MERIDIAN
Winter 2013
The Quarterly Publication of the Mountain Rescue Association
mra.org

Colorado Rescue Teams Visit China

-ITRS 2012 Review-

-Electronic Clue Awareness in Wilderness SAR-

-Alpine Near-Miss Survey Promotes Safety-

MOUNTAIN RESCUE ASSOCIATION

Winter 2013

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Cover photo by Aaron Parmet. The 4 Sisters Mountains or "Mount Siguniang" in Chinese.

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Sichuan Mountaineering Association, Summit County Rescue Group and Rocky Mountain Rescue Group. Photo by Alison Sheets.

Colorado Rescue Teams Visit China

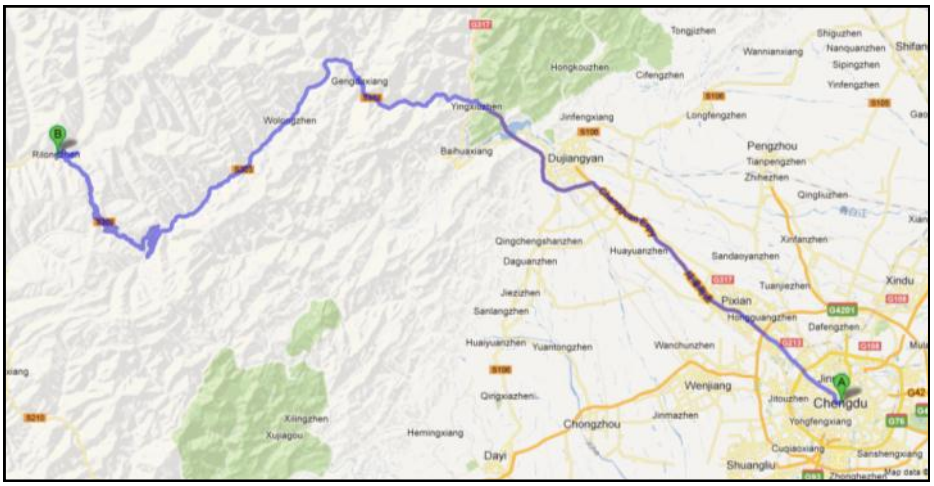
by Amber Moran and Aaron Parmet

In September, two Colorado Mountain Rescue teams traveled into the heart of China for an educational and cultural exchange with the Sichuan Mountaineering Association (SMA). Five members from the Summit County Rescue Group (SCRG) and seven members from the Rocky Mountain Rescue Group (RMRG) traveled to the Sichuan region to teach and learn from the Sichuan Mountaineering Association. The trip was a continuation from an initial exchange in 2010 when members of the Sichuan Mountaineering Association visited both SCRG and RMRG in Colorado.

The adventure began in the large city of Chengdu in central China. The rescuers were immediately welcomed by SMA who graciously had accommodations arranged for everyone. The first several days were spent in the city acclimating to the culture and getting to know our hosts. SCRG and RMRG were quickly introduced to famous Sichuan cuisine, including Hot pot. Hot pot is one of the most famous dishes in the 'culinary capital' of China. Hot Pot consists of a steaming pot of broth in the center of the table garnished with spicy Sichuan pepper corns and other flavorful spices. A variety of meat and vegetables are added until cooked, and then eaten with chopsticks. Spicy rabbit head and duck head were also delicacies of the area.

After spending a couple of days in Chengdu, the teams began an all-day drive to the mountains passing through the winding, barely passable road destroyed during the Great 2008 Earthquake. The drive was broken up by the beautiful Balang pass, with a summit of 14,771 feet – higher than many of the rescuers had ever been before. After hours of travel, lots of bumpy roads, and cramped cars the group finally ended up in the beautiful terraced valley town of Rilongzhen.

The rescuers stayed a couple miles outside of Rilongzheng in Mt. Siguniang National Park (Four Sisters National Park), a World Heritage Site. Tall snow covered peaks and large cascading waterfalls outlined the valley. The accommodations were in a small village, with brightly colored buildings. It was apparent by all of the stickers and posters that this was a base for many mountaineering expeditions. Our diet consisted of locally grown fungus, vegetables, and yak meat. Yak butter tea, which is exactly what the name describes, was a regular part of every breakfast.



Chengdu to Rilongzhen. Photo by Google.

Over the next several days, rescue techniques were exchanged between all 3 groups. The training began indoors working on knots, belaying skills, and other rope techniques. There were also segments taught on search tactics and avalanche rescue safety. SMA rescuers expressed the difficulty there is in rescuing or recovering victims from avalanches in their area. Beacon use hasn't become standard yet in china, and the avalanche paths are often remote and difficult to access. During the final days in the park a search scenario and a low angle rescue scenario were set up for SMA to practice what they had learned. It was educational to interact with other rescuers in a different culture and a different environment. Learning how to teach and apply rescue techniques in an unfamiliar area was an eye opening experience that creates the need to think outside and beyond what you are used to.

RMRG members teaching SMA. Photo by Alison Sheets.

Most of the training was taught with one of the SMA translators. It was difficult at times to find translations for some of the rescue terminology. Usually, hands on activities were the best tool for teaching and the quickest way for them to learn. Everyone with SMA was very quick at learning new techniques. The biggest challenges that SMA currently face are the lack of resources (equipment, personnel, vehicles, etc.) and the challenging mountains and terrain they have to navigate for rescue.

After spending time in the park, the rescue groups began the multi-day trek to the Second Sister Peak (17,310 feet). Horses were used to help carry in gear and supplies. After the long trek, the rescue groups stayed in a basecamp with stone huts and wooden platforms to sleep on. Basecamp was at about 14,400 feet. Green tundra and grey peaks were covered with snow the next morning. The 2am alpine start was delayed because of the snow and bad weather. We started the trek at dawn without the intent of making it all the way to the summit of the peak. A group of rescuers were still able to summit the peak despite unfavorable weather conditions.

Summit of the Second Sister—17,310 feet. Photo by Aaron Parmet.

The experience was both a rescue exchange and a cultural exchange. After the time in the Mountains, SMA spent the next several days showing SCRG and RMRG historical and cultural parts of the country. Some of the most notable sites included the Chengdu Panda Bear Reserves, the 2000 year old Dujiangyan Irrigation System, and Mount Emeishan. All three are World Heritage Sites.

The experience was a once in a lifetime opportunity for all that could not be duplicated. Both rescue teams hope to initiate more global rescue exchanges in the future. Rescue exchanges like this can help develop a worldwide standard for rescue and rescue education. Rescuers voluntarily committed their own time and funding for this trip.

A successful summit! Photo by Aaron Parmet.

Message from the President

By Doug Wesson

STATS and HISTORY

As the new year unfolds I would like to encourage all our MRA teams to make sure to report mission and call out statistics this year. Linda Finco, our Project Manager for Statistics has also stated that if there are team statistics from previous years, that may not have been reported, she will accept that information.

Linda can be contacted at linda.finco@navy.mil

Dick Pooley, (one of MRA's founders). Photo by Laurie Clarke, taken at Cloud Cap Inn, Mt. Hood, Oregon. 29 Sept. 2012.

MRA members from the Washington Region, Rick Lorenz (Olympic Mountain Rescue) and Harry Patz (Bellingham Mountain Rescue) have also been in touch with the University of Washington about the MRA archives. Last year the MRA Board of Directors allocated funding to develop and establish archived records of historic MRA documents. The following web links have been set up. We are working to have these links placed within the history area on the MRA website.

Ric was able to provide background on the MRA with the University of Washington Library staff about preserving the Mountain Rescue Association history and using the University of Washington as a central depository. MRA donated materials have been organized and collected into six boxes with acid-free paper and a "guide" has been placed on-line. This will help anyone who wants to research or access MRA material. Some of the documents, such as the MRA By-Laws form 1959 have been scanned and are retrievable by a key word search.

Link to MRA collection guide

http://digital.lib.washington.edu/findingaids/view?docId=MountainRescueAssociation5559.xml;brand=default

To find MRA documents in these other areas type in the search box: "Mountain Rescue Association"

Link to Special Collections

http://www.lib.washington.edu/specialcollections/

Link to Special Collections Digital Collections

http://content.lib.washington.edu/cdm-ayp/search.php

Link to UW catalog of Special Collections

http://catalog.lib.washington.edu/search/X?SEARCH=&searchscope=6&SORT=D&b=sc

As you all know, the 2013 MRA Spring Conference will be held in sunny Phoenix, AZ this coming **June 7-9** with pre-conference activities scheduled on June 5 and 6.

We are rapidly filling our schedule with both field and classroom sessions, but would like to invite anyone who would like to present to submit a topic summary.

If you would like to present your outstanding topic at the conference, please submit your request to:
David.Bremson@mountainrescue.org.

From:
David Bremson, Operations Chief, WEMT
Maricopa County Sheriff's Office Mountain Rescue Central Arizona
Mountain Rescue Association
http://www.mountainrescue.org, www.mra.org

Electronic Clue Awareness in Wilderness SAR

By Loren Pfau

As wilderness search and rescue volunteers we are trained from the time we join a team to be aware of clues that can help us ascertain past locations and direction of travel of the subject of a search. These may be physical clues such as the subject's vehicle parked at a trailhead, a boot print matching the type worn by the subject, or an entry in a summit register or geocache. Or they may be in the form of a narrative – the subject told a friend or family member the intended route, or a party interviewed on a trail relates that they had seen someone matching the description of the subject in a particular location earlier in the day.

What we may not be aware of are the increasing number of electronic clues that may be produced by subjects. And even if we are aware they may exist we might be at a loss as to how to access and make use of them

Like it or not, our world is becoming more and more electronically connected and devices and services used daily by individuals are proliferating rapidly. Many of these can provide clues as to a missing party's past or present location so we in the wilderness SAR community need to become as proficient in using them during a search as we are in dealing with physical clues and conducting interviews.

This is a broad area of investigation and this short article will do nothing more than raise some awareness of several technologies and hopefully generate interest on the part of others to do their own research and testing activities in order to increase understanding of the potential of electronic clues.

Cellphones

Cellphone use in the US is nearly ubiquitous. Almost everyone carries one, and many of them are smartphones. As carriers increase their coverage footprints SAR teams are seeing an increase in emergency call originating in the backcountry.

US cellular providers are required by the FCC and state regulatory agencies to provide location information for parties dialing 911 from mobile phones. The accuracy of the position information is impacted by multiple factors that include tower locations, type of handset, carrier technologies and deployment plans, and PSAP (Public Safety Answering Point – usually law enforcement Dispatch groups).

Wireless e911 calls are classified as either Phase 1 or Phase 2:

- Phase 1: Provides calling number and receiving tower location and sector information
- Phase 2: Adds name of the owner of the telephone number and latitude and longitude information

Position information is delivered to a PSAP in decimal degree coordinates using the WGS 84 datum.

Positions can come from either GPS units in the cellphone or from triangulation if the handset can contact more than one tower depending on the carrier technology. While in contact with the subject Dispatch personnel can attempt a rebid of the caller's location, which may result in in a Phase I location converting to a Phase II location, or may give an update Phase II position.

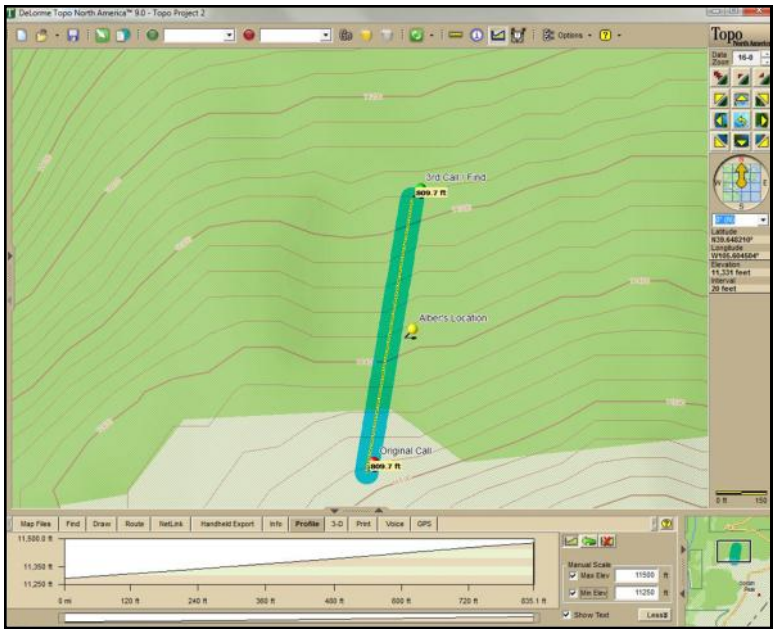
It is important to note that not all carriers in a particular area may be Phase 2 capable, so it is important to confirm with Dispatch if the coordinates provided are Phase 2. Field teams should be routed to the confirmed Phase 2 location and that location should be updated if subsequent calls are received by Dispatch during the mission.

If only Phase 1 information is received you may still be able to gather information to assist your search. Ask Dispatch to provide the tower location and sector information. Analysis of the tower location and sector may narrow down likely locations based upon the area covered by the sector (for example, area west of Saxon Mountain tower), terrain, and other information gathered on the subject's intentions. Geographic Information Systems tools can be used to develop a model that can depict where in the area there is cellphone coverage,

Mobile Content Usage
3 Month Avg. Ending Feb. 2012 vs. 3 Month Avg. Ending Nov. 2011
Total U.S. Mobile Subscribers (Smartphone & Non-Smartphone) Ages 13+
Source: comScore MobiLens

	Share (%) of Mobile Subscribers		
	Nov-11	Feb-12	Point Change
Total Mobile Subscribers	*100.0%*	*100.0%*	*N/A*
Sent text message to another phone	72.6%	74.8%	2.2
Used downloaded apps	44.9%	49.5%	4.6
Used browser	44.4%	49.2%	4.8
Accessed social networking site or blog	33.0%	36.1%	3.1
Played Games	29.7%	32.3%	2.6
Listened to music on mobile phone	21.7%	24.8%	3.1

How users utilize cellular phones. Sorce: comScore Reports February 2012 U.S. Mobile Subscriber Market Share, 4March 2012.



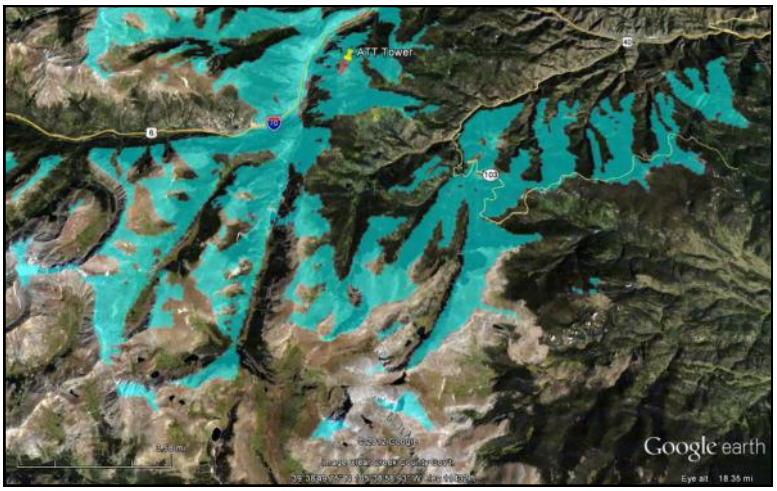
The following illustrates Phase 2 location information from three separate calls from a lost party on a recent mission conducted by the author's team.

further narrowing down the search locations. The Civil Air Patrol developed such a map in support of the author's team this past summer.

Even if the subject has not placed a 911 call the following are additional options to help determine if the cellphone is in the search area. Both approaches require law enforcement authorization and interactions with the wireless carrier.

If the phone is functioning and in contact with a cell tower it may be possible for the carrier to "ping" the handset. This may return the location coordinates of the handset or the tower to which it is connected.

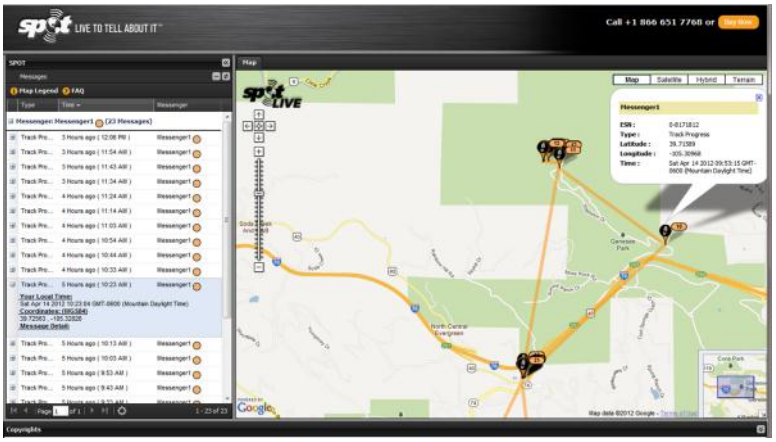
Even if the phone is not functioning it may be possible to determine if the cellphone has been in the search area. The wireless carrier can provide records which show day, time and location of the last towers in which the handset had been in contact. This request needs to be made within several days after the start of the search as the retention period for this type of data is quite short.



CAP developed this map of areas likely able to have connectivity to the cell tower that the subject's final call was carried over. Source: Civil Air Patrol Briefing on Alpine Search for missing hiker near Mt.'s Bierstadt and Evans on 18 July 2012

Satellite Messenger Units

SPOT and DeLorme InReach are in a family of personal devices designed to share position information messages in non-emergency situations and to activate a response similar to a 911 call in emergency situations. Unlike Personal Locator Beacons, in which the hardware is produced by commercial firms and the service provided by the US Government, SPOT and DeLorme hardware and services are both provided by commercial firms using the GlobalStar and Iridium, respectively, communications satellite constellations. Both require the purchase of annual subscriptions to activate various types and levels of services.



An emergency assistance request from either system is sent to the GEOS Rescue Coordination Center which in turn contacts local law enforcement to notify them of an activation, provide location, and information on the owner of the unit. Position information is delivered to local authorities in decimal degree coordinates using the WGS 84 datum.

There are several versions of both systems hardware in the field. One type is a completely standalone unit. Another is a piece of equipment that connects to Android and iPhone smartphones via Bluetooth and is controlled via an installed app. In non-emergency situations positions and messages can be sent to designated individuals via email and text messages, and to public and private websites.

In the case of SPOT messages can be sent one-way, from the individual in possession of the unit to those designated to receive text or email messages. DeLorme InReach offers a two-way messaging capability so it may be possible to query the user as to nature of the emergency, number in party, etc.

If a subject who is known to have one of these unit is missing but there has been no SOS message it may still be possible to use messenger unit information to aid in a search. Check if Reporting Parties or friends are aware of the subject's use of a messenger and if the subject has provided a link to a website that allows others to monitor location on a near-real time basis. If such a website exists obtain the URL and password (if required) from the RP and check for recent locations logged by the unit.

Users of these units may also capture tracking information for personal use, not making it available to others. If the subject is known to use a satellite messenger this possibility should be investigated and account logon credentials obtained from SPOT or DeLorme. Note that requests to access a personal account to must come from come from a law enforcement agency.

Social Media

Popular social media sites such as Facebook and Twitter offer users the ability to upload messages and pictures from their smartphones. At their option the users may enable a geotagging function on these sites, which will give a location from which the message was sent.

There are also numerous smartphone apps that provide the ability to collect and share geospatial information such as FollowMee and Google Latitude. These applications provide the ability to track your route as well as share location information with friends via the app itself or at a tracking website. These may be useful in SAR mission as shown with an iPhone tracking application called Find My iPhone that was recently used to help locate the crash site of a Chilean military aircraft. Similar location-based apps such as Foursquare and Loopt provide users with the ability not only to locate friends but also to locate features and services such as shopping, entertainment, parking and government buildings, and trails.

In an instance where a missing subject is known to use social media applications part of the investigation should entail asking friends and family members show the subject's last postings on popular sites. Even if there is no specific geospatial information enabled the messages or photos themselves may provide investigators clues as to where they were at the time they were posted.

Though not strictly a social media function photos taken with a smartphone often have location information embedded in the picture file metadata. Opening the photo with an application that can read the metadata format allows one to access that location information. This may be of use in cases when the subject has sent a photo to a friend or family member to help ascertain position prior to being reported missing.

Datum's and Coordinate Systems

A note of caution in the use of positions provided by each of the aforementioned technologies. As noted each deliver location information in the WGS 84 Datum using the some form of geographic coordinate forms (decimal degrees, decimal minutes, etc.). As many MRA teams use the NAD 27 Datum and UTM coordinates care must be taken in managing the conversion between these datum's and coordinate systems. A best practice is to work in the datum and coordinate system in which the data is provided, thus avoiding the need to convert between systems. If you must convert have someone at the base of operations make the conversion – don't ask your field teams to do so.

Conclusions & Recommendations

As with anything we do as rescuers, familiarity and practice are the keys to successfully using any technology on a mission. SAR teams need to invest some time into learning more about these potential sources of electronic clues in order to be prepared for dealing with them in a real mission.

In the case of the author's team e911 call testing was coordinated through the Clear Creek County Sheriff's Office. Calls were placed from various locations within the County using multiple carriers at each testing point. From these calls it was possible to learn by location and carrier if an emergency call would be received; if received if Phase 1 or Phase 2; and if it was a Phase 2 call how close the system provided coordinates were to the known calling locations.

Similar testing was conducted using SPOT units to gain confidence in how to access location information via the methods highlighted above. The information from the testing efforts has been consolidated into procedures documents to help guide the team's mission leaders in responding to 911 calls and satellite messenger emergency activations.

The author has done experiments with social media apps to learn how geospatial data may be captured and presented. The challenge with these is they are growing rapidly in number so maintaining awareness and proficiency is difficult. It helps to have a social media-savvy teenager in one's home to stay abreast of developments in this area.

I would encourage other teams to invest in similar testing and familiarization initiatives to develop their own ability to deal with these new electronic clues. Further, it may be beneficial if several MRA member teams collaborate on developing a set of common guidance and response documents on the use of these data sources to benefit the larger MRA community.

Loren Pfau is an 11-year member of the Alpine Rescue Team in Evergreen, CO. He is a current Mission Leader and past President and Treasurer of the Team. He currently serves as the Secretary-Treasurer of the Rocky Mountain Region of the MRA. Contact him at lorenpfau@gmail.com, especially if you are interested in collaborating on research and developing guidance on the use of these technologies.

ITRS 2012 Review

By Dave Clarke, MRA Vice President

The International Technical Rescue Symposium (ITRS) convened at Seattle Washington on November 1-4, 2012. This year's symposium was one of the best that I've attended and included a lot of new research and thought-provoking topics.

In recent years there has been an effort to place the presentation papers online at http://itrsonline.org/papers/, so even if you haven't been able to attend you can still benefit from this great exchange of knowledge. To the right is a list of this year's presentations that can be found at the link above. If anything on the list strikes your curiosity please check it out.

Now, a word of caution: there is no technical or editorial review of any of the presentations, thus the MRA and the other sponsors of ITRS take no responsibility for the safety or applicability of any of the techniques presented. Further, it is strongly suggested that you test any new technique or method under controlled, safe conditions and consider carefully whether it fits your needs. Or, as it says in bold print in the Symposium proceedings binder**…**

"Do Try This At Home"

Besides these papers, a recent addition to ITRS is the presentation of "hasty topics" which are a five to ten minute 'quick' look at new gadgets, research ideas, and techniques. And, there is always, a wealth of information exchanged in the hospitality suite.

This year's banquet keynote speaker was John Dill who has served as a SAR Technician for 42 years at Yosemite National Park. John's talk "How Long did Amelia Last" examined the question of how long should a search operation go on in the absence of clues? John gave detailed examples of several searches in the Sierra Nevada. The message in a nutshell was, don't give up too soon.

After John's keynote address Steve Hudson made a presentation of a lifetime Accomplishment Award to John. Tom Vines, one of the founding fathers of NATRS (which later became ITRS) also received a lifetime achievement award however Tom was unable to attend this year.

If you want to learn more about rescue systems or just like "geeking out" on the latest and greatest concepts in technical rescue then ITRS is the place to be. Next year's ITRS is in Albuquerque NM on November 7-10. I'll be there and I hope to see you there too.

John Dill, on right, (Yosemite National Park SAR Technician), accepting the ITRS Lifetime Accomplishment Award on behalf of himself, and Tom Vines. Steve Hudson, on left, presented the award. Photo by Buddy Lane.

- **Are Scrub Oak Shrubs a Viable Anchor Source for Rescue Sized Loads?**
- **Bring the Patient to the Hospital, not the Hospital to the Patient: The Use and Limitations of Advanced Medical Technology in Technical Rescue**
- **Compatibility: Your Connection. This is an examination of various methods of connecting a rescuer (or worker) to a lifeline and the possible problems of using incompatible equipment**
- **IKAR 2012 review**
- **Peaks, Prusiks and Pandas: A Rescue Exchange With the Sichuan Mountaineering Association**
- **Rope Failure, How Likely is it?**
- **Solo Rope Rescue Technique**
- **Evolution of Helicopter Rescue Operations**
- **Transitioning a Rescue Load in a Steep Environment to a Helicopter**

Alpine Near-Miss Survey Promotes Safety in Mountain Rescue

By Chris Jackson and Cory Jackson

- **On a rescue mission involving a moderate-angle lowering operation over loose terrain, a rescuer dislodges a rock above the patient package and sends the volleyball-sized stone careening down a gully directly at the attendants. A quick thinking rescuer jumps in front of the rock and deflects it with his backpack just before it would strike the attendants.**

- **After a successful ascent of Denali's West Buttress, poor decision-making results in the group heading down from 14,000 in a storm. The team narrowly misses being hit by an avalanche just below Windy Corner.**

- **While on a body recovery mission, a dazed bystander begins walking toward the rotor disc of helicopter that is toe-in on a slope. The pilot scrambles to get their attention and rescuers stop the bystander moments before a potentially fatal accident.**

You won't read about these incidents in the trade press, but they are more than just stories told over drinks after the mission. They are unique events sometimes referred to as "near-misses", and they present valuable learning opportunities. Unfortunately, the mountain rescue community has no immediate solution for cataloging or analyzing such incidents. Further, parallels between mountain rescue and mountain recreation – alpine, ice and rock climbing – indicate that a similar data set may be available for recreational pursuits. A newly formed research tool, the Alpine Near-Miss Survey (ANMS), provides a free, anonymous, online reporting network for gleaning and sharing these lessons.

Near-Misses Dwarf Reported Loss-Event Figures

Two trends revolutionized accident investigation and reporting in the last half of the 20th century. Researchers noted that there were far more errors to study than were being reported, and that these near-misses could be very instructive. Second, tools to analyze human errors in particular began to be incorporated into investigations of accidents in high-risk, high-consequence industries. Accident investigation in mountain rescue can take advantage of both of these innovations.

The publication*, Accidents in North American Mountaineering,* (Williamson, Jed, ed. *Accidents in North American Mountaineering*, American Alpine Club, published annually. Print, Digital.) has been read cover-to-cover by climbers since 1948. But it tends to focus on "loss-events" – incidents that create injury to people or property. Reporting only loss-events quite simply ignores the vast amount of data available for study to prevent accidents. Near-misses, on the other hand, are unintentional unsafe occurrences that would have resulted in injury, fatality or property damage, but for some fortunate intervention – and these occurrences far outnumber major accidents. They also have the distinct advantage of offering teachable points before an injury occurs.

The classic "Safety Pyramid" developed by Herbert Heinrich in 1931 showed that for every injury-causing workplace accident, there occurred 300 accidents that caused no injury at all. Frank Bird published an analysis of 1,753,498 industrial accidents in 1969, and found that for every major injury that was reported, roughly 600 "incidents" occurred that might have resulted in injury under different circumstances.

The aviation industry has been at the forefront of near-miss and incident reporting since the 1970s, and its reporting statistics confirm these accident-to-incident ratios. The National Aeronautics and Space Administration oversees the Aviation Safety Reporting System (ASRS). The ASRS collects, manages and studies reports that are voluntarily submitted by pilots, air-traffic controllers and other crewmembers. ASRS makes the reports freely available to the public for research into safety improvements. In 2010, the system received over 58,000 reports of what it calls "incidents". In contrast, the National Transportation Safety Board reports that in 2010, only 1,500 aircraft were involved in what that organization defines as an "accident".

Near-misses more importantly offer an opportunity to learn by identifying trends before any injury occurs. The April 2010 explosion of the Deepwater Horizon oil drilling rig and blowout of the Macondo Well resulted in 11 deaths. But the accident was preceded by a number of near-misses at that site including a failure to control explosive gasses in the well. A 2011 investigation into the accident by the National Academy of Engineering and National Research Council specifically noted the industry's absence of a near-miss reporting system similar to the ASRS in its recommendations for preventing future accidents.

Photo by Mike Bryson.

Accidents that occur during mountain rescue operations are certainly reported. They are discussed at conferences and are the subject of high-level study. But no centralized, easy-to-use pool of mountain rescue near-miss data exists. More, collecting a large statistically significant data set may lend itself to serious research into, and even root cause analysis of these accidents. The mountain rescue community currently does not take full advantage of these learning opportunities.

Mountain rescue accident reporting can also take advantage of a second trend in accident investigation: with the increased recognition of the human errors and human behaviors that cause accidents. In the late 1970s, the United States Navy developed a catalog of human errors called the Human Factors Analysis and Classification System to identify and potentially train to prevent these types of human errors. HFACS is now used by the commercial aviation and nuclear power industries. More recently, the National Fire Fighter Near-Miss Reporting System built a near-miss reporting system based largely on HFACS. In addition, materials distributed by the Aviation Safety Reporting System loosely state that two-thirds of all aviation accidents and incidents involve human errors.

Mountain rescue settings are characterized by many of the same conditions as these other industries: difficult work environments, intense time pressure, and extreme consequences of failure. Other industries have long identified the prevalence of human errors in accidents, and the need to study near-misses.

The Alpine Near-Miss Survey

Drawing on the experience of the Aviation Safety Reporting System, the National Fire-fighter Near-Miss Reporting System, and surveys used in the aviation industry and the military, the Alpine Near Miss Survey drafted a questionnaire tuned to the mountain rescue environment. It collects information on three categories of errors: equipment failures, environmental factors, and human errors. The survey culminates with a narrative intended to glean even more of the subtle human errors that influence near-misses and accidents.

While the survey has benefitted from previous efforts in related fields, it has also been reviewed by several leading figures in the mountain rescue community. Ken Phillips and Brandon Latham with the National Park Service, Dale Atkins of the American Avalanche Association, Mark Miller of Rigging for Rescue, and Lisa Hendy with YOSAR have all provided input.

This focus on mountain rescue near-misses fits the immediate need for nuanced, human-factors centered accident reporting. But just as mountain rescue shares many of the same characteristics as other high-risk industries that lead to human error, rock, ice and alpine climbing lend themselves to these types of situations. The ANMS Survey can also catalog these factors for additional research.

The Survey is hosted online. Users can access it at anytime, but can also download, complete, and email the Survey back to the ANMS project. The ANMS website is also key to sharing the reports that are generated from the survey. The reports are freely available, searchable, and even listed in an easy to browse format. The standardized data from the survey is uploaded to a database, and with a rich enough response rate, this data can be accessed and used for more advanced analysis.

The Survey Needs Your Help

These efforts are already yielding valuable reports. In addition to the brief incidents recounted at the outset of this article, the ANMS has received detailed narratives regarding communications breakdowns, mainline rope failures, and personal on-rope skill mishaps. While the ANMS is only just finishing development, interest in the project is high.

Of course, the Survey is only as valuable as its adoption. The early response to the ANMS is assuring: there is a clear need, and the project is prepared to meet it. The ANMS is organized as an independent nonprofit and has secured some early support from Rigging for Rescue, CMC Rescue, and the Petzl Foundation. The task now is to gather reports and spur the Survey's adoption. More information regarding the project, recent reports, and the Survey itself are available at http://www.alpinenearmiss.com. Updates are being distributed via Facebook where you can follow the Alpine Near-Miss Survey page. In addition, email updates are going out to those who sign-up to receive them on the website. Finally, and most critical at this stage, donations can be made through the website as well. Every level of financial support contributes directly to facilitating this research.

For those who would like to delve more, into this subject, here are some valuable links:

www.alpinenearmiss.com - Alpine Near-Miss Survey

www.firefighternearmiss.com - the National Fire-Fighter Near-Miss Reporting System

asrs.arc.nasa.gov - Aviation Safety Reporting System

Chris Jackson is an employee of Rigging for Rescue and a volunteer Member of the Ouray Mountain Rescue Team in Ouray, Colorado.

Cory Jackson is an attorney and part-time climbing guide. He is a director of the Ouray Ice Park, and a Member of the Ouray Mountain Rescue Team.

Photo by Mike Gibbs.

Mountain Rescue Association
Rocky Mountain Region Update

By Greg Foley, Director at Large, Rocky Mountain Region, Grand County Search and Rescue

At the Rocky Mountain Region December meeting a bylaw change was approved requiring that each Regular Member Unit contribute $100 annually to a Region Fund account. The Region Fund will be a line item held by the MRA until a disbursement request is made by the Region Board. This should happen twice a year in conjunction with the Winter Business Meeting and the Spring Conference. Teams can opt out by claiming financial hardship.

The primary purpose of the fund will be to ensure that a Rocky Mountain Regional Representative is representing the region at both of the semi-annual MRA membership meetings each year. The Regional Representative will most likely by the Region Chair or another of the Region Board members, but could be any team delegate willing and able to attend the national meetings and carry proxies for those teams not able to send a delegate. The Rocky Mountain Region is committed to ensuring that all region teams have a vote when decisions are made at the national level.

The secondary purpose of this fund will be to provide funds for expenses related to the A/R exercises or other region expenses by the Region Board.

The Region Fund requirement is one of five requirements each Regular Member Team must fulfill in order to remain in good standing with the Region.

- Provide the Region Secretary-Treasurer with a current team roster and contact information for their Board of Directors.
- Participate in intra-Region communications by enrolling a minimum of three (3) active members including at least one current Board Member on the Region's email list server.
- Provide annual missions statistics, using the MRA form, to the MRA and the Region for previous year.
- Timely payment of MRA dues.

The Bylaws and other documents can be viewed on the documents page of the Region website.

Seeking Nominations!

Together we will recognize excellence and commitment to mountain rescue services.

The MRA is seeking nominations for group or individual awards to be presented at our annual Spring Conference in Carefree, AZ (Phoenix), 4-9 June 2013. Per MRA Policy 502 (13)(d), award categories include, but are not limited to:

- Conspicuous bravery or heroism, above and beyond the normal demands of duty, displaying extreme courage while consciously facing imminent peril. Shall not have violated reasonable safety standards.
- Life Saving award. Actions resulted in the preservation of a life that otherwise would of almost certainly been lost.
- Death or injury in the course of duty.
- Outstanding mountain safety education program(s).
- Outstanding contribution of an outside agency to Mountain SAR.
- Outstanding contribution of a unit or person.
- Distinguished service, special recognition.

Please submit nominations to Dan Hourihan by e-mail at: dfhourihan@yahoo.com, by May 15. Please include a narrative, as an attached document, with all nominations. Recipients may be from outside of the MRA. All nominations will be evaluated for completeness prior to acceptance.

Rescuing a Fallen Climber from Nippletop Mountain

By Forest Ranger Rob Praczkajlo

Photo by Forest Ranger, Jay Scott.

On Saturday, December 15, 2012, the weather in the Northern Adirondack Mountains was bluebird clear but cold. I spent the day with a fellow New York State Department of Environmental Conservation (DEC) Forest Ranger patrolling on foot to the two thousand foot summit of Hamlin Mountain in Essex County.

The temperature dropped throughout the day and I commented on how cold it felt. Ranger Chris Kostoss replied, "It's going to be a bad night to stay in the woods." As Forest Rangers, we often think about this when speaking of weather when the thermometer plummets.

At 10:00 AM the same day four men from Syracuse New York began hiking to summit Nipple Top Mountain in the Dix Mountain Wilderness via a technical climb up a natural slide on the mountain's west side. Three of the men were experienced mountaineers the fourth was not. The men had decided prior to beginning the climb that they wouldn't use a rope or other protection until one of them felt uncomfortable.

The men were wearing climbing helmets and using ice axes and crampons to make their way up the ice covered slide. Around 4:00 PM the four men were three quarters of the way up the slide. One of the climbers reached a point where he felt he needed to be roped in. He communicated this to his climbing partners who were above him.

While he attempted to get into position to lower a rope, the three climbers watched from above. Suddenly, he slid, and then cartwheeled down the stair step ice-covered slide. According to one report, the novice climber seemed to, " …just let go." He made no attempt to self-arrest with his ice axes. The climber tumbled and fell two hundred feet down the slide before coming to a stop against a log frozen in the ice.

The other climbers could hear their friend moaning and observed him moving his arms. He then slid another twenty feet, but was stopped by small trees.

His friends made a quick plan. One would rappel down and stay with the victim providing whatever assistance he could. The other two would quickly climb to the summit and call 911 on their cell phone. They provided the climber who was staying an insulated jacket and whatever other clothes they could quickly hand off for the victim.

At 8:00 PM my State cell phone rang. The DEC Dispatch in Ray Brook advised of the climber's accident. Dispatch also reported that five additional Forest Rangers were being dispatched to the incident and the Forest Ranger Lieutenant serving as the Duty Officer for the weekend was notified.

The climbers who had left the scene to call for help had been unable to obtain cell phone service on the summit. They walked out six miles to their vehicle and drove to a diner to call in the emergency.

Judging from the reports, it was expected that the injured climber would have severe injuries. A call was placed to the Adirondack Medical Center's Backcountry Rescue program and a physician's assistant responded to assist. We later learned, the injured climber was above 4000 feet, lying on pine boughs, covered with a spare jacket, in the company of a single companion and suffering numerous severe injuries.

Forest Rangers, including myself, and the physician assistant all met at the incident command post to determine the best way to get to the injured climber as soon as possible, and to get him off the mountain and to a hospital.

Two plans of action were developed. Both plans called for getting Forest Rangers and the Physician's Assistant on scene as soon as possible to assess and stabilize the climber knowing rescuers would have to remain on the mountain until morning. Plan A called for New York State Police Helicopter with a Forest Ranger crew chief to fly in early the next morning, hoist in a litter and then hoist out the injured climber. Plan B called for six Forest Rangers to hike in with a litter and arrive at the injured climber's location at the same time the helicopter would arrive. If for some reason the helicopter hoist could not happen, we could begin the three and a half mile carry out to the Ausable Club Road.

At 10:30 PM Saturday, two other Forest Rangers, the Physician's Assistant and I left the command post and began hiking to the injured climber. We carried all the equipment needed to stabilize and protect the climber until first light when a helicopter could fly in. We hiked the trail to Elk Pass and then followed the tracks the climbers had made early in the day when they bushwhacked to the slide. As we came out near the slide we spotted the headlight of the climber who had stayed with the injured man. Although it looked only short distance above us through the woods it took us an hour to reach the two men, due to distance and terrain.

We arrived at the location of the injured climber at 3:30 AM Sunday morning, five hours after leaving the Ausable Club. The Physician's Assistant began assessing, stabilizing and warming the injured climber with assistance from Forest Rangers. He had multiple skull fractures, inter-cranial pressure, fractured C1, broken ribs, a six-inch long laceration of his left cheek and was hypothermic. Forest Rangers also worked to warm, hydrate and feed the injured climber's companion who was also slightly hypothermic.

At the command post, the Forest Ranger Lieutenant was managing resources by phone and radio. Three different radio channels were needed to communicate between the accident location, DEC Dispatch at Ray Brook, and the Ausable Club command post.

At 4:20 AM six Forest Rangers geared up and left the command post to head in to our location. At the same time another Forest Ranger was in the State Police helicopter hangar at the Lake Clear Airport twenty miles away preparing the helicopter for a hoist operation. The weather

Photo by Forest Ranger, Jay Scott.

window was small but appeared to provide enough time to fly in, lower a litter, move away and then return to hoist the patient and the physician's assistant out.

Before settling down to wait for morning, Forest Rangers on the mountain made a fire and cleared out an area where the litter could be lowered from the helicopter and hoisted back up. The physician's assistant stayed up all night tending to the injured climber.

At 7:00 AM those of us on the mountain knew it was going to be a long day. It had snowed all night and now squalls of snow and ice were pelting us. The visibility was around one hundred yards. Temperature was hovering just above zero degrees Fahrenheit.

At 8:00AM the Forest Ranger on the helicopter contacted me on a direct radio channel. He reported they were in the air nearby but could not see the summit of Nipple Top. I advised him of the weather conditions we were observing. The pilot tried to fly in from the north but could not reach our location. He then flew around the peaks and tried an approach from the south without success. The helicopter was not even able to get close enough for those of us on the ground to ever hear it.

The Forest Ranger on the helicopter contacted me again and reported that the helicopter was unable to reach our location. At that point I knew we were about to begin one of the most difficult and grueling carryout's DEC Forest Rangers have done in recent memory.

At 8:30 AM the six Forest Rangers arrived with the litter for the carryout and shortly after that, two experienced local climbers that had been asked to assist in the rescue operation joined us. A discussion ensued regarding the best route for the carryout. It was decided to use a rope belay system to lower the injured climber down five pitches each about 200 feet in length to the bottom of the slide. We would then carry him up through a spruce and fir forest to Elk Pass where we could pick up the Nipple Top Mountain Trail. We could then use a backpack carry system for the remaining one and one half miles down the trail to the vehicles.

It all sounds very easy. We began carrying at 8:30 AM and did not reach the ambulance waiting at the command post until 8:00 PM. We had eleven and one-half hours of carrying, sliding, dragging, lifting, pulling, cutting, throwing and pushing by Forest Rangers, volunteer climbers, and local emergency response volunteers.

There were enough Forest Rangers that we were able to have two teams lowering the litter with the injured climber. While one team was working to lower the litter, the other team was breaking down the previous rope system and setting it up at the next pitch.

Once we reached the bottom of the slide we had to carry the litter through the spruce and fir forest. Again we worked in teams with a group of forest rangers working with axes and handsaws to clear a trail while the other group would carry the litter.

Fortunately, once it had been determined that we would have to carry the injured climber out, two additional forest rangers were sent in with chainsaws to begin cutting through the woods from the Elk Pass. When the group coming out with axes and handsaws met with the chainsaw crew cutting their way in, progress of the carryout picked up pace.

We arrived at the trail and rigged up the backpack carry system. The system entails two people wearing shoulder straps that are connected together by a solid bar. The center of bar is then connected to the litter with webbing. One rig is connected to the front of the litter and another to back of the litter. The bar can pivot on the shoulder straps allowing the forest rangers to maneuver through narrow areas. Using this rigging with coordinated teamwork, four forest rangers can carry a litter rather quickly through the woods.

Fortunately as we headed down the trail we were met by additional Forest Rangers, a DEC Environmental Conservation Officer, members of the Keene and Keene Valley Volunteer Fire Departments and volunteers from the Search & Rescue of Northern Adirondacks (SARNAK). The large number of rescuers enabled people to take turns and rest in between.

Once we reached the Ausable Club Road we loaded the litter on one of the vehicles and drove out to meet the Keene Valley Rescue Squad. The injured climber was transported to the local hospital and then on to Fletcher Allen Hospital in Burlington, Vermont where he was operated on immediately. Intracranial pressure was the biggest concern. He is making a slow recovery but his doctor feels he will recover and return to his family members and friends.

One of the lessons learned from this rescue is that it takes much longer than expected to carry a two hundred pound person three and one-half miles. Also when you need to cut out emergency trails through tightly grown spruce and fir trees, over boulders, and across side hill, it is most efficient to have two people operating chainsaws and three people moving brush.

Along with technical rope rescue equipment, crampons were a necessity. At the beginning of the rescue we had two or three inches of snow and the trail was very icy, by the end, six additional inches had fallen. Footing was a constant concern.

No equipment was broken during the rescue. No rescue personnel were injured during the incident, though there was an exposure to bodily fluids, when the victim was thrashing around, and his bloody hand actually ended up in a Forest Ranger's mouth by accident.

The rescue effort was successful because of the thirty plus rescuers and others, supporting the mission from eight different organizations, working together to care for and carry the injured climber almost four miles through rough terrain, thick vegetation, cold and snow.

All worked together to save the climber's life. This happened because of the relationships between individuals and organizations that have developed over the years of working together during training exercises and actual incidents here in the Adirondack Park.

Photo by Forest Ranger, Jay Scott.

Blizzard Protection Systems Evaluation

By Mike Vorachek, MS, EMT, WEMT, TRT, Bonneville County Sherriff's Search and Rescue, MRA— mtnsar@cableone.net

Photo by Mike Vorachek.

Our Sheriff's Search and Rescue team has been doing an evaluation of some of new products being introduced into the marketplace by a company called PerSys Medical. Our team operates in Bonneville County, based out of Idaho Falls, Idaho. We cover 1,868 square miles of land and 32 square miles of water. We have a distinct four-season climate that attracts outdoor recreationalists from far and wide.

The casualty/survival blankets and jacket appear to be very well thought out products and represent one of the applications of technology that may have a profound impact on wilderness medicine, search and rescue, and tactical medical operations. Of particular interest is the new ***Blizzard Heat™*** **Casualty Blanket**. I tried it out on a cold Idaho morning, laying out the bag/blanket in the snow in the mountains. It was 30° F with about an inch of snow on the ground. For test purposes, I was wearing a cotton t-shirt, jogging pants, tennis shoes, and socks. I sealed myself into the bag, pulled the Velcro closure strips together, tightened down the top and bottom drawstrings, and 'dX made myself comfortable. The demo bag I used did not have the four moveable large air-activated heating pads installed, but I was very surprised how rapidly I could feel the bag begin to warm up. I had my wife slide a cotton towel under the bag at shoulder level to see what a minimal insulation layer might feel like. It made quite a difference. I spent about 30 minutes in the bag and felt warm. The bag has a full frontal closure, as well as side access with Velcro strips – so we could access almost anywhere that we might need to on a patient.

Next, I put my wife in the bag and had her lay flat. I was able to take the bag from being completely flat on the snow to fully sealed, with the top, bottom, and two torso drawstrings closed, in under a minute. She had on a little more clothing, including a jacket. She reported feeling warm and as comfortable as could be expected lying in the snow with no insulation. The addition of a pad or insulating layer below would have made all the difference in the world, but I was trying to see how well the bag functioned by itself.

A few weeks before, we had our Aquatic Rescue Team (ART) try the new ***Blizzard Survival Blanket™*** during a dive training event. Our ART leader provided the following report:

> *"On October 19th, 2009, I had the opportunity to evaluate the Performance Systems two person bag. I had just completed a 35 minute Scuba dive in 46 degree water using a 7 mil wet suit. The outside air temperature was 40 degrees and there was a breeze of approximately 5 mph. There was heavy cloud cover. We had just experienced a passing snow squall. Directly upon exiting the water and removing my Scuba gear, I sat down in a chair and had the bag placed over me. The bag easily covered the chair and me from head to toe and I had considerable space in front of my face for breathing. I didn't feel claustrophobic at all. I immediately noticed the heat being generated inside the bag and experienced a 'stove pipe effect' where the heated air rose up around me and out the open top over my head. I put my eyeglasses on and they fogged up right away. The warmth was comforting and instantaneous. After spending about 5 minutes inside the bag, I lowered the top down to my waist. I was still comfortably warm. I removed the bag and tried a standard emergency "space" blanket. This blanket measured 84" X 52". Sitting down, I wasn't able to be completely covered and I didn't notice any heat being generated. This bag would be an incredibly useful item for our dive team. Its application could be for both rescuer and victim."*

Another diver provided the following summary:

> *"My body was cold and my hands were really cold before I went into the bag. Almost the instant I went into the bag I started to warm up. One big thing was that it blocked the cold wind. I could feel the bag getting warmer as I stayed inside it."*

For those of us who have grown up using the standard wilderness hypothermia or "burrito" wrap, with sleeping bags, mat, and plastic – this product is a TREMENDOUS improvement. The ***Blizzard Heat™*** system represents a tremendous technological improvement in field treatment and patient packaging. The units are sold in vacuum packaged plastic. The ***Blizzard Heat™*** **Casualty Blanket** measures 3 x 9 x 12 inches (about the size of a large text book) and weighs 4 pounds (including the 4 heat pads). This is quite a bit smaller and lighter than our team's current patient packaging kit. The ***Blizzard Survival Blanket™*** is packaged at approximately 8 x 4 x 2 inches and weighs a whopping 19 ounces.

The patented Reflexcell™ material appears to limit heat lost through convection, evaporation, and radiation. With a pad or other material, it would limit loss through conduction as well. It is also very durable and capable of withstanding a fairly difficult evacuation, and I would expect, be readily repairable with almost any type of tape. The blanket/bags are considered reusable, but as would be expected, would have to be recompressed or vacuum packed to get close to the original packaging sizes. The literature that Performance Systems provided indicates that the blankets are made of a triple layer of metalized polymer foil, providing a water and windproof ensemble. The bag is in widespread use with the British RAF Mountain Rescue Service and the US Special Operations Forces medical community. The products have been evaluated by independent laboratories and rated to be equivalent in thermal protection to a 2 or 3 season sleeping bag.

From my conversations with the PerSys Medical representative, the bags are going to be priced in the retail market in the $30 – $40 range. The ***Blizzard Heat™*** **Casualty Blanket** will be priced a little higher. Additional information can be found on their web site at www.blizzardsurvival.com. I've played with a lot of different patient packaging materials, but for the price, cube, and weight, this is one of the best inventions to hit the wilderness and tactical EMS world in quite some time.

As always , your suggestions and comments are encouraged-either directly to the author, to me , or via the ListServ to the MedCom.

Skeet Glatterer, MD, FAWM

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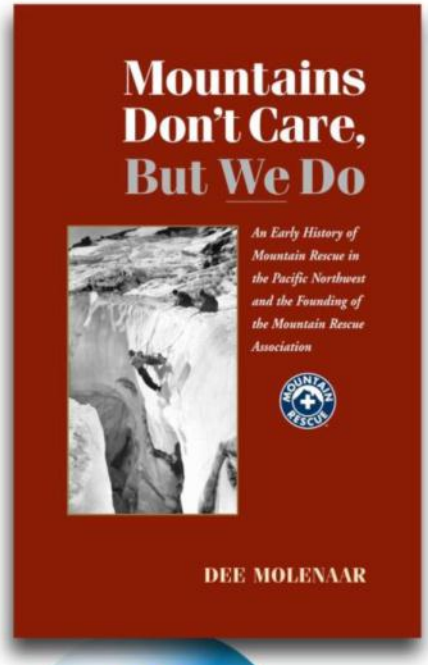
Editor's Note: The MRA does not endorse this product over any other.

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

50th Anniversary Tribute

"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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