

2012 National Search and Rescue Conference

-Accident on Vesper Peak-

-MRA Founder Celebrates 100 Years-

-Tourniquets: An Ancient Technology-





MOUNTAIN
RESCUE
ASSOCIATION

April 2012

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Cover photo by Bill Parker, BAMRU



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2012 MRA and NASAR Conference

Joint MRA/NASAR Annual Conference Lake Tahoe, NV June 7, 2012 - June 10, 2012

Lodging Reservations: To make your lodging reservations at the conference facility, use <http://www.harrahs.com/CheckGroupAvailability.do?propCode=HLT&groupCode=S06NSR> or call Harvey's Lake Tahoe directly at 1-800-455-4770. Please be sure to use group code S06NSR to ensure you receive the group rate. The room rate for the conference dates is \$79 except for Saturday, June 9th, where the rate is \$139. Check in time is 1600 and checkout is 1200.

Schedule of Events

June 4-6—Pre-conference workshops (pre-registration required)

June 6— 1500 Opening of exhibit hall

June 6—1830 NASAR board of directors' meeting

June 7—0900 Opening session

June 7—1130-1300; 1630-1900 Exhibit hall open

June 7—1330-1700 Workshops

June 7—1900-2030 Meet the candidates for NASAR board of directors

June 8—0830-1500 Workshops

June 8—1000-1330 Exhibit hall open

June 8—1530-1700 Community meetings (Canine, Ground SAR, Water, Tracking, MRA)

June 8—1830-2230 Higgins & Langley Awards Ceremony

June 9—0830-1730 Workshops, ASTM meeting

June 9—1630-2230 Awards banquet

June 10—MRA business meeting



(MRA)

*This year's
joint MRA/NASAR
conference is not to be
missed!*

2012 Conference Track Content

Workshop descriptions with speaker names and times are posted on the conference website at <http://www.nasar.org/page/25/2012->

Canine Track

- Understanding and Selecting the Search Dog
- Visual Trackers and K9 Handlers Working Together
- Cultivating a successful SAR dog: whelping box to certification
- A New Search Dog
- Understanding the Autistic Subject for the K-9 Handler
- Drive Theory - A New Look
- Apples to Apples: Comparing Airscent Dog and Grid Team Search Effectiveness with Sweep Width
- Scent Theory - The Human Scent Source

General & Medical Track

- Wilderness Trauma Care: You maul 'em, we haul 'em
- Basic Life Saving for Healthcare Providers (American Heart Association card will be mail post conference)
- Critical Incident Stress Management
- FEMA NUMS and ASTM Standards for the SAR Community
- Risk Assessment and Mitigation for SAR
- Estimation of Probability of Detection through Recorded GPS Tracks
- Clue Awareness (hands-on half day Saturday; 12 person limit)
- Neurotrauma in the Backcountry: Difficult Injuries in Difficult Terrain
- Missing at Risk: Understanding and Managing the Search for the Missing At Risk

Government, HLS, USAR & Technology Track

- Verizon Wireless—Business Continuity / Disaster Recovery Emergency Response Capabilities & Preparedness
- Emerging Technologies for Monitoring and Tracking At Risk Populations
- Back to the Future - Relearning how to locate 121.5 ELT's
- Current Satellite Communications Capabilities and Web Based GPS
- Insider's Guide to Distress Beacon Search
- Thermal Imagers: Applications and Limitations in SAR
- Intro to MapSAR
- Learn to use MapSAR
- Wilderness Search and Rescue Support for Community Response Teams

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Management Track

- Investigative Strategies During a Missing Person Search
- Tactics for Coordinated Use of Tracking Resources During a Search and Rescue Incident
- SAR Intelligence... And being smart about it
- Search and Rescue KSA Crosswalk
- Grant Writing 101
- Leadership, Teamwork and Decision Making for Small Teams
- Making Social Networks Work for Your SAR Unit
- Catching Curve Balls - Planning for phase transitions and dealing with contingencies in SAR operations management
- Civil Air Patrol Direction Finding
- Geospatial in Wilderness: Acquisitions, Management and Applications

Mountain Rescue & Technical Rescue Track

- Developing an Intuitive Understanding of Rope and Force Vectors in Technical Rescue
- High Altitude Emergencies
- When Worlds Collide: Rope Access Rescue versus Backcountry High Angle Rescue Techniques
- The Use of Parallel Systems in Rope Rescue
- Overcoming Gravity - Choosing a Rope for Rescue
- Low Angle Rescue Awareness (hands-on full day Saturday; 12 person limit)
- Mountain Rescue Olympics (hands-on full day Saturday, prerequisite information TBA)

Water Track (Swiftwater & PSD)

- Line Capture and Evolving Protection Systems for Moving Water
- Ice Rescue and New Technology
- Briefing from Winners of Higgins & Langley 2012
- Search Analysis for the Underwater Wreckage of Air France Flt. 447
- Hands-on "The Basics with a Twist"
- Surface Supplied Diving Techniques for Public Safety Diving (hands-on full day Saturday, prerequisite information TBA)
- Water Skills New and Old (hands-on full day Saturday, prerequisite information TBA)

NASAR Education Track—TBA

The MRA officer nominees to be voted on during the MRA business meeting at the conference are:

Nominees for Member-At-Large

Bryan Enberg
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Greg Foley
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Nominee for President

Doug Wessen
Juneau Mountain Rescue
Alaska Region
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Nominees for Vice President

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Justin Wheaton
San Bernardino Cave and Technical Rescue Team
California Region
jwheaton@sbsar.org

Carl Pedroza
Altadena Mountain Rescue Team
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Lastly, don't forget that the International Commission on Alpine Rescue (IKAR) chair is accepting applications for the Terrestrial and Air Commission's representative positions, and those applications will be reviewed at the June conference by the MRA board of directors. The deadline for applications to Fran Sharp at fransharp@comcast.net is May 15, 2012.

Accident on Vesper Peak—September 14, 2010



Photo taken of rescue helicopter on the beach at Copper Lake, while they were re-splinting Steph Abegg's leg. Photo by Deputy Steve Klett.

I wonder if I can make it down alone, I asked myself.

Probably not.

I watched the blood already dripping through the jacket that was tied around my badly broken leg.

I pondered the rugged rock walls surrounding me.

*This could be worse, I thought—I was fortunate that I didn't hit my head or break my back;
and that the rope caught my fall.*

But it also could be better.

To distract myself from the pain and anxiety about my sister's safety, I rustled in my pack.

I found some alphabet cookies. C-R-A-P, I spelled out.

— Steph Abegg

On Sept 14, 2010, two experienced climbers set out to climb the North Face of Vesper Peak, a classic Cascade alpine route in Snohomish County, Washington requiring ten miles of travel including on a glacier and several pitches of technical granite. By 1:00 pm, the sisters had surmounted the pass, glacier and moats protecting the climb and were making good time up the face at about 4,200 feet. Then a rock crumbled beneath Steph Abegg's foot while she was on lead, sending her on a tumble that broke her leg ... badly. Preparation, experience and presence of mind paid off. After lowering, reaching and securing Steph and splinting her open fracture in an elevated position with an ice axe and improvised crampon straps, Jenny rappelled down the route. She returned up the pass with hopes of securing cell phone reception to call 911. Due to generally spotty coverage in the Cascades backcountry she knew there were no guarantees, but Steph had had the good fortune to get cell phone coverage to activate a companion rescue on remote Mt Terror the year prior. The sisters were able to stay in voice contact during this period but both felt very alone in the shadow of Vesper.

Jenny was able to get a call out and was connected to Sergeant Danny Wikstrom of Snohomish County Sheriff's Search and Rescue Unit, who activated a helicopter rescue team including two volunteers from Everett Mountain Rescue, helicopter rescue technician Ernie Zeller and flight paramedic Richard Duncan. Cell phone triangulation pointed to a grossly wrong area but Jenny was able to accurately describe Steph's location. Following a suggestion from Steph's prior experience she requested a helicopter short-haul rescue operation.



Accident location. Photo credit unknown.

The Sheriff's rescue helicopter crew in "SnoHawk 10" (a Bell UH-1H Iroquois- a.k.a. "Huey") had just completed reconnaissance of a body recovery mission and refueled when they received the call to Vesper. The helicopter approached the fallen climber at 3:40 p.m. Ernie was lowered by hoist to her location and assisted Steph into a harness to be raised into the hovering chopper. After raising Ernie as well, "Snohawk 10" made a brief stop to retrieve gear that had been dropped off. This stop also allowed Richard to give detailed attention and care to Steph's leg before the journey to the nearest trauma hospital.

I first learned of Steph from her fascinating and well written account of her partner's 2009 Mt Terror rescue not long after I joined Everett Mountain Rescue. Her candid writing, cartographic analysis of mountaineering accidents and captivating photos of the Cascades are worthy reading if one enjoys mountains and climbing. Her story became more personal when I watched the Snohomish County helicopter fly over my home and land at the hospital where I work. Soon after I learned the details of her rescue by our helicopter rescue team.

The rescue went smoothly due largely to Steph and her sister doing all the right things. One hopes to have the presence of mind and capable partner that Steph had that fateful day. Due to the training and preparedness of the Snohomish Helicopter Rescue Team they were able to quickly locate, stabilize and transport Steph from rugged technical terrain to the highest degree of medical care and emergency surgery.

Of great significance is Steph's ongoing journey of recovery and rehabilitation which continues today, a year and a half after her life-altering accident. For further details I suggest you read this story in her own words at her website: www.stephabegg.com.

What follows is from my interview with Steph on January 19, 2012. – Kevin Riddell

What did you and your sister do right in terms of communication and rescue and preparation for organized rescue?

I think the key part that made this a successful rescue was that we assessed the situation and made a plan based on the situation at hand. You can never predict the specifics of an accident scenario, so the key is to make good decisions quickly, calmly, and decisively. We had a cell phone with us, and previous experiences with cell phones in the North Cascades had shown that you can often get a weak signal from high points and passes. Since I was in no position to ascend or descend, we decided the best way to initiate a rescue would be for my sister Jenny to take the gear, use it to descend safely, and go get help. Given the urgency to get help before dark, plan A would be to try to get cell service from the nearest high point (such as the summit of Vesper), and if that did not work, plan B was that Jenny would hike out and call from the nearest town (in which case it would likely be the next day before help arrived). Fortunately, plan A worked.

It is also relevant to note that I had been involved in a short haul helicopter rescue when my climbing partner was injured the previous summer. So before Jenny left me on the mountain, I told her to make sure she requested a short haul via helicopter. This expedited the rescue process greatly, as 911 directly transferred Jenny to the SAR/ASU Sergeant Daniel Wikstrom with the Snohomish County Sheriff's Office Air Operations Helicopter Rescue Team, and he was able to redirect a helicopter that was just leaving to come pick me up. Just a few minutes later, and valuable time would have been wasted as another helicopter team was mobilized and fueled.

How did your companion rescue experience on Mt Terror help you on Vesper Peak?

In July 2009, I was involved in an eerily similar accident when my partner Steve pulled off a loose rock, fell, and suffered a broken femur on the north side of Mt. Terror. We were climbing as a group of four, so two of us decided to climb on toward the summit, while the third stayed behind with Steve. We had a cell phone, and our best hope was establishing contact from the summit and calling in an air rescue. Fortunately, this plan worked. As I would experience a year later on Vesper, Steve was short-hauled off via a helicopter that evening. So when my accident on Vesper occurred, our first line of attack was to try to find cell service and call in for help. Fortunately, it worked again. If I had not had the experience on Terror the year before, I am not sure that using a cell phone to get help would have been my first instinct. Also, we learned here that being decisive and calm was key to success.

What do you think worked well with organized rescue?

I think every aspect of the rescue was executed with textbook precision. The 911 dispatcher transferred my sister immediately to the Snohomish County Sheriff's Office Air Operations Helicopter Rescue Team so she could describe the scenario. The already-mobilized team was immediately redirected to fly to Vesper. They had the short-haul equipment and expertise on the helicopter, and a flight medic aboard. The SAR/ASU sergeant maintained cell phone contact with my sister (who was on the ridge several hundred feet above me) so she could help direct the helicopter to the site of the accident.

As a climber, I dread imagining such an event but I see no mistakes or actions that would have avoided your accident. What might you plan to do differently in future climbs (thinking, route preparation, anchor, climbing technique, first aid classes, gear, communication etc) – that might serve as a recommendation to fellow climbers?

On future climbs and mountain adventures, I will strive to make sure that my partners and I are as prepared as Jenny and I were on Vesper that day. The success of the rescue, which involved an unusually serious injury on unusually rugged terrain, is direct testament to the fact that we were prepared. There's always an element of luck involved too, but in many ways you can bias your luck towards a positive outcome. Be familiar with your route, climb in favorable weather conditions, know how to set anchors, know how to apply first aid, have extra clothes, always carry some means of rescue communication (cell phone, SPOT, PLB, radio), and—above all, I think—keep a calm head and make appropriate decisions.

From a subject perspective, what could be done better?

I've had over a year to analyze the accident, and apart from simply staying home, there is very little we could have done to avoid it. Sometimes accidents happen. Granted, we had departed from the standard route to bypass a wet area, but we were on terrain that was within our climbing ability and by all appearances safer than the wet area on the actual route. The one oversight I had made that day was not to bring my SPOT device. In retrospect, the cell phone call was more effective at initiating an appropriate rescue and allowing my sister Jenny to direct the rescue to my location, but if we had not achieved cell service and Jenny had to hike out to get help, it is likely that I would have lost my leg. The SPOT would have been a sure bet for alerting a rescue team that I was in need of help.

Note: For an excellent summary of SPOT and PLBs see the January, 2012 issue of Meridian and the Rocky Mountain Rescue discussion at http://www.rockymountainrescue.org/about_PLBs.php. We in Snohomish County have more confidence in and better results from events where PLB devices have been activated. Until affordable lightweight satellite phones are widely available it is Danny's and my opinion that a PLB and lightweight cell phone would have greatly expedited this extraction as well as the Mt. Stuart mission described in the January, 2012 Meridian. Emergency notification of location is priority number one and voice communication is a potential bonus of great utility.
– Kevin Riddell

If there was no option for an organized and professional rescue what might your sister have done?

I've often wondered this, and played out various scenarios in my head. I believe our next best option was the aforementioned plan B, that Jenny would quickly hike out and alert a rescue team once she got to the nearest town. In this case I would probably have been on the mountain overnight. I was in stable condition and reasonably warm (we had an extra jacket), but I was bleeding quite a bit (I later learned my bone had severed an artery leading into my foot) and had put a tourniquet on my leg, so it is likely I would have lost my leg in this case. The other scenario I have thought about is that I would have descended with Jenny, with my leg splinted tightly to my ice axe. It would likely have taken the rest of the night to crawl out on the trail. It would have been quite risky trying to descend the rugged and nearly vertical North Face in my condition though, so I'm glad we didn't have to execute this scenario.

You detail the costs of your medical care on your website. A helicopter rescue costs approximately \$10,000. Who do you think should bear the cost?

I think that an emergency air rescue should be covered by insurance in the same way that an ambulance ride is. For most insurance plans, this would mean that the injured party pays about 10-40% of the bill, while insurance pays the rest. The helicopter rescue played an essential role in getting me off the mountain alive and to a hospital in time to save my leg. I would pay \$10,000 for that. Helicopter rescues place a level of danger on all persons involved, and I think that the helicopter teams should be paid for their service. As it is, they are mostly volunteers. The fact that I am able to climb again today is due to the heroic efforts of the Snohomish County Sheriff's Office Air Operations Helicopter Rescue Team on September 14, 2010.

Would you as a climber be prepared to pay for climbing rescue insurance as is common in the Alps?

I think that climbing rescue insurance is a good idea. In this way, climbers could buy only basic medical insurance, and then cover themselves better when they are participating in the activity they are most likely to get injured doing.

A similar question, but perhaps different too: Any thoughts on health insurance in the United States as a climber?

My injury was certainly an education in US health insurance. Prior to the accident, I always thought that since I paid a sizable sum for health insurance, I would be covered if I ever got injured. After all, isn't that what insurance is for? I was shocked when I quickly overcame the maximum benefit (\$100,000) of my student health care plan. In my mind, this doesn't make sense, as students (i.e. young, surrounded by a healthy environment, occupied with studies) are probably some of the least likely people to rack up hefty medical bills, and they are also the ones that would be most unlikely to be able to pay them off if they did have a major accident. The insurance providers would have little to lose by providing a higher maximum benefit to students, and they would save the very few who did get badly injured from early onset bankruptcy.

That said, during my second year of treatment when I was covered by a renewed maximum benefit and had transferred my care to a network hospital, I received the nonexistent bills. So there are times when the health insurance operates as it should. And the surgeries and treatment I received throughout the experience were top-notch. I figure that all in all, I am willing to accept the problems with the way health insurance is conducted in the US for the quality of treatment and the fact that I have my leg today.



Fourteen months after the accident, Steph (second from left) finally stands on the summit of Vesper. Photo courtesy of Steph Abegg.

MRA Founder Celebrates 100 Years

By Harry Patz, Bellingham Mountain Rescue Council

On February 24, 2012, Wolf Bauer celebrated his 100th birthday. Wolf founded Seattle Mountain Rescue Council in 1948, which later became the springboard for the MRA in 1959. Wolf is also a lifelong outdoorsman. His list of accomplishments goes well beyond what I can describe here, and it is truly a trip through history just to talk with him. Many of you may have been fortunate enough to see or meet him at our 50th MRA celebration at Timberline Lodge, in which case you probably got a taste of his colorful history.

The MRA believed some type of special recognition was appropriate and allowed Rick Lorenz (Olympic Mountain Rescue) and I to attend his birthday party and present Wolf with the ice axe pictured above. The ice axe was a very old Subai in excellent condition with the following words laser engraved on the shaft:



Photo by Rick Lorenz.

***“In honor of your vision and commitment as co-founder of the Mountain Rescue Association.
Presented to Wolf Bauer celebrating his 100th birthday, February 24, 2012.”***

Most of the event was professionally filmed by Rick’s son Matt and a link to that video is below. Wolf was very touched by the gift as you can see in the photo of him with his close friends Jim and Lou Whitaker showing off the axe. Wolf is still going strong and it was a great honor to represent the MRA at this event. And for that, both Rick and I are humbled.

Video of the event: <http://vimeo.com/39587427>, by Topographic Media.

International Technical Rescue Symposium (ITRS) 2012

ITRS is the leading forum for up-to-date, state-of-the-art, technical rescue information. Rescuers representing mountain, cave, fire, industrial, and swiftwater gather to discuss ways to improve safety and performance, and answer questions such as:

- What’s been tested lately?
- Is that belay system reliable?
- Two-rope system or main and belay?
- Will that “xxx” hurt my rope?
- How will that new standard affect me?
- What’s new in air operations?
- What do we know about that accident?

**November 1 - 4, 2012
Renaissance Seattle Hotel
Seattle, WA**

**Go [here](#) to
register now!**

This year’s ITRS Symposium will be held **November 1 - 4, 2012**, at the Renaissance Seattle Hotel in Seattle, WA, presented by CMC Rescue and Pigeon Mountain Industries (PMI), and co-sponsored by the MRA, NASAR, Fire Rescue, the National Cave Rescue Commission, and the Society of Professional Rope Access Technicians (SPRAT).

The symposium format consists of two and a half days of peer presentations. There are no vendor displays or anyone selling t-shirts, but plenty of opportunity for you to talk to other rescuers to exchange ideas, find out what others are doing, and learn how they are solving problems.

To encourage quality presentations, ITRS features the Best of Show Awards ballot. Have you done a presentation at ITRS? If not, you might want to think about it. You might be the next presenter to be awarded Best Overall Presentation, Most Practical Presentation, or Best New Research!

A meeting of the ASTM F32 Search & Rescue Standards Committee will be held following ITRS 2012 on Sunday afternoon and Monday morning, also at the Renaissance Seattle Hotel.

The early bird discount rate for MRA members registering before May 1st is \$215.00. For more information or to register, visit www.itrsonline.org.

ITRS

International Tech Rescue Symposium



Seeking a Meridian Editor!

Meridian is seeking a new editor, beginning with the 2012 fall issue. The only qualifications are an interest in mountain rescue, dedication to getting quarterly issues out on time, and some knowledge of the MRA's structure, membership, interests and resources (or the willingness to learn) so that you can assess what kinds of stories will interest our membership and where you can get them. Interested parties should respond to Neil Van Dyke at neilvd@stoweagle.com, or Anna DeBattiste at adebattiste@aol.com to volunteer or to ask questions.

We know what you're thinking. And here are all the reasons why you shouldn't be thinking those thoughts:

"But I don't like to write."

No need to write anything. All you need to do is keep your ears open for timely topics, solicit articles from the membership, and organize the material on a quarterly basis.

"But I don't have very good editing and proofreading skills."

That's OK! We've had people volunteer to be proofreaders before, and we can easily find someone to help with that part.

"But I don't have any graphic design skills."

No need for those! Our wonderful graphic designer, Carolanne Powers, has agreed to stay on board. All you have to do is send her the copy and photos you collect and she'll do the rest.

"But I don't have time to take on another project."

Editing Meridian takes less time than you probably think. But this is the one reason you should examine seriously. If you really and truly don't have any extra time, it's probably not a good idea to volunteer. Meridian needs to go out on schedule.

Are you out of excuses yet? Drop us a line!



MRA Medical Committee member Christopher Van Tilburg has recently published Backcountry Ski & Snowboard Routes Oregon, available through Mountaineer Books at <http://ht.ly/902cK>. Get 30% off this and all other Mountaineer Books products until June 17, 2012, by adding the discount code **MRA12** at checkout!

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Risk Management and Safety Update

By Mike Vorachek

These two terms come up every so often in conversations that take place among team members. We all talk about safety during our training and during operational events. We often put a “safety officer” on the incident management team, and we frequently tell our people to “be safe.” In other discussions at various levels of the government that comprise our Authority Having Jurisdiction (AHJ), the term “risk management” becomes more prevalent. As industry and government both seek to lower costs associated with providing workers compensation and general accident liability, the term “safety” takes on a much bigger significance.

At the 2011 MRA Winter Business Meeting, a group of us got together to discuss what the MRA could do as a national body to aid member teams in addressing what is perceived to be a growing focus on risk management issues at the local level. There was discussion about the relative level of effort we needed to focus on safety and why. I asked one of the group to stand up and show us the back of the Honor Guard t-shirt he was wearing. The shirt is emblazoned with the names of 29 of our comrades who have died in the line of duty since 1947. And that’s only the names of those we have identified as being affiliated with the MRA in one manner or another. Think about it: If you were starting work with a new 2,000 employee company and they told you that they had a great safety record – only 29 people killed since they started keeping records – what would you think? I realize that I’m mixing apples and oranges a little bit, but my point is that we are in a dangerous business and safety has to be a key component at every level in our decision-making process.

As a long-time safety manager with a graduate degree in safety, I have spent much of my career trying to ensure that each and every one of our folks goes home at the end of the day in at least as good, if not better, shape than they were in when they came through the front door at the start of the day. And yes, I’ve seen the safety slogans, crunched the numbers, and so forth. But one thing is for sure; when you put the right programs in place, and the team uses them, you will have a safer work environment.

Several members of the MRA work group have taken on the task of identifying and sharing various safety programs that teams may be using. We would also like to develop some common use items to assist teams in planning for various activities. For example, the ICS Form 215A, Incident Action Plan Safety Analysis, is configured very similarly to what industry calls a Job Hazard Analysis (JHA), or Job Safety Analysis (JSA). We prepared an ICS 215A for the Saturday training evolution at Eagle during the MRA spring conference. Our goal is to provide several topical ICS 215As on the MRA website for teams to be able to download and adapt to local operations.

Over the long term, we would like to provide other tools that teams can use for upgrading the safety mindset of personnel throughout the team structure, as well as specific tools for personnel who may routinely function in the role of safety officer.

For any of you interested in further information on this subject, I encourage you to attend my session at the MRA-NASAR conference in June. Otherwise, feel free to contact me at mtnsar@cablone.net.

Tourniquets: An ancient technology revisited

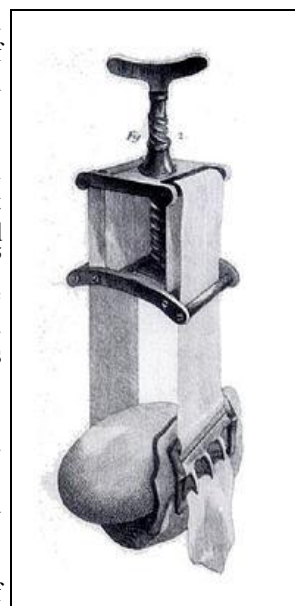
By Tim Hurtado, DO, FACEP, El Paso County Search and Rescue Medical Director

Tourniquets have been used at least since the Roman campaigns. They were first used in surgery in 1864 and have since fallen in and out of favor for pre-hospital use.¹ Tourniquet use has been catapulted to the forefront of trauma care with the recent military conflicts. Studies have shown that they are safe and effective when used properly.^{2,3}

Traditional EMS protocols have discouraged the use of tourniquets with some texts cautioning that there is often “...damage to muscles, nerves, and blood vessels.” These assertions have not been documented in the recent literature. Multiple animal and human studies have shown that tourniquets are safe, effective, and under-utilized in combat situations. In addition, there have been renewed calls to increase tourniquet use in the civilian sector.^{1,4-5} It is clear that the longer the tourniquet is in place, the greater the risk of underlying damage. Orthopedic literature has shown that tourniquets in place greater than six hours are associated with an increase in crush injuries and compartment syndromes. This has not been reported in the pre-hospital combat literature. Current teachings suggest that tourniquets left in place for less than two hours are not associated with permanent damage.

Tourniquets can be commercially made devices or can be improvised. The commercial devices are easier and quicker to apply and usually more efficacious. Improvised devices do not require the rescuer to carry extra gear, however they are usually inadequate for arterial hemorrhage control unless well thought out and practiced ahead of time. Improvised tourniquets should be a minimum of 2cm wide to minimize underlying tissue damage.

Search and rescue personnel should consider using a tourniquet in severe life threatening extremity bleeding. If direct pressure on a wound does not work, elevation of the limb and using pressure points have been taught as the next course of action. These actions rarely provide definitive hemorrhage control for significant arterial injuries and are often not practical during SAR missions.



One of the first—Petit tourniquet engraving from 1798.

Conventional teaching for the primary survey includes addressing the airway, breathing and circulation (ABCs) in that order. For life threatening extremity hemorrhage, the time it takes to control the airway (beyond a simple jaw thrust or airway repositioning) can lead to significant blood loss. Current tactical combat casualty care recommends that a single rescuer should perform a simple airway maneuver, and then consider rapidly applying a tourniquet to a hemorrhaging extremity.⁶ Once bleeding is controlled, airway control per protocol can be addressed.

A trained rescuer can apply a commercial tourniquet in 30 to 60 seconds. The extremity should be exposed where the tourniquet is to be applied. Proper positioning includes placing the device two to three inches above the wound. The windlass portion of the tourniquet should be placed over the arterial supply and tightened until the bleeding stops. Note the time of application.

Tourniquets should not be placed for minor wounds, hemorrhage that can be controlled with direct pressure, or a dressing or wounds where the bleeding is controlled with a hemostatic agent (e.g. Quickclot™ or Hemcon™). Common errors with tourniquet use include not using a tourniquet when it is indicated, applying the tourniquet too high above the wound, failing to recheck the wound and tourniquet during transport, and not applying the tourniquet tight enough. Tourniquets are painful; give appropriate analgesia per local protocols.

Pre-hospital removal of a tourniquet is controversial. If the anticipated transport time is under two hours, the tourniquet should be left in place unless an experienced medical provider can remove it. Should the transport time be prolonged, and the decision made to loosen or remove the tourniquet, a compression dressing and a topical hemostatic agent should be available to be applied to the wound. The tourniquet should be slowly loosened and the wound closely monitored. If significant bleeding continues despite an adequate dressing, the tourniquet should be retightened. Always leave the tourniquet in place if it is loosened in case it needs to be retightened. Intravenous access should be obtained if possible prior to loosening a tourniquet in the event severe hemorrhage reoccurs and fluid resuscitation is required. A tourniquet can also be used for wound inspection and cleaning. If in doubt, leave the tourniquet in place. The loss of a limb is preferred to the loss of a life due to extremity hemorrhage.

In conclusion, a tourniquet should not be the last resort in severe life threatening extremity hemorrhage. A properly applied tourniquet is life saving and allows the rescuer to address the multitude of other needs of the patient. Proper training and preparation expedites the application of tourniquets. Rescuers should address the use of tourniquets with their medical director and follow local protocols for their use.

The references below Doyle et al,⁴ Risk et al.¹ and Sippel⁵ provide excellent reviews of pre-hospital tourniquet use and suggested EMS protocols.

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El Paso County Search and Rescue Medical Director
Timothy.Hurtado@gmail.com

Risk GC, Augustine JJ. Civilian EMS should consider tourniquets. www.jems.com/article/patient-care/civilian-ems-should-consider-tourniquets. Accessed March 3, 2012.

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Dr. Hurtado is a member of the El Paso County SAR Team in Colorado Springs, Colorado, and is also their medical director. He is on the faculty at the University of Colorado Medical School as an instructor for their wilderness medicine courses.

We hope you have found this article on tourniquets useful. There generally is a feeling that we are on scene too late to be effective with this type of treatment, and that likely it will be used for rescuers' injuries. However, during the last nine months in Colorado we have seen three instances where timely use of a tourniquet would most likely have saved a life. That makes these issues, and this article, more timely.

Articles for Meridian are reviewed by the MedCom as a group. We invite your questions, comments and criticisms which may be directed to Dr. Hurtado or to me.

Skeet Glatterer, MD, FAWM
Chairman, MRA Medical Committee
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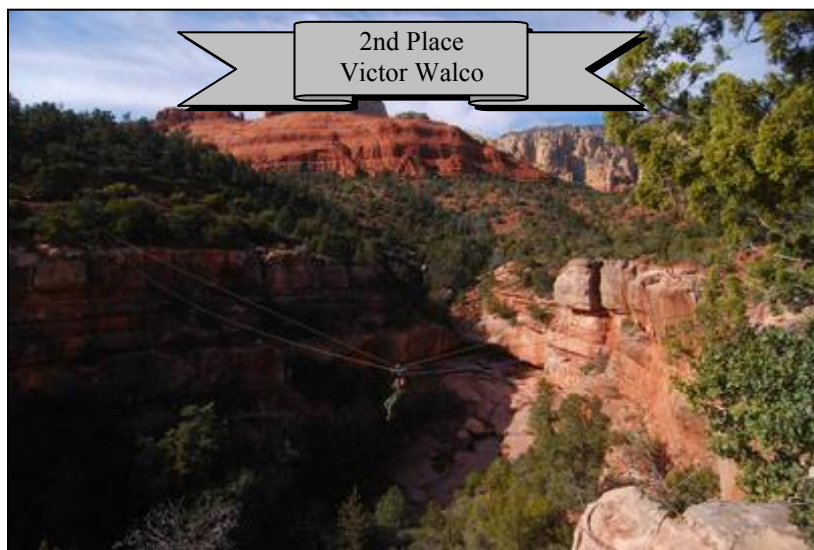
Facebook Cover Photos Contest Winners

For those of you who missed it, MRA social media guru Bryan Enberg ran a photo contest to choose a new cover photo for the recently re-designed [MRA Facebook](#) fan page. A big thank you to [Mountaineer Books](#) for supplying the awards! Here are the impressive top three entries:

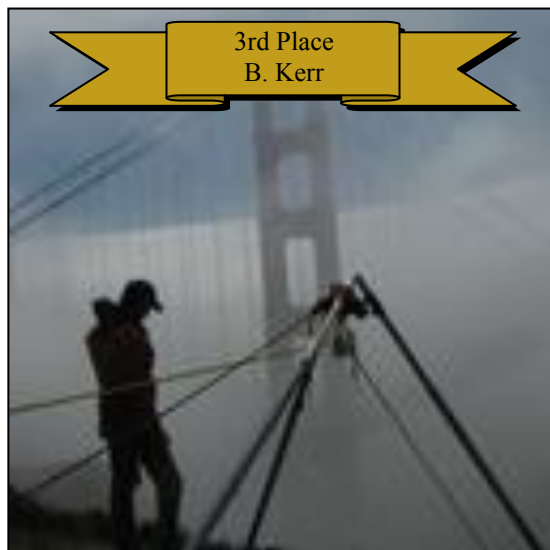
1st Place
Bill Parker, BAMRU



2nd Place
Victor Walco



3rd Place
B. Kerr



Regional News

Rocky Mountain Region

By Dan Lack, Region Chair

The Rocky Mountain Region of the MRA ended 2011 with just under 1000 missions performed by our fully accredited teams collectively. Within this mission load, 10% were mutual aid assistance to other MRA and non-MRA teams. This is a valuable service to the rock climbers, hikers, mountaineers and skiers of the Rocky Mountains and the mutual aid support of other teams, when needed, is fantastic to see. An additional 250 missions were performed by the ex-officio teams of Rocky Mountain and Grand Teton national parks. It also appears as though 2012 is off to a busy start with a number of stories reported for extended searches, avalanche rescues and recoveries and mountaineering rescues. Many teams are expecting that the below average snow pack and warmer than usual weather so early in the season will lead to a spike in rescues in the first half of 2012.

Board of directors:

At the winter regional meeting at the end of 2011, Loren Pfau from Alpine Rescue Team was elected as the new secretary/treasurer, and Dan Lack from Rocky Mountain Rescue (RMR) was elected as the new region chair. Joe Ben Slivka (Summit County Rescue Group), Leigh Caswell (Albuquerque Mountain Rescue Council) and Steve Zuckerman (Vail Mountain Rescue Group) were re-elected to the vice chair and directors at large positions.

Reaccreditations:

The talented rescuers at AMRC started 2012 with a lot of extra work preparing for their eventually successful reaccreditation in March. Atalaya and Aspen will also be reaccrediting in 2012.

SAR exchanges:

In September of 2010 the Rocky Mountain Region hosted a SAR exchange with the Chinese Sichuan Mountaineering Association (SMA) rescue team. During this exchange Summit County Rescue Group (SCRG) and RMR shared experiences in rock climbing, mountaineering and technical rock, alpine and avalanche rescue techniques. The exchange was incredibly productive for all involved and SMA has invited 24 members of SCRG and RMR to the Sichuan province for a rescue and cultural exchange to return the goodwill. Twelve members of each team will travel to China in September for two weeks and will coordinate seven days of rescue training and seven days of mountaineering and cultural activities.

Another exchange with SAR teams in Israel is also in the planning stages. This is a continuation of a strong link between the teams in Israel and the Rocky Mountain Region of the MRA.

Historical:

Sometime in 2012 a documentary portraying the rescue of an injured climber from the North Face of the Grand Teton in 1967 (www.thegrandrescue.com) will be released. Performed by the Teton National Park Jenny Lake Rangers (now ex-officio members of the Rocky Mountain Region), this rescue took over three days to execute with only seven rescuers. The daughter of one of the rescuers is making the documentary and contacted Alpine Rescue Team and RMR in 2011 to provide historical rescue equipment and SAR expertise during the filming process. Five members of ART and RMR travelled to the Grand Tetons in the summer of 2011. ART's Dale Atkins and RMR's Dan Lack may just end up on the lens side of the camera.

The rescue itself in 1967 utilized an Austrian cable rescue rig, identical to the equipment seen in the video posted on Facebook by the MRA (<http://vimeo.com/20370150>). In 1956 the Austrian Mountain Rescue Service brought this equipment into the US to lead the recovery of bodies and wreckage from the Grand Canyon mid-air plane crash. They brought with them their cable rig, and at the end of the recovery this was donated to RMR, who assisted in the recovery. Shortly after, Grand Teton National Park acquired a duplicate cable rig, which was used on this rescue.

The American Mountaineering Museum in Golden Colorado will unveil a mountain rescue exhibit featuring equipment, photographs and stories of North America's mountain rescue history. Members of several Rocky MRA teams have been assisting the museum in developing a detailed interactive exhibit. The exhibit will open in 2012 and we will be sure to let the MRA know when it happens. Stay tuned for more details.



Dan Lack carrying ancient cable spools in a National Park uniform. Photo by Dan Lack.



Dan Lack and Dale Atkins carrying antique gear down from the Grand Teton. Photo by Dan Lack.

Appalachian Region

By Bryan Enberg

The Appalachian Region held its winter training on March 12th in Stowe, Vermont, hosted by Stowe Mountain Rescue. Thanks to great planning by SMR, the day was a great success, despite the unseasonably warm weather.

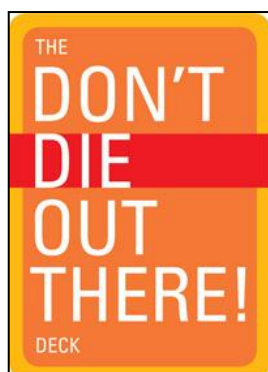
The morning began with a short walk to some ice where SMR's Doug Veliko led a refresher on design and construction of multi-point ice anchors.

The afternoon session took us higher into Smuggler's Notch to find suitable snow for low-angle litter work.

A grateful thank you to Stowe Fire Department for providing sleeping quarters for all.



Photo by Jennifer Enberg.



Book Review:

Don't Die Out There and Freedom of the Hills Playing Cards

Review by Jules Harrell

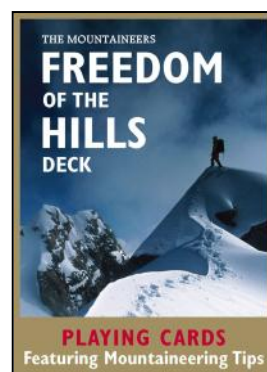
Every ski patrol, campsite and rescue center should have these cards on the table so newbies have something to do with their hands while they listen to the rest of us talk about our rescues. You know the drill, we were all once candidates too. These cards from Mountaineer Books are simple, fun and great for newcomers to wilderness medicine. They are compact, filled with great information, and light enough to take with you and the family on the mountain.

For reviewing your choices, you might wish to pull a random card, any card, and find out how to poop in the woods, which is the two of diamonds in your Freedom of the Hills deck. We all know we should carry it out, but if that fails, how deep should you dig the hole in the summer? What layers of soil are you hoping to find? Finally, how much time do you have to choose the perfect spot, with a mixture of litter, duff and humus before nature takes its course? At least you'll have reviewed your information before venturing into the woods.

On a completely different subject, within the same deck of cards, you might pull the six of hearts. If you are a new rock climber wanting to brush up on your hand jamming technique, this card is for you. The king of spades contains ice ax self-arrest images and directions. Don't try this without professional instruction. It's good to know all this stuff, especially while sitting around the ski patrol top house waiting to hear about a real emergency. Freedom of the Hills is focused on mountaineering and climbing, with slightly more advanced first aid instructions than Don't Die Out There.

Don't Die Out There is a playing deck, with a different style and format. Learning about compass parts? The ten of diamonds provides a nice diagram. The seven of spades is "Splints Illustrated," while the four of hearts contains information for cleaning minor wounds. This deck is also color coded to match the suits; for example, diamonds are blue and hearts are purple. The deck focuses entirely on very basic advice about what to do in an emergency situation, including self-rescue.

You can also just use these decks to play cards, but I suspect that even the most highly trained of us will want to sneak a peek once in a while to brush up on our emergency exit reviews. I like the carabiner brake rappel card because it's always possible that some day, I'll drop my ATC from the top of a climb. Belaying with a Munter, and Chaining a Runner are useful too. Would I take these cards and look at them to find emergency information? No. Would I give them to a friend to learn more about climbing and first aid? Absolutely. I highly recommend it.



About the reviewer:

Jules Harrell lives in Cherry Plain, NY on the MA/VT border. She is a 52 year old ski patroller for Jiminy Peak, a SAR volunteer for Berkshire County, a permaculture farmer, a beekeeper, an animal tracker, and a former EMT/firefighter with the Bolinas Fire Department in Marin County, California.

Jules has written three books: *A Woman's Guide to Bikes and Biking* (Bicycle Books, 1999), *A Woman's Bike Book* (Owl Publications, 2010), and *Tripping with Gabrielle* (Owl Publications, 2011). For more about life with rescued dogs, cats and llamas at Cherry Plain Sanctuary Farm, see: www.cherryplainfarm.blogspot.com



MRA Climbing Patrols and Rescue Response in Mt. Rainer National Park

Recent Activity and Current Plans

By Rick Lorenz, Olympic Mountain Rescue

Mount Rainier provides the most challenging alpine climbing terrain in the lower 48, and each year more than 10,000 people attempt to summit. A large percentage of climbers now use a guide service with fees of more than \$1,000 per person for the climb. The overall success rate for the summit climb is about 56%, with a slightly higher rate for the guided parties. Since 1995 the climbing program has been administered by professional climbing rangers; the concept was initiated by Mike Gauthier (Gator), who is currently serving in Yosemite National Park. During his tenure the program benefited from improved professionalism, as well as an opening for new guide services in the park. Until 2007, Rainier Mountaineering (RMI) held the exclusive right to guide on the mountain. Today Stefan Lofgren, the mountaineering district ranger, leads the Mount Rainier climbing program including SAR activities in the park.

In 2010 a number of meetings were held between Stefan Lofgren and local MRA volunteers about ways to support the climbing program and rescue response in the park. It

was decided that the park and the local MRA units can mutually benefit from coordinated activity on the mountain. For the park, regular MRA patrols provide an extra set of capable hands on the mountain who are trained and available to provide initial response to search and rescue incidents. For the mountain rescue units, these patrols can provide training, fitness, and familiarization opportunities. The program was formalized in the 2011 climbing season (May to October) and during that time eight patrols were completed by five local MRA teams, a very successful season.

Volunteer MRA patrols consist entirely of field qualified MRA members, and the climb leader is responsible for organizing the group, choosing a route, signing up for the date, and following up with the assigned park coordinator. The MRA patrols are expected to be completely independent and are encouraged to climb on some of the less travelled routes on the mountain. MRA teams obtain training numbers from their local county, issued by Washington Department of Emergency Management (DEM) in advance of the climb. This provides the same basic insurance coverage for team members as in any regular training. In the event of an actual emergency in the park during the patrol, the park incident commander (IC) can request the DEM to make the team available, and a regular DEM incident number is assigned.

During the 2011 climbing season a number of lessons were learned by MRA teams, and maintaining good communication is always a challenge. With numerous valleys, canyons and blind spots, even regular communication is complicated by a single primary SAR channel that can become overloaded during emergency operations. MRA teams need to have the correct park frequencies, as well as a list of the repeaters, and they must know when and how to use them. MRA patrols monitor the park frequency and conduct at least one radio check per day giving patrol location and critical information. All patrols file an after-action report that is available to rangers, MRA members and other climbers on the climbing blog describing conditions on the mountain. The park is in particular need of information about waste management, trailhead parking, high camp status and general route conditions.

In January, 2012 MRA teams were called into the park for a series of SAR operations. The first involved the successful rescue of a lost snowshoer who spent two nights out in blizzard conditions at an elevation of 4,500 feet. This was followed by a week of intense searching for four missing camper-climbers in the vicinity of the Muir Snowfield. They were not found, bringing the early season Mount Rainier 2012



Photo by Rick Lorenz.

fatality count to five. All this came in the days following the line-of-duty shooting death of a ranger inside the park, putting additional strain on local resources. For these SAR missions more than 130 outside individuals were called into the park, including 75 MRA volunteers from Washington Region teams and Portland Mountain Rescue for periods of up to three days.

In the months ahead we are working to continue and expand the MRA Patrol Program, and to improve the ways that a park IC can request emergency assistance from MRA teams through the State DEM. For the first time the park is opening courses in IC management to MRA volunteers; two MRA volunteers attended last month and two more are scheduled for May. For a big operation, it will be important to have MRA volunteers as part of the park IC team and not just in the field. Beginning with the MRA Patrol Program and highlighted by recent calls to the park, the level of MRA-Mount Ranier National Park cooperation is steadily increasing. Reliance on qualified MRA resources during SAR emergencies in the park is a benefit to all, including the general public.



Photo by Rick Lorenz.

Do you know where to find the MRA?



[https://www.facebook.com/
MountainRescueAssociation](https://www.facebook.com/MountainRescueAssociation)



<http://twitter.com/MtRescueassoc>



<http://mtrescueassoc.blogspot.com>

Mountains Don't Care, But We Do

An Early History of Mountain Rescue in the Pacific Northwest and the Founding of the Mountain Rescue Association

By Dee Molenaar

Dee Molenaar, author of *The Challenge of Rainier*, has written fascinating accounts of the legendary mountain rescues and recoveries in the Pacific Northwest. In telling these tales of triumph and tragedy, he has also traced the formation and evolution of the mountain rescue groups that carried out these missions.

"The old master has done it again, pulling from personal experience and scholarly research, a vital and vibrant history of mountain rescue in the Pacific Northwest to celebrate the Mountain Rescue Association's 50th anniversary."

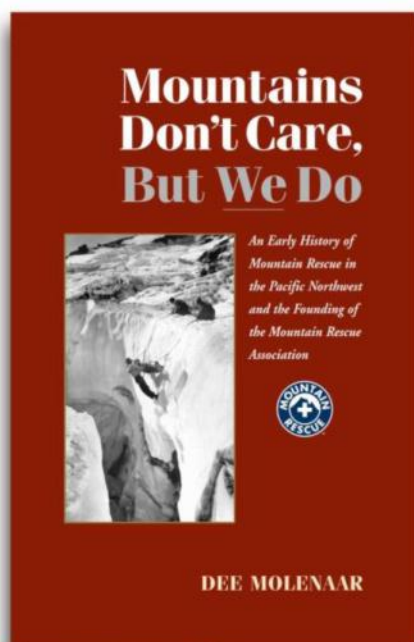
Tom Hornbein

"Mountains Don't Care, But We Do, by Dee Molenaar, is a must read for those who enjoy high adventure and want to know the history of the Mountain Rescue Association."

Jim Whittaker

"Mountains Don't Care, But We Do, is a modest way of saying 'thank you' to the hundreds of mountain rescue volunteers who have come before us. We hope that they would be as proud of today's groups as we are of them."

Charley Shimanski, President
Mountain Rescue Association



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