

PARK RANGER

WILDERNESS EMS & SAR, WILDFIRE, HELI-OPS & LAW ENFORCEMENT



ISSUE

1



Weight-loss tip:
eliminate every unnecessary gram.

ALVEO

Lightweight helmet for work at height

Forget about weight on your head, thanks to the ultra-light design of the ALVEO helmet (345 g). For optimal stability in action, its CenterFit adjustment system ensures perfect centering of the helmet on the head. It is extremely modular, allowing integration of a VIZIR face shield and hearing protection. Available in two versions: ALVEO VENT (ventilated) and ALVEO BEST. Contains Alveolen® of Sekisui Alveo AG

www.petzl.com/ALVEO



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EDITOR: Lee Lang

lee@rangermagazine.com

MANAGING EDITOR: Ade Scott

ade@trmedialtd.com

RSA EDITOR: Rob Thomas

rob@trmedialtd.com

Technical Diagrams:

Steve Monks

steve@trmedialtd.com

ADVISORS:

Medical: Rob Keating/Neil Noble

Wildlife: Steve Daly

Tactical: Michael Woltering

Forestry: Thomas Amorim

Helos: Rob Keating/Rob Thomas

Rope: Reed Thorne

Water: Dr Mike Croslin

Dave Pope

Wojtek Rychlik

Ade Scott

Gere Scott

ADVERTISING:

Kelly Matthews

kelly@trmedialtd.com

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Ian Downes

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maintained by Lee Lang

Reviews and articles not shown
as authored are by Ade Scott and
Lee Lang

FRONT COVER:

NPS Ranger pilot Scott Retchen
and Gail weathers discuss pay-
load on a high altitude rescue
using an Allouette III
picture by Dave Pope

This Page: Yosemite National
Park in Summer. Either side of
Tuolumne meadows are Half
Dome and El Cap
picture by Gere Scott

CONTRIBUTORS:

Mitch Boudrot

Dr Mike Croslin

Mel Harms

Lee Lang

Andy Maguire

Detlef Maushake

Mick Moore

Kevin Moses

Ken Phillips

Gene Robinson

Ade Scott

Rob Thomas

PICTURES:

Linsey Dyer

Detlef Maushake

Ken Phillips

INTRODUCTION

www.rangermagazine.com

WELCOME

to **PARK**
RANGER
quarterly

Phot of Yosemite Search & Rescue Team (YOSAR) by Dave Pope winner of the Technical Rescue/CanPro Photo Competition 2010

ISSUE 1 | **PARK RANGER**

PARKRANGER picks up where our sister magazine **TECHNICALRESCUE** (TRm) rarely ventures... into the wilderness.

Instead of heavy rescue, USAR, vehicle extrications, flood rescue with 17 trucks and a hovercraft and technical rope rescues involving three and a half tons of rope and metalwork **PARKRANGER** is an altogether lighter and healthier magazine. Perhaps because of all the fresh air and lack of petrol generators. Instead of reviewing 50kN steel carabiners and 21b descenders we'll be looking at aluminium snaps and belay tubes, instead of Peli Cases that can be transported by 38 ton trucks or airlifted by Lockheed Galaxy Transporters we'll be looking at rucksacks and hessian carrier bags (because they're better for the environment). This will be the new home for Search Dogs although TRm will continue to cover USAR/Disaster Response dogs. This will also be the new home for SAR Helicopters although, again, TRm will continue to cover medivac, Coastguard, Surf Rescue and military helicopters used in a tactical role as distinct from wilderness rescue. We've called it **Park Ranger** because the words **Wilderness Responder** didn't fit the pages very well and we kept spelling it wrongly. So the focus for **PARKRANGER** is wilderness emergency responders whether they be Mountain Rescue, 4x4 teams, medics, heli-crews, wildland firefighters, search dog handlers, animal specialists or law enforcement. In the case of actual Park Rangers they tend to do all of the above and so had the honor of having this magazine named after them - and it's easier to spell than 'wilderness responder'.

And since we're on the subject of Park Rangers here's PRm's Editor Lee Lang to explain more....

"Jack of all trades, master of none" - is a figure of speech used in reference to a person that is competent with many skills but not necessarily outstanding in any. This, however, should not be used to describe Rangers. Around the World, Rangers and the other wilderness professionals (paid and volunteer) that we are including under the 'Ranger' banner, find themselves having to master skills more commonly associated with a number of distinct career paths. They may be expected to perform law enforcement duties, wildland firefighting, EMS and wilderness SAR. Each area offers unique challenges and requires specific skills. Park Rangers in particular may have to perform in these areas simultaneously. No other profession expects so much from its workers. Unlike the police officer, firefighter, urban EMS specialist, or urban SAR responder where backup or support is minutes away, rangers and

wilderness operatives commonly find themselves in remote settings with broken communication channels, where backup or support is measured in hours or even days and weeks in the case of Antarctic bases. Further complicating the ranger's job are the extreme environmental conditions under which they work - from temperature extremes to high altitudes under gale driven snow to class V rapids to open-ocean SCUBA diving - Rangers do it all.

PARKRANGER is focused on the truly unique demands that Rangers and wilderness personnel face while performing their duties. Our Gear Reviews will examine equipment from a wilderness perspective - focusing on performance while being light, comfortable and versatile. Many of our instructional articles will reflect the limited resources that responders have in a remote wilderness. Our articles are written by some of the most experienced professionals in the field, some are world renown and some are only known within their own area of operations. In common with TR Media's other magazines, **PARKRANGER** features content from around the World providing diverse opinions and procedures.

TR Media's family of magazines focus on the unique needs of individual specialists not currently served by other journals: **TECHNICALRESCUE** and **ARBCLIMBER** are both very technical titles with an irreverent style and very poor adherence to deadlines. That's because we're not really publishers at all, we're a bunch of operational rescuers who have been masquerading as a publishing house for over 20 years now. Quite amazing that we should have gotten away with it for this long let alone be starting our third magazine.

PARKRANGER will follow the same dubious traditions but will compensate occasional tardiness and typos with outstanding photography, critical reviews, instructional and informative articles written by wilderness veterans and technical specialists.

We want to hear about your own ideas and incidents and in this technical age, even those of you in the most remote of wilderness areas should be able to keep in touch with us so we look forward to hearing from you.

Lee Lang
EDITOR

Ade Scott
MANAGING EDITOR

WHO'S BOSS?

I have been working on Standards for Wilderness Search and Rescue a lot lately and believe a paradigm shift in the wilderness SAR community needs to take place. The shift I envision will hurt many egos but will enhance safety and team leadership in the wilderness SAR community as a whole and enhance the professionalism of the field.

The change I am referring to involves leadership of field teams during SAR operations. All too often leadership is determined or assigned to the individual with the greatest technical skills. The operational Standards I have been involved in reviewing are just one example of this tendency. The Standards define 3 operational levels and as the level increases so does the leadership and technical skills required for that position. At the end you have a SAR level 1 with basic skills, a SAR level 2 with mid-level skills who oversees SAR level 1s and then a SAR level 3 with enhanced technical skills and who oversees SAR level 1s and 2s.

This sort of paradigm leads to conflicted leadership. To appreciate what I am talking about, let's examine the fire service, where hundreds of in-the-line-of-duty deaths over a century have led to a true culture of leadership development and safety awareness. The key element that the fire service maintains in its chain of command and through its leadership positions is **Situational Awareness**.

One of the best (or most simple) definitions I have found is in a United States Coast Guard training manual –

Situational Awareness is the ability to identify, process, and comprehend the critical elements of information about what is happening to the team with regards to the mission. More simply, it's knowing what is going on around you.

While working as a firefighter in Orange County, California, I truly learned to appreciate my Captain's role on scene. However, that appreciation came over time. As a "newbie" I first looked at the Captain as being too "self-important" to get his hands dirty. He always stood back and directed from afar. It was only many years after I left the department did I appreciate his role – the resources were always there when I needed them, that he was

maintaining the "big picture" view while I was deep in the minutia of the call at hand. Essentially, he always had my back when I did not (and I was not even aware that I did not have my back).

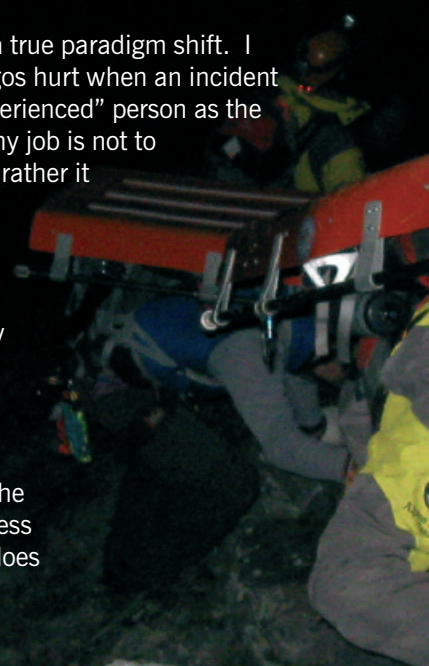
Back to Wilderness SAR – all too commonly, the most skilled individual is assigned as the field team leader, but he or she commonly has the most technical skills. Essentially, how can this person be the team leader and say literally lead the team up a WI2 ice couloir. The moment he or she starts leading the WI2 section they are no longer maintaining Situational Awareness, at best it is severely degraded and putting the entire team at risk. Another example, how often on your team is the highest medical person also assigned the field team leadership role? How can this person care for the patient and effectively serve as team leader? I honestly do not believe you can be "the patient advocate" and team leader at the same time because those hats are mutually exclusive. How often on your team or on missions does this occur?

Like I first stated, it is time for a true paradigm shift. I suspect many will have their egos hurt when an incident commander assigns a "less experienced" person as the team leader. I am sorry – but my job is not to make those people feel good... rather it is to enhance Wilderness SAR overall.

How can we start making this paradigm shift? We can start by incorporating the following concepts and ideas into our training:

Truly understand and practice the concepts of Situational Awareness
Understand that "more skills" does not equate to leadership.

- Break leadership into a separate training tract for members
- Add leadership challenges into training scenarios



- Train leaders that practice good leadership practices
- Seek expert advice/input
- Admit mistakes
- Appropriately recognizes other's efforts/skills
- Are accountable and appropriately hold others to account
- Asks questions
- Are respected and have good command presence
- Are decisive
- AND maintain **Situational Awareness**

I challenge each of you - look at your organization. You may be one of the lucky ones where these ideas are already engrained and incorporated into your organization. For the rest of us, we can work to bring these concepts to our organizations. If you are one of the "high skilled" people that are commonly placed in field team leadership roles – suggest that someone else be placed in that position. Look at how your organization develops leaders... can you help to create leadership specific training.

Lee Lang



Quality Gear for Life



Advance Tech HX Progress Capture Pulley



PN 154900

The SMC Advance Tech HX Pulley is a double pulley with an integrated cam that provides immediate progress capture without the need of prussik loops. The all in one frame and cam design presents a compact form factor. Stainless pins retain the rope when a rigged system is packed so that system can be pulled out and used immediately. Manufactured from high quality aluminum and anodized to help prevent corrosion. The Advance Tech HX is the most advanced pulley of its kind on the market today. The Advance Tech HX will support ropes diameters from 7mm up to 12.5mm. The Advance Tech HX is ideal for all rescue applications where a small mechanical advantage system is being utilized.

Distributed



For more information visit
SMC on the web at
www.SMCgear.com or your
local PMI Dealer.

3/8" Safeline

The BlueWater SafeLine is the premier static rope for rescue and industrial needs. It features a durable 16 carrier construction that has a 50/50 ratio of core to sheath for long wear and excellent handling .

Solution dyed polyester sheath with a nylon core. Available in multiple colors for easy identification between lengths, kits, etc.

UL Classified to meet NFPA 1983/2006 edition for Light Use ropes.

Available in:

300' and 600' Lengths in Yellow w/ Blue marker, Blue w/ Yellow marker, Red w/ Yellow marker, Green w/ Orange marker, Orange w/ Green marker, or Solid Black. Special lengths available.

Elongation:

@ 300 lbf. = 4.3%

@ 600 lbf. = 6.7%

@ 1000 lbf. = 8.9%.

Diameter: 9.5mm (3/8")

Gms Per Meter: 66

Tensile Strength: 6,070 lbf. (27 kN)

Sheath Mass: 46%

Wt Per 100 Feet: 4.87 lbs.

www.bluewaterropes.com

LumiLine

Set up systems through the night with the 7mm Lumi-Line. The special phosphorescent striped sheath will glow after extended exposure to a light source. As a cordelette it is ideal for setting up personal anchors, it is a standard pre-packaged 20ft/6.4m length of 7mm nylon but with glow-in-the-dark fibers

Key Features:

- 100% Nylon
- Glows for up to 10 hours
- 7 mm
- Available in 6.4 m Cordelette
- White phosphorescent tracer
- UIAA 102
- Color: Blue/White

MBS: 10.7 kN (2405 lbf)

Weight: 29 g/m

Diameter: 7 mm (9/32")

Length: 1 m (3.3 ft)

Material: Nylon Sheath/Nylon Core

Cost: \$1.99 / meter

www.pmirope.com

DANNER KINETIC

The Danner Kinetic™, is a lightweight, fast and flexible boot made specifically with law enforcement in mind. Kinetic is made to go the distance and outlast the rigors and exposure that police officers, correctional officers and S.W.A.T. officers may be exposed to.

With Ultralon footbeds for all-day comfort, polyurethane midsoles for added support and ballistic rip stop nylon, the Danner Kinetic is lightweight, fast and ready for anything. The Kinetic is made with durable, quick-to-polish full-grain leather, and comes with either 100% waterproof GORE-TEX® lining, or a highly breathable, moisture-wicking lining for warm weather comfort. It also features a multidirectional low lug outsole for superior surface contact, as well as a reinforced heel and metatarsal construction for added protection.

"We listened to the needs of active law enforcement officers closely when designing the Kinetic," says Drew Linth, Senior Product Development





GPS Microphone for Radios



The GPS-MIC is a heavy duty, water rated speaker mic with a built in GPS unit. Connected to any portable or mobile two-way radio, the GPS-MIC will relay its coordinates to all other GPS-MIC-1 users, viewable on a built-in 120 X 160 backlit LCD screen.

Multiple agencies on local, state, and federal levels have put the GPS-MIC-1 through significant and thorough testing. The net result: a revolutionary solution to member and situational awareness. Upon careful review, many veterans of the GIS, GPS, and communications industries have discovered the GPS-MIC provides a low cost, out of the box solution.

GPS-MIC

- View information on a 120 x 160 backlit LCD
- Monitor longitude, latitude, altitude, direction, speed, temperature & more
- Store waypoints with symbols and names
- Send waypoints to individuals or groups
- Track up to 50,000 points by time, range, or auto
- See relative position to other team members on the group viewer (see diagram left)
- Monitor ETA based on speed & distance from waypoints
- Send and receive text messages between groups or individuals
- Send SOS GID for automatic transmission of data to other users
- See UTM & USNG information
- Transmit location, heading, speed, elevation & user ID every time PTT is pushed
- Run 20 hours off a single charge with lithium-ion battery
- Upgrade firmware with no additional cost

Save money & resources by integrating GPS-MIC into your current communications system; no additional equipment required! Optional cables fit most any 2-way or portable radio Add optional software for incident management like never before.

www.infinityglobaltech.com

Manager for Danner. "With function as our primary objective we were able to build a very athletic boot that is lightweight, comfortable and durable. All of the details in this boot, from the soft collar for comfort while sitting in a vehicle to the broad flat lug design of the outsole for increased surface contact and durability, went into creating a boot that officers could feel comfortable and confident in every day."

The Danner Kinetic comes in a 6" or 8" profile with hot weather or GORE-TEX linings available, and runs in men's sizes 4-16D with half sizes to 12, and 7-14EE with half sizes to 12. The suggested retail price for the Kinetic ranges from \$119.95 MSRP for the 6" hot weather style, to \$139.95 for the 8" GORE-TEX style. Danner also now offers a Kinetic boot specifically made for the Army, and meets all AR 670-1 requirements for optional wear.

www.danner.com

MICRO TRAXION

The Petzl MICRO TRAXION is an ultra-light, ultra-compact progress capture pulley that is exceptionally efficient. The cam can be locked in open position so the device can be used as a simple pulley. Works even on frozen or muddy ropes. [ED: a little too small to be gloves-friendly]

The pulley with integrated progress capture device can be used as a progress capture pulley or simple pulley.

- Upper button allows cam to be locked in open position.
- Aluminum sheave mounted on sealed ball bearings for excellent efficiency.
- Rope clamp works on muddy or frozen ropes.
- Ultra-compact and lightweight.

Weight: 85 g
Min. rope diameter: 8 mm
Max. rope diameter: 11 mm
Sheave type: sealed ball bearings
Sheave diameter: 25 mm
Efficiency: 91 %
Working load: 2,5 kN x 2 = 5 kN
Breaking strength: 7.5 kN x 2 = 15 kN
Working load as progress capture pulley: 2.5 kN
Breaking strength as progress capture pulley: 4 kN
Material(s): aluminum, steel, stainless steel, nylon
Certification(s): CE EN 567, UIAA

www.petzl.com

SIDESCAN SONAR for the MASSES!



More public safety dive teams are adding sonar to assist in their underwater search and recovery operations. Side scan is the ideal tool for these operations because it produces detailed images of the underwater environment regardless of water clarity. In addition, the sonar is able to search large areas quickly, scanning several hundred feet of ocean, lake, or river bottom with each pass of the boat. The sonar does this by transmitting an acoustic beam from a towfish which sweeps the bottom and reflects off any objects lying there. The reflected beam returns to the fish and is sent topside where vivid color images are displayed and stored on a notebook computer. Connecting a GPS allows position coordinates to be captured with the sonar data. Side scan can easily locate a variety of targets including sunken boats, submerged vehicles, and drowning victims. An optional Splashproof computer with ultrabright display can be an essential item when operating from a small, open boat.

One team that recently acquired a side scan is Grayson Fire Department in Kentucky. The department serves an area covering 90 square miles. Their dive team is responsible for search and recovery missions in 20 mile long Grayson Lake and surrounding waterways, where tragically 2 to 3 persons drown each year. To assist in searching such a large area, the team decided a side scan sonar would be a great asset. With support from the community and

assistance from New Horizons Dive Shop, the team raised the necessary funds and purchased a sonar. The one they chose was JW Fishers SSS-600K side scan because it would give them the optimal combination of range and resolution. With five different range settings providing varying resolution, the 600K lets the operator tailor the system's operation to meet the mission requirements. On the long range setting the sonar is capable of scanning a swath up to 200 feet wide on each side of the boat, most helpful when searching large areas. This setting is best when looking for bigger targets like a car that has gone off a bridge or a capsized pleasure craft. When looking for small or soft targets such as a drowning victim, shorter range settings are a better choice. After completing a one day training session at Fishers factory team members returned home, and two days later they were out on Grayson Lake practicing with their new sonar. Lt. Kyle Morgan reported, "We can clearly see tires, lots of tree limbs, and several cinder blocks on the bottom. The images were quite impressive."

Two more departments that have added Fishers side scan sonars are the Iberville Parish Sheriffs Office in Louisiana and the New Bedford Police Department in Massachusetts. Iberville Parish is located just south of Baton Rouge and includes 34 square miles of water, much of it bayou. The sheriffs department went with the single frequency SSS-600K as it has all

the range needed to work in small bodies of water, but also the high resolution needed to find small targets like drowning victims and weapons. Along with the sonar system they opted for the mapping software which shows the track of the boat as it runs a search grid and the size of the sonar swath, ensuring no part of the area is missed. New Bedford is a coastal city with an active port and small airport. The police chose the dual frequency SSS-100K/600K side scan which provides both detailed images of high frequency combined with the longer scanning range of low frequency, an essential feature when searching large areas of open ocean looking for lost vessels or downed aircraft. An adjustable transducer feature is available with the single frequency that allows the sonar to scan vertical structures making it an excellent tool to inspect ship's hulls for compartments carrying drugs, or scan piers and bulkheads for explosives. After completing the training session Sgt. Jill Simmons, a longtime member of the department's port security team reports "I'm very happy with the unit, and the guys loved it! Our group was already using Fishers TOV-1 towed video system and Pulse 8X metal detector and getting good results. When we got the funding for a side scan, their system was the obvious choice."

A few more of the many teams using Fishers side scan sonars are the Lowndes County Sheriffs Department in Georgia, the Oxnard Fire Department in California, the Aronac County Sheriffs Department in Michigan, the Livingston Parish Office of Homeland Security in Louisiana, the Pulaski County Sheriffs Office in Arkansas, and the National Search and Rescue Agency of Indonesia.

www.jwfishers.com.

Photo: Members of the Grayson Fire Department with their JW Fishers side scan sonar, Inset photo - New Bedford Police Dept dive team members with their Fisher side scan.

CRE Radio Holster for Back Packs



Same great design as the Original CRE Radio Holster, but has wider and longer Velcro straps to wrap around the wider material of back pack shoulder straps. A simple, basic yet rugged radio holster made from thermal foam sandwiched between layers of fabric. Being semi rigid provides protection for the radio while keeping it stable when moving around. Velcro straps provide a broad range of adjustment to accommodate different sizes while holding the radio securely in place. Loop for carrying on the belt and velcro straps for attaching to a vertical strap, such as a pack shoulder strap.

www.carletonrescue.com

Tough Traveler's USA-Made Emergency Bags and Emergency Packs are known for excellent design and excellent durability, made to have appropriate capacity and compartments, from Oxygen Bags and Oxygen Packs to Emergency large-capacity backpacks to many excellent emergency small pouches and small bags.

PATROL PADRE

SIZE: 26"h x 12"w x 13"d

• Built with supports and padding and with features of our chiropractor-recommended Super Padre backpack series, the Patrol Padre offers superior back comfort for carrying necessary gear.

• Organized specifically for ski patrol use, this bag has many superior features, such as clip-in oxygen cylinder bag, organizable pockets, superior workmanship, and premium materials!

• Designed with pockets that open upright

when the pack is on the snow or ground, so that you can work easily and cleanly out of the backpack.

- Fully-padded, breathable-mesh back
- 1" thick, wide waistbelt and 3/4" thick shoulder straps for superior support.
- Load-control straps, sternum strap, curved-rod internal frame, and aluminum stay for excellent balance and weight control.
- Flexible pocket for O2 cylinder bag allows O2 weight to be most comfortable & pocket is out of the way if not needed.
- Front pocket organized for intubation items, with elastic slots and internal pocket with clear vinyl window
- Separate padded bag for C- or D-size oxygen cylinder snaps easily inside main pocket, so that it stays quick to grab.
- Sturdy vinyl valve protector to keep oxygen cylinder safe.
- Interior features four elastic-topped, open, color-coded pockets
- Clear vinyl window on front for identification or information tag
- 3 zippered, color-coded pockets on pack face, towards bottom.
- Pack bottom & part of back reinforced with Rhinotek® for durability & ease of cleaning
- Interior Velcro-closed pockets for use on snow or ground when pack is fully opened
- Two padded pockets, one on each side, one with zippered closure and the other open with web-tab. Sized for radio
- Reflective stripes for night visibility
- Drawstring top with water-resistant hood
- Three level adjustable back to fit from 5'3" up to 6'4" tall
- Made in USA using water-resistant 400 d. packcloth, YKK zippers, and heavy-duty webbing

• Patent Pending Price: \$390.00

Color: Orange www.toughtraveller.com



+ OceanidTM
WATER RESCUE CRAFT

208.322.3600 | OCEANID.COM



EMERGENCY Shelter



Fjällräven Vindsäck

Lightweight windsack in durable ripstop nylon that effectively shuts out the storm and rain. 3 ventilation zippers, reflectors and safety carbine hook.

Rapidly changing weather conditions are normal in the mountains but with a windsack you will always have portable protection against storm winds, particularly if a thin snow cover eliminates the possibility of digging a shelter. A must on winter hikes but also good in the summer when you need shelter and warmth during meals and breaks. The fabric is a lightweight, durable ripstop nylon and the blue colour was chosen for high visibility in nature.

Reflectors on both sides improve visibility in the darkness and a silicon treatment keeps you dry when it rains. Three 40 cm long zippers provide ventilation and an opportunity to stick your head outside. Equipped with a safety carbine hook that you attach to yourself to avoid the risk of losing the sack in stormy weather. Room for three people. Inner dimensions: 180 x 215cm Height: 180 x 215cm Weight: 490 g Size: 3 persons



www.fjallraven.com

MONTANE support UK Mountain Rescue

On Saturday 5th May 2012, MONTANE® officially presented Mountain Rescue England & Wales with £15,000 to support their valuable work.

At MONTANE®'s showroom in Staveley, Brand Director, Paul Cosgrove, presented representatives of Mountain Rescue England & Wales (MREW) and Kendal MRT with £15,000. This marks the end of two years of fundraising carried out by MONTANE® and kickstarted the Mountain and Cave Rescue Awareness weekend. The Mountain Rescue Teams operate 24 hours a day, 365 days of the year and are run by highly trained volunteers. Their primary focus is to locate and evacuate injured or lost people from upland areas. In 2010, MREW assisted some 1,697 people in total. The Teams also undertake missing person searches in lowland areas where access or terrain hinders normal search rescues, provide NHS ambulance support, provide government support in floods, heavy snowfall and during major incidents, carry out swift water rescues and some animal rescues.

They offer these life-saving services free of charge to the general public and rely completely on sponsorship or fundraising to cover their running costs, including kit. With statistics noting a general increase in incidents requiring call out of a Mountain Rescue Team, MONTANE® was delighted to donate £15,000 to support the MREW Teams. Paul commented: "We have had a connection with Mountain Rescue throughout our almost 20 year history. Two years

LIFEJACKET for DOGS

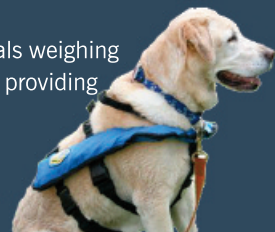
not hang. The strong lifting handle has retro-reflective tape and a D-ring for a leash attachment making for quick and easy pet-overboard rescues. The cover is a sturdy tear-resistant fabric.



Small Medium & Large - Large fits animals weighing 35 to 200 pounds with 27" to 48" chest providing 25 lbs of buoyancy.

Cost: SRP: \$119 to \$139

www.crittersinflatable.com



The Critter's Inflatable® life jacket is fully automatic inflatable and can be orally inflated as needed to save on rearm kits. When inflated, it provides additional buoyancy directly under the dog's neck to keep its face and mouth out of the water. Also, the bright yellow color of the inflation chamber and the retro-reflective tape on the lifting handle make it easy to spot a pet in the water. This life jacket has adjustable neck and collar straps, and two adjustable harnesses (each with upper and lower sections that can independently be repositioned) to ensure proper fit, safety and comfort. The wrap-around straps can be secured so the ends do

ago, we launched a small range of specialist light weight clothing at the Outdoor Show in Birmingham, specifically to raise money for MREW. That work and range has now resulted in a £15,000 donation and it seemed only fitting to hand over this money to the national mountain rescue organisation as part of its Awareness weekend."

"This kind of national support eases the financial pressure on teams and we welcome it," said Kendal MRT Chair, Dagmar Johnson, "but we are also eternally grateful to the local people and businesses who have always supported us and continue to provide so much of the financial backing to our volunteers."

National Chairman, David Allan, reinforced those thanks: "Without this sort of support for volunteer rescue from companies like Montane - in money and in kind with equipment - we wouldn't be able to function."

HIGH MOUNTAIN EXPEDITION SMOCK

Unrelated to the above item about Mountain Rescue support The High Mountain Expedition Smock is nevertheless an interesting item for extreme conditions... Rugged construction with an exceptionally warm deep pile. Perfect for high Arctic and deep mountain cold use. As chosen by the British Antarctic Survey on the Lake Ellsworth Expedition in the winters of 2011/2012 and 2012/2013.

Fabric: EPIC® Alcatraz Reinforcements: CORDURA® H2O

Lining: DRYACTIV® 3000 Colour: Black / red (zips)

Weight: 995g / 35.1oz (Size Medium) Sizes: S – XXL

Fit: Active Mountain

Activities: Polar Exploration / Alpine Climbing / Mountain Walking / Trekking / Outdoor Professional

RRP: £160.00

www.montane.co.uk



WHITNEY & PALLISADE SAR PACKS

Designed by rescuers for rescuers, the Whitney (shown here in Coyote Brown) is the perfect SAR ready-pack to keep in your vehicle for your next call. Large enough to carry gear and provisions to support you in the field for a full 24 hours, the Whitney contains plenty of pockets and features to keep everything well-organized. The dividable main compartment adapts to fit larger items (like ropes) and can be accessed from top or bottom. Specially designed pockets fit an optional hydration reservoir (sold separately), gloves, helmet, water bottles, web gear and sunglasses or goggles (in their own fleece-lined pocket). Additional features include: padded back with aluminum stays, fully adjustable padded shoulder and waist straps with integrated gear loops, MOLLE, loop strip for name tags or



other ID, reflective strips, and a strategically placed top carry handle with pass-through sleeve. The pack is made from 500-denier CORDURA® nylon; the padding features breathable D3 cloth for all-day comfort. The integral gear cache cloth is detachable, features four corner handles and doubles as a rain cover.

The smaller but full-featured Pallisade pack (shown here in red) holds the essentials for quick-response operations or team trainings, it also works as a great urban backpack. Many of the features of its big brother, the Whitney Pack, are included. Made of 500-denier



CORDURA® nylon, it's built to last with enough pockets to keep everything within easy reach. Organize your helmet, gloves, water bottle, eye protection, and other must-have gear in separate pockets. Padded back and shoulder straps feature breathable D3 cloth, and a lightweight waist belt and sternum strap enhance comfort when loaded. A variety of MOLLE and other external attachment points allow for the addition of extra gear. An optional hydration reservoir can be fully integrated into both packs.

Available in Red or Coyote
Pallisade - 1,750 cu in (29 L) \$139.00
Whitney - 2,800 cu in (46 L) \$279.00
www.cmcrescue.com

ED: SAR, Law Enforcement and Firefighting are perceived as a male dominated worlds despite the vast number of female personnel. So in an effort to redress the balance we have Melissa (Mel) Harms as one of two women that have been tapped to

review gear for PRm from a women's perspective. As an old style mountaineer/trad climber there are not many people I readily trust in the back country – But Mel is most definitely one of them.

Salute to the Bag Lady

The dirt bag lives in an adventurcentric world, living as simply as possible to

dedicate all resources to one thing and one thing only, romping in the out of doors. They have a female counter part, the dirt bag lady. Things are a little different for this species because of the “lady” thing. Societal expectations that females need give a shit about the Kardashians and reading US Weekly bear no effect on

this type, they've been bitten by the outdoor bug and there is no amount of ramen they aren't willing to consume to get out there.

What exactly is the difference between a typical REI ravaging sista and a bag lady besides the frequency one uses an ATM versus a UTM? Bag ladies are the women who can rip, send it, huck, do sick things, who get pumped out, kill it, with the boys, without the boys, and do so on a daily basis. These mean mountain mamas never take themselves so seriously that they won't bust out a tutu on a first ascent. They aren't out there to prove anything to anyone, except themselves. They are women of the woods, just doing what they love, laughing when people call them

by

MEL
HARMS

Photo by Lynsey Dyer



“hardcore.” They are the movers and shakers of the outdoor industry and can annoy as much as fascinate, mostly because they make it look so damn fun and easy.

But it has not been easy. Every bag lady has put their neck out there alongside their male counterpart. They have worked hard for their skills and live outside and way outside the norm. They won't break a nail tying a figure eight on a bight. They love being women; they just take a much more artistic approach to the concept. Why? Because being trendy is expensive and while they like to look cute, chances are these alpine angels probably have a road trip planned and quick draws are more functional than UGGs. The baggies have long since figured out that giving up a couple months of salon visits covers a new pair of Dynafit bindings. Bag ladies are the kind that will check out a dude in a Tacoma way before a guy in a BMW, get excited about receiving a new


PFD for Christmas, and knit their own merino wool beanie because not only can they make it better, but they can save a few bucks. These classy kitties can wink and bat their eyes into a discount on a wilderness first aid refresher or an Avalanche 2 class. They get excited about using a chainsaw.

Function of gear is top priority for these women. A few savvy outdoor retailers have discovered that if they produce a Gortex jacket in purple, the bag lady will swoon. There's not a bag lady that doesn't want to give a serious high five to the boot companies that have started making goods like female-specific fully crampon compatible boots, because finally girls don't have to shop in the boy's section for ALL of their technical gear. It is here that I come into the picture. I'm lucky enough to be chosen to test some gear for my girls. This is getting pretty close to my dream job. We ladies realize that the woman's technical gear market is a small one and give props to those supporting our addiction to the

outdoors and cravings for style.

So who am I? I'm Mel and I'm an aspiring baggie. I haven't quite found the guts to quit my job and move into a van down by the river but I'm on a quest for self that seems at its best in the outdoors. I've found the more I've given up on being a girly girl and becoming a dirty girl, the more I've become in touch with my femininity. There was a time that I denounced all fashion for the sake of looking “outdoorsy.” The more confidence I gained in my technical skills and experience I gained with exposure, the more I ditched the effort to fit in with the boys by looking like one. My pack may get worn more than my high heels, my sleeping bag serves as my comforter and last time I reached into my purse for my keys the first thing I pulled out was a multi-tool, BUT my little black dress and heels HAVE been in my pack (aka carry-on.) I may not always look like a super model, but I can kick her ass up an approach, and love it instead of complaining, then shower, bust

my dress out of my pack, smear on my glitter lip gloss (with SPF) and swagger my moves like Jagger. A happy Mel is directly proportional to how much time I spend as a bag lady, but at the end of the day, I'm still a lady. Being a woman makes me no less outdoorsy and being outdoorsy makes me no less of a woman.

I'm not alone; girls in the backcountry are multiplying. Organizations such as SheJumps promote women's meet ups and other opportunities for females to push their boundaries and be bag-ladylike. There are females that are bringing it with force and starting to get organized and swarm the mountains. I'll be out there getting awesome with some kick ass gear that will hopefully be worth of wear by these princesses of the pine. If you meet us on the trail bear in mind, we are ladies and we'd appreciate it if you treat us like it (ahem...buy us a beer.) Also feel free to invite us on any adventures, we'll loan you a skirt and some lip gloss. 

SPEAK UP!

Crew Resource Management Communication for Emergencies

by Ken Phillips

NPS Branch Chief of Search and Rescue. Ken is a National Park Service Park Ranger, Paramedic, and former Chief of Emergency Services at Grand Canyon National Park.

Rope rescue training,
Yosemite National Park.
NPS photo

Would you have the strength to speak up in a critical situation that had the potential to lead to a fatal accident?

Truly, would you immediately speak up with clarity?

On July 7, 2010 a United States Coast Guard (USCG) MH60T helicopter crashed in the ocean near La Push, WA resulting in the deaths of three of the four crew members aboard. The Jayhawk helicopter was being transferred to Air Station Sitka, Alaska, from the Aviation

Logistics Center in Elizabeth City, N.C., following a six-month overhaul, when it collided with electrical power lines suspended above the water to a small island that powered a USCG navigation

stated there was a “breakdown in crew resource management” among the crew members. The flight crew failed to speak up and challenge the pilot’s decision to deviate from the planned altitude

“It’s what you don’t say that can kill you.”

-US Navy Crew Resource Management Training Program Manual

aid. The sole survivor of the accident was co-pilot, Lt. Lance Leone. In the official Final Action Memorandum, published on March 12, 2012, the USCG

of 1,000 feet. As the helicopter “zoomed” a USCG motor lifeboat at the mouth of the Quillayute River, the helicopter struck the power lines 114 feet above the

water. The impact of the strike caused the rotor system to become out of balance and disintegrate in flight. Taking a harshly strong position, the USCG levied charges against Lt. Leone for negligent homicide and dereliction of duty. These charges were later dismissed by the agency, however the tragic loss of three crew members will continue to haunt everyone associated with this very unfortunate and preventable accident¹.

Speaking up in critical

This checklist provides an effective means for communicating a plan in critical circumstances.

Crew Resource Management

When a group of individuals comes together, there are critical ingredients that allow them to actually perform effectively in a stressful environment as a team. Psychologists, through the use of flight simulators, studied how aviators interacted and communicated in the cockpit as a small team. This early research conducted by the National Aeronautics and Space Administration in 1979 was called "Resource Management on the Flightdeck."² This was later referred to as cockpit resource management and has subsequently evolved to the broader application for other teams as "crew resource management" (CRM).

The similarities between the need for clear thinking on the flightdeck and on the battleground is readily apparent to the military. In the heat of battle, adrenaline can affect the tactical judgment of a soldier or an emergency responder and reduce their situational awareness. As adrenaline clouds our judgment- we become "wrapped around the axle."

There are limits to how much one person can do in a critical situation. The best leaders in emergency response recognize they must tap into the people around them to optimize safe incident performance. These experts recognize that they are human and far from perfect.

Briefing Format For Emergencies



1. Here's what I think we face;
2. Here's what I think we should do;
3. Here's why;
4. Here's what we should keep our eye on;
5. Now, talk to me.



Adapted from Karl Weicke, *South Canyon Revisited; Lessons From High Reliability Organizations*

Gary Klein, a psychologist and decision making researcher says, "experts are not only better at forming situational awareness and seeing the big picture, but they can detect when they are starting to lose the big picture."³

Keeping this in mind former USAF pilot and aviation safety advocate Tony Kern provides the definition of an expert as someone who:⁴

1. **Recognizes his or her personal limitations.**
2. **Recognizes diminished decision-making capacity in emergencies.**
3. **Discusses personal limitations.**
4. **Encourages others to question decisions.**

Psychologist Dr. Judith Orasanu found that "one of the factors that distinguished between high and low performing airline cockpit crews was that the high performing crews spent the light workload phases of flight discussing what they would do in emergency situations."⁵

What is the single best way to prepare for any emergency? Think about it in advance. A proven approach to handling any emergency effectively is to have it

mentally pre-planned beforehand. Mental projection permits you to dry run it in your head. In the "heat of battle" during a life threatening emergency, it will be more difficult to think clearly with the effect of adrenalin impairing your senses. Having a mental pre-plan permits you to simply work from recall in your mind, rather than having to make time critical decisions under pressure.

When we work together in a small team during an emergency, our ability to share information and develop a "shared mental image" is the key to effective teamwork. The incident commander must adequately communicate their intent and plans to other rescuers.

As human beings our intuition allows us to perceive when something "does not feel right." Exactly what cues we are detecting within our subconscious is difficult to assess, but listening to our instincts can be a healthy survival tactic in emergency situations. Trusting your gut feeling and proactively communicating with other emergency responders may sound simple, but it requires

Communication Responsibilities For All Personnel:

1. Brief others
2. Communicate hazards to others
3. Acknowledge messages
4. Ask if you don't know
5. Debrief your actions



circumstances is not only the right thing to do, but it is every team member's responsibility. Unfortunately as human beings we are often handicapped by organizational culture and self-imposed psychological pressure to not speak up. The power of a few well spoken words has the very real possibility to prevent a tragedy.

discipline that we frequently lack.

In the broadest sense, situational awareness is defined as the ability to “know what is going on around you.” During emergency response operations our ability to maintain our situational awareness is decreased by the effects of stress, poor communications and getting over-tasked.

Emergency operations are dynamic events. A patient’s condition may deteriorate or improve. High-risk environments, such as a rescue operation, require us to gather information on a continual basis so that we can update our mental image of the mission. Failing to incorporate information from our surroundings causes us to employ a faulty mental image that could result in bad decisions. With an accurate mental image we are able to project into the future and play the mental “what if” conclusion of a current situation. This projection permits us to stay ahead of the situation being proactive rather than reactive.

Sheryl L. Chappell of the NASA Ames Research Center (CA) prepared the following list for leaders to consider how to manage situational awareness in their crew:

MANAGING CREW SITUATIONAL AWARENESS⁶

• What do they know that I need to know?

As team members we need to utilize all our sources of information to be aware of everything we need to be. Many of those sources are other people’s eyes and ears.

• What do I know that they need to know?

There will be times when, despite your crystal ball, you will have a reduced level of awareness due to fatigue, distraction or some other factor. Let the other crew



*Grand Canyon SAR personnel conduct mission briefing.
NPS photo by Ken Phillips*

members know when this is the case, so that they can back you up more carefully.

• What do none of us know that we need to know?

The other question to ask yourself is, “What are we as a crew not paying attention to? If everyone

is looking at the same thing, then something’s getting missed. If you are unsure whether another crew member is maintaining awareness of something, be sure to clarify. The request “keep an eye on that for me” comes in handy.

As public safety responders we are constantly exposed to risk in our operations and share this trait with other high reliability organizations. High reliability organizations (HRO), which include nuclear power installations, space agencies and petro-chemical facilities, accept zero accidents in spite of operating in a risky environment due to the potential for even a minor accident to be a catastrophe.

According to authors Martha Grabowski and Karlene Roberts HRO’s have the following common traits;⁷

- Good communication
- Articulated decision making
- Information handling in complex situations
- Redundant organizational structures
- Culture and norms about safety

Promoting safety is simpler than actually eliminating human error in an organization.

Gordon Dupont, an aviation safety consultant and former Canadian aviation accident investigator, has compiled the “Dirty Dozen of Human Errors” based upon his experience. These errors can set up anyone to make an error no matter what the task or occupation. Consider

DIRTY DOZEN Of Human Errors⁸

1. **Lack of Communication**- A failure to exchange information.
2. **Complacency**- Loss of awareness and the development of overconfidence.
3. **Lack of Knowledge**- Lack of experience or training in the task.
4. **Distraction**- Anything that takes your mind off the job.
5. **Lack of Teamwork**- Without teamwork, we are only a group of individuals in a similar task.
6. **Fatigue**- Considered to be the number one contributor to human error.
7. **Lack of Resources**- Insufficient or not fully operational equipment and manpower to safely perform a task.
8. **Pressure**- External as well as self- imposed psychological pressure.
9. **Lack of Assertiveness**- Failing to speak up when things do not seem right.
10. **Stress**- Overwhelmed by stress leads to human error.
11. **Lack of Awareness**- A lack of alertness and vigilance in observing. Failing to ask the “what if?” question.
12. **Norms**- The “normal” accepted way things actually are done in an organization, regardless of whether their practices are valid and safe.

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reviewing these points with all personnel during training and formal operational briefings on large incidents.

operating room knows each other by name." When introductions were made before a surgery, Gawande says, the average

message is heard clearly and not ignored. One way a person can effectively make their thoughts heard in critical circumstances is

communications equipment and their personal communications skills to convey important information. Without good communications the mission can rapidly degrade and responder safety can be jeopardized. 



Grand Canyon National Park firefighters handle a charged hoseline during a propane gas leak. NPS photo by Ken Phillips

"If something doesn't look or feel right, it probably isn't."

**Sheryl L. Chappell, NASA
Ames Research Center, Moffett
Field, CA**

**Speak Up,
Someone's Life
May Depend On It!**

We can see that the topic of inadequate communication was at the top of Gordon Dupont's list. Atul Gawande, author of *The Checklist Manifesto*, described his study involving the use of a two-minute checklist in hospital operating rooms which resulted in profoundly dramatic results.

number of complications and deaths dipped by 35 percent.

"Making sure everybody knew each other's name produced what they called an activation phenomenon," Gawande explains. "The person, having gotten a chance to voice their name, let speak in the room —

to use "direct statements." Direct statements often appear assertive or rude so we typically rely on indirect statements. Direct statements are a very powerful communications tool, which are referred to as "communication on steroids."

As a final reminder the characteristics of "safe operations" include:

1. Well briefed with clear desired results
2. Clear team expectations and responsibilities
3. Identification of available resources
4. Climate that values input and learning
5. Positive attitude/high morale
6. High degree of accountability at all levels
7. Atmosphere of self-critique

As previously stated effective communications are essential during an emergency incident. Personnel rely on both their

The format for employing a direct statement includes:

1. Use the person's first name.
2. Use "I", "I think", "I believe"
3. State your message clearly.
4. Use appropriate emotion.
5. Require a response.
6. Don't let it go!

"We also found that good teamwork required certain things that we missed very frequently, like making sure everyone in the

were much more likely to speak up later if they saw a problem."⁹

When someone does speak up, they need to be certain that their

1 United States Coast Guard. *Final Action On The Administrative Investigation Into The Crash of CG-6017 That Occurred 7 July 2010*. Released March 12, 2012. http://www.uscg.mil/foia/FOIA_Library.as

2 Fisher, John, et al. *October-December 2000. Does Crew Resource Management Training Work?* Air Medical Journal, Mosby Publishing, St. Louis, MO

3 Klein, Gary. 1998. *Sources Of Power: How People Make Decisions*, MIT Press, Cambridge, MA

4 Kern, Tony. 1998. *FLIGHT DISCIPLINE*. McGraw-Hill, New York.

5 Flin, Rhona. 1996. *Sitting In The Hotseat- Leaders And Teams For Critical Incident Management*. John Wiley & Sons, Ltd. West Sussex, Great Britain - . Reviewing research of Dr

Judith Orasanu, a psychologist researcher of the Distributed Team Performance Laboratory at NASA Ames Research Center, Moffett Field, CA.

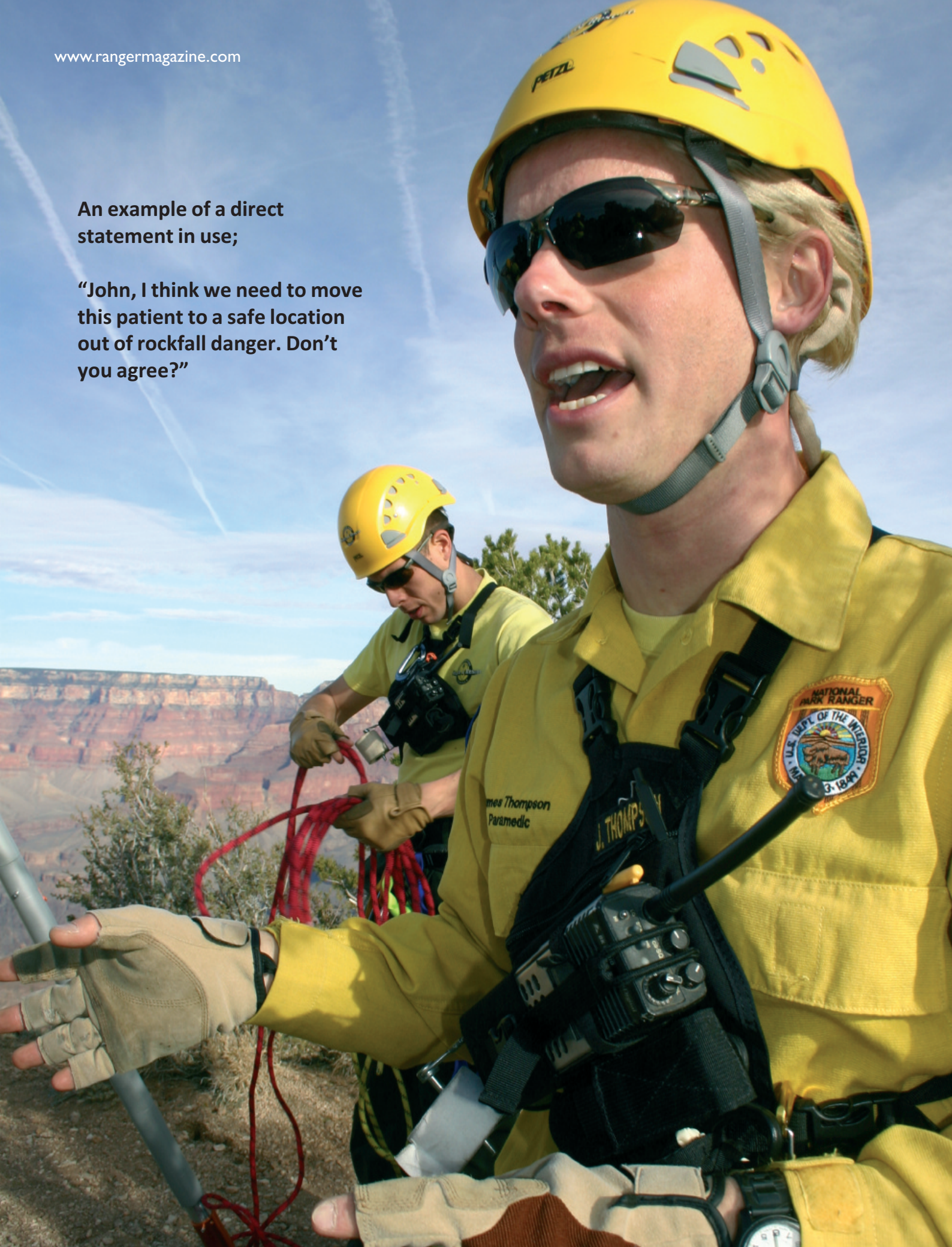
6 Chappell, Sheryl (undated manuscript) *Managing Situational Awareness On The Flight Deck Or The Next Best Thing To A Crystal Ball*. Internet. <http://www.crmdevel.org/resources/paper/chappell.htm>

7 Grabowski, Roberts. 1996. *Risk Mitigation In Large Scale Systems: Lessons From High Reliability Organizations*. 8Dupont, Gordon. *Dirty Dozen Of Human Errors*. Reprinted with permission. www.system_safety.com. Richmond, BC, Canada

9 National Public Radio- *Morning Edition Interview*. Atul Gawande's 'Checklist' For Surgery Success. January 5, 2010 <http://www.npr.org/templates/story/story.php?storyId=122226184>

An example of a direct statement in use;

“John, I think we need to move this patient to a safe location out of rockfall danger. Don’t you agree?”



princeton tec APEX HEADTORCH

by Rob Thomas

So, why did I buy it?

I was going through my rescue pack, trying to optimise. One of my decisions was to try having all electronics running off the same sized battery. Since my handheld radios require AA batteries for their backup battery packs and are the most expensive items to replace, I decided to standardise on AA batteries. I already had a spare GPS receiver that runs on AA batteries so the head-lamp was the only out-of-step item.

What influenced my decision?

Obviously I wanted AA battery size, but what else? I wanted it reasonably waterproof. Not that I dive with it but night-time kloofing (canyoneering) rescue involving jumps and compulsory swims is one of the uses I needed it for. I also had distant memories of a body recovery many years ago which took place during a torrential downpour, resulting in a Petzl Zoom ¼ full of water (but still working!). I wanted to be able to select the brightness for close up as well as distant work. A long burn-time would be nice, too.

First Impressions

Opening the box I found what the picture had shown: A head-lamp with a battery pack on the back of the head and the light on the front. It has a strap around the head and another over the top of the head. The overall impression is of a well-built, solid and difficult-to-break product.

Usage and experiences

My first action was to pop 4

SPECIFICATIONS:

Manufacturer:	Princeton-Tec
Model:	Apex
Origin:	USA
Cost:	£78. \$89 (Extreme \$105)
Power Supply:	4 x AA batteries
Battery Type:	Alkaline, Lithium or NiMH rechargeable
IP Rating:	None
Waterproofing:	1m depth for 30 min
Weight:	279 g
Light Output:	200 Lumens
Burn Times:	Up to 150 hours
Light Sources:	1 x Maxbright LED 4 x Ultrabright LEDs
Modes:	MaxBright – High MaxBright – Low UltraBright – High UltraBright – Low
Approvals:	UL RATING APPROVED Class I Division 2 Groups A, B, C & D Class II Division 2 Groups F & G UL TEMP CODE T4
Colours:	Black, Olive Drab, Orange
Variants:	Apex Pro, Apex Extreme Apex Rechargeable
Website:	www.princeton-tec.com

batteries into it and rip off the strap that goes over the top of the head. This is because on night helicopter rescue we often drop our headlamps around our necks to avoid inadvertently blinding the flight crew if we look up during hoisting operations, after which I adjusted it to fit my helmet. The next step was to find a suitable plastic Tupperware-like box to fit it and throw it into my backpack. The plastic box is because I've cracked the casing of this light's 4 predecessors simply through the hostility of the inside of a rescue backpack that actually gets used and I'm getting tired of buying new headlamps.

The first use of the light saw the rest of the team full of "Ooh's" and "Ah's" as I lit up distant objects with the light. I did find the weight a little uncomfortable at first but soon got used to it. Technical session after technical session followed and the light just never ran out of battery. When you do start to get low on battery the light blinks 3 times indicating that you have about 20 minutes of use left on the mode you're in. Changing to a dimmer setting increases your remaining battery endurance.

Early in May (beginning of southern hemisphere winter) we got a call for a Spanish Tourist who needed rescue with a properly broken leg at 3000m in the Drakensberg – 01h20 flying time away. Off we went, climbing to 10,000ft as we neared the site. A mountain guide had a handle on the solo hiker's location having heard his shouts for help. We landed to pick up the guide and evict half the team to lighten the aircraft in anticipation of hoisting operations. I switched on the light to locate the guide and promptly got my ears blasted when my aviation radio went nuts, the sound amplified by my headset. The headlamp was emitting spurious RF and interfering with my radio. Let's just say that the rest of the rescue was an interesting choreography of swapping between headlamp and radio to speak to the pilot.

Despite this, the light impressed when I was able to use it to light the scene below during hoisting operations, making the flight engineer's task a little easier.

The lamp continued to perform well when away from my aviation radio.

Six months later it survived a nasty fall when my backpack was blown off a cliff by a helicopter (despite me putting the pack into a ditch). The plastic box wasn't so lucky and had to be replaced.

I changed my air-band radio (I had a second one) but discovered that this made no difference.

Perhaps the RF was getting into the radio via the headset lead?



The battery compartment is opened using the headband 'key'

Time to do some checkinG

I discovered that at the distance between my chest harness and my headlamp (about 30-50cm) the headlamp interfered with two different air-band radios (ICOM AC-A22 and VERTEX VXA-300) without headsets attached, so it wasn't that. The interference manifested on both of the two different frequencies I tested. The interference is inversely proportional to the brightness setting with none on the brightest setting, increasing as the lamp is set dimmer.

The bottom line is that I'll continue to use the lamp in a ground-rescue context and revert to a smaller, better behaved light for helicopter rescues.

The lesson is to take your radios with you when buying a new piece of electronics!

PS: The problem has been reported to Princeton-Tec and I'm awaiting feedback. 📧

WHEN FAILURE IS NOT AN OPTION

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GERMAN HOTSHOTS

A story of enthusiasm

By Detlef Maushake

Raid response wildfire intervention in the form of Smokejumpers and Hotshots is often thought of as a uniquely American and Canadian discipline while major wildfires themselves are considered a US and Australian problem. But Europe does have its moments with Portugal and France in particular suffering regular large scale wildfires. A specialist German fire team with a quirky and apt name - @fire (that's At Fire for the keyboard illiterates) was set up in much the same way as a disaster response team to provide rapid response to wildfire situations. Detlef Maushake describes the evolution of @Fire:

In the summer of 2000 while wildfires swept through the southern European countries of Portugal and Spain, German firefighters watched as local citizens tried to battle the flames with branches or bucket brigades in a desperate attempt to save their homes.

Some firefighters from all over Germany who got to know each other over the internet came together for a meeting to develop a solution to the question of how to help the people in the "house of Europe" defend themselves from the increasing incidence of wildland fires.

Because of the complexities of government to government interaction, it was obvious that the need existed to form an NGO, non-profit association to help abroad. This was the hour of birth for @fire – International Disaster Response Germany.

With about 1.2 million members (mostly volunteers) the German Fire Service Association is one of the biggest in Europe. Most of the members of @fire originate from the ranks of the German fire service but there are also EMS, civil protection and forestry based members in the association.

Concerning the training the team looked abroad and used the expertise of some contacts to the Los Angeles County FD gained during visits to the area. @fire soon adopted the NWCG guidelines as the best means to standardize the training while not re-inventing the wheel.

The first training camp in 2003 saw different PPE from FDs all over Germany mixed with US PPE according to the wildland fire standards and used Pulaskies bought on eBay side to side to old style shovels put to action in the German forest.

Even though the team was at first viewed as 'nerds beating the weeds', the @fire team stuck together and grew strong. As

photo

Rx in the Harz Mountains, Germany, May 2011



@fire Handcrew during the FFT 1 course summer 2011

more and more firefighters, EMS personnel and people from other agencies joined the team, @fire soon expanded its fire cache and translated the needed information from the National Wildfire Coordinating Group (NWCG) guidelines to form courses like Wildland firefighter 1 and 2 which formed the basic training at that time.

More material was ordered from the NWCG publications list and more and more "S" Courses were held in Germany. During this time the first fire call came along in 2005 and with a standby request from the city of

Vila Real in northern Portugal. This was to become the first real challenge for @fire.

The city was struck again by severe wildfire conditions and within a day the team had a 9 member recon-team enroute to Vila Real for evaluation of a mission using the full team of about 60 members (at that time).

This mission was a total success, as the handcrew-based system seemed to fit directly into the southern European fire fighting tactic of Type 3 based engines and air attack. The ice was finally broken when the @fire team fought its first real

wildfire side-to-side with the Portuguese firefighters also gaining experience fighting fire in the different environment of Portuguese mountains than in the conditions of northern Germany.

The use of fire for prescribed burning and to fight wildfires was totally unknown in Germany apart from some small scale Rx that were conducted in protected habitats like heath lands.

With its expertise in using the S-234 material from the Burn Boss course and hands-on training during the USA trainings, @fire fit into this gap perfectly. The team used the prescribed fires in the heath lands for the support of the nature conservation association doing small scale Rx and also for initial attack training utilizing tools, small pumps, firing courses and indirect attack.

The next mission led the team again to Vila Real in 2006 with

an 11 person Handcrew module. During this mission several wildland fires were battled, including one in the I-Zone with 3 houses threatened. The houses and several others in the dry valley were saved by the combined IA efforts of all crews on scene. The special value of a handcrew proved again

when the team was able to catch several spot fires in a dry creek fast and effective before they were able to merge and spread putting more houses at risk.

This fire forged the relationship between the Portuguese firefighters and the German team as they fought the fire side by side against the red dragon threatening the community with the Germans not even knowing the language let alone the people living in the houses they were putting themselves in harms way to protect.

One of the other fires during this mission broke out at 11pm in rugged terrain sparked most likely by fireworks. The team marched into the fire and cut fireline all night long to protect the nearby village against the high flames and spark rains. Successfully the team left the scene in the morning and returned for mop-up several hours later after some much needed rest.

The internet is a source of endless information. Luck made it happen that Mike Benefield, a Fire Management Officer with the U.S. Bureau of Land Management in Oregon found the team's website www.at-fire.de on the internet in 2006 asking for training opportunities.

August 2007 saw a 9 person handcrew module arrive in Redmond, Oregon to spend a week shadowing Mike's fire



Portugal Fires 2005 & 2006



Training for local FDs delivered by the @fire team
using anchor and flank tactics

organization there for a training mission organized and documented under a volunteer agreement signed by each team member and the BLM.

The @fire team was the first German team to have an official radio designator (German crew 1) which was used on the Moffit Butte Fire near LaPine, Oregon during the visit. Mop-up in steep terrain with low RH and high fire spread potential was the task for the team.

Mike Benefield's promotion to the Fire Management Officer position in the BLM's office in Moab, Utah led to the next training opportunity for @fire. Four crewboss trainees flew over in the summer of 2009 to undergo training on the Canyon Country Fire Zone in SE Utah. During this visit the crew fought a lightning strike fire in the mountains near Moab named by the CB-T Detlef Maushake as the "German fire". It was small in



@fire Crew 1 at the Redmond Air Center with Mike Benefield (far left)

size but proved that the teams training fit in well with in the US system and the work went hand in hand between the international forces on scene doing initial attack under German supervision.

This was when Mike Benefield came up with the name German hotshots for the team, being the one and only special trained wildland firefighting team in Germany according to the NWG standards as he said. Even though the team does not meet

all requirements for a US hotshot team, the name was added to the name @fire and was used on shirts too.

One of the contacts made in the US was Alan Sinclair of the BIA in Sacaton near Phoenix, AZ. With the generous support of the National Interagency Fire Center (NIFC) in Boise, Idaho, Alan was able to travel to Germany to deliver a full FFT 1 and S-230 course for the @fire organization. @fire members then paid a visit to the US Embassy in Berlin, for a

personal meeting with the U.S. vice Ambassador to present the adoption of the US based NWCG handcrew system by the team. It was very important to the German volunteers that they deliver a strong message of appreciation for the support by the US government.

After this course the training crew adapted the CD based courses S-130 and S-190 plus the Packtest (with added situps, pull-ups and pushups) as a minimum standard for @fire wildland firefighters. This way the team comes as close to the NWCG standards as possible. It has to be mentioned that the full S-230 course was done in English same as all the drills in the field that the team does.

Apart from the training @fire engages in the field of prescribed fire for forestry units and national parks in Germany. These prescribed fires are conducted according to the GO-NO-GO





Helitack Training with a helicopter company – The crew just unloaded and attached the bucket



Packtest according to the NWCG Guidelines in pre-season preparation

checklist and all the other safety features needed following the S-234 material. They serve as initial attack training especially when conducted in steep terrain e.g. the Harz Mountains.

about the support during wildfires.

This is the first direct written bilateral contract on which the team can be called for help, apart from the EU mechanism of

Fire expertise for deployment anywhere in the country and in Europe in about 24 hours, depending on the availability of the volunteer members.

Training opportunities in the US are always welcome to enhance the team's expertise. The team is financed solely by donations and the membership fees of those involved.

The @fire experience has proven to be a valuable asset to any fire department wishing to add an international dimension to their training program. @fire team members have proven themselves to be adaptable and well trained in the fundamentals of wildland fire suppression. The spirit of community service will always be one of the core values of the firefighting profession. As the German firefighters of @fire have reminded us, the solution to any problem starts with the

willingness to engage, said Mike Benefield.

As the fire danger continues to develop in Portugal this summer, a pre-alarm has already been sounded for the @fire team to be prepared to go and help. The refresher training and pack tests are running and we will be ready! The German hotshots will be on their way again...

Detlef Maushake has been a captain/paramedic for the Salzgitter Fire Department in northern Germany since 1995. Maushake, 41, also is chief of wildland training for @fire, a volunteer, non-profit nongovernmental organization engaging in wildland firefighting for southern Europe and beyond. For more information about @fire, visit www.at-fire.de or e-mail the author at d.maushake@at-fire.de. PR



Moffit Butte fire, Oregon 2007

The biggest step came in 2011 when the team went to Portugal to sign an institutional cooperation agreement between the City of Vila Real and @fire

disaster response where the team is listed too.

Today the team can set up two Type 2 IA hand crews, a helitac team and provide RX

Less search— more recovery...

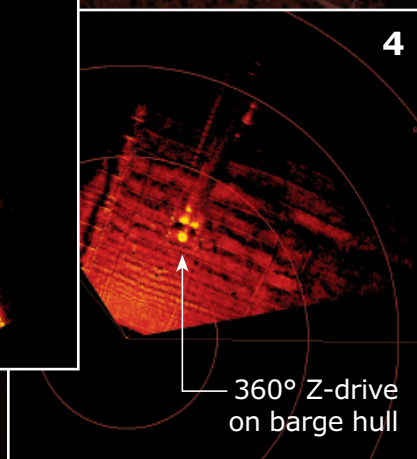
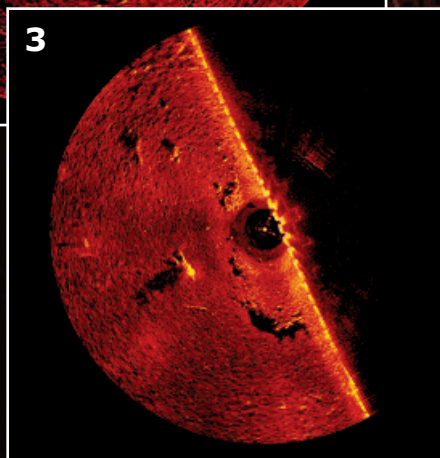
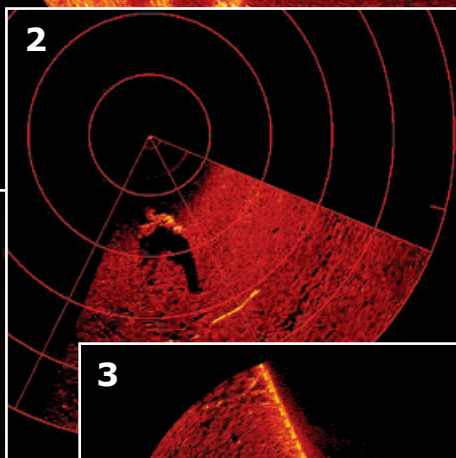
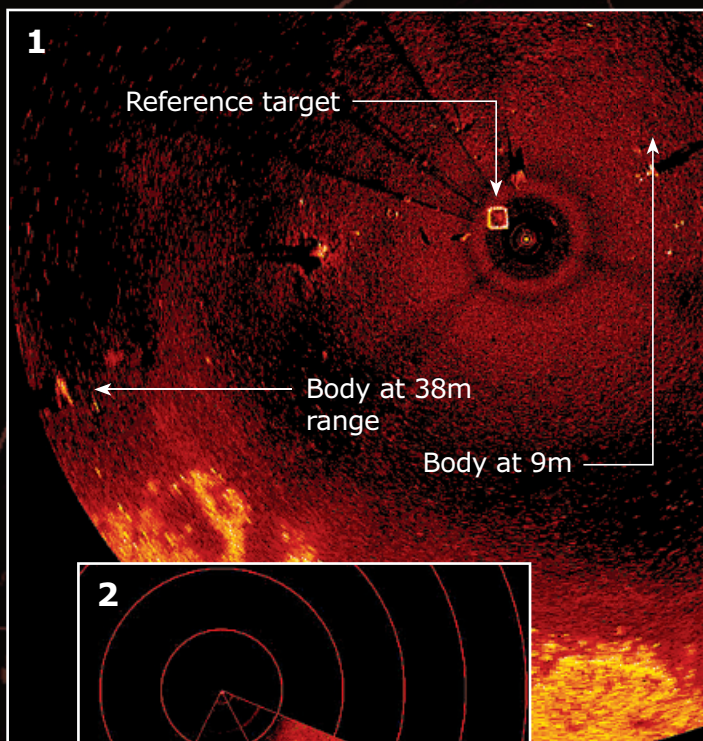


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1. Body location
2. Homicide victim
3. Diver alongside sheetpile
4. Hull inspection



THE FULL PICTURE

Of Bridles and Tails: Lightening your Wilderness Litter Loads

By Andy Maguire



Difficult edge transitions are much easier with efficient high directional rigging and the assistance of suitably positioned colleague to keep the ropes clear and make it easier to accurately place edge protection.

When time is of the essence and safety is paramount, vertical rescue teams need high performance rigging to get the job done quickly. Rescue professionals are constantly evaluating and developing their systems to find the perfect balance between strength, weight and safety. The litter bridal is perhaps the most important and overlooked part of the rigging for high angle rescue situations. After an in depth evaluation of our vertical litter with Mark Miller of Rigging For Rescue, members of Larimer County Search and Rescue took the initiative to drastically change the materials used to rig our vertical litter in an effort to lighten our overall system.

The way our litter bridal was rigged was not drastically different than most other agencies. 1" tubular nylon webbing connected to four full strength litter points with steel carabiners. All webbing was pulled to a single point and a bite was made using an overhand knot. A single large steel carabiner attached the webbing bridle to a large steel rigging plate. The webbing was adjusted so that the head of the litter was up at approximately a 25° angle in a free hang when empty and level with a 250 lb subject. Clipped through the power point was a single giant steel carabiner that would take both the main and belay line tie-ins. Attached to the rigging plate and running to the toe of the litter was a 3:1 jigger made from 7mm cord for adjusting the scoop and balance.

In common with many other SAR teams, we use married bowlines with long tails as the primary rescuer and subject tie-ins. Both the subject and the rescuer were further attached through secondary tie-ins/attachements. The complete system when rigged offered redundancy and exceeded the standard 10:1 static safety factor US SAR teams typically operate under.

Functional? Absolutely!

But, when you took it all off the litter and passed it around you could see just how heavy it really was, just

The revised litter rig in action (and overleaf stripped down back at base with the jigger in place). For difficult faces we place the attendant above the litter enabling him/her to manoeuvre the litter by grabbing the Dyneema straps.





The stripped down rig showing Dyneema tape going to a Delta maillon (which is normally connected to the plate by an additional alloy carabiner) and the mini pulley system (jigger) attached to the front enabling quick and easy re-orientation of the litter

over 8 lbs (3.65kg)! Our team had purchased \$2,300 (US) two-piece titanium litters to lighten the rescue loads on our high altitude long distance rescue and our litter bridle rig was approaching 40% of the litter weight.

We needed to discuss an alternative that cut the weight but performs just as well if not better. First to go were the steel carabiners, we replaced them with new CMC Pro-Series aluminum carabiners that are half the weight and still rated at 45 kN on the main axis. Next, we swapped all the 1" (25mm) webbing for 7/16" (11mm) 22 kN Dyneema® slings connecting them with a delta shaped, 12mm steel quicklink capable of distributing the triaxial loading. An aluminum carabiner was then used to attach the quicklink to the smaller aluminum rigging plate. This extra step is required to rotate the quicklink 90° to avoid torque on the quicklink or rigging plate attachment point.

The legs of the litter bridle were adjusted utilizing overhand knots to shorten the lengths so that the head of the litter was up at approximately a 25° angle in a free hang when empty and level with a 250 lb subject. There has been much discussion regarding knots in Dyneema®, DMM has an excellent article and video on their website that shows an approximate 50% loss in strength. However, it is important to note that the Dyneema® is being utilized in an equalized 4 point system, so even at a 50% loss in strength we are well above our 10:1 static safety factor.

Another common concern with Dyneema® is its lack of elasticity, resulting in dangerous shock loading during dynamic loading. Once again, DMM offers an excellent video on their website that

demonstrates this issue. This risk was a discussion point by the rescue members on the team and after careful consideration; it was determined not to enhance risk during rescues. The decision rested on the fact the team utilizes a SCARAB and a double prusik belay – any significant dynamic loading would fall “onto” the double prusik belay which well known for its ability to absorb dynamic loads.

Accessory components (etrier, and jigger) are attached through the rigging plate. Our team has found it useful to attach the litter and the jigger to the centralized connecting points on the rigging plate. The reason being, that we have found it allows the rescuer to more easily rotate the litter while negotiating obstacles on the wall. The etrier is moved to wherever on the plate our rescuer prefers during rescue operations. The rest of our rescue system remains the same and therefore is fully redundant for both the rescuer and the subject.

Although changing steel to aluminum rescue components is an obvious means of saving weight, one should not ignore the soft goods. Examine your soft goods and perform a risk assessment – one can find significant weight savings in these commonly overlooked items. We successfully constructed a litter bridal that is 1/2 the weight (approx 3.75lb (1.7kg)) and functions well within the MRA standard 10:1 safety factor employed in wilderness rescue.

Another component to LCSAR's vertical litter rigging is use of a subject tie-in referred to as the “Mare's Tail” tie-in. This system utilizes a subject harness (we provide and secure a harness in the event the subject is not wearing one) and four pre-rigged Prusiks that are connected to the structural rails of the litter. Each Prusik is threaded through the belay loop and attached to the corresponding rail at opposing directions, then adjusted tightly (As described above, our team uses the tail of a married bowline as the primary tie-in). Standard litter straps are utilized to provide additional subject restraint for further securing. With this system we can safely reduce lateral movement, effectively disperse the subjects' weight through the core and rapidly secure our patient for transport.

Many teams utilize purcells in a similar configuration as the means to tie-in the patient to the litter. Although this is perfectly valid and safe, our team found that prusik knots on the purcells caused patient discomfort as they commonly were tight against the patient as can be seen in the picture above. The use of the “Mare's Tail” tie-in reduces this patient discomfort. As technology changes and the profession advances new materials and techniques will sculpt the way we save lives. Critically evaluating your agency's rescue system can shed light on ways to potentially improve the quality and functionality of the complex systems. Start with the basics and redesign the system to meet the requirements of your rescuers! 📸





► Pirate ORCA-lock

The best belay biner just got better! The new patent-pending ORCA lock design opens just like a non-locker, but closes with the security of an auto-lock. Also available on rockO and rockD carabiners.



► Unicender

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► UFO Rig Plate

With 12 connection points, the Universal Focusing Object makes complex connections easy. Machined from a solid block of 6061-T6 aluminum, the UFO weighs 18 oz, and boasts a breaking strength of 36 kN.



► Omni 1.1 Pulley

This patented pulley features a swivel integrated into a pulley. This sleek new design has a 1.1" sheave and weighs only 145 grams!



► RockGrab

The RockGrab is the next generation rope grab/adjuster designed to be left on the rope. Available with conventional cam or 90 degree cam with attachment hole (pictured).



► NanoSwivel

The NanoSwivel is the newest and smallest of our world-renowned high-quality swivels. Weighing in at just 3 oz, the NanoSwivel is rated at a breaking strength of 23 kN.

REACH

System Developed by Dr Michael Croslin

Original TRm Article Edited by Eric Adsit, Sam Drevo (NRG) & Ade Scott

device & system

Readers of TECHNICAL RESCUE magazine might fear that they have been ripped off with a reprinted article but fear not because this is an all new summary of the TRm63 article repenned by Mike Croslin especially for you Park Ranger aficionados. We wanted to strike while the iron was hot and reinforce the lessons of that first article by also getting the Reach into this launch issue of Park Ranger. That's because, as I mentioned to Mike when I conned him into contributing twice in as many issues, the Reach system crosses the aquatorial divide between urban/suburban technical rescue and wilderness rescue. However, I am going to cheat a bit and rehash my intro - so we owe you 17cents refund on your subscription! Ade Scott

The Reach device is not a new invention. We've been using them for several years, and not always for their intended purpose which is to 'capture' a rope in mid-water or 'snag' a boat/kayak attachment point. In effect it's a mini grappling hook with sprung retaining clips to help keep hold of whatever you capture. Jim Segerstrom was a passionate advocate as you might expect of someone so close to inventor Dr Mike Croslin. But Jim, canny though he was, wouldn't have put his name on the line (so to speak) if he didn't think that the Reach was worth shouting about. The Reach System should be a part of every water rescue team's bag of tricks and if ever an item could be described as performing tricks it's the Reach system. It does what no other water rescue device can and it now does so in a waist belt package that is easily carried, easily deployed and if necessary, easily jettisoned. It's cheaper than a hovercraft, smaller than a PWC and the same colour as Aston Villa's football strip - what's not to like unless you're a Birmingham City fan? (Apologies to US readers won't have a clue what I'm talking about). So we're putting the Spotlight on the Reach System in the hope that it will convince even more of you to try it, persevere with it and not only improve your successful throw count by multiples of ten but put a whole range of new options at your disposal. It's aimed at expert kayakers, rafters, professional rescuers and canyoneers. The device and pouch with cord retails for \$199. plus \$75 to \$115 for the Rescue Swimmers Waist Belt.

The basic device & pouch=

- MBS: 9 kN (2023 lbf)
- Weight: 1 lbs 9 oz (708 g)
- Diameter: 5.5 mm (7/32")
- Length: 18 m (60 ft)

The Reach Protection System is really just a progressive enhancement of the primary rescue tool in swiftwater rescue...the throwline. We add the remote capture capabilities of a REACH device to a juiced up wearable waist harness platform that has a compact high performance

escape/tag/throw-line that can be jettisoned with one hand quickly and accurately...yet is secure against accidental release...but has redundant back up release of all components, even under extreme conditions. This allows us to evolve our rescue solutions from slow to fast. From generally two-sided rescuer access and rope deployment to ONE-sided immediate access. Reach provides remote connection to a stressed boater or rescuer who is now able to participate in his/her own rescue. Since we can now safely access any discharged line remotely via line capture from a greatly expanded range of positions on the




river...upstream, downstream, Rt, Lt or above...all open now to perform line capture. Swiftwater rescue in foot entrapments, strainers, sieves, undercuts, recirculations, rooms of doom, catcher mitt type eddies, long high water swims resulting flush drownings, can and should be impacted by this technology. It's faster, safer, requires fewer rescuers, and works extremely well in even severe gradient and flow conditions, in a vastly greater set of potential locations for rescuers to position themselves. Its been extensively tested by extreme boaters, and rescue professionals alike and has earned high marks as revolutionary...so much so that we can EVOLVE from setting mere safety(honestly...not easy with just a downstream wish that you might hit your teammate on a accurate toss in turbulent water while under stress and time pressure...} to a real hope of PROTECTION...and the great liberating effect of giving a rescuer or boater solid and tested options that can compress

rescue timeline tremendously... You release a tag line, it floats even if you cant...its seen even if you cant be seen, it can be captured remotely and is already attached to you in the perfect location to apply force to extricate...not prone to stripping, but can be pulled from ANY vector...yet can be released by you...the victim, actually your no longer a victim...your actively engaging in your own rescue...which makes perfect sense..since you are in the best postion to reach out... ..The system is being taught within the ACA, Rescue3 International, Rescue Canada and the International Rescue Instructors Alliance and the curriculum of Swiftwater Rescue is evolving to set new standards and provide new skillsets while providing quick and safe interventions. It's a new model of protection and it requires a new but easily taught set of fundamental skills. Extreme boaters and rescue professionals devleoped this system together as a way to bridge the gap in our rescue response in seemingly hopeless conditions.

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GEAR SPOTLIGHT

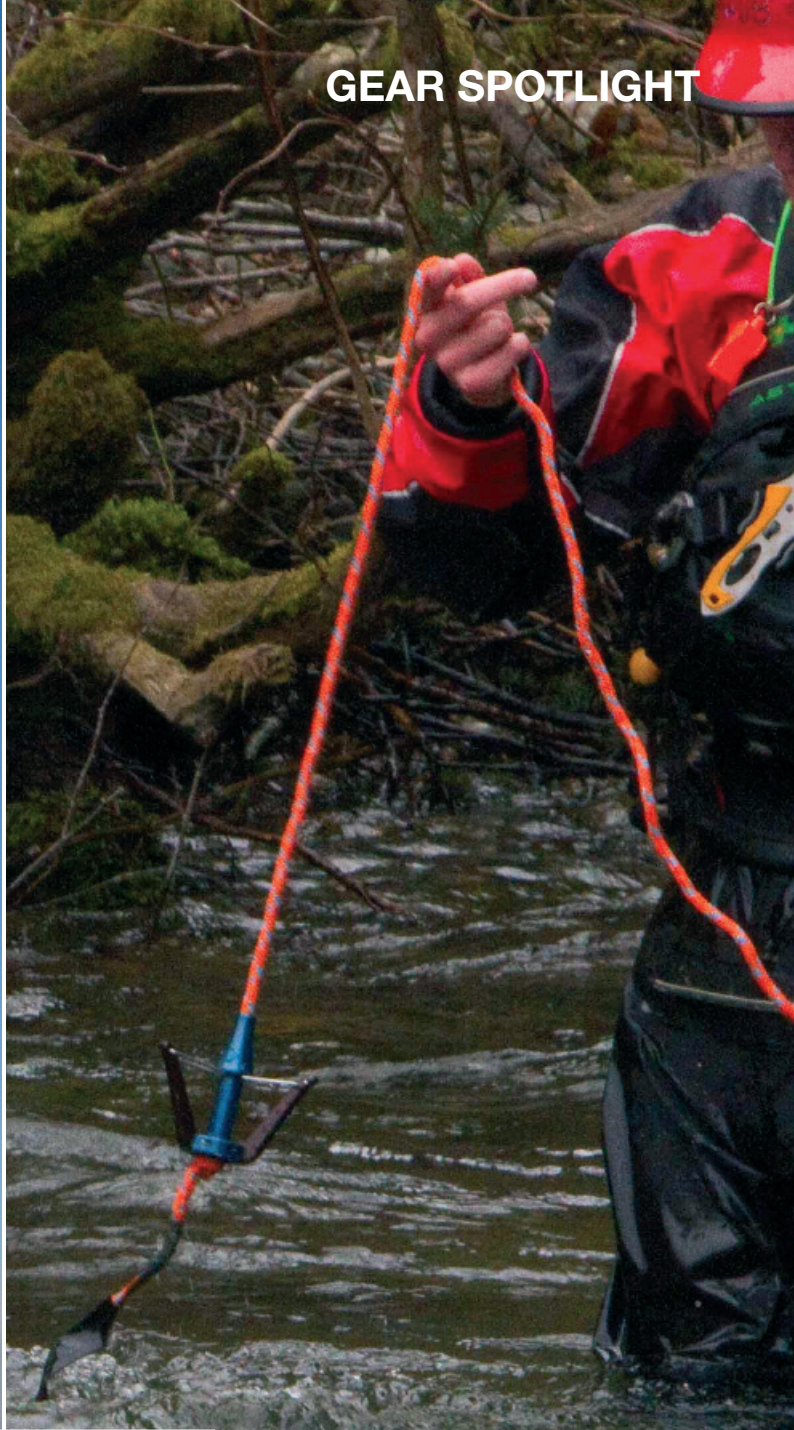


Photo by Eurocopter: Eurocopter Daupin N2s operated by Northern Region
SLSA Helicopter Rescue Service Pty Ltd in Northern NSW, Australia



Things that go bump in the flight

by Rob Thomas
PRm South African Editor

This article is an extract from the upcoming book "HELICOPTERS AS A RESCUE TOOL" by Rob Thomas, scheduled for publication in late 2012.

You're probably sitting there wondering why a book on rescue with helicopters is discussing the causes of helicopter accidents. The answer's easy – you need to know what the causes of accidents are so that you aren't the cause of the accident.

The first question on a lot of people's minds is: "What happens when the engine dies? Does the helicopter just fall out of the sky?" The answer is "No, it does not". The pilot executes a technique called *autorotation*. What happens is this:

Helicopters have centrifugal clutches, which means that they engage when the engine is running and disengage when the engine stops. If the engine stops it immediately disengages from the rotors, allowing them to keep spinning under their own momentum. If the helicopter has more than one engine then each engine has its own clutch. One of the forces involved in flight is drag, so a main rotor that isn't under power from the engine is not going to keep turning on its own forever. If they did we'd have powerless flight! The moment the clutch disengages the rotors start to slow down.

To prevent the blades from grinding to a halt the pilot *dumps collective*, pushing the collective all the way down which puts the main rotor into a negative pitch. As the helicopter starts to lose height the air flowing upward through the rotor disk keeps the blades turning, maintaining their momentum and keeping them as close to 100% RPM as possible. At a predetermined height the pilot pulls maximum collective, causing the aircraft to try to

climb and that cushions the landing.

In order to have a successful autorotation the aircraft has to have the right combination of height and forward speed. If you're too low there isn't enough time to react and not enough time to recover rotor RPM. If you're a bit higher but stationary you won't have enough forward speed to cushion the landing. The combinations of speed and altitude are published as graphs called *Height-Velocity Curves* but everyone knows these as 'Dead Man's Curve'.

Looking at the example of a *Height-Velocity Diagram* here, the hatched zones (in red on this graph) are the *Dead Man's Curve* area, where a pilot won't be able to execute an entirely successful autorotation. These are considered as areas to avoid where possible. But avoiding these areas would be the same

conducted from within *Dead Man's Curve*.

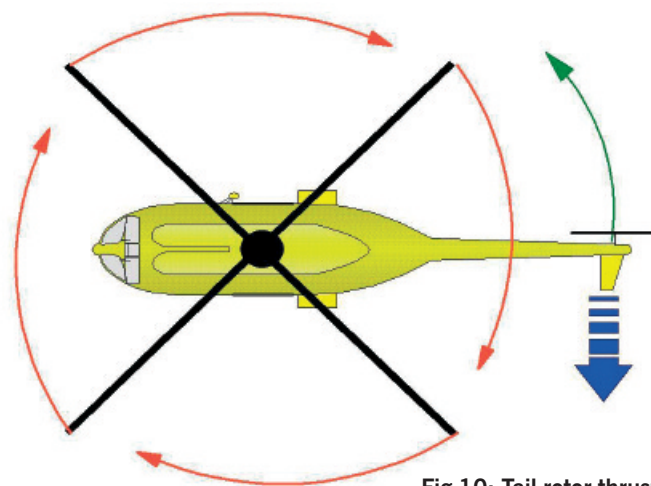


Fig 10: Tail rotor thrust

All that rescuers can do is be as efficient as possible to that the least amount of time possible is spent inside *Dead Man's Curve*. We'll discuss more on this later.

A large number of helicopter accidents relate to the tail-rotor, so let's look at the role of the tail

red) will result in the fuselage trying to spin the opposite way (shown in green). The purpose of the tail rotor is therefore to provide lateral thrust (shown in blue) to counteract this tendency to spin.

But what makes the tail rotor turn? Does it have a second motor? No it does not. Instead the main rotor gearbox has a second shaft coming out of it that extends down the length of the tail boom. This goes through a second gearbox in the tail and from there to the tail rotor. One big advantage of this system is that the main rotor RPM and tail rotor RPM will always maintain the same relationship – you can't lose tail rotor RPM without losing main rotor RPM!

The first cause of helicopter accidents is when the tail rotor fails. This can be from mechanical causes (such as a part seizing or breaking) or it can be from outside impact, such as when the tail rotor strikes a tree. The result is immediate and catastrophic – either the helicopter spins out of control and crashes or it cuts off its own tail, spins out of control and crashes. The only exception to this outcome is when the aircraft is in forward flight, going fast enough that the airflow across

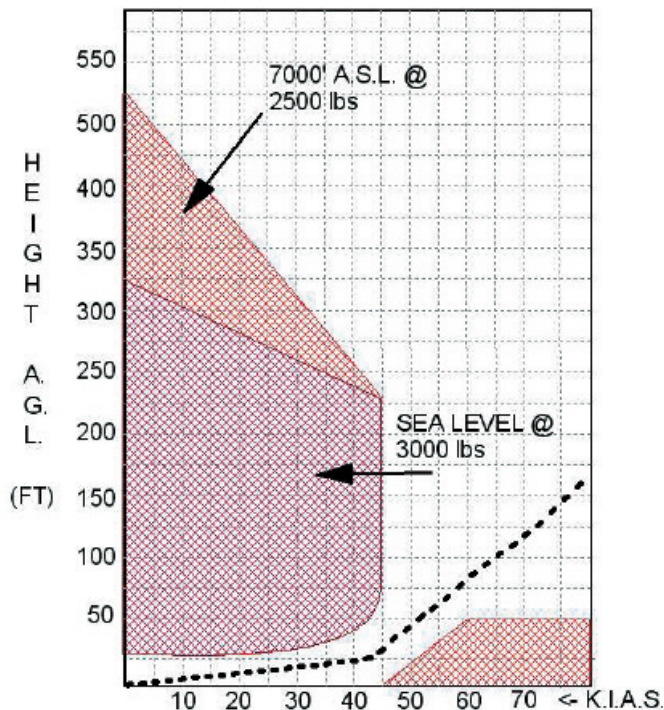


Fig 9: Height-Velocity diagram

as flying a normal aeroplane – it is precisely these operating areas that make a helicopter unique and such a useful rescue tool, so **nearly all rescue operations are**

rotor.

We know that because the main rotor is turned through a gearbox which is mounted to the airframe, the effort exerted by

the vertical stabilizer allows it to *weather cock* the aircraft (and it therefore hasn't cut off its own tail), keeping it more-or-less straight, but this is typically only possible above 30 kts.

How would a helicopter cut off its own tail, you ask? You may remember that the main and tail rotors are connected by a shaft. If one of the rotors hits something it slows down momentarily, sending a torque

crash!

As rescuers we need to make sure that there are never any loose articles, or potentially loose articles, anywhere nearby when we are conducting helicopter operations. As part of our own pre take-off checks we need to check for loose articles and if there are any we need to secure them. We also need to ensure that patients, their companions and bystanders are also properly

higher power requirements. Recirculation is multiplied in canyons, steep valleys and between high-rise buildings – a.k.a. the urban canyon.

By limiting our weight we can try to slow the onset of recirculation and give the pilot a bit more power to get out of the canyon with. If don't waste time in the hover but get the job done smartly then we can allow the pilot to depart before this becomes a real problem. Another option is to select hoist points that offer the pilot an escape route that does not involve applying additional power to climb out.

LTE

Another nasty little problem is *Loss of Tail Rotor Effectiveness*, or *LTE*. This is also sometimes called *Loss of Tail Rotor Authority*, or *LTA*. LTE is caused when a specific combination of wind forces prevent the tail rotor from doing its job. A high Density Altitude will aggravate the likelihood of LTE developing. There are a number of factors that, when encountered in combination, can cause the tail rotor to lose effectiveness to the point where it is unable to

has had a tail-rotor failure and spin out of control even though the tail rotor is perfectly serviceable.

Factors that contribute to LTE are:

- **Low airspeed**, high power requirements (such as hovering)
- **Dirty air** (from main-rotor downwash) flowing over the tail-rotor. This normally means a breeze from the helicopter's 2 o'clock (for aircraft with clockwise rotor systems such as European-made aircraft) or 10 o'clock (for aircraft with counter-clockwise rotor systems such as American-made aircraft).
- **Wind from directly behind** the aircraft or a sudden wind-shift in the 4-8 o'clock area can cause the aircraft to try to weather-vane.
- **Wind from the right** for aircraft with clockwise rotor systems such as European-made aircraft) or 10 o'clock (for aircraft with counter-clockwise rotor systems such as American-made aircraft) can blow fast enough to require more power than the tail-rotor can deliver.
- **A high Density-Altitude** results in thinner air and therefore higher power requirements AND less air density for the tail-rotor to 'bite' on.
- **An aircraft that is heavily loaded** will be more susceptible to LTE than one that is more lightly loaded.

There are only two real options for recovering from LTE – either the pilot must increase airspeed to the point where the vertical stabilizer allows for a weather-vane effect or they must enter auto-rotation and by doing so remove the need for tail-rotor torque. Either one means that your helicopter is going to have to depart smartly or land on your head.

Now the positioning and operating of the aircraft might be a pilot job, but the rescuer who is aware of and tuned into the risk

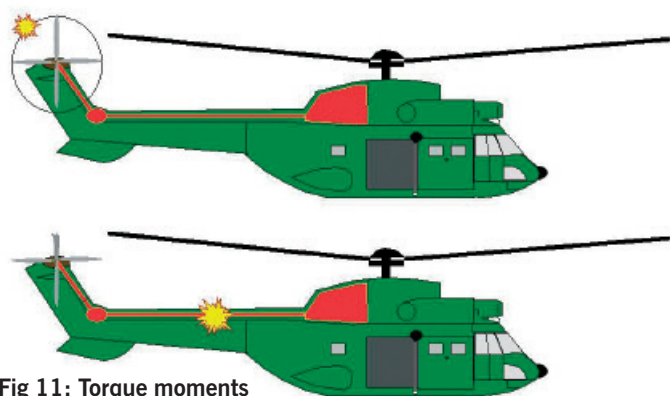


Fig 11: Torque moments

moment (twist) down the shaft, sometimes snapping the shaft. Once the shaft has snapped it starts to flail around under centrifugal force and cuts the tail off! This was spectacularly demonstrated a few years ago in Dubai when two Super Pumas touched blade-tips at an air show. Both cut off their tails and crashed.

The other cause of tail-rotor loss is when it is struck by a foreign object that has been picked up by the turbulence, such as a hat or jacket that has been left lying on the ground when the helicopter is hovering near by. A Bell 206 (Jet Ranger) has been brought down by a baseball cap going into the tail rotor. Similarly, a Puma crashed and burned when a PVC bag got picked up and blew into the tail rotor. A leather flying jacket went into an Oryx tail rotor resulting in a crash that left 11 people dead. This is one of the most likely reasons that a rescuer would be the **direct** cause of a helicopter

managed to ensure that they are not a source of loose articles.

RECIRCULATION

The next problem that the pilots encounter is called recirculation. Recirculation happens when the downwash of the helicopter starts to circle back up above the aircraft on the outside of the

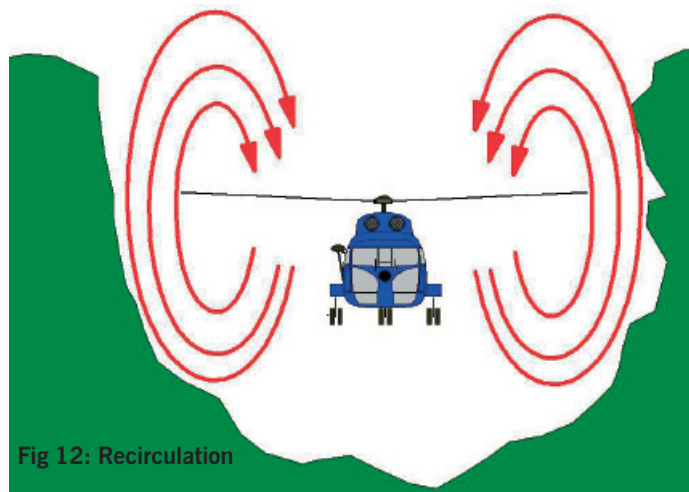


Fig 12: Recirculation

rotor disc before being sucked back down again. This moving mass of air starts to develop momentum and maintaining a hover results in increasingly

produce sufficient thrust (lift) to counteract the torque requirements generated by the main rotor and the aircraft starts to behave exactly as though it

of LTE can make the pilot's life easier by selecting drop-off, pick-up and hoist points that don't put the wind behind the aircraft or on the vulnerable side of the aircraft. It also helps to communicate wind direction and speed to the pilot if the rescuer is already on the ground – the wind at ground level is often different from the wind 100m (300 ft) above.

WIRE STRIKE

The next issue that pilots face and that rescuers can do something about is wire strike. When we stand on the ground we look up and see power lines and we wonder how on earth a pilot can fly into them without seeing them. However, we forget that when we stand on the ground those power lines are nicely silhouetted against the sky. When you're in the air looking down they tend to disappear into the background

clutter of the terrain below. As a ground rescuer do NOT hesitate to make a pilot aware of power lines, telephone lines, aerial cable-ways or stay wires if you know the area. If you are due to be picked up from the field by helicopter make a point of alerting the pilot to all the hazards that you are aware of. If all else fails then wave them off!

BIRD STRIKE

Another low-level hazard is bird-strike. Rescuers can often do something to alert pilots to this hazard in areas that are

known to have populations of large birds such as eagles, vultures and storks. Apart from reducing the risk of helicopter crash it might also make a critical difference to one breeding

pair of an endangered species.

DYNAMIC ROLLOVER

Yet another type of accident that can be directly caused by rescuers is *dynamic rollover*.

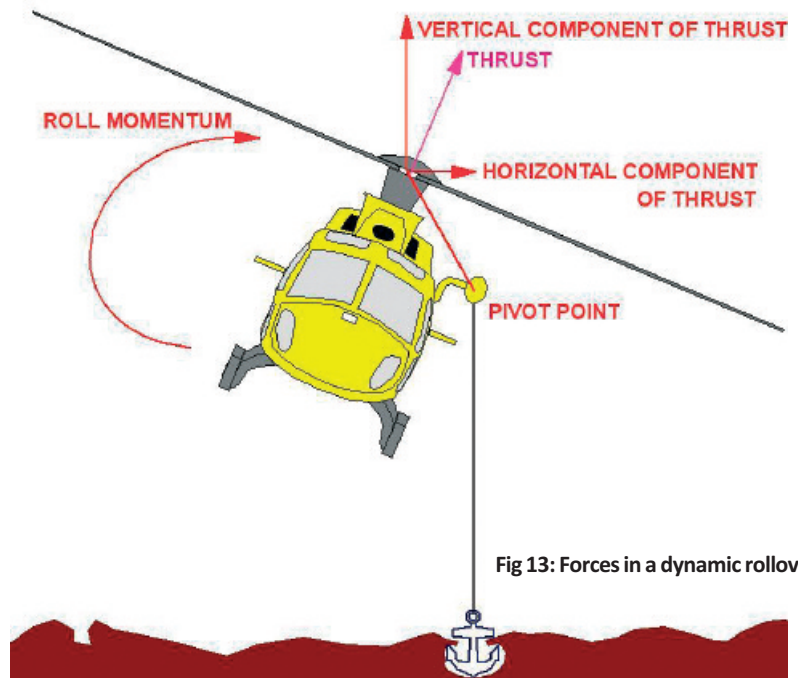


Fig 13: Forces in a dynamic rollover



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Dynamic rollover is a catastrophic condition that occurs when on the helicopter that is not directly underneath the centre of gravity gets attached to, or snagged on the ground. This may be a wheel getting stuck in a crevice or a skid hooking on a rock lip but it can also be caused when the hoist hook snags under a rock or a rescuer (stupidly) decides to temporarily 'park' the hoist hook by clipping the hoist hook to an anchor system while he executes some task before connecting himself, someone else or a load such as a stretcher to the hook.

What happens then is that if the hoist cable is allowed to come tight the aircraft basically rolls over that point, aided by the rotational energy of the rotor disk. Think of this as leverage. As the helicopter starts to roll the lift (or thrust) of the main rotor disk gets broken down into two components – one countering gravity and going straight up (the vertical component) and one going straight sideways which

starts to send the helicopter in that direction.

Once a dynamic rollover starts it can roll the helicopter over beyond the point of no recovery in less than 3 seconds.

HUMAN FACTORS

The last accident contributor we'll look at is *Human Factors*. Human Factors are all those things where people and their interactions are involved. This is increasingly being recognized as a major contributor to accidents and near-misses. In a white paper published by the Helicopter Association International (HAI) in August 2005 titled "Improving safety in Helicopter Emergency Medical Service (HEMS) Operations" the conclusion was drawn that in 127 accidents in HEMS operations between 1991 and 2005, 85% of them involved Human Factors as a contributing cause. Increasing numbers of organizations are also realizing that while the flight crew members are responsible for the actual control and operation of

the aircraft in flight, there is joint decision making that

must take place between the flight crew and the rescuers. The most frequently encountered Human Factors contributions to accidents include:

- Go-fever: One person says 'Go' and the next person is reluctant to contradict this, even if conditions are marginal.
- Hero mentality: the feeling that in rescue one has to get the job done, regardless of how risky it becomes.
- A poor understanding of equipment which is normally brought about by poor training.
- Poor understanding of techniques brought about by a lack of training or practice.
- Failure to allocate clear roles and responsibilities
- Complacency. This may come from ignorance or from excessive familiarity.

that these include such aspects as joint decision-making.

POST-ACCIDENT

So what happens immediately after the accident? Well, that depends on the design of the helicopter. All helicopters used in formal rescue are turbine helicopters. The operating temperature of most turbine engines is well above 600°C. Jet A-1, the paraffin- (or kerosene- for the Americans) based fuel used by helicopters has a flash point of about 38°C.

With most helicopters the engine sits on top of the passenger compartment, along with the gearbox which normally sits directly under the mast. The fuel tank of the helicopter is under the floor and has breather pipes which extend

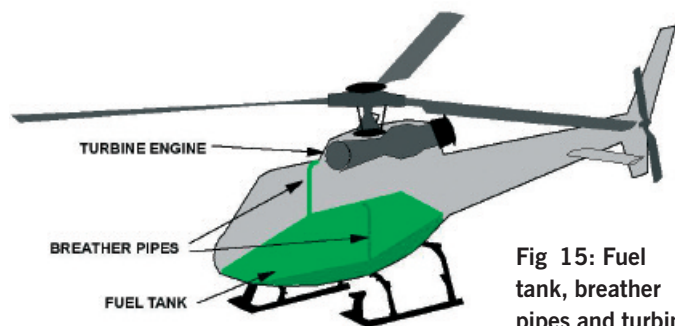



Fig 15: Fuel tank, breather pipes and turbine

- Get-home-itis. This is the fever that strikes people and alters their judgement causing them to take unreasonable risks in order to get back home (or to their intended destination) in the face of obviously unfavourable conditions, mostly weather related. Its real name is Destination Fixation Syndrome.

It is critical that organizations running rescue operations develop proper Risk Assessment strategies and techniques and

up either side of the helicopter, allowing air to replace the fuel that has been used without spilling fuel. This system works very, very well until the helicopter rolls over with hot turbines, such as immediately following a crash. Suddenly the lower of the breather pipes starts allowing fuel to flow out – directly into the engine compartment. The result is an instant fire.

In newer models of helicopters steps have been taken to prevent the fuel from flowing out in the event of a rollover after crashing.

There's not a great deal that rescuers can do about post-crash fire. However, pay special attention to clothing. 



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The Heart of a Volunteer

By Kevin Moses

On 18 April 1942, Lieutenant Colonel Jimmy Doolittle, when speaking of the eighty brave U.S. Army Air Corps pilots who volunteered to launch a counter attack against Japan in the aftermath of their attack on Pearl Harbor, was inspired to remark, "There's nothing stronger than the heart of a volunteer."

Col. Doolittle was onto something there, and his observation is applicable to a much wider group of people than just those of our Armed Forces. Volunteers contribute to countless programs worldwide, improving the overall quality of the programs. How true is this for volunteers in search and rescue?

Photo by Dave Pope



Volunteer SAR Technician Chad Wilt at Loonbeam Hollow, Ozark National Forest, AR.



Both paid and volunteer SAR professionals work together conducting rappelling evolutions on the cliffs of Little Stony Man Overlook at Virginia's Shenandoah National Park, April 2007, NPS Basic Technical Rescue Training—East.

Over the years, I have had the sincere privilege of working side by side with dozens of volunteers on numerous SAR teams across the United States, and it's been my observation that Doolittle [General James] was spot-on. There is nothing these folks aren't willing to do for a cause they believe in. Volunteers give and give, and then give some more. They give their time, money, and effort every time they respond to a mission call or attend training.

But they give even more than that: they give us their passionate commitment to keeping themselves ever-ready to do their part to locate and rescue those in need. They work every bit as hard as their paid teammates and are equally skilled. They serve as instructors at team training sessions, take responsibility for team administrative functions, staff information booths at county fairs, and participate in team fund raisers.

Another intangible benefit volunteers bring to the SAR community is their collective life experience from as many different backgrounds as there are volunteers. Whether a college student on the Larimer County SAR team (Colorado), or a licensed pharmacologist on a local team in Tennessee, every individual rescuer brings to his or her team a wealth of knowledge, skills, and abilities. After joining the team, participating in trainings, missions, and other functions, those already experienced folks continue to grow, both individually and as part of a cohesive team unit.

The "day jobs" held by the folks on the SAR team I currently serve on span a wide spectrum: automobile mechanic, firefighters, tree

farm nursery owner, radio journalist, professional photographer/writer, EMTs, nurses, retired military members, musicians, and two pastors. Each one brings to our team such knowledge! One of my favorite aspects of training with these folks is taking time to get to know them beyond the SAR environment...learn more about what makes each one of them unique and interesting as a person. The more paid personnel on a SAR team get to know their volunteer personnel, and vice versa, the stronger the overall team.

That triggers an opportunity to make an important clarification: "Paid" is often synonymous with "professional." In the case of SAR team personnel, "volunteer" can also be synonymous with professional. Those of us who have SAR responsibilities as part of our paid job need to start thinking in these terms. Our volunteers are every bit as professional, in terms of skill level and conduct, as their paid counterparts. Viewing them in this light might seem like semantics, but to me it's more a matter of showing them the high degree of respect they've earned.

Remember, too..."The Titanic was built by paid engineers, the Ark was built by a volunteer."

Untold hours are donated every year to SAR teams around the world by motivated, skilled volunteers. On my present team alone, volunteers contribute over a thousand hours in any given year. In the case of some of the missions, we would've affected the rescue without them, but there is no argument that their skilled presence on scene made life a lot easier for everyone involved, especially the victims. In other cases though, it is fair to say that we could not have completed the mission without our volunteers, as they served in some pivotal role.

Another often overlooked benefit provided by local volunteers is their response time. Depending on the location of an individual SAR call, some of my team's volunteers arrive on scene several vital minutes before any on-duty responder. In those minutes, they're usually either busting up the trail as a hasty team or taking charge of some logistical need at the trailhead, such as interviewing the reporting party or initiating a sign-in roster.

For about half of any given year, I enjoy the privilege of working with another, different group of volunteers, this time for the purposes of planning and instructing the

Volunteer SAR Technician Jerry Anderson rappels over Devils Jump Overlook in Kentucky's Big South Fork National River and Recreation Area, April 2006, NPS Basic Technical Rescue Training-East.



Volunteers and rangers navigate the Big South Fork of the Cumberland River in February 2008 while searching for the body of a drowning victim, Big South Fork National River and Recreation Area, Kentucky.



U.S. Park Ranger Todd Garrett serves as litter attendant/EMT while volunteer SAR Technician Don LaBonte "rides the elevator" to the top as the patient during cold weather high angle rescue training in the South Maumee corridor of Arkansas' Buffalo National River, December 2011.

National Park Service's Basic Technical Rescue Training—East class, which is a week-long, on-the-cliff, hands-on course. Again, the volunteers committed to this cause are of the highest caliber, bringing to the course the varied skill sets of certified climbing instructors, retired military medics, and private sector managers. If the Park Service only knew what a knowledge base these folks provide every year...

The bottom line with SAR volunteers is this: They give so much to us, so it's only right to give back to them. We have to take care of these generous people.

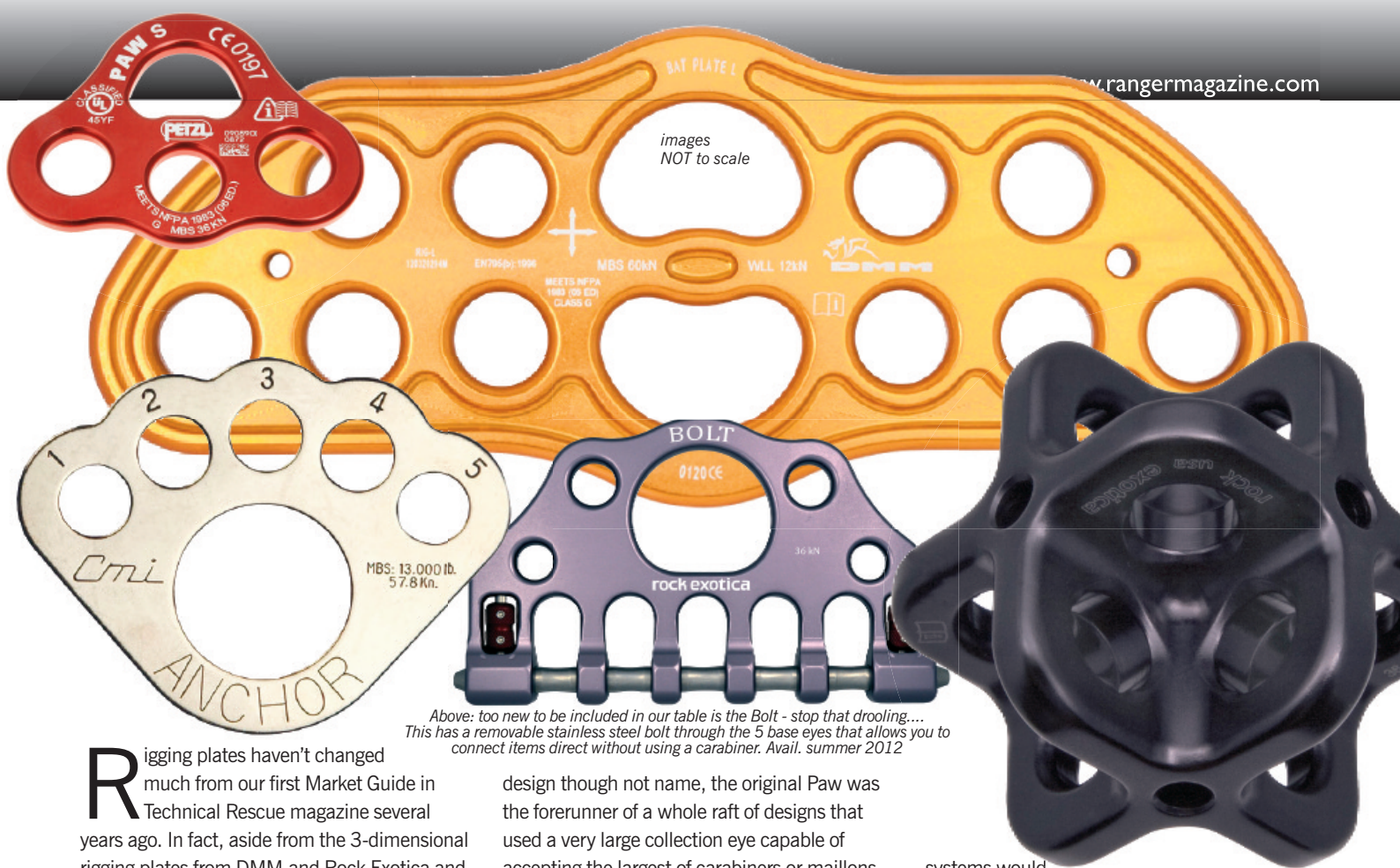
How do we as agencies—as paid professionals—take care of our volunteer professionals? I can write an entire article on this topic alone—and I intend to in an upcoming issue—but for starters, do whatever you can to make your volunteers feel valued. A little recognition goes a long way. If they attend training, print a training certificate for them; award CEUs wherever you can for those volunteers who maintain their EMT status. More ideas on this subject will be forthcoming, but suffice it to say what matters most when taking care of volunteers is ensuring that they feel like they belong to the team and serve in a needed role.

When we place a high premium on the welfare of our volunteers, everyone benefits: The National Park Service enjoys improved relations with volunteer fire departments, county SAR teams, Community Emergency Response Teams (CERTs), Explorer SAR Posts, and the greater public in general; those sister organizations gain members whose knowledge, skills, and abilities are expanded; and most importantly, the victims receive an overall, higher-quality response.

Forging and maintaining healthy relationships with fellow agencies and/or organizations is pivotal for agency SAR teams, especially in cases where a unified command approach is taken to manage an incident. It builds trust, and that is indispensable! Both in the command post and in the field, paid professionals and volunteer professionals will mesh much more effortlessly if our team has taken time before the mission to "pre-load" an investment of team-building and caring for volunteers.

When it matters, we will be able to trust each other. In some cases, this means we'll trust our lives to them and they'll trust theirs' to us...

"On belay." 



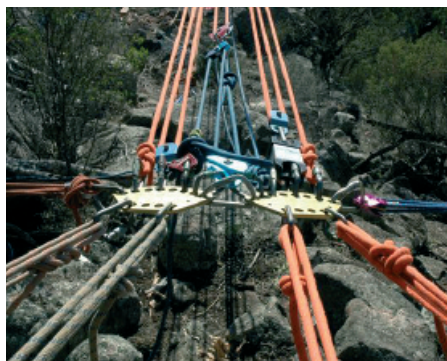
Above: too new to be included in our table is the Bolt - stop that drooling.... This has a removable stainless steel bolt through the 5 base eyes that allows you to connect items direct without using a carabiner. Avail. summer 2012

Rigging plates haven't changed much from our first Market Guide in Technical Rescue magazine several years ago. In fact, aside from the 3-dimensional rigging plates from DMM and Rock Exotica and the yet to be released Bolt, everything else is a variation on a 20 year-old theme albeit with improved design and finish. The basic job of a rigging plate hasn't changed either; tidying, organising and best of all ensuring correct directional loading but the rigging plate is so much more than simply an organiser for the anchor end of your rope systems.

Originally, teams got their local metalworker to fabricate metal plates of all types, mainly stainless steel and alloy, these were cut to shape, drilled to accept carabiners and if you were lucky, deburred!. They were mostly triangular, intended to have a number of ropes or webbing collected at one point which would then be securely anchored. My own team procured bearing plates uncannily similar to DMM's Hub, which were heavy but served us well and I'm certain there were plenty of other home-grown innovations. The do-it-yourself approach was overtaken in the late 80's when RA, CMC, SMC and Rock Exotica in particular started producing quality machined and anodised plates that could accept several anchor connections and redistribute them to several load and/or belay ropes. These were obviously at the larger end of things but in the pocket-sized versions Rock Exotica (rights later bought by Petzl) came up with a model that became the industry watch-word for rigging plates - the Paw. Now superseded just a bit in

design though not name, the original Paw was the forerunner of a whole raft of designs that used a very large collection eye capable of accepting the largest of carabiners or maillons or multiples thereof. This presents a slight contradiction as the large eye may be overcrowded with carabiners causing a return to unruly and untidy rigging rather than preventing the jamming of carabiners against each other.

One thing that that definitely has changed is the quality of finish and attention to detail, again



exemplified by Rock Exotica with their UFO and DMM with their HUBs which are plates enabling 3-dimensional rigging but aimed primarily at arborists so not likely to be seen enough by wilderness rescuers to feature in the team shopping list despite their obvious worth. But fear not because DMM now have their Bat range which is aimed more at the general rope rescue community.

A dilemma facing users of rigging plates is that they were, and still are, often treated as bombproof in that a number of collected rope

systems would terminate at one plate connected to one bombproof or multiple anchors. In many cases the sturdiest stainless steel and 7075 T6 aircraft alloy plates probably are about as bombproof as things get but there's no accounting for metal fatigue and stress fractures and sheer bad luck so local protocols may mandate that rigging plates should always have a built-in bypass to provide redundancy. This can be the simple application of a sling running through some or all of the connected carabiners or on smaller plates an additional large carabiner can be clipped between the top and bottom carabiners (but ensuring that the plate is still taking all the load). Alternatively, DMM's latest Bat Plates can be bolted together to give you 2 plates in one - how bombproof do you want it?

Applications

- 1) Main Anchor** - Enables connection of all the various ropes and safeties and haul systems etc into the same collection point which can be attached to one or several anchors. This is where the largest of plates excel with largest have around 16 eyes to utilise. The bigger plates have large clearance holes to help reduce weight but these too can be pushed into action using either webbing or very large carabiners.
- 2) Stretcher Rig** collection is the next commonest application and the smallest and

RIGGING PLATES

mid-sized plates are extremely efficient in providing attachment for the stretcher straps as well as casualty safety and stretcher attendant tie-in. Be careful not to torque your carabiners as they rotate in the plate's eye - this is where careful selection of the rigging plate design suitable for your particular system is vital. SMC for instance use elongated eyes for better alignment and can even be used as a belay plate while Rock Exotica take things to the ultimate with a cube of holes enabling all four corners of your stretcher to be connected and spaced in their preferred orientation.

3) Pick-Off Rig - Tidy up your personal attachments with the smallest plates as these will provide separate connection points for your own attachment to the descender, pick-off sling and/or pulley system and casualty packaging, and most importantly will ensure that there is no 3-way loading of carabiners which has

traditionally been a necessary evil of the standard pick-off procedure. Mini plates are so small and light there is no reason for the lightest of climbing rigs not to have one.

4) Highline 'trolley' systems. A plate makes a great trolley for connecting pulleys to the main rope, control lines to either side and your own array of connections beneath. Of course some pulleys, notably the Kootenay carriage and DMM's 'Hitch Climber' now incorporate rigging points into the cheeks which negates the need for a separate plate.

5) Pulley Systems - particularly on high directionals where a plate can give you better alignment of your prussic (if you are using one) past the top block and onto the rope.

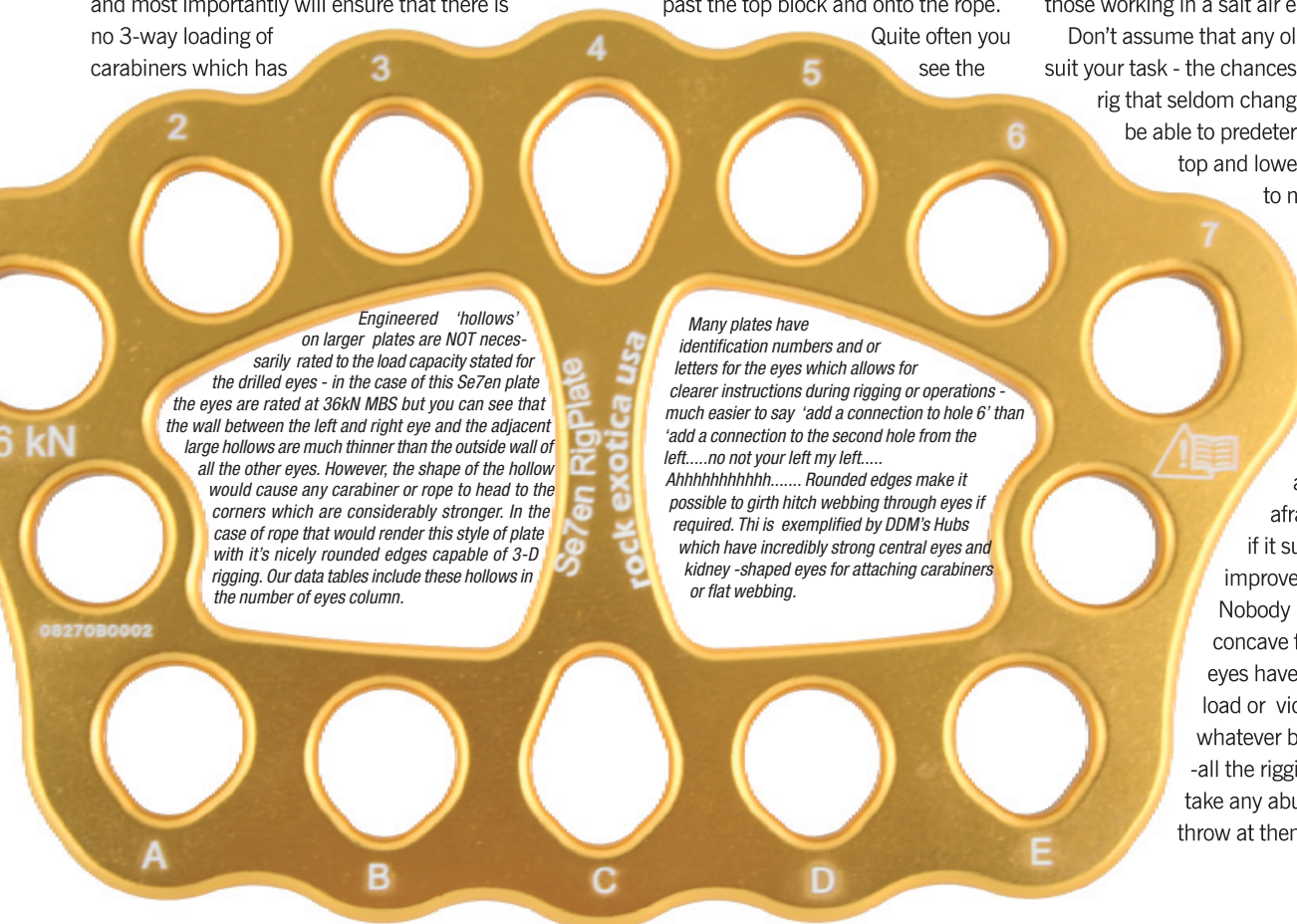
Quite often you see the




prussic bent around the block in an effort to connect back into the main supporting carabiner. Your belay and redirect pulley(s) can also be better separated and provide more direct alignment with the load.

6) Not just ropes! - rigging plates are also superb for organising your non-load-bearing components, for instance airline, lifeline, comms wire etc. in a confined space rescue rig. CMC and CMI produce a stainless plate for those working in a salt air environment.

Don't assume that any old rigging plate will suit your task - the chances are you'll have a set rig that seldom changes and you should be able to predetermine the number of top and lower eyes you will need

to negate torquing or 'unbalancing' the plate. If torquing remains a problem then simply add a swivel, there are now several excellent designs available. Don't be afraid to invert the plate if it suits your purposes to improve directional loading. Nobody mandates that the concave face or the small eyes have to point towards the load or vice-versa - use whatever best fits your system - all the rigging plates here will take any abuse you're likely to throw at them.

















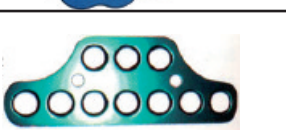

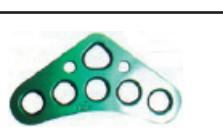







Images NOT to scale	MODEL	COMPANY	ORIGIN	COST	STAN- DARDS	MATERIAL	P THIC
	1269	Camp		€32	CE	Aluminium	8
	1269.01	Camp		€62	CE	Aluminium	1
	1269.02	Camp		€96	CE	Aluminium	1
	Micro*	CMC USA		\$24.50	NFPA	Aluminum	8
	300610 & 300650	CMC USA		\$44.50	NFPA	Aluminum	6
	300615	CMC USA		\$51.50	NFPA	Stainless Steel	6
	Maxi	CMI USA		\$90.90	NFPA	Aluminum	9
	BearPaw1	CMI USA		\$66.60	NFPA	Aluminum	9
	BearPaw2	CMI USA		\$71.45	NFPA	Stainless Steel	4
	Bat Plate L	DMM		\$90.00 £59.99	NFPA CE	Aluminium	1
	Bat Plate M	DMM		\$60.00 £39.99	NFPA CE	Aluminium	1
	Bat Plate S	DMM		\$30.00 £19.99	NFPA CE	Aluminium	1

NOTES: ORIGIN = Company selling the product, not necessarily the country of manufacture DIMENSIONS: some manufacturers gi

PLATE THICKNESS	DIMENSIONS mm & inches	WEIGHT	COLOURS	MBL	Number of Eyes	NOTES	WWW.
3mm .32"	93 x 72mm 3.6 x 2.8"	70g 2.5oz	Gold	36kN 8,093lbs	5	eye diameters 19mm	camp.it
2mm .47"	149 x 86mm 5.8 x 3.3"	245g 8.6oz	Red	45kN 10,116lbs	8	eye diameters 19mm	camp.it
2mm .47"	227 x 128mm 8.9 x 5"	590g 21oz	Blue	45kN 10,116lbs	12	eye diameters 19mm	camp.it
3mm .32"	88 x 71mm 3.49 x 2.81"	57g 2oz	Red, Black	40.6kN 9,127lbs	4		cmcrecuse.com
6mm .23"	160 x 120mm 6.3 x 4.7"	170g 6oz	Black	50.4kN 11,330lbs	5		cmcrecuse.com
6mm .23"	160 x 120mm 6.3 x 4.7"	454g 16oz	Polished	49.3kN 11,083lbs	5		cmcrecuse.com
5mm .375"	240 x 120mm 9.5 x 4.75	500g 17.6oz	Purple	58kN 13,000lbs	13	min eye diameter .75"	cmi-gear.com
5mm .375"	170 x 127mm 6.75 x 5"	190g 6.7oz	Gun Metal Grey	58kN 13,000lbs	6	min eye diameter .9"	cmi-gear.com
6mm .183"	170 x 127mm 6.75 x 5"	245g 8.6oz	Polished	58kN 13,000lbs	6	min eye diameter .9"	cmi-gear.com
10mm .40"	249 x 99mm 9.8 x 3.9"	322g 11.2oz	Purple, Black,Sand, Olive,Gold	60kN 13,200lbs	12	min eye diameters 19mm Plates can be bolted together Individually marked Made in Wales, UK	dmmwales.com
10mm .40"	189 x 97mm 7.4 x 3.8"	247g 8.6oz	Purple, Black,Sand, Olive,Blue	60kN 13,200lbs	8	min eye diameters 19mm Plates can be bolted together Individually marked Made in Wales, UK	dmmwales.com
10mm .40"	129 x 95mm 5 x 3.7"	159g 5.5oz	Purple, Black,Sand, Olive,Red	60kN 13,200lbs	4	min eye diameters 19mm Plates can be bolted together Individually marked Made in Wales, UK	dmmwales.com

























Have slightly different figures for conversions from mm to inches depending on whether they round up or down

Images NOT to scale	MODEL	COMPANY	ORIGIN	COST	STANDARDS	MATERIAL	THICKNESS
	Bat Plate XS	DMM		\$17.05 £17.99	CE	Aluminium	10mm/.40"
	Hub L	DMM		\$223.00 £133.25	CE	Aluminium	10mm/.40"
	Hub M	DMM		\$143.00 £88.75	CE	Aluminium	10mm/.40"
	RP320	ISC UK		£46.37 \$90.00	NFPA CE	Aluminum	10mm/.40"
	RP310	ISC UK		£22.32 \$45.00	NFPA CE	Aluminum	9mm/.35"
	RP300	ISC UK		£14.21 \$28.00	NFPA CE	Aluminum	7mm/.28"
	Tripl'an	Kong Italy		\$25.00	CE	Aluminum	4mm/.16"
	Pentapl'an	Kong Italy		\$28.00	CE	Aluminum	4mm/.16"
	Stretcher	MSA		\$131.59	NFPA	Aluminum	8mm/.31"
	Stealth	MSA		\$103.39	NFPA	Aluminum	8mm/.31"
	Paw Sml	Petzl France		£17.50 \$25.95	NFPA CE	6mm/.25" Aluminum	6mm/.25"
	Paw Med*	Petzl France		£32.50 \$45.95	NFPA CE	10mm/.4" Aluminum	6mm/.25"

NOTES: ORIGIN = Company selling the product, not necessarily the country of manufacture DIMENSIONS: some manufacturers g

PLATE THICKNESS	DIMENSIONS mm & inches	WEIGHT	COLOURS	MBL	Number of Eyes	NOTES	WWW.
19mm .75"	62 x 62mm 2.4 x 2.4"	37g 1.3oz	Orange, Black,Sand, Olive	36kN 8,093lbs	4	min eye diameters 19mm Individually marked Made in Wales, UK	dmmwales.com
20mm .80"	175mm 6.9"	761g 26.7oz	Purple	50 & 80kN 11,100lbs & 16,186lbs	9	Super-strong central eye Individually marked Made in Wales, UK	dmmwales.com
20mm .80"	108mm 4.25"	210g 7.3oz	Purple	50 & 80kN 11,100lbs & 16,186lbs	5	Super-strong central eye Individually marked Made in Wales, UK	dmmwales.com
20mm .80"	249 x 150mm 9.8 x 5.9"	436g 15oz	Gold, Black, Custom	45kN 10,116lbs	15	Individual serial numbering Min eye diameter 19mm	iscwales.com sarproducts.com
20mm .80"	166 x 108mm 6.5 x 4.25"	202g 7oz	Blue, Black, Custom	40kN 8,093lbs	8	Individual serial numbering Min eye diameter 19mm	iscwales.com sarproducts.com
25mm .98"	91 x 84mm 3.5 x 3.3"	64g 2.2oz	Red, Black, Custom	36kN 7,868lbs	4	Individual serial numbering Min eye diameter 19mm	iscwales.com sarproducts.com
25mm .98"	130 x 100mm 5.1 x 4"	70g 2.5oz	Red	30kN 6,600lbs	4		kong.it
25mm .98"	155 x 122mm 6.1 x 4.8"	106g 3.7oz	Blue	30kN 6,600lbs	6		kong.it
26mm 1.02"	254 x 95mm 10 x 3.75"	330g 11.5oz	Teal	54kN 12,200lbs	10		msanet.com
26mm 1.02"	184 x 89mm 7.25 x 3.5"	250g 8.7oz	Blue	48kN 11,000lbs	6		msanet.com
26mm 1.02"	98 x 75mm 3.8 x 2.9"	55g 1.9oz	Red, Black	36kN 8,093lbs	4	Black = £18.33 19mm holes Individually marked	petzl.com
26mm 1.02"	160 x 90mm 6.3 x 3.5"	210g 7.3oz	Blue, Black	36kN 8,093lbs	8	Black = £34.17 19mm holes Individually marked	petzl.com

Give slightly different figures for conversions from mm to inches depending on whether they round up or down

Images NOT to scale	MODEL	COMPANY	ORIGIN	COST	STAN- DARDS	MATERIAL	PR THIO
	Paw Lge	Petzl		£53.33 \$77.95	NFPA CE	Aluminum	1
	Mini Rigger	Climbing Technolgy		£15.00	CE	Aluminum	6
	Master Rigger	Climbing Technolgy		£30	CE	Aluminum	6
	Tri-Rig	Rock Exotica		\$25.95	CE	Aluminum	8
	Penta Plate	Rock Exotica		\$44.95	CE	Aluminum	9
	SE7EN	Rock Exotica		\$68.95	CE	Aluminum	9
	UFO	Rock Exotica		\$104.95	CE	Aluminum	11
	Mini	SMC USA		\$25.00	NFPA	Aluminum	9
	NFPA	SMC USA		\$52.80	NFPA	Aluminum	12
	RP1	SRTE (CAPITAL- SAFETY)		AUS\$138	NFPA	Aluminum	1
	RP2	SRTE (CAPITAL- SAFETY)		AUS\$97	NFPA	Aluminum	1
	RP3	SRTE (CAPITAL- SAFETY)		AUS\$138	NFPA	Aluminum	1

NOTES: ORIGIN = Company selling the product, not necessarily the country of manufacture DIMENSIONS: some manufacturers gi

PLATE THICKNESS	DIMENSIONS mm & inches	WEIGHT	COLOURS	MBL	Number of Eyes	NOTES	WWW.
10mm 40"	220 x 120mm 8.6 x 4.7"	350g 12.2oz	Gold, Black	36kN 8,093lbs	14	Black = £55.83 19mm holes Individually marked	petzl.com
13mm 23"	83 x 101mm 3.25 x 4"	62g 2.2oz	Black	36kN 8,093lbs	4		climbingtechnology.com singingrock.com edelrid.de
13mm 23"	98 x 149mm 3.8 x 5.8"	147g 5.1oz	Black	45kN 10,116lbs	8		climbingtechnology.com singingrock.com edelrid.de
19mm 35"	72 x 84mm 2.83 x 3.3"	51g 1.79oz	Gold, Black	36kN 8,093lbs	3		rockexotica.com
24mm 37"	101 x 123mm 3.98 x 4.85"	110g 3.9oz	Blue, Black	36kN 8,093lbs	6	New V5 (6-hole) coming soon	rockexotica.com
25mm 36"	152 x 238mm 5.97 x 9.36"	376g 13.3oz	Gold, Black	36kN 8,093lbs	16	New 'Bolt' coming soon	rockexotica.com
26mm 46"	89 x 89mm 3.5 x 3.5"	470g 16oz	Black(ish)	36kN 8,093lbs	12		rockexotica.com
27mm 37"	95 x 75mm 3.75 x 2.9"	79g 2.8oz	Blue, Black	36kN 8093lbs	3		smcgear.net
27mm 5.5"	178 x 135mm 7 x 5.3"	323g 11.4oz	Red, Polished	52kN 11,689lbs	6		smcgear.net
30mm 39"	205 x 125mm 8 x 5"	543g 19oz	Gold	50kN 11,100lbs	12	Full size rigging plate provides flexibility in rigging complex anchor systems	srte.com.au
30mm 39"	165 x 97mm 6.5 x 3.8"	228g 8oz	Gold	50kN 11,100lbs	6	Large central rigging points	srte.com.au
30mm 39"	170 x 122mm 6.7 x 4.8"	386g 13.5oz	Gold	50kN 11,100lbs	10	rubber spacers to protect carabiners when used flush with the ground	srte.com.au

Give slightly different figures for conversions from mm to inches depending on whether they round up or down



UNMANNED AIRCRAFT & First Responders

By Eugene(Gene) Robinson

US Congress passes new law


On March 27th, 2012 the President of the United States signed HR-658 into law. This law funded the Federal Aviation Administration (FAA) for its' many duties. To the first responder or firefighter, the most crucial part of the bill included wording to the effect:

(1) COMPREHENSIVE PLAN- Not later than 270 days after the date of enactment of this Act, the Secretary of Transportation, in consultation with representatives of the aviation industry, Federal agencies that employ unmanned aircraft systems technology in the national airspace system, and the unmanned aircraft systems industry, shall develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system.

This is the overarching statement given to the FAA to begin the integration process of unmanned aircraft into the United States airspace. The law goes further and states that public government agencies should have a simplified process for getting small unmanned aircraft (sUAS) into operation within 90 days from the enactment of the law.

What does this mean to law enforcement, fire and first responders? It means that if you are not preparing to utilize this tool in the very near future, you will be left behind in the technology curve that will become pervasive in our lives. The civilian version of the ubiquitous Predator B unmanned aircraft, the Ikhana, has been utilized in some of the very large fires in California. While this option is expensive and was brought to bear late, the lesson was quickly learned. Unmanned aircraft provide unprecedented situational awareness to Incident Command without the risk to

human life. Since that time, smaller more economical aircraft have shown to be effective in fire, stand off, and SAR situations where firefighters or law enforcement could be placed in harms way.

With the passage of this law, comes a warning. Care should be taken before agencies rush headlong into this technology. It is still evolving and there are many manufacturers that proclaim their platform to be the be-all-end-all for your department, when in fact, just like the variety of tools available to a first responder, the unmanned aircraft comes in many varieties and the application of that tool remains the most important consideration. Education in the selection of the right tool is just as important as the ability to use the tool effectively. 



Gene is a former pilot with the United States Air Force Europe 8th Tactical Fighter Wing. He has since retired and founded RP Flight Systems and RP Flight Services, the latter is a non-profit corporation, focused on assisting search and recovery operations. Gene has utilized small unmanned aircraft in searches in 29 states in the US as well as Jamaica, Mexico, and Africa. Lastly Gene has been working with the US FAA in developing "Best Practices" for unmanned aircraft in US airspace.

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In early 2011 Wolverine forwarded a pre-production pair of their new iCS boots, the Fulcrum, for review. I agreed to put the boots through their paces, though admittedly I was concerned about the new iCS “thingy”. I am an avid believer in the ASOLO 530 series boots; I was on my third pair of ASOLO boots when the Wolverine boots arrived, so these boots had a “high hurdle” to overcome.

Before I go into the nuts and bolts of this review, I need to explain why this review has been in the making for over a year and how impressed I have become with Wolverine’s devotion to quality. After receiving the boots in early spring 2011, the boots were utilized in weekly SAR trainings and on multiple wilderness SAR missions. By June 2011 the original pair of boots were clearly not holding up to the rigors of mountain SAR, in fact the soles were delaminating and the “scuffs” from the rocks were now allowing water to penetrate the leather. The boots were performing so poorly that we felt compelled to bring the quality issues directly to Wolverine.

To Wolverine’s credit, they immediately held production and asked that we allow them to address the issues, after which they would send a new pair of boots for evaluation. Sure enough, in late-ish 2011 a new pair of iCS boots appeared on my door step. The boots were once again incorporated into my SAR gear and sure enough

the issues identified with the previous boots have all been addressed.

So onto the nuts and bolts of the Wolverine iCS boots - Wolverine’s iCS technology allows the wearer to adjust the heel strike cushioning by “dialing” your individual setting through an insert located in the heel of the boot. I am always wary of gadgets and new fangled do-hickeys, but I must admit this iCS technology really works! By customizing each boot, I found the boots were unbelievably comfortable and required no break in time. I also find that I suffer less fatigue in the field as I am able to adjust the heel strike in the field. It may seem crazy, but I have found that my boots are set for different heel strikes typically - and no I did not walk in circles prior to these boots. So chalk one up for new fangled technology thingies actually improving a product.

The boots themselves are light weight boots designed for mild 3 season work. The vibram soles are the softer sticky type, offering excellent traction in rocky terrain. Although be forewarned that the price of sticky traction in rocky terrain is quicker wearing of the


rubber. The boots have an integrated tongue to minimize water penetration.

The silicone impregnated leather provides a soft boot that is at least as comfortable as my trusted ASOLO 530’s. Wolverine also appears to have addressed the weak silicone impregnation that was identified in my first pair of boots - because thus far my boots are showing no signs of water penetration through the scuffs obtained through typical use in rocky terrain.

The boot design is very similar to other high quality boots with minimal seams around the entire boot. Any experienced outdoor type will tell you that seams equal water leaks in boots. So if you are shopping for quality boots limit your search to boots with the minimal number of seams. These Wolverine iCS boots will be in the running!

Boots are very personal things and I have learned over time that what one person describes as the “perfect” boot for them is a torture chamber for me. So - I should devote a short description of my foot type so you can determine if these boots might be for you. Now I know many of my friends and colleagues may describe me as “hobbit like” or worse “troll like” - I

would like to think I am a little more main stream. And no Ade - I do not shave my feet! Being serious, I have been told that I have “high volume” feet with minimal arches; hence I find ASOLO boots so comfortable. If you have the long narrow foot type these boots will not be for you.

In conclusion if you are seeking an amazingly comfortable pair of boots that require no “breaking in” before extended hikes, I certainly would recommend that you check out the Wolverine Fulcrum boots. Understand that you will be trading some sole life for the sticky traction on rocks - I have pulled through some simple 5.5 moves with these boots while on approaches. Take the time to play with the iCS settings and customize each boot. Also take advantage of being able to adjust the boots during the long days where you might be putting 10 miles behind you. I will admit - my trusted ASOLO 530’s have been replaced by a new favorite boot... the Wolverine Fulcrum until my next favorite boot arrives. Lastly, I am especially impressed with Wolverine’s devotion to quality - they could have ignored our comments, instead they held up production for many months and addressed the issues we first identified and ultimately came out with an outstanding product. 



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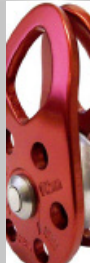


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DEVELOPING MINDFULNESS:

RETURNING TO THE BASICS:

By Mitch
Boudrot

photo: Michael Woltering -
TRm Tactical Editor

This article specifically addresses, either as an introduction to, or as a review of, mental preparation & attentiveness, in a deliberate effort to increase the success of Park Rangers assigned to wilderness emergency medical services (EMS), search and rescue (SAR), wildland fire, rotary/fixed-wing aircraft and/or law enforcement operations. Training in mindfulness is one of five developmental areas of human experience, which encompasses the domains of: (1) physical readiness, (2) mental toughness & clarity, (3) emotional depth & control, (4) awareness & intuition and (5) the indomitable warrior-spirit (kokoro).¹

As with most things in life, the key to healthy and productive human development lies in establishing balance among these five primary and integral domains. Obviously, this capacity for self-mastery is of critical importance to Park Rangers who perform seemingly otherwise “routine” and repetitive tasks, as demanded by their profession, in often complex and high-stress situations, where failure is not an option.

Because of their inter-connectedness, there is the additional benefit that development and advancement in one domain leads to growth within the other areas. In other words, as we develop the capacity to control and efficiently use our minds, we also master other dimensions within ourselves.

The problem, from my perspective as a law enforcement trainer/instructor, is that “routine,” repetitive tasks emerge as a continuing threat to the effectiveness and safety of our officers, and the public they serve. While the majority of our daily lives are governed by routine, affording us the opportunity to “free our minds” and do other things (often simultaneously), the danger of poor habits and established routine become an invitation to mindlessness.

Mindlessness may be described as the mental state in which the mind generates a constant swirl of remarks and judgments which create a barrier of words and images, separating people from their lives (e.g., “lost in thought,” “loss of focus,” “absent-minded,” “tuned-out,” “preoccupied,” “lack of concentration,” or simply “not there”), governed by both habit and inattention. This condition makes it difficult to be mindful, or attentive, to life’s experiences - especially when these experiences demand our immediate attention and intuitive/trained response. Instead, apathy, denial, complacency and a false sense of security can arise, diminishing our ability to respond/react accordingly.

For example, recall the last time you operated a motor vehicle and travelled a significant distance without any conscious recollection other than you were on “auto pilot.” Or, the fact that the majority of our conscious time, we are either pre-disposed to think about what happened in the past (although we cannot alter it) or what may happen in the future – all the while, inattentive that what is happening now – the only period of time we have the immediate capacity to effect change within.

With advancements within the disciplines of Neuroscience and our understanding of traditional contemplative practices, we know that we can use our mind to change our brains to change our minds for the better – a concept known as self-directed neuroplasticity.² The development of mindfulness – the mental capacity to attentively observe an experience as it unfolds in a moment-by-moment awareness, devoid of the usual and constant commentary and conceptualizing, is our desired goal.

“In the fields of observation, chance favors only the prepared mind.”³

The exceptional service and protection you perform everyday as a Park Ranger involves a certain element of chance, inherent within the demands of the profession. The fact that you are assigned to a specific geographic area, working a particular shift, within whatever ambient weather, lighting and topographical conditions that are present, working solo, or as part of a team, encountering a subject(s) during either a proactive or reactive (dispatched) encounter – all of these, and more, are variables not immediately within your

capacity to control.

If scripted in a mathematical formula of statistical probability, the variable that significantly determines success or failure, even life or death, when confronting incidents and situations otherwise largely dictated by the element of chance, is the prepared mind. As Park Rangers, the most immediate method of preparing your mind is through training (formal, or informal) and experience (directly, or indirectly).

Through the proper preparation of the mind, our training and experience, and the appropriate application of both, the element of chance (i.e., luck, fate, destiny, fortune, providence, etc.) becomes less threatening and devastating in its potential consequences as we emerge as an active (verses passive) participant within the event(s). There is an element of established control within the situation(s), in which, as attributed to the Roman philosopher Seneca, "Luck is what happens when preparation meets opportunity." Similarly, as credited to Branch Rickey, "Luck is the residue of design." That control within the external world is, first and foremost, the direct result of us effecting control interiorly, within ourselves, through intentional preparation. We take responsibility for our state of readiness – literally, our ability to respond. Despite our understanding that the world is a chaotic and often dangerous place, within our profession, preparation through continuous training and refinement of skill is the key, not paranoia.

For purposes of this article, we can compare situational awareness (SA) to the concept of mindfulness. Through our experience we know that situational awareness (SA) is a dynamic and fluid concept – the ability to collect, compare/contrast, store and retrieve relevant information, while accurately predicting future events based upon that information. Furthermore, SA is difficult to maintain in the long-term and is easy to lose with competing demands upon available resources. This is especially true

for the sole first responder – sustaining attention and vigilance over prolonged periods of time – especially during highly-stressful and complex operations.

As a Park Ranger, you have, no doubt, received numerous hours of formal and informal training, within a variety of disciplines. However, all of the training, knowledge, skill, ability and supporting technology in the world is useless if it cannot be applied when needed, and under the circumstances existing at the time. For example, as a law enforcement officer, if you do not observe the impending launch of an attack by a suspect(s), because of loss of attention or focus, you will be behind the reactionary/response curve and your ability to dominate the event. Action is, invariably, faster than reaction.

THE OODA LOOP

As a student of tactical operations and military history, Colonel John Boyd (USAF)⁴ understood the significance of interpersonal human conflict as time competitive events – whether aerial dog fights, close quarter battle (CQB), or the management of critical incidents/events. The OODA Loop, also referred to as Boyd's Cycle, consists of four distinct, but interrelated stages, each constituting a cycle. In conflict, each adversary begins by Observing their situation, the environment and their opponent. The second stage is an Orientation to the situation – wherein perspective is gained from the observed situation. The third stage is the formulation of a Decision, based upon all the factors present at the time of the observation. Finally, the implementation of the decision is manifested through Action. This cycle continues to repeat itself throughout the course of the conflict – flowing from Observation, to Orientation, to Decision, to Action – easily remembered through the acronym OODA.

The OODA Loop model assists us in understanding that the adversary

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who can consistently flow through the cycle faster than his opponent, gains the tactical advantage. Ultimately, the faster an adversary can dominate the ability of his opponent to observe, orient, decide, and/or act – the greater the tactical freedom to determine the outcome of the conflict. Initiative, then, follows the faster adversary. But this initiative can only be accomplished through mindfulness – a smooth running OODA Loop translates to effective situational awareness (SA).

COLOR CODES OF AWARENESS

Another significant model to assist us in regulating our mindfulness, or situational awareness (SA), is the concept of Color Codes, used to designate our level of awareness to potential/actual threat(s). Most models are based upon the pioneering work of Colonel Jeff Cooper (USMC)⁵, with variations. For example, a model offered through the Calibre Press Street Survival

Seminar in 1990, consisted of the colors White, Yellow, Orange, Red and Black, and is still widely used.

Condition White

represents a lack of awareness, total relaxation, obliviousness to one's surroundings, daydreaming. In Condition White, there is no preparation for a response to a threat(s).

Condition Yellow is a state of relaxed awareness and alertness – this is the mental level we want our first responders operating at, as it at least corresponds to the first stage of the OODA Loop – Observation.

Condition Orange is a state of heightened awareness – you are aware of something that is (at least potentially) wrong. Total alertness, strategic planning, focusing upon the threat(s). This may correspond to the second & third stages of the OODA Loop – Orientation and Decision.

Condition Red is the state of awareness where there is positive identification of what is wrong and an appropriate response to it. This is full combat, where training and experience are crucial. Condition Red may correspond to the third and fourth stage of the OODA Loop – Decision and Action.

Condition Black represents a state of non-awareness where one is in denial, panic, misdirected frenzy or paralysis due to the presence of the threat(s). It may also represent injury and the inability to respond, frozen/immobilized with fear, or death.

As a model, the Color Code system assists us in making more efficient and effective tactical decisions, through a progressive transition from Condition Yellow, to Condition Orange, to Condition Red. Transitioning from Condition White to Red may not be possible, because the lack of situational awareness resulted in our inability to effectively and appropriately respond to the threat(s) when finally identified. Instead, finding ourselves in Condition White may result in a transition to Condition Black, wherein we are tactically ineffective.

OBSERVE - ORIENT- DECIDE - ACT

"Fear makes men forget... and skill which cannot fight is useless."

- Brasidas of Sparta, 429 BC

"A man surprised, needs an instant to collect his thoughts and defend himself; during this instant he is killed if he does not run away."

- Ardant du Picq

DEVELOPING MINDFULNESS THROUGH BREATHING

Developing mindfulness is not an easy task, nor one for the faint of heart, as it requires consistent practice and dedication to develop. Traditional Chinese literature often describes the human mind as a monkey – unsettled, capricious, inconstant, indecisive, and uncontrollable. Other descriptions compare the mind to a bottle of muddy water – where our thoughts are swirling and chaotic. In both cases, the monkey mind can be tamed, and the muddy mind can be settled as the metaphorical sediment of thought simply falls to the bottom – becoming both clear and serene.

One technique, employed within traditional martial arts systems and tactical officer training is using the breath as a focus for attention – a fixed place, an anchor, to direct our attention and increase our capacity for mindfulness. A four-count breathing exercise, also referred to as box or tactical breathing, emphasizes intentional control of the breath and our level

of awareness.

As long as we are living, the breath is always present. As a result, the breath is something to which we can return – no matter

WHITE	YELLOW	ORANGE	RED	BLACK
Oblivious to Surroundings	Relaxed Awareness	Aware of Something (Potentially) Wrong	Identification of What Is Wrong & Responding Appropriately To It	Panic Misdirected Frenzy Paralysis

where we are – when our minds begin to wander. Attending to the inhalations and exhalations during breathing brings profound calmness to the body and focuses our awareness.

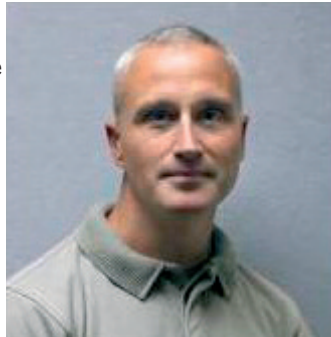
- Find a quiet space where you will not be interrupted, sit straight in a chair, placing your feet flat on the floor while relaxing your hands – either palms up, or palms down within your lap. In as much as possible, be at ease (without or minimizing tension) while maintaining a good body posture.
- Close your eyes and mouth and inhale slowly through your nose, mentally counting to four as you inhale, expanding your abdomen. Hold your breath for a mental count of four, allowing your lungs to expand and settle.
- Open your lips slightly and slowly exhale for a mental count of four, allowing the abdomen to contract. Hold the emptiness for a mental count of four. Repeat the exercise, ideally for the duration of four minutes.

There are several immediate benefits to this seemingly simple practice, including a more relaxed state, a re-training of the body to breathe more effectively, and a slowing of the heart rate due to the action of the parasympathetic nervous system while exhaling. However, after a short time, your attention may begin to wander as thoughts and judgments flood the brain. When this happens, simply observe the fact that your mind has strayed, and then return your attention to the breath. This is the fundamental practice of developing concentration – the capacity to stay attentive to a single thing. In learning to concentrate we will repeat the process many times – when, invariably, the mind strays, we return to the breath. Don't be overly self-critical – which will only agitate the mind and defeat our intended goal.

Taming our minds in this manner is not an end to itself. Our goal is to increase mindfulness, gradually strengthening our capacities for concentration and awareness. Additionally, deliberately and intentionally controlling our attention – anchored to the breath – to be one hundred percent present within the practice of the four count exercise and, more importantly, equally present when all hell breaks loose, or "when the fecal matter hits the oscillating rotor."⁶ "We do not rise to the level of our expectations, we fall to the level of our training." - Archilochus, Greek Soldier & Poet, C. 650 BC

"Of all the things I've lost, I miss my mind the most"
– Mark Twain

The human mind is more than the activity of the brain. It is more than the one hundred billion neurons and approximately five hundred trillion synapses, constituting a three pound mass of matter within the skull, which utilizes twenty percent of the body's glucose, oxygen and blood flow, generating between ten and twenty-three watts of electricity when awake.



As professionals, our passion for learning is the primary tool for our effectiveness and survival. However, with regard to the development of mindfulness, studying the practice is no substitute for practicing the practice. In other words, mindfulness becomes cultivated by simply and deliberately paying attention – despite the inherent difficulty in being attentive. Due to limitations on space, the reader is encouraged to independently research the principle concepts contained within this article. Reference material is listed within the end notes. ☐

END NOTES

1 Referred to as The Five Mountains

– Unbeatable Mind, Foundations Course, SEALFIT Founder and Retired SEAL Commander Mark Divine.

2 Using the Mind to Change the Brain, Rick Hanson, Ph. D., the Wellspring Institute For Neuroscience and Contemplative Wisdom. <http://www.rickhanson.net/wp-content/files/SlidesHansonGoogle.pdf>. Accessed 05/06/2012.

3 “Le hasard ne favorise que les esprits prepares.” On December 7th, 1854, at the University of Lille in France, the first Dean of the Faculté des Sciences (Science Faculty), Louis Pasteur, then only thirty-two years of age, prepared to give his inaugural lecture. The narrative of history would remember Pasteur not only for his contributions to humanity as a 19th century French microbiologist, chemist, pioneer of the germ theory of disease and inventor of the process of pasteurization and vaccinations against anthrax and rabies, but for his insight into the nature and process of scientific discovery during his lecture, equally applicable to our development of mindfulness.

4 Colonel John Boyd.

[http://en.wikipedia.org/wiki/John_Boyd_\(military_strategist\)](http://en.wikipedia.org/wiki/John_Boyd_(military_strategist)). Accessed 05/06/2012.

5 Colonel Jeff Cooper. http://en.wikipedia.org/wiki/Jeff_Cooper. Accessed 05/06/2012.

6 Colloquially known by the phrase, “When the shit hits the fan.”

Mitch Boudrot is a twenty-five year veteran of law enforcement, having served at the state, county and municipal levels. Mr. Boudrot is employed as the Law Enforcement Coordinator and as an Instructor at the Southwestern Community College – Public Safety Training Center (SCC-PSTC), located in Franklin, North Carolina, with oversight of the North Carolina Basic Law Enforcement Training (NC-BLET) and the federally accredited National Park Service – Seasonal Law Enforcement Training (NPS-SLET) academies. Mr. Boudrot is assigned to the Cherokee County (NC) Sheriff's Emergency Response Team (SERT) and serves in the capacity of Operations Commander (OPCOM). His professional memberships include, among others, the National Tactical Officer's Association (NTOA), the North Carolina Tactical Officer's Association (NCTOA), the Georgia Tactical Officer's Association (GTOA), the International Law Enforcement Educator's & Trainers Association (ILEETA), the North Carolina Law Enforcement Training Officers Association (NCLETOA), the International Hopology Society (IHS) and is an Associate Member of the Police Survival Defense Institute (PSDI) National Training Center. In addition to general and specialized instructor certifications, Mr. Boudrot conducts on-going research, development, application & instruction of tactical concepts to include leadership, physical training, subject control & arrest techniques, situational awareness, perception & reality, goal setting, visualization, positive self-talk, stress management, mindset and reality-based training/simulation, with the goal of decreasing the reactionary gap to improve Officer/Operator survivability and the ability to prevail during/after threat confrontations, by “simultaneously decreasing limbic and amygdalar hyper-responsivity while increasing dorsolateral pre-frontal cortex activation.” Mr. Boudrot can be contacted at m_boudrot@southwesterncc.edu or ArchangelTacOps@aol.com.

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SAR DOGS

Getting to Know Their Capabilities

by Michael Moore

This article is an introduction to the dogs themselves rather than their training. It's an introduction to SAR dogs for those who know little or nothing about the dogs they may occasionally or even frequently work with.

In their 'modern' form SAR Dogs have been around for several decades now. In the European Alps they were being used for avalanche searches in the 50's and 60's and in the UK Hamish McInnes took the concept into the Scottish mountains by training his own dogs to work with the local mountain rescue team. The vast majority of teams/handlers are volunteers with some government agencies having their own canine resources. Virtually all countries have some sort of dog presence as this is a relatively inexpensive but hugely useful Search and Rescue resource.

To non-dog-lovers, SAR dogs may simply be a tool, just another asset in a list of useful tools. But such an attitude can indicate a lack of understanding for what a dog team can actually offer. Far from being simply an asset, to us as dog handlers they are our friends, buddies and confidantes. It is an intimate relationship in which the dog understands us and we understand the dog. These highly trained and highly motivated dogs will work for us literally until they die with no questions asked and in so doing deserve respect from every

one they come into contact with.

All dogs are capable of being search trained although this doesn't necessarily mean that they will be suited to any particular role. I have heard of chihuahuas being used by firefighters within restrictive spaces with their heads poking out of the handler's jackets to identify human scent when crawling through rubble but they probably wouldn't fare so well as avalanche search dogs.

Corgis and terriers have and are being used by some groups as is the US fire station mascot, the dalmatian. But the main wilderness breeds tend to be German shepherds, labradors, border collies and in recent years Belgium shepherds making a mark in SAR dog work. The trend around the world is for medium size dogs as these animals are good all rounders. Herding dogs tend to make the best searchers as they are hard wired for rounding up livestock and responding to remote commands. Trainers aim to reorientate this hard-wiring in favour of human searching. While any breed can be utilised for the various air and or ground-scenting roles those breeds with 'squashed' faces, bulldogs, pugs and chows for instance tend to be

discarded due to respiratory disorders and diminished olfactory function than in dogs with a longer snout although intermediate breeding 'modification' of the snout

such as the boxer are being used successfully.

Within the SAR Dog community there are two distinct 'sniffing' functions and five main disciplines which can be utilised as a singular specialisation or multi-role:

- 1) Air scenting
- 2) Ground scenting
- Open Area search dog
- Structural search/collapse search
- Cadaver recovery-land/ water
- Tracking and Trailing
- Avalanche search

Some feel it should be one job-one dog, but dogs can be multi trained and to have a combined air-scenting/ground scenting skill in one dog can be incredibly useful rather than simply being seen as training for training's sake.

Depending on the type of search a highly trained dog and handler can replace up to twenty land searchers if deployed correctly by the search controller. However, a search controller who knows little about the capabilities of properly trained dogs may use the dogs at inappropriate times or locations. For

this reason it is essential to have dogs training with all teams that they are likely to work with especially those teams on the peripheries of your usual 'patch' who may be less familiar.

Training together regularly will highlight each others strengths and weakness because dogs are not necessarily a Search Controller's panacea.



For example in a UK incident where a male wandered away from a hospital, air and ground search resources were used over a number of days. During this period temperatures dropped from -4C to -11C (52F). Almost a week went by and the man was not located so volunteer search dogs were requested and this search located the man's body within two hours. This shows how effective highly trained dog teams can be if only they are called early enough. In most searches there is extensive manpower employed and this 'disruption' to a likely trail can hinder a search dog's efforts. If called in at the start of a search, dog teams may save time and money and perhaps reduce the distress to relatives.

Sometimes a possible deployment for search dogs may not be obvious to a search manager. For instance traffic crashes, train crashes and air craft crashes where there is the possibility that people have walked off or that persons have been jettisoned some distance from the ultimate crash scene. Dogs can be useful for body part recovery as well as live person location.

As handlers we don't refer to our dogs as 'tools'; they are a living and breathing animal and just because they don't talk doesn't mean they don't have off-days just like us. There are times where the expectations of requesting agencies are too high and this can result in unfair pressure being put on the dog team to perform which in turn can lead to 'fraudulent' searching. This can happen when the dog team is tired or over worked, a tired handler fails to notice that the dog too is

tired and becoming less effective. So strict monitoring of search times must be made by the controllers and dog teams rotated in the same way as other searchers and rescue personnel. A full and complete briefing should be given to all handlers prior to searching as there may be known anomalies that can effect the dog during searches that have to be planned into a search by the handler. This could be weather, local geographic or even seismic conditions, certain farming/ranching operations, remote mining or other industry in fact anything that may cause distraction or disruption to a normal wilderness search effort. The type of search will determine the search time periods before the dog needs to be rested for a short time, and resume the search again.

It is best to start search training of a dog from three months old with play training so that by the time it reaches one year old it should be




capable of doing basic open area or ground searches. Then the real training starts depending on what skill is needed the time can vary from three months individual to two years for multi-role or one year to train a good tracker. If the training is done on a voluntary basis then it can take up to two years to be fully trained carrying out up to four hours a week training. When selecting a dog certain things should be taken

into consideration. These are the qualities we look for in a prospective search dog:

- **Calm and friendly to all**
- **Confident**
- **Curious to all things**
- **Not aggressive to humans**
- **Not aggressive to other dogs**
- **Appropriate Size and build**
- **People-motivated (pat dog)**
- **Scent-oriented**
- **Young and healthy**

The handler too needs to be appropriately trained and equipped and able to intergrate into the search operation of whichever agency has requested the dog team. Ideally handlers should have a minimum EMT/life support qualification since they will frequently be first on-scene.

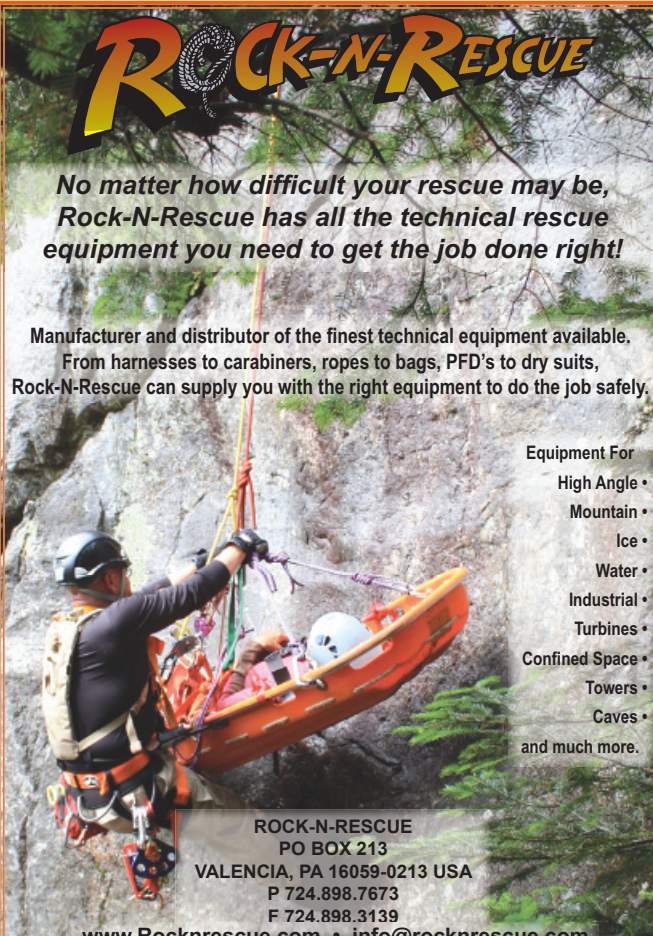
This article is only a short introduction to SAR Dogs for those who know little about dogs. Future articles will explore all of the disciplines in detail and hopefully give a better insight into exactly how your search efforts can be assisted by the incorporation of a dog team. 

Mick was a dog handler for the UK military for 10 years including counter-terrorism in Northern Ireland before spending 20 years as a Police dog handler including responsibilities for tactical firearms assistance and explosives dogs training. Concurrently with this he has been a volunteer SAR dog trainer and handler since 1976 and now provides SAR dog training full time.

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COAXSHER SR-1 Endeavor

By Lee Lang

MSRP: \$239.95

TECHNICAL SPECS:

- Material: DuPont® 1000 Denier Cordura®
- ITW Nexus® Buckles and Hardware
- YKK® Zipper Pulls & Tape
- Quality Nylon Webbing
- Total Weight: 78 oz / 4.88 lbs / 2.21 kg.
- Full Volume: 2800ci / 45.88 liters
- Light-Duty Volume: 900ci / 14.75 liters



One look at the SR-1 Endeavor pack from Coaxsher tells you that its design was forged in the fires of Mount Doom (I have always wanted to use Tolkien in my writing). It is obvious that this SAR pack uses the wildland fire pack as the foundation. This immediately intrigued me because if there is one thing that wildland firefighters have down to a science it is hiking long distances and working long hours with heavy packs. It seems natural therefore to tweak this basic design to fit another field, wilderness SAR, which requires hiking long distances for extended hours.

Of course one of the most difficult things to review is personal gear (i.e. boots, packs, clothing, etc.) where body shape and personal preference becomes integral to the function of the product. So, as you read this review, consider your body type and your personal preferences to help you judge if this pack will work for you. For example, if you know that wilderness fire packs are the most God-awful thing you have worn, then this pack is not for you.

The SR-1 Endeavor is a highly-modular designed pack, offering great versatility. But this versatile modular design comes with a price – weighing in at almost 5 pounds this pack leans towards the heavy end of many packs used in wilderness SAR. The pack's modular design results in the ability to remove or add “pouches” to fit the mission at hand. When the pack is fully assembled it offers approximately 46 liters of space – which is surprising because the modular design makes it look much smaller. One issue with the modular design I found was the various compartments have limited storage space meaning that items I usually keep together (Like subject clothing and gear) had to be separated into separate compartments. The pack literally has “nooks” and “crannies” everywhere... I swear if you look hard enough you will discover the one where socks go when dryers “eat them”. In reality all of the internal pockets, pouches, and bags offer one the ability to stow special gear but you'd better be very familiar with your pack... 'cause you could easily “lose gear” in this pack.

I found the pack very comfortable to wear for extended periods of time over long distances. Fire packs tend to lower the load on your back resulting in fewer upper core muscles being engaged over time and less fatigue to the wearer. The “yoke” style shoulder straps provide comfort and allow for easier movement. I believe this is key to the pack's comfort and is an integral part of fire pack design where one is expected to dig line for 8 hours while wearing his or her pack. This design feature becomes very important when assessing this pack for mission functionality.

The SR-1 Endeavor is not a technical mountaineering pack. I would never utilize this pack in a SAR mission that involved technical rescue. Technical mountaineering packs



are narrow, streamlined and “become part of the climber”. They are designed like that to ensure a climber is not exposed to unintended weight/balance shifts while moving through technical terrain. The SR-1 Endeavor’s strength in comfort is its liability in technical terrain.


I must honestly admit I have no idea how the pack performs in rain. Since receiving the pack my area has literally not had any significant rain. Possibly, Coaxsher has built in an anti-rain feature ensuring that all SAR missions by the wearer will occur in sunny dry weather... if they have they certainly have a strong selling point! In reality this is one area that could be an issue for people that do not carry a rain cover for their packs.

In an effort to examine the pack’s performance in rain, I exposed the pack in a vertical position (as if being worn) to a sprinkler set to “gentle rain shower” for a total time of 1 minute. As suspected, the pack allowed water to readily enter the pack. The strength of its modular design proves to be a weakness here, as the individual modules serve to “catch” rain and promote soak through. The pack’s primary weaknesses are the seams, which are not taped, and the zippers, which are not of a design to prevent water from entering through them.

Of course I encourage people to use rain covers since most packs under-perform in repelling water. But - a rain cover is essential for this pack.

It is important that the wearer spend the time to fit the SR-1 Endeavor to their body. Load the pack to capacity when you fit it. I spent nearly 2 hours adjusting this strap and that strap... loosening here and tightening there... bending over and looking up... turning this way and that way. Once you adjust the pack it is very comfortable. If you don’t do this you will find the load is wobbly... bouncy... and simply annoying. It essentially means the pack is highly customized to you and not wearable by others.

In general I find the SR-1 Endeavor to be a comfortable and functional SAR pack for non-technical SAR missions. Understand that the modular design means you have to “retrain” yourself into how you pack your SAR pack – possibly changing years of habit. So, understand you will go through a “get to know you” period with the pack, and do not be surprised if at first you do not like the pack simply because it is so different from your standard SAR pack. But its comfort on those long days will win you over.

I encourage Coaxsher to develop this product further—hopefully they will work with wilderness SAR personnel and develop the modularity to further enhance the pack. Possibly, add a “bash kit” or “go kit” component. It would be great to see a rope bag component for 150’ or 300’ ropes. Although the pack is not appropriate for technical rescue... the pack would be great in many rescue situations where the approach is not technical but requires the movement of heavy gear long distances. 



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CRESTONE

2009

**The Mission that received the
2010 Valor Award of NASAR [USA]
(National Association for Search & Rescue)**

Nominees

Colorado's Alpine Rescue Team, Custer County Search and Rescue Team, Douglas County Search and Rescue Team, El Paso County Search and Rescue Team and Rocky Mountain Rescue Group and their members that performed a remarkable nighttime rescue July 27/28, 2009.



The famed Crestone traverse follows the ridge between the Peak and Needle. The dotted yellow line shows the rescue evacuation route. (Photography courtesy of Wojtek Rychlik, www.pikespeakphoto.com.)

Summary

July 27/28, 2009, 26 members of Alpine Rescue Team, Custer County Search and Rescue Team, Douglas County Search and Rescue Team, El Paso County Search and Rescue Team and Rocky Mountain Rescue Group, all in Colorado, conducted a high altitude rescue that was above and beyond the call of duty, exemplifying the selfless, perhaps risky commitment to others embodied in the NASAR motto, "That Others May Live." The rescue took place entirely at night on the traverse between two of Colorado's most dangerous 14,000 foot peaks, Crestone Peak and Crestone Needle, in a gully notorious for rock fall and surrounded by 70 rock faces of 1,500 feet. Rescuers had to climb nearly 4,500 vertical feet, ascending more than 3,000 vertical feet to the summit, then

perform a technical lowering for 1,700 vertical feet and then climb back up 1,500 vertical feet to a pass before descending another 1,500 feet. Ten successive lowering stations were required to lower the injured climber from 14,000 feet to a helicopter at 12,300 feet — all before severe summer thunderstorms developed over the peaks. Command and coordination was by radio from 15 miles away.

Background on the Crestone Peak - Crestone Needle traverse

Stabbing the sky in Colorado's rugged Sangre de Cristo Mountains, the jagged summits of Crestone Peak (14,298ft) and Crestone Needle (14,201ft) were the state's last 14,000 foot summits to be climbed.



Once thought to be unclimbable, these peaks are considered the state's most difficult fourteeners summits to reach. Between these two spectacular peaks, the 7th and 20th highest in the state, is a famed traverse; described in Gerry Roach's Colorado's Fourteeners climbing guide, The traverse of the Crestones is one of Colorado's four great fourteeners traverses. This climb is listed as a Class 4 *Classic*. The most difficult part of the traverse is the 500 feet on the Needle's north side. Knobby conglomerate rock delights climbers, but occasionally it lets loose rocks that will damage anything in its path.

The morning of July 27, 2009, two climbers were attempting the Peak to Needle traverse when a hold broke. One climber fell, fracturing his leg. Now stuck at nearly 14,000 feet, the climber needed rescue.



The Rescue

The Custer County Sheriff's Department received the emergency call from the two climbers late that morning. Knowing the extreme difficulty of the location, Custer County Search and Rescue Team requested additional technical rescuers from the Colorado State SAR Coordinator. 26 rescue mountaineers from five teams. Alpine Rescue Team, Douglas County Search and Rescue Team, El Paso Search and Rescue Team and Rocky Mountain Rescue Group responded to assist. The Air Force Rescue Coordination Center was contacted and high altitude helicopter support was requested, in the hopes the rescue could be completed before nightfall.

Rescuers from as far as 175 miles away responded to the command post in the small town of Westcliffe. The Incident Commander and Operations Chief put together a nighttime rescue plan in which rescuers would attempt to reach the injured party by climbing to the summit of Crestone Needle (14,201 ft) and then rappel off onto the traverse to the injured party.

Additional rescuers would also hike in from the southeast side and climb from below via Cottonwood Lake. Flight For Life Colorado's high altitude AS350 B3 helicopter was called to shuttle rescuers to the mountain, to avoid the long, slow drive on a 4x4 road. Before dark only one team of rescuers could be flown from Westcliffe to the mountain. All the other rescuers drove the 1-2 hours up the 4x4 road to the trailhead. While rescuers had begun their climb (around 21:00 hours) of Crestone Needle, the US Air Force Rescue agreed to attempt a nighttime hoist operation. Two HH-60G Pave Hawks and a C-130 airborne refueling plane were dispatched from Kirtland AFB in Albuquerque, NM, home of the USAF's 58th Special Operations Wing. As reported by USAF Lt. Col. Thomas D. Humphries, who was the flight lead for this mission:

All I needed was a site larger than my 53 ft 8in rotor diameter to be able to hover in-ground-effect that was nearby the objective and I would have shot my approach to that site and let my PJs recover the objective from there. However, what we both found when we assessed the objective's location were 70-degree rock faces towering 1500-2500 feet from the lower terrain, requiring an out-of-ground effect hover capability to stop in open airspace to hoist the objective. While my wingman was assessing the site, we looked at all we carried to see if we could download enough to get light enough and determined that site required us to lighten our aircraft 1100 lbs below the zero fuel weight of the aircraft to be able to hover out-of-ground-effect at 14,000 ft MSL. Neither of us, when we assessed the site separately, found anything even close to the objective that would have afforded a rescue of the objective any faster than the climbing teams.

At 14,500 feet in the dark at 01:00, the Air Force had to give up their rescue attempt, leaving the 26 rescuers on the mountain to compete the mission. A predicted threat of significant daytime thunderstorms meant the rescue be done that night.

In addition to personal gear for a high alpine peak, rescuers carried 1,600 feet of rope, anchor slings and hardware, a litter and medical supplies up a very complex and extremely rugged mountaineering route. The first team of rescuers reached the injured climber around 01:30 that night and began what would become a 1,700-foot evacuation of the injured climber.

Eighteen of the rescuers climbed to the summit of Crestone

Needle that night to reach the injured man. Meanwhile eight other rescuers crossed the 12,900-ft Broken Hand Pass and circled 1-1/4 mile around to the mountain's west side where they met the litter and injured subject about half way down a gully called Asteroid Alley, so named because of lots and lots of rock fall. Working through the night entirely by headlamp rescuers rigged 10 successive lowering stations through vertical rock cliffs, steep scree fields and icy snow. After five strenuous hours, the injured climber was carried to a helispot at about 12,300 feet.

A Flight for Life helicopter was able to land and transport the climber to a hospital in Pueblo, Colorado, 56 miles away. Rescuers then faced a hazardous 1000-foot climb back up over a pass and 1,900 feet again down the mountain, and all arrived back at the trailhead before the start of the forecasted afternoon thunderstorms.

An unusual mission

This mission was unusual from typical high mountain missions in several ways:

- To avoid dangerous, forecasted afternoon thunderstorms this entire mission was completely performed during the night on one of the most notorious and severe 14,000 ft peaks in Colorado.
- Rescuers from five SAR teams had to work together in severe technical terrain with very difficult route finding, which was all done by headlamp.
- Radio communication and rescue coordination was spread across two sides of a large mountain; the command post was 15 miles northeast of the accident site, ground access was from the southeast and the lowering to the helicopter was on the southwest flank.
- The technical evacuation involved creative and improvised anchors requiring expertise far above the norm.
- Rescuers' efforts were physically demanding, requiring rescuers to climb over 4000 vertical feet. Rescuers ascended more than 3000 vertical feet to the summit, performed a technical lowering for 1700 vertical feet, and then climbed back up 1000 vertical feet to a pass before descending another 1900 vertical feet to the trailhead. **PR**

Agencies Involved

Custer County Search and Rescue Team www.custersar.org

Alpine Rescue Team www.alpinerescueteam.org

Douglas County Search and Rescue Team www.dcsarco.org

El Paso County Search and Rescue Team www.epcsar.org

Rocky Mountain Rescue Group www.rockymountainrescue.org

Colorado State SAR Coordinator (CSRB) www.coloradosarboard.org

Custer County Sheriff's Department

www.custercountygov.com/sheriff.htm

Air Force Rescue Coordination Center

www.1af.acc.af.mil/units/afrc

512 Rescue Squadron, 58 SOW, Kirtland Air Force Base, NM

www.aetc.af.mil/library/factsheets/factsheet.asp?id=6195

505 Special Operations Squadron, 58 SOW, Kirtland Air Force Base, NM

www.aetc.af.mil/library/factsheets/factsheet.asp?id=6190

PARK RANGER will feature Mission/Incident reports in each issue. Please submit your interesting reports with photos to info@rangermagazine.com

NEW(ish) RESCUE HELI ASSOCIATION



The Helicopter Rescue and Response Association (HRRRA) was founded in Austin Texas in 2010 as a result of the annual ad hoc Helicopter Rescue Summit held in conjunction with Helicopter Association International's Heli-Expo. The fruition of this association is the result of a common desire shared by those actively involved with helicopter rescue operations towards creating an information sharing network within the community.

The Board of Directors come from a variety of helicopter rescue backgrounds worldwide and provide decades of operational experience between them. The HRRRA is dedicated to the safety of air crew, rescue and response personnel and survivors through education, training, standardization and information sharing. Using technology and equipment improvements to increase efficiency/effectiveness and improve safety.

Most recently, the HRRRA organized, hosted and promoted safety at the 2012 Helicopter Rescue Summit held in Dallas, Texas. The event was well attended by 60 HRRRA members from around the globe. Presentations by HRRRA members covered a wide gamut of operational issues and considerations, generating discussion and idea sharing. Next year's summit will include a call for papers and topic-specific presentations.

HRRRA has also developed a website, www.HeliRescueAssociation.org, which serves as a focal point for information sharing and networking. The Members Section of the website offers forums, operational guidelines examples and the ability to connect with others in this field.

Members and Board of Directors come from a variety of helicopter rescue backgrounds worldwide, with decades of operational experience between them.

www.HeliRescueAssociation.org

Lost Person Behavior: A Search and Rescue Guide on Where to Look – for Land, Air, and Water

Author: Robert J. Koester

Publication Date: 2008

ISBN: 978-1-879471-39-9

Publisher: db's Productions

Price: \$25.00 USD / AU\$56.95

Paperback: 416 pages 5.5 x 8.5 inches

Illustrations: 107 throughout

Chapter Titles: Introduction, International Search and Rescue Database, Limitations of ISRID Statistics, Overall ISRID Findings, Lost Person Strategies, Lost Person Myth and Legends, ISRID Tables Explained, Subject Categories, Determining Probability of Area, Summary, Appendixes A-C, Abbreviations, Glossary, Notes, and Index

Bob Koester has assembled a resource book that belongs on every Search and Rescue professional's bookshelf. The book is not a light liesure-read, it is highly technical and crammed full of information. So why do I recommend it? Simple – The book contains the information to improve any SAR managers' pre-plan or as a resource in the Planning Section in ICS (or similar area in other command structures).

International Search and Rescue Incident Database 25


Location	n	Organization
Australia	556	SAR Bayes
Alberia	90	Hatch & Cornell
British Columbia	241	Provincial Emergency Programs
Ontario	441	Ontario Provincial Police
Nova Scotia	337	Hill Emergency Measures Organization
New Zealand	2460	New Zealand Police
South Africa	47	Mountain Club of South Africa
Switzerland	76	Swiss Air Force
United Kingdom	489	Mountain Rescue Council
Worldwide	8	1 st Special Response Group
USA	52	Michelle/NASAR Project
USA	425	Project Lifesaver
USA	5538	National Park Service
USA	13318	Mountain Rescue Association
USA	244	US Air Force Rescue Coordination Center
Arizona	290	Arizona Division of Emergency Management
California	257	Costa Costa Sheriff's Department
California	72	Marin Sheriff's Department
California	140	Placer Sheriff's Department
California	420	Santa Barbara County SAR
Colorado	3797	Colorado SAR Board
Idaho	443	Idaho Sheriff's Association
Indiana	4	Indiana Department of Homeland Security
Kentucky	280	Kentucky Division of Emergency Management
Maine	227	Maine Warden Service
Maine	24	Acadia National Park
Maryland	209	Maryland State Police Special Operations
Massachusetts	45	SAR Statistics
New Hampshire	1066	New Hampshire Fish and Game Department
New Jersey	5	Search and Rescue Council of New Jersey
New Mexico	1309	New Mexico Department of Public Safety
New York	2354	NY Dept of Conservation and Natural Resources
Oregon	7590	Oregon Emergency Management
Pennsylvania	563	PA Dept of Conservation and Natural Resources
Utah	4948	Utah Department of Public Safety
Virginia	1330	VA Department of Emergency Management
Washington	581	Washington State Emergency Management Division
Wisconsin	25	Wisconsin-Headwaters SAR ICI
Wyoming	252	Wyoming Office of Homeland Security
TOTAL	50,492	40 Sources

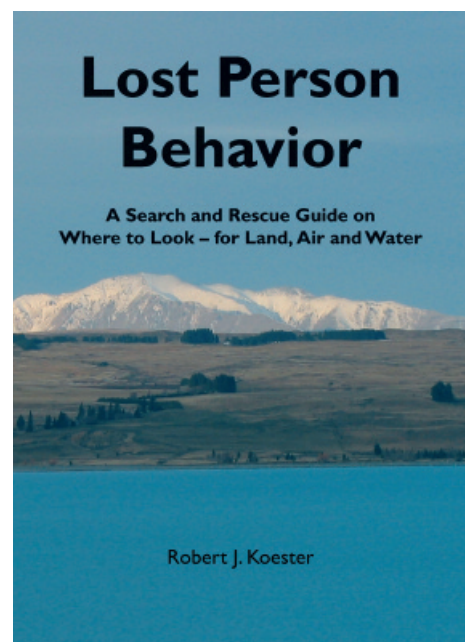
Excerpts from *Lost Person Behaviour* including the sources for Rob Koesters data (above) and sample pages (far right).

The book provides the analysis from the massive International Search and Rescue Incident Database (ISRID), now containing more than 50,000 SAR incidents. Through careful analysis, Bob identifies 41 unique subject categories that can be used in SAR planning. Behavioral profiles offer SAR Managers the information to better judge Search Urgency or to help steer limited resources into high probability areas. The book goes beyond the classical statistics offered in older books and provides data for mobility time, survivability, elevation changes, etc, all of which will help the SAR Manager make informed decisions that can help limit liability as well as ease his or her conscience.

Bob has also gone one step further, and offers SAR data for ecoregions. In the past a lost hunter in a Temperate Forest region was the "same" as a lost hunter in a Dry Forest region. Bob's analysis shows that these individuals will probably act uniquely different and the wise SAR Manager could predict their behavior with this book.

Rather than read this book, you should "learn how to use it" – become familiar with the layout, identify your operational region and your typical subject types. Review your pre-plans with this book sitting beside you. Keep the book in your Manager's kit and look at it as soon you have a moment. For the "ground pounder" – you can use the book to become a better searcher in the field. Before you leave base to start your mission look at the expected behavior information and overlay that to the terrain – Use the information to search smartly and improve your searching.

I should offer a warning, and Bob does a good job of this in the book as well. Books like this provide probable behaviors – the information should not be construed as "Rules" the subject will follow. There are always exceptions to the probable and you should never forget that your mission, your subject, may be one of those exceptions. Too many SAR Managers have fixated on the statistical data to the detriment of the overall mission or worse the death of the subject. Use this book for what it is... a tool to be added to your tool box. 



Overall ISRID Findings 39



4. Overall ISRID Findings

The International Search & Rescue Incident Database (ISRID) examines lost person data in several ways. It looks at:

- Population density (urban versus non-urban incidents)
- Group behavior
- Special groups
- Subject scenarios

Population Density

Much like the error of combining data from Iceland and southern Florida, combining data from a vast New Zealand wilderness and the urban streets of San Francisco makes little sense. Therefore, ISRID contains a data field that describes population density. The choices are wilderness, rural, suburban, urban, and water.

	Wilderness An area essentially undisturbed and uninhabited by humans. Although even in a wilderness area a network of trails and roads may be found. The term is much broader than the definition used by federal land managers.
	Rural An area relating to the countryside, situated by farming or raising livestock, which is sparsely populated. It is often mixed with open spaces and woods.

106 Lost Person Behavior

Dementia (Alzheimer's)

Initial Reflex Tasking

Investigation

- ☐ Determine planning data.
- ☐ Determine searching data.
- ☐ Start MPQ/EPQ. Ask specific questions.
- ☐ Previous wandering.
- ☐ Potential destinations.
- ☐ Severity of dementia.
- ☐ Check tools, mass transit (all ability, low price, EVG, jabs, children, etc).
- ☐ Alert municipal workers.
- ☐ Issue "Silver" alert.

Containment

- ☐ Establish containment.
- ☐ Use statistical mean zone or geographical zone.
- ☐ Containment provided by road patrols/cops.
- ☐ In urban environment, use road, bike, car patrols.
- ☐ Consider extensive to get development.

Initial Planning Point

- ☐ Presence PPI
- ☐ Local search.
- ☐ High's systematic grounds and structure search.
- ☐ Repeat search of grounds and structure.
- ☐ Task assign them/trackers.
- ☐ Tracking/lost bag dogs: ideal if they have practiced with persons with dementia.

Travel Corridors

- ☐ High's search of trails, roads, drainage, and other routes leading away from PPI point.
- ☐ Look for decision points and exit for sign of turn off points.
- ☐ Dogs into drainage.
- ☐ Corridor search parallel to roads and routes.

Hub/Immediate Area

- ☐ Canvas compass.
- ☐ Canvas neighborhood.
- ☐ Thorough search of 25% zone.
- ☐ Sweep/area dogs.
- ☐ Notify community by media, fly, door to door, and/or telephone system.

High Probability Tasks

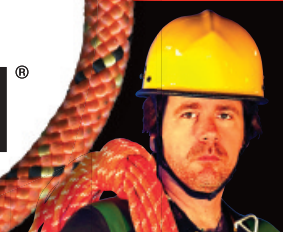
- ☐ Check historical files.
- ☐ Previous lost locations.
- ☐ High hazard areas.
- ☐ Previous homes.
- ☐ Ensure heavy brush is searched.

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