch also is great for when you have to tie off to a vertical pole (small diameter). Move past what is shown to you in classes alone for your hitches and knots; they will only get you so far before you run into something that will jam you and your team up. A perfect area to look and find alternatives for knots and hitches would be sailing/boating knot books. There is a lot of old and forgotten knowledge out there from times past that worked great then and could find a new place in rope work today i.e.

the Death Grip Hitch (Google the vid).

Self-equalizing or non-self-equalizing anchor, that is the question. Well maybe not, even if you have an anchor point that would be in question and you have it sharing a load with another anchor point it still doesn’t mean that you would need it to be a self-equalizing anchor. As long as you have your load line going over a fixed point at the edge (last point before going to load) it will not matter how much the load moves side to side. This doesn’t seem to be well explained to new students overall. It seems that no matter what the scenario when using a multi-point anchor with a single piece of line the majority of riggers will have a knee jerk reaction to build a self-equalizing anchor every time without thought. I stood back and watched a rigger do this once and respectfully asked him to explain his reasoning behind the choice. So you the reader have a picture of the area to be rigged on. We are on the top of a seven story building with only the guard rail around the sides to rig off of. The roof is approximately 30\*30 flat. The rigging team decided to place a pulley lashed to the railing at the point where the load was to be raised to, and place a three point self-equalizing anchor directly across from that. After being made the anchor stretched half way across the roof. After being asked about this the rigger stated that this was how he was taught and this is the safest way to make the anchor in case of a blowout. I asked him if there was to be a blowout of one of the anchor points where would the anchor point be at then? “Well in the pulley at the edge”. Then he laughed and said “well only if the safety line doesn’t grab”. I then asked him

if it is necessary to have the self-equalization part of it, or could just adding a knot into it be the best way to do this? The man just stood back looking at the anchor and said he never gave it thought due to this was what he was taught. As much as knots are a big part of learning rope rescue with all the time that is spent making sure the student knows them forward and back, an equal amount of time should be set for anchor construction and philosophy. After all if you can’t tie a knot then you are dead in the water, but if you can’t build an anchor then you are dead in the water as well. I started to explain how to make an anchor non-extending self-equalizing and I stopped due to losing the man with too much information at one time.

With new tools coming to the market for mid-point anchoring (like the UFO) attention to detail on main anchor points can be lost. Don’t allow yourself to become lazy after taking your rescue classes keep up on your skills and pick up new ones from other disciplines of rope work. When you start incorporating different styles into what you are doing you will see a massive improvement in the end result (also it will keep your interest held for a longer time). Not every drill has to be on rescue based scenarios, try bringing in professionals from other climbing disciplines to show what they do, how they do, and why they do so you and your team will have a good idea what to look for when it comes time to rescue them.

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# MOUNTAIN RESCUE Afghanistan-Style

## RESCUE AIRMEN ENGAGE HOSTILE FORCES TO RETRIEVE 'FALLEN ANGELS'

by Capt. Erick Saks

455th Air Expeditionary Wing Public Affairs

May 1 2011 - KAPISA PROVINCE, Afghanistan

Airmen from Bagram Airfield's 83rd Expeditionary Rescue Squadron performed a daring mountainside rescue here, April 23, after an Army helicopter crashed in a hostile Afghan valley.

The Airmen, deployed from the 33rd RQS at Kadena Air Base, Japan, and the 212th RQS at Joint Base Elmendorf-Richardson, Alaska, recovered one injured pilot and one fallen hero while often coming under heavy fire.

The mission began prior to daybreak, when the squadron's tactical operations center received a report of a Fallen Angel - the term which signifies a downed aircraft. Within 10 minutes, the Pedros of the 83rd ERQS had two HH-60s airborne and enroute to the site where a coalition helicopter was reportedly down.

Pedro 83 and Pedro 84 quickly arrived on scene, approximately 20 miles from Bagram, and held about five miles away as they linked up with the other air assets in the area, including F-15E Strike Eagles, AH-64 Apaches and OH-58D Kiowa Warriors.

"When we arrived, one of the Apaches already had eyes on the aircraft, and he lased the pilot so we could see him," said Capt. Louis Nolting, Pedro 84 co-pilot. "At this time, we had thought that the pilots were collocated and that they'd egressed together from the aircraft."

One pilot had climbed several hundred feet to a ridge above the aircraft wreckage. This ridge is where Pedro 83, the lead aircraft, used the hoist to insert its Guardian Angel team composed of Maj. Jesse Peterson, combat rescue officer; Tech. Sgt. Chris Uriarte, team leader; and Tech. Sgt. Shane Hargis, team member. "Once lead got the PJs on the ground, we found out the pilots had split up," said Maj. Philip Bryant, Pedro 84 pilot. "The pilot who had egressed told the PJs that the other pilot was unconscious and at the crash site."

The PJs relayed the information about the second pilot still with the downed helicopter, and Pedro 84 was directed to insert their PJs near the wreckage.

Based on the information, Staff Sgt. Zachary Kline, pararescue assistant team leader, and Staff Sgt. Bill Cenna, pararescue team member, began preparing their gear for their insertion near the crash site. At about 180 feet, the hoist was significantly higher than their standard descent due to the surrounding terrain.

"It was the longest hoist I've ever been on," added Sergeant Kline. "When we got on the ground, I was still under the impression that we were close to the other team, so we took a knee. We were about 50 meters from the crash site, and we didn't see the other guys so we made our way to the site."

The team approached the pilot and assessed he had died prior to their arrival. The PJs immediately began preparing the fallen hero to be hoisted out.

## FIRST CONTACT

Overhead Pedro 84's flight engineer had retrieved the hoist cable and was getting back into position when the aircraft began to take fire.

"Not more than two seconds after forward momentum was executed ... pop shots," said Staff Sgt. William Gonzalez, Pedro 84 gunner. "The first thing we start doing is checking to see where it's coming from and checking everybody out. And, maybe five seconds later the (flight engineer) says 'I'm hit.'"

In addition to manning one of the Pavehawk's .50-caliber machine guns and

monitoring the aircraft's systems, the flight engineer runs the hoist on the aircraft. Tech. Sgt. James Davis, was the engineer on Pedro 84 when it was first engaged by enemy fire.

"I had just turned off the hoist, and I was sliding back into my seat when the round came through the helicopter and hit me in the leg," said Sergeant Davis. "They asked 'are you alright Jim' and I said 'no I'm bleeding pretty good here.'"

Pedro 84 rejoined Pedro 83, but determined they were no longer mission capable after the injury to the flight engineer. They headed back to Bagram to get

advance care for their injured flight engineer and to pick up another engineer to take Sergeant Davis' place.

Sergeant Gonzalez immediately moved over to provide medical care for Sergeant Davis.

"I looked back, and the first thing I saw was a pool of blood by his seat," said Sergeant Gonzalez. "I went over to assess his situation. I saw that he was still conscious and saw that he was still breathing. I put his tourniquet right above the wound. After I had it on, I went over to the PJs medical kit and grabbed some gauze, and I wrapped it around the leg trying to absorb as much blood as I could."

When the Pavehawk landed at Bagram, the gunner, co-pilot and a Marine lieutenant (who saw they needed assistance) off-loaded Sergeant Davis, who was brought into the Craig Joint Theater Hospital emergency room.

The flight engineer said the timing of the shot is what made the difference between a serious wound and a potentially fatal one.

"I had been in the doorway with no way of protecting myself to get the PJs on the ground," said Sergeant Davis. "I got the cable up, and as soon as I slid from the doorway to the seat, the round came in. If I was still in the doorway, the round would have hit me right in the body armor or below it, and I'd have been in much worse shape."

As they cared for their injured crewmember, Pedro 84's crew also worked to find a replacement for Sergeant Davis so they could get back to their PJs on the ground. Tech. Sgt. Heath Culbertson, was sleeping at Bagram Airfield when Sergeant Davis was shot, and he was woken up by frantic knocking on his door.

"They said 'get up, we need you in the TOC now,'" said Sergeant Culbertson. "I asked what's going on, and they said Davis had been shot."

"When we taxied over from the (refueling point), Sergeant Culbertson had just walked out and was ready to go," said Major Bryant. "He came, got into the aircraft, got hooked up, and we took off. The crew swap only took about four minutes."

The reality of the situation hit Sergeant Culbertson as he approached the aircraft. As soon as I got underneath the rotor, I saw the blood," he said. "It was pretty surreal. I'd seen blood before in the cabin, but never from any of our own guys. That was pretty shocking to me."

## THE RIDGE

Back on the ridge above the crash site, the three-man pararescue team treated the pilot, pulled security and prepared for extraction. As team commander, Major Peterson coordinated with Pedro flight for pick-up and passed along information about the situation on the ground.

"My job as team member was as the medic," said Sergeant Hargis. "I checked

over the pilot on the ground. He was fully alert and oriented with stable vital signs, and he had a laceration on his jaw."

Overhead, Pedro 83 swept the area searching for the enemy.

"As we came around, I saw rounds come up so I returned fire," said Senior Airman Justin Tite, Pedro 83's gunner.

According to the aircrew, the enemy fire originated from a tree between the two PJ teams on the ground.

"There were no other trees on the slope except this one huge tree right in the middle between the two teams, and that's where they were hiding," said Airman Tite. Seeing that his teams were split up by enemy positions, Sergeant Uriarte realized they were not going to be able to walk to the PJs below.

As the enemy fire began picking up, Capt. Joshua Hallada, Pedro 83's pilot, decided that they needed to get the PJ team and pilot off the ground as soon as possible.

"So we set ourselves up to come in for a hover similar when we first infilled them although much lower," said Captain Hallada. "Being that it was a little lighter now, we brought it into a 20-foot hover over our team and the survivor."

As the pararescuemen and the engineer worked to get the survivor into the aircraft, enemy fire increased, threatening Pedro 83.

"The team started to hook up the survivor, and that's when the pilot started to call rounds off the one o'clock," said Senior Airman Michael Price, Pedro 83 flight engineer. "Someone called the go-around at that point, and I sheared the

cable to stop from dragging them through the rocks."

Airman Price used the guillotine-type device built into the hoist to cut the cable and prevent injury to the Airmen below.

"I had the strap around the survivor, and I was hooked into the cable," said Sergeant Hargis. "I gave them the signal to bring up the cable, and I noticed a little more slack coming out. I thought maybe he didn't see me, so I gave him the signal again, and the next thing I know, the cable's sheared."

"At first I did not realize that he had sheared the hoist," said Captain Hallada. "We came back around and I was setting up to go lower and further back into the rocks so that we could prevent them from hitting us to try to get them out again. On short final, I was informed that we didn't have a hoist. He had told me several times, I was just overwhelmed with other stuff."

Pedro 83 went around for yet another pass as the crew tried to figure out how to proceed.

"I determined we needed to one-wheel hover," said Captain Hallada. "It's when you just set a wheel down on the rock next to them and hover the rest of the aircraft at the same time, allowing them just to jump on."

According to the crew, the maneuver took 10 seconds at most, with the PJs and survivor jumping onto the aircraft followed by a speedy takeoff. However, the aircraft took damage from fire they received as they lifted off.

"We went back into our overwatch patterns, realizing we'd been hit at that point," said Captain Hallada. "And, we started trying to figure out what to do next seeing as we didn't have a hoist and we knew the lower (landing zone) was hot."

Pedro 83 stayed on scene to provide overwatch for the remaining PJs and pilot despite the damage to their aircraft; however, running low on fuel, they were relieved to hear that Pedro 84 was on its way back.

"We left for (Forward Operating Base) Morales-Frazier planning to get gas, ammo and return," said Captain Hallada. However, once we landed the situation caused us to shutdown and evaluate further."

At Morales-Frazier, Sergeants Uriarte and Hargis transferred the injured helicopter pilot to the field surgical team while Major Peterson ran to the tactical operations center to coordinate with the ground force commanders. Meanwhile, Airman Price looked over the aircraft to examine the extent of the damage. Upon the first glance, the damage appeared minimal. But then, the Airman checked the main transmission fluid.

"It was pretty much bone dry," said Airman Price. "I told the captain we couldn't fly. We really didn't want to create another (personnel recovery) event out there." The crew of Pedro 83 began working with their operations team at the TOC to get back into the fight. This entailed 1st Lt. Elliott Milliken, Pedro 83's co-pilot, coord-

inating a ride back to Bagram to pick up their spare aircraft.

Once at Bagram, the crew quickly loaded into the fresh Pavhawk with additional pararescuemen and a small maintenance team, and they headed back to FOB Morales-Frazier.

## PEDRO LINKUP

Pedro 84 arrived back on scene to find significant airpower had joined the fight to protect the pararescue team and pilot still on the ground.

"While we were away, the A-10s (Thunderbolts) had shown up," said Major Bryant. "We train with the A-10s to do this - combat search and rescue. When we got back out there, there were three Apaches and four A-10s operating in the area."

The enemies in the large tree continued to threaten the aircraft and ground personnel until the A-10s and Apaches engaged the target.

"The A-10s were using their nose guns and their rockets, and the Apaches were using their chain guns," said Captain Nolting.

With the situation appearing to have settled down, Pedro 84 made an attempt to extract the PJs and remaining pilot. An Army Apache teamed up with the Pavhawk to move to the LZ.

On scene for the first time, Sergeant Culbertson was able to get eyes on the crash site and the PJs. He was guiding the pilots down to the site when he began to hear what he thought may be gunfire.

"I heard whistling by my head," he said. "But, I thought to myself, 'that can't be. I've got my helmet on. There's no way I'm hearing the hisses.'"

It wasn't until Sergeant Culbertson heard the impacts on the aircraft that he realized they were under fire, and he began searching for points of origin.

"Next thing I know, I get thrown on my console," said the flight engineer. "I still didn't know what was going on at that point. But from this vantage point, I could see under my gun, and I could see the muzzle flashes. I remember shaking my head to clear it, and then just a rage of fury came over me."

It wasn't until much later that Sergeant Culbertson realized that a bullet had entered his helmet on the right side, through his visor and exited the other side of the helmet without injuring him.

"I called for the go around, turned the gun power switch on, and just started unleashing the 50 cal on these two points of origin," added Sergeant Culbertson. While Sergeant Culbertson remembers the event in "slow motion," Sergeant Gonzalez said the entire engagement was very quick.

"All of this happened within four seconds," added Sergeant Gonzalez. "I hear him say 'I'm scanning, I'm scanning. There was the pop-pop-pop from the ground, then the guh-guh-guh-guh from his gun."

Captain Nolting credits Sergeant Culbertson's quick and collected response to saving the aircraft.

"Without him returning that fire, there was a chance that our right engine or hydraulics could have been shot out," Captain Nolting added.

Running low on fuel, and with plenty of air support on scene to protect the team on the ground, Pedro 84 returned to FOB Morales-Frazier where they looked over the damage to their aircraft. It was at this point that the crew realized not only that Sergeant Culbertson had been hit, but so had Sergeant Gonzalez.

"I initially counted seven rounds that had impacted the cabin," said Sergeant Gonzalez. "And then, I noticed the one that was under my seat. It had come from under my seat and fragged outward. One piece missed my right knee, and the other actually bounced off my knee and went through my knee pad."

Determining the aircraft was still flyable, Pedro 83 and Pedro 84 prepared to head back to the crash site together. Before departing, the pararescuemen who had come in with the spare aircraft from Bagram loaded onto the Pavhawks.

"The situation being what it was, we didn't know how long the mission was going to take," said Sergeant Uriarte. "We thought it was best to switch crews so that they could do some work and we could pick it up later in the night."

## THE CRASH SITE

At the crash site, Sergeants Kline and Cenna assessed the situation. With Pedro 84 off scene due to Sergeant Davis' gunshot wound and Pedro 83 on its way to FOB Morales-Frazier, there was little they could do but wait. They hunkered down near the aircraft and the pilot, waiting for the Pavhawks to return.

"It was at that time when we started taking fire," said Sergeant Kline. "I didn't

# MILITARY RESCUE

know what was going to happen at that point. We were both preparing ourselves mentally to stay there for a while."

The enemy fire was sporadic as they took cover at the base of the mountain.

"Initially, it was just a couple shots here or there," said Sergeant Kline. "But then, it really started to get close. Both of us ducked and got behind a rock outcropping. I think I saw the rounds impact before I heard them."

Unable to see the muzzle flashes, Sergeant Kline requested support from the aircraft above.

"I was basing all of my calls for fire off the impacts," he added. "If rounds hit here, they had to come from there. There was no other way. We were just watching where the dust flew and taking a reverse azimuth."

The team member began looking for escape routes should the conditions deteriorate further.

"To me, there was just one," said Sergeant Kline. "There was this ravine. It was approximately 25 meters away."

The team eventually had to use the egress route as the enemy fire became overwhelming for the two Airmen.

"We thought we were in pretty good coverage with the boulders and the helicopter," said Sergeant Cenna. "But, I distinctly remember looking over at (Sergeant Kline) at multiple times seeing rounds and dirt flying right next to him. How we were not hit was pretty amazing."

"It felt like 30 rounds were all around us all within a two- to four-second period. They just hit everywhere," Sergeant Kline added. "They hit the aircraft, and it went up in flames. It quickly overtook the aircraft and I yelled at (Sergeant Cenna) to get the hell out of there. I had noticed during my initial scan of the aircraft that there was still a rocket pod with rockets in it. That was my concern; that it was going to be like the Fourth of July."

Sergeants Kline and Cenna sprinted for the ravine taking cover from the aircraft fire while dodging enemy bullets.

"That's when it started exploding," said Sergeant Kline. "Even while we hunkered down, they still kept shooting at us. The rounds were ricocheting above our heads. I have molten metal on my kit from where the helicopter had exploded."

Sergeant Kline kept in contact with the air assets throughout the firefight, providing situation updates and receiving information about the enemy who was closing on their position.

"They provided overwatch the whole time," said Sergeant Kline. "They were like 'there are these guys 300 meters to the north of you;

we're going to go hot on them.' We could feel the concussion from the rockets." Sergeant Kline also recalled seeing an Army quick reaction force being flown over their position as they waited.

"I could see guys sitting there in their seatbelts with their guns," he said. "And as they were going by, I could see a (rocket propelled grenade) whiz by. I looked up, and I could see the burst on the western mountainside."

Sergeants Kline and Cenna said they would go up to 15 minutes without a shot fired on them; however, every time they would begin to signal that they were clear, the firefight would start up again.

"I'd say, 'hey, it's been clear for 15' pop-pop-pop-pop," said Sergeant Kline. "It was every time I would try to tell someone it was clear, they'd pop off a couple of rounds."

While waiting in the ravine, Sergeants Kline and Cenna overheard the 9 line medical evacuation request for a member for the QRF.

## 9 LINE

Together for the first time since Sergeant Davis was shot, Pedro 83 and Pedro 84 left FOB Morales-Frazier hoping to extract the PJs and the second pilot. However, they received the 9 line before they arrived on scene.

A Soldier had been hit and died within minutes of the call, said Major Bryant. Then as the Pedros approached the area another Soldier was hit requiring immediate medical evacuation.

"When we got to the scene, there was an incredible amount of helicopter traffic in the valley," said Captain Hallada. "It was more than I've ever seen anywhere in this entire country going all directions. There were UH-60 (Blackhawks), Apaches, Kiowas, and French helicopters."



Tech. Sgt. Heath Culbertson, 83rd Expeditionary Rescue Squadron flight engineer, shows where a bullet entered then exited his helmet. (U.S. Air Force photo by Capt. Erick Saks)

Two Apaches joined the Pedros' Pavahawks creating a four-ship rescue formation; however, the number of enemies on the ground and the amount of firepower they wielded resulted in several unsuccessful passes over the medevac landing zone.

During the first attempt, Pedro 84 began descending into the ravine as the other three aircraft provided cover.

"As we got down to about 30 feet, (Sergeant Gonzalez) and I started seeing muzzle flashes from this one building 200 to 300 feet from us," said Captain Nolting.

The flight lead determined they need to pull around, and as Captain Nolting worked to get the aircraft out of the valley, the flight engineer and the pararescuemen engaged targets in the building.

Just barely passing over some wires that were strung along the valley, Captain Nolting was able to safely get Pedro 84 out the zone. The aircraft formed back up for another pass with Pedro 83 this time attempting to land and extract the Soldier.

"As we were about to set down, we were engaged, and all of the aircraft returned fire including the Apaches," said Captain Hallada. "As we took off, I immediately saw the wires out the windscreen, and I pulled everything the rotor system had to get over them."

On the third attempt, Pedro 84 was just feet from the ground when they started taking fire again, according to Major Bryant. At that point, one of the Apaches performed a buttonhook back toward them and began engaging enemy targets.

"It split the formation, firing rockets and guns," said Captain Nolting. "It was the most amazing thing I've ever seen. It was

deconflicted, it was safe, and it was awesome."

Based upon the threat, the formation again pulled out of the area to reset. At that point, the Apaches fired their Hellfire missiles destroying a confirmed position which had been posing the immediate threat to the aircrews and the Soldiers on the ground.

On the fourth attempt, Pedro 83 was finally able to land and extract the injured Soldier. The Pedros saw this as the ideal time to finally extract the second pilot and their PJs.

"There had been this tremendous weight on us the whole mission since we'd left our PJs in the zone," said Captain Nolting. "This was our golden opportunity to get them out."

## EXTRACTION

Captain Nolting made contact with the PJs as Pedro 84 began to move into position above them. They agreed on an extraction game plan. Sergeant Culbertson

"I called for the go around, turned the gun power switch on, and just started unleashing the 50 cal on these two points of origin,"

Sgt Culbertson - Flt Engineer PEDRO 84



Maj. Jesse Peterson and Tech. Sgt. Shane Hargis, 83rd Expeditionary Rescue Squadron Guardian Angel team members, practice a hoist mission, April 22, 2011, the day before they were called upon to recover the pilots of a downed Army helicopter. (U.S. Air Force photo by Staff Sgt. Bill Cenna)

would lower the hoist, the PJs would first hook the pilot's litter to the line, then they would connect themselves on a second hoist. But just as the aircraft made it's decent, the engineer noticed that the hoist had broken.

"I knew that we had to get our PJs out, and this was our opportunity," said Sergeant Culbertson. "The only other option I had was to go to backup mode. I said a little prayer, pushed down, and it worked."

According to the flight engineer, the problem with operating the hoist in backup mode is that the speed is significantly slower; however, they lowered the cable and the pararescuemen connected the pilot.

"That's pretty brave to send up a hero and not yourself when you been there over five hours," Captain Nolting noted.

The lack of speed in the hoist was clearly evident to the PJs below the aircraft, according to the engineer.

"As I'm putting the hoist down there, I can see Kline down there waiving for me to go faster," said Sergeant Culbertson. "I'm like, 'sorry brother, I can't go any faster. The hoist is broke.'"

"By this time, I was expecting for us to get shot down," said Captain Nolting.

"We'd been there so long. I truly expected we were going down."

For the first time that day, however, the aircraft did not take any fire, and Pedro 84 was able to extract the pilot and PJs and evacuate the area.

Sergeants Kline and Cenna spent about five and a half hours in the valley dodging

bullets and the explosion of the aircraft. And while he didn't know whether or not he would make it out of the area alive, Sergeant Kline said he knew that he would never have left without the downed pilot.

"We were going to do everything in our power to get him back," he said. "If I had to clip in and hold him, I would have. There was no way he wasn't coming back." Prior to departing to have his injuries treated at Landstuhl Regional Medical Center in Germany, Sergeant Davis expressed his pride in the actions of his squadron.

"We did what we do," said Sergeant Davis. "We've got a motto for a reason, these things we do that others may live."

TR



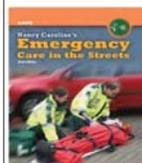
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# CMC MPD

[ED: a mouthful of letters and I know we've shown this before as a Product News item but we haven't had a chance to review it yet and it's now available as an 11mm version so will have much wider appeal than the original 13mm-only version. It looks like Rock Exotica-quality manufacture and an interesting item for rope rescuers]



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# CPR Manikin for realism in the outdoors



## Full Bodied CPR Manikin

Ruth Lee Training Manikins in the UK have recently designed a full bodied Ruth Lee CPR manikin for use in or out of the classroom. The manikin will allow for realistic CPR training in more difficult situations i.e confined spaces or with the manikin trapped under a vehicle or collapsed building etc. You can imagine your staff coming across this manikin in a situation other than on a first aid course and you tell them he has stopped breathing and needs resuscitation, it will certainly be a surprise and will bring any training scenarios to life!

The manikin was designed around and can be bought complete with the Simulaid's Brad torso, but it will accommodate most other manufacturers models if you already have one. The torso isn't actually fixed to the manikin in any way and can simply be lifted out for cleaning or maintenance. The chest cavity of the manikin is also padded all round to protect the torso when used in difficult situations. The torso is constructed of soft, realistic vinyl plastic over polyurethane foam.

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- long torso for realistic abdominal thrusts
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# HART CONFERENCE PROGRAMME



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### DAY ONE – WEDNESDAY 22ND JUNE 2011

08.00 – 08.45	REGISTRATION / COFFEE / EXHIBITION	
08.45 – 09.00	<b>HART Conference Chair, Dr Dave Sloggett</b> , independent consultant and academic at King's College London	Welcome from the Chair, outline of the next two days
09.00 – 09.30	<b>Russ Mansford</b> , Chair, Ambition 2011 & Strategic Ambulance Advisor, Department of Health	HART IN 2011: Progress so far
09.30 – 10.00	<b>KEYNOTE: Baroness Pauline Neville Jones</b> , Minister of State for Security and Counter Terrorism	Topic: To be confirmed
10.00 – 10.30	<b>Colonel Peter F Mahoney</b> , Defence Professor of Anaesthesia and Critical Care at the Royal Centre for Defence Medicine, Birmingham	Topic: To be confirmed
10.30 – 11.15	REFRESHMENT BREAK IN THE EXHIBITION HALL	EXHIBITION HALL
11.15 – 11.45	<b>Jason Killens</b> , Deputy Director of Operations, London Ambulance Service and <b>Mark Scoggins</b> , Solicitor Advocate with Fisher, Scoggins, Waters	Topic: The 7/7 Inquest: Lessons learned
11.45 – 12.15	<b>James R. Gruenberg</b> , Assistant Director, National Center for Medical Readiness, Department of Emergency Medicine, Boonshoft School of Medicine, Wright State University, Ohio, USA	Topic: Hurricane Katrina, Mississippi: The Disaster Paradox
12.15 – 14.00	LUNCH BREAK IN THE EXHIBITION HALL	EXHIBITION HALL
14.00 – 14.30	<b>Mr Chaim Rafalowski</b> , Director of Emergency Management Department, Magen David Adom, Israel	Topic: Mass casualty response: UK learning lessons from Israel
14.30 – 15.00	<b>Anthony Marsh</b> , Chief Executive of West Midlands Ambulance Service NHS Trust and National CEO Lead for Emergency Preparedness in the Ambulance Service	Topic: The structure of emergency preparedness in the NHS
15.00 – 15.30	REFRESHMENT BREAK IN THE EXHIBITION HALL	EXHIBITION HALL
15.30 – 16.00	<b>Professor Keith Willett</b> , National Clinical Director for Trauma Care, Professor of Orthopaedic Trauma Surgery, University of Oxford and Honorary Consultant Orthopaedic Trauma Surgeon at John Radcliffe Hospital, Oxford	Topic: New trauma centres and their potential impact on managing mass casualty incidents
16.00 – 16.30	<b>Roy Wilsher</b> , Chief Fire Officer, Hertfordshire Fire and Rescue Service	Topic: The Japanese experience
16.30 – 16.45	HART Conference Chair	Summary of the day, audience questions & discussion
16.45 – 17.15	EXHIBITION HALL OPEN UNTIL 17.15	EXHIBITION HALL
18.15 – 19.00	DRINKS RECEPTION sponsored by Excelerate Technology Limited	Outside Ironbridge Suite
19.00 – 23.00	Ambition 2011 GALA DINNER sponsored by Excelerate Technology Limited	Ironbridge Suite

### DAY TWO – THURSDAY 23RD JUNE 2011

08.00 – 08.45	REGISTRATION / COFFEE / EXHIBITION	
08.45 – 09.00	<b>HART Conference Chair</b> and brief welcome from <b>Russ Mansford</b> , Chair, Ambition 2011 & Strategic Ambulance Advisor, Department of Health	Welcome from the Chair
09.00 – 09.30	<b>Dr Dave Sloggett</b> , independent consultant and academic at King's College London, specialising in intelligence analysis and counter terrorism	Topic: The CBRN threat: an up to date assessment
09.30 – 10.00	<b>Vij Randeniya</b> , West Midlands Chief Fire Officer	Topic: To be confirmed
10.00 – 10.30	<b>Peter Tallantire</b> , Deputy Director, Horizon Scanning, Civil Contingencies Secretariat, Cabinet Office	Topic: The role of CCS in a crisis
10.30 – 11.15	REFRESHMENT BREAK IN THE EXHIBITION HALL	EXHIBITION HALL
11.15 – 11.45	<b>Wing Commander Philip Greville</b> , RAF Search and Rescue Headquarters, Anglesey	Topic: To be confirmed
11.45 – 12.15	<b>Simon de Gruchy</b> , former Military Commander of the Joint Service EOD Operations Centre (JSEODOC) & Director Explosive Risk Management Ltd	Topic: The threat posed from IEDs in the UK to first responders
12.15 – 13.30	LUNCH BREAK IN THE EXHIBITION HALL	EXHIBITION HALL
13.30 – 14.00	<b>Marianne Breerton</b> , Emergency Management Development Officer, Ambulance Victoria, Australia	Topic: Australian Challenges and establishment of SORT teams
14.00 – 14.30	<b>Jennifer Cole</b> , Head of Emergency Management, Royal United Services Institute (RUSI)	Topic: Research on the use of training and exercising programmes / technology
14.30 – 15.00	HART Conference Chair	Summary of the day & audience questions for panel
15.00 – 16.30	EXHIBITION HALL OPEN UNTIL 16.30	EXHIBITION HALL
16.30	EVENT ENDS	EVENT ENDS

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# CAMP PHOTON CARABINERS

## Photon Climbing Carabiners & Quickdraws RECALLED Due to Risk of Injury

WASHINGTON, D.C. – The U.S. Consumer Product Safety Commission, in cooperation with the firm named below, today announced a voluntary recall of the following consumer product. Consumers should stop using recalled products immediately unless otherwise instructed. It is



**illegal to resell or attempt to resell a recalled consumer product.**

Name of product:	Photon carabiners, Photon and Mach Express quickdraws
Units:	About 15,500
Importer:	CAMP USA Inc., of Broomfield, Colo.
Hazard:	The carabiner gate may open under a heavy load, posing a risk of serious injury or death if the climber falls.
Incidents/Injuries:	None reported.
Description:	The Photon model carabiners are used by climbers as connectors and are sold individually or as components of the Photon Express and Mach Express quick draw used as extenders to anchor a climber. The carabiners were sold in a variety of colors including green, yellow, silver and brown. The quickdraws use a white or black fabric strap with green, yellow or gray stitching and Photon carabiners attached at each end.
Sold at:	Outdoor retail stores nationwide from February 2011 through March 2011 for between \$8 and \$12.
Manufactured in:	China.
Remedy:	Consumers should stop using the recalled carabiners and quickdraws sold with carabiners immediately and contact CAMP USA to return the recalled products for a full refund.
Consumer Contact:	For additional information, contact CAMP USA Inc. toll-free at (877) 421-2267 between 9 a.m. and 5 p.m. MT Monday through Friday, or visit the firm's website at <a href="http://www.camp-usa.com">www.camp-usa.com</a> .

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8 grams of Argon= 5 fills on Small, 4 fills on Medium, 3 fills on Large, 2 fills on XL and XXL, 1 fill on XXXL Each fill will remain in vest for up to 1 week while being worn, and over 2 months when hung up.

This breakthrough system uses flexible, airtight yet breathable chambers filled with argon gas instead of

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# MULTI-TOOL TESTS

In issue 60 we began an extensive series of Back to Back comparisons of multi-tools. There will be 3 tools in each issue culminating in a larger 'final' article which will pitch all of the highest scoring tools against each other - probably the top 6 but we'll reserve a decision on that until closer the time. Occasionally we *may* slip up on marking and need to re-evaluate a model based on an initial incorrect use which caused its marks to be downgraded or maybe we just got the adding up wrong! We decided that the tests for a multitool should encompass 1 entry requirement and 4 important tasks that are vital in either urban or wilderness survival. The entry requirement is that the multitool should be able to cut fence wire, simulated in our tests with a thick wire coat hanger. That cuts out all the handbag multitools and is shown up in our tests in the COMFORT test which is mainly centred on cutting thick wire because it requires most hand pressure and can be painful with a poorly designed handle/body interface or indeed a rubbish plier head. On to the 4 tasks and who hasn't cursed at the inability of their knife to change a plug when caught out 300 feet up a cliff? or felt the urge to sharpen a wooden stake when the wife won't let you watch football on the main TV. Taken in isolation these tasks may seem unrelated and if you live in a tent in the desert maybe they are, but for most people their multitool goes everywhere from house, to car, to station to incident or training area and back to the station or home for a BBQ. It therefore needs to be a jack of all trades and preferably master of some.

## CHANGE A PLUG

We chose changing a plug because although it's a requirement that's close to extinction in the modern age it still generally requires at least 3 to 5 tools - A medium or small flat screwdriver to open the plug, a small phillips to undo the cable retention plate, a really small flat screwdriver to release and tighten the bare wire ends into the terminals, wire cutters to cut the whole wire and maybe the individual live, earth and neutral and finally a wire stripper to bare the wires for the terminals. This latter can easily be accomplished with a carefully manipulated knife blade run around the plastic sheath of the wire before plucking it off by hand or with the pliers to reveal the bare wires.

## CARVE A WOODEN STAKE

It's hard to change a plug with a dirty great bowie knife or similar Rambo-esque killing tool but you can certainly carve a wooden stake with one. We chose this test with the intention of having to cut a short stake that was flat at one end for driving in with a hammer or rock and sharp at the other end...obviously. It is cut from a 2" diameter length of medium density wood, ash or beech - eerily similar to a broom handle - this required either an efficient wood saw or more patience and a serrated blade or even more patience and a sharp blade. But the requirement for a flat end does make using a knife blade very long-winded since you effectively have to cut the wood initially by employing 'V' cuts then whittling it flat. A number of modern multitools have opted for a 'turbocut' wood blade or in some cases a swap-out facility for all sorts of blades. A wood saw is very definitely the easiest way to cut wood or plastic with a multitool. Creating the sharp end doesn't fox many, if any, proper multi-tools, it's all about the time taken to do it and the efficiency or effort required. Large, very sharp blades achieve this easily and quickly but only if their handles are large enough and comfortable enough to assist in the task. Try cutting the wood with just a bare jigsaw blade where all that you can hold is the locating lug at the back of the blade - doesn't matter how sharp the saw blade is does it? Similarly, one of those girly mini-multitools with the tweezers, nail file and 2 inch knife blade is just going to be plain embarrassing no matter how sharp and tough the blade is.



## UNSCREW A CARABINER

We chose this one because, while you may not all use carabiners in a rope rescue sense, they crop in plenty of other areas of rescue and could be a truly life-saving requirement when a screwgate carabiner has been over-tightened and locked. The pliers firstly need to be large enough to get around the screwlock - normally about half an inch. Some pliers are large enough for the screw to fit into the semi-circular recess and this makes life easier. But smaller plier heads may still perform well using the flat section closer to the tips providing they have a good enough grip or serration. Unfortunately, it seems to be that smaller plier heads have too fine a grip to actually 'grip' much at all let alone the large, curved surface of a carabiner screw lock.

## OPEN A TIN & BOTTLE

We decided to put these two functions into one because 99 times out of a hundred if it has a tin-opener it's also a bottle opener. Not always the case of course as the Zilla showed and we have come across other tools where the tin opener was either the jaw of a carabiner style clip or some ninja manoeuvre with a belt clip. A good tin-opener can be a lifesaver - ask Sir Ernest Shackleton. Or it can save your fingers if your only other option is one of those corned beef tins with a key that rolls a metal strip around half way before breaking off, forcing you to try and lever the two halves apart and invariably ending up in A&E/the ER with part of your finger missing. Save yourself the anguish and simply use a multitool's tin opener.

## NUMBER OF TOOLS

In our first article we had one conventional market-leader, the Leatherman Surge and two unconventional tools the Swiss Army style Wenger Mike Horn based on their Hunter model and CRKT's Zilla tool. If a multitool has one extra-spectacular tool like a built in breathalyser or cordless drill it will get bonus points. Otherwise, all the marks or stars are out of 5 apart from the *number* of tools. For this category we awarded 1 point or star for every 3 tools quoted by the manufacturer. I wanted any tool that had an 'awl' to be deducted points because I've always found that to take up valuable space that could have been a harmonica or something more useful, cue the emails.... Because it's intended to 'drill' holes in things it's too sharp to use as a marlin spike to assist in untying knots but when I had to drill an extra hole in a leather belt the other day because it was too big (no really..) I became a convert and now go around drilling holes in all kinds of light sheet metal roofing and car body panels. That then gives me a chance to test the wire cutting capabilities in breaking out of jail. The mark for number of tools doesn't necessarily take into account whether the tools quoted are actually bonafide tools or something made up by the manufacturer for convenience, after all they could claim that any large screwdriver is also a 'paint lid remover' and gain extra points. And some do. So occasionally our mark may not coincide with the number of tools quoted by the manufacturer.

## ZILLA

In the case of the CRKT Zilla and their 'bottle opener' this is listed as a feature on their box and in some of their literature based on the fact that the top end of the pliers handle will allegedly open a bottle - it therefore qualified as a 6th quoted tool and got them 2 points for that category. The bottle-opener as an intentionally engineered tool is a nonsense and it failed to open our Corona Beer bottle anyway but we allowed the 2 points because it had 5 good tools which is closer to 6 than 3 so it seemed fairest. It may open some bottle of course as virtually any stiff, flat-sided object thin enough to get between the cap and the first thread will....but not our Corona bottle and if you can't open Mexican lager what good are you?

## VALUE FOR MONEY

Ultimately this is a vital consideration. Not because you're all a load of skinflints but because when Porsche decide to bring out a multitool that copes easily with a sunday roast and a lunar moon landing the fact that it costs as much as the Lunar module you arrived in and are now trying to fix will weigh heavily on your shallow pockets. Equally, you get what you pay for so those of you that fell for the chinese knock-offs like poor old Aron Ralston and end up having to chew your own arm off should consider carefully whether saving \$50 so you could buy that 60" TV was the best way to spend your money.

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BLUE MOUNTAINS  
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NSW, AUSTRALIA



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22 SQUADRON - Sea King

A Flight, RAF Chivenor, UK  
B Flight, RAF Wattisham, UK  
C Flight, RAF Valley, UK



ROYAL AIR FORCE SAR  
202 SQUADRON - Sea King

A Flight, RAF Boulmer, UK  
D Flight, RAF Lossiemouth, UK  
E Flight, RAF Leconfield, UK



ROYAL AIR FORCE SAR  
84 SQUADRON - Griffin

RAF Akrotiri, Cyprus



ROYAL AIR FORCE MARITIME PATROL  
201 SQUADRON - Nimrod

RAF Kinloss, Scotland, UK



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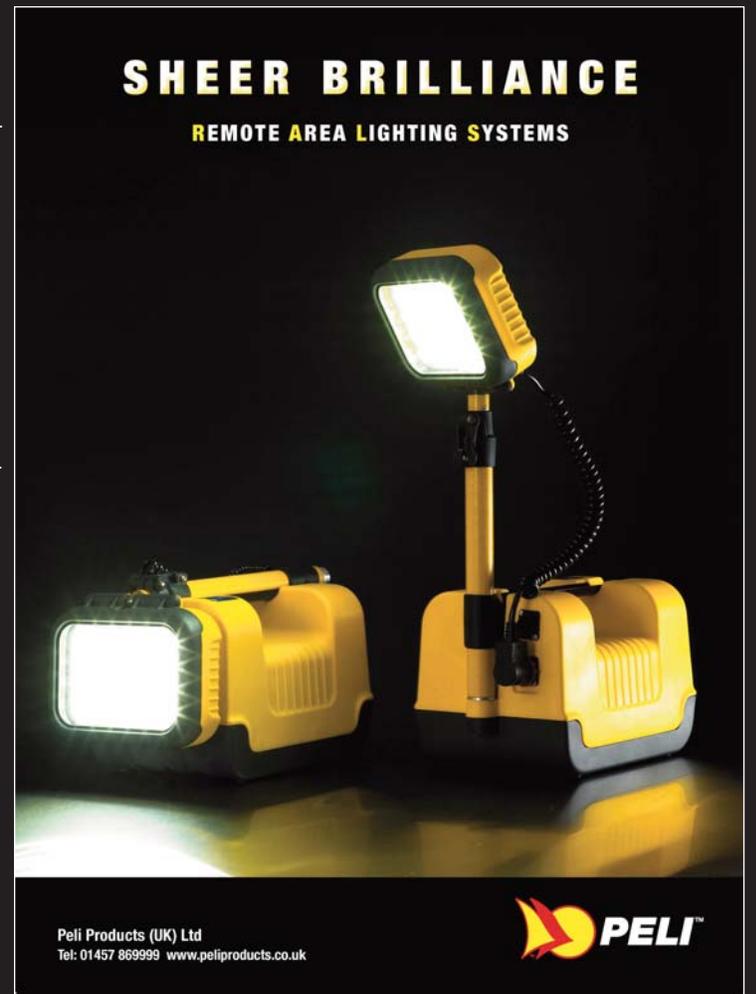
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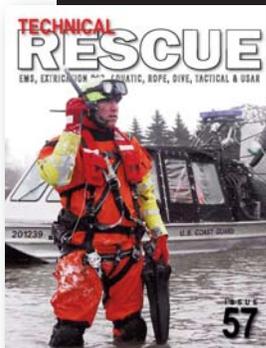
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