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# Managing Hypothermia in the Backcountry

-ICAR '15 Report

-Two Tensioned Rope Systems

-The MRA Loses a Founding Father

# Fall 2015



*Extrication in less than perfect conditions. Cover photo by Christopher Van Tilburg, MD., Crag Rats, OR- (not Chris)*

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# MedCom—Part 1

**Many are Cold but Few are Frozen: Treatment of Hypothermia in the Mountains**

*By Ken Zafren, MD, Alaska Mountain Rescue Group and Mountain Rescue Association Medical Committee*

What do we really need to know to treat accidental hypothermia in the mountains? We need to know: How is heat lost? What are the responses of the body to hypothermia? What are afterdrop and circum-rescue collapse and why can they kill our patients? Once we understand these principles we can answer the key question: How can we prevent afterdrop and circum-rescue collapse?

Accidental hypothermia is defined as an unintentional drop of core temperature to below 35°C (95°F). Core temperature is the temperature of the central body organs. The most important organ in hypothermia is the heart. The cause of death in hypothermia is decreased or absent heart function. Hypothermia occurs due to net heat loss from the body by conduction, convection, radiation, and evaporation. Heat can be lost by evaporation from vaporizing water on the skin or in clothing and from direct losses of moisture from skin or from breathing.

The human body attempts to maintain a core temperature about 37°C (98.6°F). The body responds to skin cooling by decreasing skin blood flow and by shivering even when the core temperature is normal. Although decreased skin blood flow limits heat loss, and shivering can increase metabolic rate to 5-6 times normal, the main ways that humans avoid hypothermia in cold environments are behavioral—putting on clothing and finding shelter. Staying dry helps, too. Heat loss is increased 5-fold by wet clothing and 25-fold by immersion in cold water.

Shivering causes increased metabolism due to the work of shivering itself and due to increased breathing. Shivering can raise core temperature 3-4°C (5.4-7.2°F) per hour in a well-insulated, well-nourished person, but can stress the cardiovascular system and is very uncomfortable. As core temperature decreases, shivering increases until a core temperature of about 32°C (89.6°F). Shivering then decreases as core temperature decreases further, ceasing at a core temperature of about 30°C (86°F). Very ill or severely injured patients have little or no shivering.

Brain activity begins to decrease at a core temperature of 33-34°C (91.4-93.2°F) and continues to decrease with further cooling. Brain cooling results in poor judgment, decreased motor function, lethargy, sleepiness, and eventually unconsciousness (coma). These changes are reversible with rewarming unless blood supply is not

*Crag Rats and Portland Mountain Rescue extricate a deceased climber in bitter cold, Zig Zag Glacier, Mount Hood, Oregon. Photo by Chris Van Tilburg, MD.*

adequate to supply the metabolic demands of brain activity. Cold protects the brain during low-oxygen conditions such as cold induced cardiac arrest and cold water drowning by decreasing brain metabolism. The brain likes to be cold. However, if the brain is too cold for too long, it will sustain permanent damage.

Decreased brain activity due to cold also decreases breathing. In addition, cold causes inefficient gas exchange in the lungs, leading to high carbon dioxide levels and low oxygen levels in the blood.

The cardiovascular system is also depressed by cold. Because organs such as the brain have lower metabolic needs when cold, this is not as much of a problem as it would be if the brain were warm. Unfortunately, a cold heart is susceptible to ventricular fibrillation (VF). VF is disorganized cardiac activity in which the heart resembles a bag of worms. When the heart is in VF there is no circulation of blood. VF can be triggered by high blood levels of carbon dioxide or low blood oxygen levels or by body movement.

Afterdrop is a continued drop in core temperature after a person is removed from cold exposure. Afterdrop is mostly due to blood flow to cooler tissue in the arms and legs and subsequent return of cooled blood to the central circulation, including the heart. In someone who is hypothermic, cooling of the heart can cause susceptibility to VF. Afterdrop can be as much as 5-6°C (9°-10.8°F) in hypothermic patients.

Afterdrop cannot be prevented, but can be minimized by decreasing blood flow to the arms and legs while warming the core. Standing increases blood flow to the legs, worsening afterdrop. Exercise also worsens afterdrop by increasing circulation in the legs. To minimize afterdrop, a patient who is not moving and who is shivering should be insulated to protect from further heat loss and allowed to shiver for 30 minutes before starting exercise. If possible, have the person drink fluids or eat foods that are high in calories in the form of easily metabolized carbohydrates.

Circum-rescue collapse usually occurs in victims of cold water immersion just before, during, or just after rescue and removal from the water, but can also occur on land. Removing a victim from water decreases hydrostatic pressure. This can lead to decreased blood return to the heart causing shock (circulatory collapse). If the victim has to perform work to assist in rescue, for example, walking or climbing a ladder into a boat, death can result from mechanical stimulation of the heart precipitating VF. There is also evidence to suggest that when rescue is imminent, mental relaxation in a conscious patient may cause decreased circulation leading to fainting and drowning.

In order to decrease afterdrop and prevent circum-rescue collapse, patients should be handled gently with the least possible movement of arms and legs. Wet clothing should be cut off to minimize arm and leg movement. A patient with hypothermia should be kept horizontal to minimize the work of the heart and not allowed to stand or walk. A hypothermia patient should not be put into a hot shower or bath, as this would cause an increase in circulation to the arms and legs.

The best rewarming methods are not necessarily the fastest methods, such as exercise and immersion in warm water, but are the methods that cause the least afterdrop and that avoid circum-rescue collapse. Because severely injured trauma patients have decreased or absent shivering, even with mild hypothermia, it is important to begin active rewarming with large chemical or electrical heat packs or with forced air warming as soon as possible. These methods are also beneficial in patients who can shiver because they replace heat generated from shivering with external heat, decreasing the stress on the cardiovascular system caused by shivering and increasing patient comfort.

This winter when you are out in the mountains rescuing a hypothermic person remember to minimize afterdrop and prevent circum-rescue collapse. Also, remember to keep cool but don't freeze!

# MedCom Part II

**Some People are Cold and Alive: Hypothermic Cardiac Arrest in the Mountains**

*By Ken Zafren, MD, Alaska Mountain Rescue Group and Mountain Rescue Association Medical Committee*

What should we do when we find a person who is hypothermic without signs of life? We know that some people are cold and dead, but others are cold and can be alive if resuscitated.

Hypothermic patients have survived with complete neurologic recovery even after cardiac arrest. Fixed, dilated pupils and apparent rigor mortis (stiffness of the body) are not contraindications to attempting resuscitation in a hypothermic patient without signs of life.

**Who should not be resuscitated?**

Some patients are cold and dead. If it is clear that a patient had a cardiac arrest before becoming hypothermic, rescuers should not attempt resuscitation. Rescuers should also not attempt resuscitation if there are obvious fatal injuries such as decapitation, incineration or open head injury with loss of brain tissue or if the chest wall is so stiff that compressions are not possible. Rescuers should not attempt to resuscitate an avalanche victim who has been buried for 60 minutes or longer who is found with an airway that is completely blocked by snow or ice. This indicates that the victim died from asphyxia.

Dependent lividity, a red or purple discoloration of the parts of a body where blood pools from gravity, is a contraindication to attempting resuscitation. The presence of dependent lividity indicates that the body has been lying in one place for at least an hour and likely much longer. The discoloration is due to circulatory standstill and disruption of blood vessels. Unlike general redness of the skin, which is common in hypothermia and affects all parts of the body, dependent lividity is found only in the parts of the body where blood pools from gravity. Dependent lividity is absent in parts that are in contact with the ground, because blood cannot pool in areas that are under pressure. A rescuer who is not sure whether discoloration in a hypothermic patient without vital signs is dependent lividity should attempt resuscitation.

**Who should receive CPR?**

CPR should be performed only in a patient with cardiac arrest. CPR should not be performed when there are signs of life. In a cold patient who may be hypothermic, rescuers should try to feel a pulse and look for breathing for 1 minute. This is different than the current recommendation for basic life support in patients who are not hypothermic. If there is no detectible pulse and no detectible breathing after 1 minute, rescuers should start CPR, including rescue breathing. Rescuers should move the patient to a warm setting such as a ground or air ambulance as soon as possible.

A cardiac monitor or an automated external defibrillator (AED) with a built-in cardiac monitor can help determine if there is cardiac activity, but these devices often do not work in the cold. They also require exposing the patient to additional cooling.

**Delayed, intermittent, and prolonged CPR**

Cooling reduces oxygen use in tissue and protects the brain. Prolonged cardiac arrest may not cause brain injury if the cardiac arrest was caused by hypothermia. Rescuers should start CPR as soon as possible if they have not found detectible signs of life after checking for pulse or breathing for 1 minute.

Evidence for delayed and intermittent CPR comes from case reports and experience with induced hypothermia for cardiac surgery. If necessary for safety reasons, CPR can be delayed for up to 10 minutes. Once started, CPR should be continuous, if possible. In mountain rescue, it may not possible to administer continuous effective CPR. For example, CPR is not effective when a patient is being carried in a litter unless mechanical (machine) CPR is used.

*Crag Rats and Portland Mountain Rescue prepare for the extrication of a snowboarder from a collapsed serac, White River Glacier, Mount Hood, Oregon. Photo by Chris Van Tilburg.*

*"In a cold patient who may be hypothermic, rescuers should try to feel a pulse and look for breathing for 1 minute. This is different than the current recommendation for basic life support in patients who are not hypothermic. If there is no detectible pulse and no detectible breathing after 1 minute, rescuers should start CPR, including rescue breathing."*

If mechanical CPR is not available, CPR can be interrupted in order to move a patient. Interruptions should be kept to a minimum. If core temperature is 68-82.4°F (20-28°C) or if core temperature is not known, the current recommendation is to perform CPR for at least 5 minutes at a time, interrupting CPR for ≤5 minutes. If core temperature is <68°F (< 20 °C), perform CPR for at least 5 minutes at a time and interrupt CPR for ≤10 minutes. In most cases, core temperature will not be known. There is currently no reliable way for basic life support rescuers to measure core temperature in a cold environment. New developments may make this possible in the near future.

**CPR technique in hypothermia**

Although CPR is less effective in hypothermia because the body is stiff, the metabolic needs of the patient are also decreased. Chest compressions should be given as in patients who are not hypothermic. Compression-only CPR is not recommended in hypothermic patients. Hypothermic patients also need ventilation. Hyperventilation is a potential risk in cold patients, but mouth-to-mouth and bag valve mask ventilation are limited by chest wall stiffness. Unless the patient has an advanced airway, ventilations should be given at the normal rate.

**Conclusion**

Sometimes it is not clear whether a cold patient is dead or alive. Unless rescuers are sure the patient is dead, they should remember that some people are cold and alive and should attempt resuscitation.

# President's Message, Fall 2015

*By Dave Clarke, MRA President*

It's been a busy Fall for the MRA with activity, on a variety of fronts. On the international stage, the MRA was well represented at the International Commission on Alpine Rescue (ICAR) Congress in Killarney, Ireland, Oct 13-17. Several presentations by MRA members were well received and all of our delegates and alternates participated in their commission proceedings. Their reports will be posted on our website soon. This is just one example of how the MRA works to share the latest SAR information from around the world with our members.

Another example is what you are reading right now, the Meridian. This issue contains an article by Kirk Mauthner that describes two tensioned rope systems that utilize techniques that have evolved because of recent tests he conducted. Whatever high angle rope system your team uses, I believe that understanding the concepts presented in the article will lead to safer rope rescue operations. While it is not the role of the MRA to dictate any specific system, we were founded on the principle of sharing information to make all teams better. If your team finds a way to incorporate these concepts to improve your system, please share the results with us either by writing an article for the Meridian or simply by posting your thoughts on the MRA lister. Better yet, attend the 2016 MRA conference in Port Angeles, WA, and demonstrate your improvements there.

Looking forward to winter, your officers are busy preparing for the upcoming winter meeting. After much research and discussion, we are getting ready to purchase insurance for the MRA. Thanks to Monty Bell for his assistance and guidance with this. VP Bryan Enberg will present an interesting new proposal to supplement our education program. Secretary/Treasurer Doug McCall is leading a committee to implement improved financial policies. This will be increasingly important since our fundraising team of Rocky Henderson and Jennifer Baldwin are continuing their success in recruiting quality sponsors.

I said at the start, we are staying busy and we are working hard to keep the MRA productive and financially sound in order to support you, our volunteer rescuers. Yet, it is up to each of you to make the most of this work. I guarantee that the more you get involved with the MRA the more you will get from it. So please, continue reading (and better yet, writing for) the Meridian; post a comment or ask a question on the lister; attend a conference. All of us working together will make the mountain rescue community the best we can be.

Here's wishing you all a wonderful holiday season and a deep, white winter.

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*Note: Kirk Mauthner presented the material in this article at the recent ICAR Congress, in Ireland. He generously agreed to share it with the MRA here in the Meridian. However, he wanted to add that although the article was written with a specific reference to the MPD, he doesn't want readers to think the MPD is the only tool of choice for two tensioned rope systems (TTRS). There are other ways to accomplish the same thing and Kirk teaches those as well in his Basecamp Innovations Ltd. courses. It is the principles being covered in the article that are key. (Dave Clarke, MRA President)*

# Two-Tensioned Rope Rescue Systems

## MPD Current Best Practices

*By Kirk Mauthner, Basecamp Innovations, Ltd. On behalf of Parks Canada, Kirk represents Canada in the Terrestrial Rescue Commission of ICAR and is a member of the Technical Committee for the Association of Canadian Mountain Guides.*

**Background:**

For the past couple of decades, a growing body of evidence has shown that when Two-Rope Systems[1] are being used for rope rescue operations that risks can be better managed when *both* ropes are placed under tension once the attendant has good control of the load and is in the correct line of ascent/descent. Compared to a Two-Rope System where one rope is tensioned and the other rope is un-tensioned (i.e. as a back-up, or "belay"), a roughly equally tensioned two rope system significantly reduces peak fall arrest forces and fall arrest stopping distance should one rope system fail[2]. It is also well understood among practitioners that a tensioned rope is less likely to cause rope-induced rock-fall (or other materials). Two-Tensioned Rope Systems offer a number of other advantages as well, some of them related to human factors. However, placing both ropes under tension raises other risk management questions, all related to the concept of backing up rescue loads (i.e. 'belay'[3]).

If, for example, both ropes are under tension, then rescuers must consider the fact that both ropes are not only being used for descent/ascent control, but also that each rope must simultaneously serve as a back-up to the other, should one system fail. This has lead to the concept of 'Dual Capability'[4] systems whereby each system must be able to simultaneously serve as both a mainline (for lowering/lifting loads) as well as a back-up line should one rope system fail. However, for this concept to work, each rope system must be both *competent and capable*[5] of both these functions. It is abundantly clear that not all descent/ascent control systems can meet these criteria; they simply weren't designed for that. Where many descent control systems fall short in Two-Tension Systems is the ability to competently serve as a back-up should one rope system fail.

Up until 2014, in North America it was commonly taught that during edge transitions that one rope should support the entire load, and the other rope – the back-up – should be un-tensioned[6]. Why is this? What are the primary reasons for the belief that a 'belay line' should be un-tensioned in rope rescue, especially for edge transitions? What is the prime risk management benefit of doing so? Clearly it is a common practice in North America (Note: it is not as common in other continents). In other words, what evidence exists to support the requirement of having one rope tensioned (i.e. taking all the load) and the other rope un-tensioned, and rigged primarily as a back-up, or belay, should something happen

(1) Assuming conventional kernmantle life safety ropes are being used (e.g. Classified to USA Cordage Institute standards). There are many forms of Two-Tensioned Rope Systems; this handout assumes two independently anchored and managed rope systems which are joined together in a common 'union' just above the rescue load (e.g. 'master attachment' at the stretcher bridle).

(2) Tests conducted in-house by Basecamp Innovations Ltd.

(3) Internationally, the term 'Belay' can mean different things than what is commonly assumed in North America and therefore this term can be ambiguous. Instead, the terms 'Back-up' or 'Safety' are favoured.

(4) Dual Capability Systems is more descriptive than "Mirrored Systems", the latter of which was intended to mean the same thing, but can be ambiguous in that it can also mean – incorrectly – that each system looks like the other, which is neither the intent nor requirement of Dual Capability Systems. Dual Capability means that each rope system is both *competent and capable* of serving as a mainline (lifting/lowering) and concurrently as a back-up, should one system fail.

(5) Competent and Capable infers that the systems have been shown to perform favourably under relative worst-case conditions testing, such as the '*Belay Competency Drop Test Method*' established by the BCCTR.

(6) BIL also taught this practice up until 2014.

to the mainline system? Among a number of arguments posited, two common themes come up as answers to these questions. The first theme which is commonly espoused is that it's easier to lower/raise a rescue load over an edge using only one rope under tension, and the second common theme is a risk management justification in that if there is a problem at the edge (e.g. rescuer stumbles at the edge, or a high directional fails) and this causes the ropes to strike and/or slide across a sharp edge, then an un-tensioned rope is less likely to get damaged than a tensioned rope, and since the un-tensioned rope is the back-up, logic would follow that we use methods and techniques to preserve its integrity. Logically then, it seems reasonable to have one line support the load while the back-up remains un-tensioned. However, physics is not intuitive, it is learned, and physics is at play here.

However, the belief that it is easier to lower/raise a rescue load over an edge by placing all the control on one line is completely counter to the many teams who have – for decades - demonstrated that in fact the opposite is equally true(7). Given that smooth edge transitions can be accomplished with either a Two-Tensioned rope system or a Dedicated Mainline system, this implies that other factors are in play other than whether a single or two tensioned ropes are used to execute edge transitions – such as Human Factors (such as poor skill/technique or inadequate training/familiarity with the descent control device, etc). It is undeniable that one does not have to look back far in history to find numerous examples of poorly executed edge transitions whereby the rescue load took a bit of a drop or fall due to some form of 'mishap' using either of these techniques. Upon closer examination – albeit anecdotal – the severity of the 'mishaps' with dedicated mainline system appear greater. One explanation for this is that since all the load is supported by just one line, then any mishap with that line will inevitably result in a rapid gravitational transfer of tension to the remaining line; if that line is un-tensioned, then naturally rope stretch and any slack in that system will add to the fall arrest stop distance. It is also common practice with dedicated mainline/back-up systems to only elevate the mainline with a high-directional of edge-person lift. The body of evidence is growing that the magnitude of drops/falls when using two-tensioned rope systems are substantially less than with dedicated mainline, un-tensioned back-up line systems.

Coming back to the second common theme, we need to question what evidence exists to support the requirement of keeping the back-up system un-tensioned. In 2014, *Basecamp Innovations Ltd* conducted a study to examine this question(8). They conducted a series of tests, comparing *Two-Rope Systems*, one Two-Rope System with both ropes *about equally tensioned*, and one Two-Rope System having a *Dedicated Mainline and a Dedicated Un-tensioned Back-up line*. All drop tests were conducted over a sharp edge with the simple objective of determining which of the Two-Rope Systems was less likely (or more likely) to get damaged from a 'mishap' of a rescue load at the edge. The key variables were drops straight over a level edge (no sideways sliding of ropes on the edge), a non-level edge (causing sliding across an edge), and some form of protected edge (multiple canvas layers). Each series of tests were increased in magnitude of severity until failure occurred. In every single series of tests conducted, the results clearly showed that there are no compelling reasons in favour of operating a back-up line un-tensioned. In fact, in all cases, Two-Tensioned rope systems survived drops on sharp edges better than dedicated main/back-up systems. Physics can explain why this occurs, and ironically the reason is directly related to the baseline premise of why an un-tensioned back-up was being advocated as a better risk management tool.

*The premise that an un-tensioned rope is less likely to get damaged than a tensioned one is demonstrable; but the leap to say that rescuers should therefore keep their back-up line un-tensioned is not*. The irony of this is that this practice actually makes failure of that rope more likely, as demonstrated in the BIL 2014 tests. The explanation for this lies in the subtlety of understanding the distinction that if *all* of the tension is borne by only the mainline, then it is *more* likely to sever when exposed to a sharp edge than if *less* tension is placed on that rope. In other words, it's not a question of whether a rope should be tensioned or un-tensioned; it is realizing that a better risk management strategy is to place less tension on both lines so that the probability of severing a rope from a sharp edge is less likely.

If sufficient tension is on a dedicated mainline system (i.e. the entire load is supported by the mainline), and it severs due to exposure to a sharp edge, then the falling rescue load (read: additional energy in the system) will now place an *even greater* magnitude of

**Comparative Sharp Edge Tests:** Two-Tensioned Rope System on the left and Dedicated Main with Un-Tensioned Back-Up on the right. In all test series, Two-Tensioned Rope Systems fared better.

(7) Many ICAR (International Commission for Alpine Rescue) nations regularly successfully demonstrate the ease of use of using two ropes under tension as opposed to using only one line of a Two Rope System under tension.
(8) Presented at the 2014 International Technical Rescue Symposium in Golden, CO.

tension on the remaining originally un-tensioned back-up line(9), and the probability of that rope surviving is dependent on it being subjected to a less sharp edge than what the mainline was exposed to, because if it is exposed to the same edge as the mainline – but now with greater tension on it - then severing of that back-up line is almost certain.

Comparatively, if all the tension is about equally shared between both ropes – then naturally each rope will be at about half the tension than if one rope supported the entire load, and we already know that a rope that is under less tension is less likely to be severed than a rope under more tension. As such, it takes a substantially greater fall to bring *each* rope in a shared tension system up to the same magnitude of respective tension where severing occurs in a dedicated mainline system. Therefore the flaw in the logic of believing that a back-up rope should remain un-tensioned lies in the reality that should that rope be called into action, that it will be tensioned to an even greater amount than if it had originally supported some of the load, and therefore damage or outright failure of that rope is more likely. In some regards, this is a major paradigm shift in thinking for rope rescue in North America. The 2014 BIL tests are only a gateway to help guide rescuers to further examine how risks can be better managed, both for lifting/lowering, as well as backing up loads.

**Some Key Strategies When Using Two-Tensioned Rope Systems and MPD's:**

There are numerous differences in risk management strategies between Dedicated Mainline/Back-up and Two-Tensioned rope systems. The following highlights some of the major strategic risk management choices for using Two-Tensioned Rope Systems and MPD's as devices.

- **Initial Setup:** Ideally anchor system focal points for each rope system should be located essentially side by side, far enough back from the edge to also allow a haul system to be built to lift the load, even if the primary objective is just to lower the load. This anchoring strategy results in the same amount of rope in service per system, thereby reducing this as a system behaviour variable (i.e. rope stretch) to manage when lowering. Since both ropes are converted into haul systems when raising a load, co-located MPD focal points allow for efficient sets and resets as each system can be reset simultaneously. There are Human Factor advantages in co-located focal points as each MPD operator can more easily see what the other operator is doing and communication between the two operators is more easily accomplished. This allows for smoother operation of each rope system and also means detection and correction of any errors is enhanced.

**Both Ropes Elevated:** vector both ropes.

- **Evenly Elevate Both Ropes:** For many rescuers, this is a completely different and new way of thinking, so it is important to understand the reasons why. With both ropes equally elevated through a high directional, the load is always protected with a top-rope back-up, or a zero fall factor back-up if one rope system fails; this strategy will result in only a 'settling-in' of the load to the remaining rope system and will prevent a freefall. The benefit of having both ropes evenly elevated should not be underestimated, especially since most edge-transitions-gone-wrong are human factors based, such as a sudden feeding of the mainline or the attendant stumbling at the edge. Both of these events have a potentially serious consequence if no top-rope back-up is provided. With dedicated main and back-up systems where only the mainline is redirected through a high-directional, then any failure of that system will not result in a settling-in, but rather a free-fall until the back-up rope makes contact with the ground, and by default the load will have fallen past the edge before fall arrest commences(10).

  There is another very important reason why both ropes should be equally elevated through a high directional, especially if the edge that is being transitioned over is sharp. If the high directional were to fail, then equally elevated ropes will result in both ropes contacting the ground simultaneously, and as we just reviewed earlier, two ropes with roughly equally shared tension, have a better propensity to survive damage from a sharp edge than do dedicated main & belay setups. Even if the system is being operated as a TTRS, if the ropes are unequally elevated and the high directional fails, then one rope will make contact with the ground first while the other rope remains un-tensioned, which the resultant risk is now no different than if the system were operated as a dedicated main & back-up. If there is any *real* risk of the high directional failing(11), then once the load is past the edge, then it would be a wise and reasonable strategy to lower the height of the ropes to a lower position so as not to subject the load to the risk of a drop while it is below the edge.

  It is also important to realize that during edge transitions, if the high directional fails, this will result in a drop of the load

(9) The 2014 BIL tests also recorded peak force on each rope to see when respective failures occurred.

(10) The BCCTR Belay Competence Drop Test Method is based entirely on this worst-case event; the test method is a 1m drop of a 200 kg mass onto 3m of rope. With Two-Tensioned Rope Systems, the consequence of one rope system failure is less severe, especially when both ropes are elevated and also if more rope is initially in service.

(11) Two known cases of High Directionals failing are from sharp edges cutting the material holding the redirect pulleys (NPS, 2014; Delaware Water Gap; and, Bellingham Fire/Rescue in the mid-nineties). There are likely other cases.

regardless of whether both or only one rope is elevated in the high directional. Therefore it is better to manage the more likely risk of an accidentally overfed mainline or an attendant stumbling at the edge through the provision of a top-rope setup which minimizes fall arrest distance.

- **Lift and Push Out ('Vector') both ropes:** During edge transitions, edge people can push up and out on both ropes to help assist the attendant with the edge transition. Any shift or change in tension between ropes will not affect how much each edge person pushes out as it is the combined tension of the ropes that is being pushed out on, not each individual rope. Even the complete loss of one system will not change how much edge people are pushing out since the load itself does not change. Pushing out on both ropes provides a form of high directional for each rope (a lifted rope cannot drag material towards the edge during lowers) and this helps reduce edge stumbles. It is especially important to lift and push out on both ropes when the load is coming back up over the edge (load being raised). Otherwise, if one rope is left on the ground and only one rope is vectored, then the remaining rope on the ground will tend to 'suck' the load into the edge instead of helping lift the load over the edge.
- **Tail the Ropes:** For *each* rope station, appoint a person to not only feed rope to the operator of the MPD to allow for clean smooth lowering, but also to be a *highly attentive* second set of eyes and ears to ensure not only proper MPD technique but also confirm any given Commands/Communication. In a very direct and deliberate way, the people tailing the ropes act as 'Technique Coaches', constantly watching to detect and help correct MPD technique errors. The rope tailing job has one other extremely important function, and that is to position themselves so that if for whatever reason, the MPD operator loses control of the rope they are managing, that the rope tailer can simply maintain their two-handed grip on the rope and prevent further movement through the MPD(12). Ideally the MPD operators are placing the ropes through the secondary friction post to be ready to take on the load of the other rope should that system suddenly fail. For awkward locations, it is sometimes easier to clip a redirect carabiner through the anchor system to allow this function to be accomplished from a more suitable position.
- **Change the Mindset – a Human Factor Risk Management Strategy:** Rather than each MPD operator thinking that they are 'lowering' the load, change the mindset to thinking that what they really are doing is serving as the back-up to the other rope system and that they need to be ready *at all times* to catch the load if the other rope system fails. This is likely one of the more powerful human factor management tools that can be employed. What this means is that prior to lowering the load, each MPD operator must ensure that the rope they are managing is rigged and oriented through the MPD in a manner such that they can simply 'take-on' the additional load should something go wrong with the other system. For example, with a 200 kg load and 11mm rope, it is advisable for the MPD operator to already clip the rope into the secondary friction horn (but not necessarily redirect the rope around it) so that the rope is in the maximum potential friction position just in case the entire load suddenly comes onto their line. Even with the rope clipped into the secondary friction horn, it is still easy to pay rope out smoothly.

  Conversely, if the operator has the *mindset* that they are *only* doing a lowering function, then there can be a tendency to just apply enough friction to smoothly lower the load, but not necessarily be able to catch the load if the other rope system fails. This sudden transfer of tension to the remaining rope system can result in an unprepared operator to inadvertently allow rope to run through the MPD until they have the sense of mind to allow rope locking to occur.

  The strategy of having someone tail the ropes and actively monitor and coach the MPD operators combined with the operators having the mindset to manage their respective ropes in anticipation of being able to suddenly and fully receive the entire load significantly helps manage the risks associated with human factors. Recall that the intent behind Dual Capability Systems is that each rope station serves simultaneously as a mainline as well as a back-up to the other system and each station must be *competent and capable* of each. While lowering with an MPD, the act of rotating the handle to release the rope over-rides the auto-lock, and therefore a new risk is introduced and must be appropriately managed. It is the combination of having the right MPD mindset, having specific people in place to tail the rope, serve as Technique Coaches to help detect & correct technique, aid in Command/Communication, and serve as a back-up set of hands to the principal MPD operator that provide good risk management strategies to the various factors that can affect failure. It is a good practice for the team to discuss having the right mindset prior to going operational.
- **Use Pre-Departure Briefings:** Modify the Command/Communication system to better manage Human Factors during the crucial stage of edge transitions. After everything has been rigged and inspected, and the team is ready to go opera-

(12) The concept of having additional set(s) of hands actively managing the rope behind the device operator is also a common practice in rock/gym climbing to provide a form of human factor back-up for 'new' belayers, such as school group settings. In many countries this is generally considered a standard practice of care for guides & experiential instructors.

tional, it is common for the Control person to first conduct a Roll Call, then issue commands to move and position the load by the edge in preparation for the edge transition. But prior to issuing commands to pre-tension the systems and commencing lowering of the load, it is highly recommended to have a final Pre-Departure Briefing, right near the edge. The objective of the Pre-Departure Briefing is to bring the team together one final time, just before transitioning over the edge, and going over *exactly how* the load will be transitioned over the edge and *exactly what commands* will be used to accomplish that task. It must be perfectly clear to everyone how this stage will be executed; in a sense, it is a rehearsal of how it will be done. This 'rehearsal' is led by the Control person – so that he/she gets the words clear in their mind – and also physically demonstrates the speed at which lowering will take place, and also exactly what and how the edge people will lift the load and vector the lines, and exactly what needs the attendant may have at any stage during the edge transition. This simple practice of having a Pre-Departure Briefing significantly elevates everyone's situational awareness at a very crucial time during a rope rescue operation.

- **Dry Run MPD Movement:** Prior to committing to the edge transition, it is highly recommended that the Control person orchestrate a Dry Run immediately following the Pre-Departure Briefing in order to work out any skills or command deficits. Skills that have waned can easily be detected and corrected here, before committing to the edge. If required, another dry run can be executed to ensure all commands and skills are up to speed for that operation. Often it is incumbent on the Operational Team Leader to ensure that these Dry Runs are conducted, not only at the respective MPD stations but at all locations, including the edge people and attendant. The objective of the dry runs are to bring situational awareness to the highest level given the current team members, current level of training, and current operational conditions.

**Gauging Roughly Equal Tension:** A common strategy to determine if each rope is roughly equally tensioned is for a person to grab one rope in each hand with their thumb, bend the ropes to feel the respective tension; if one rope feels tighter, then a command can be given to that respective operator to temporarily let rope out faster until the tension between the two ropes feels the same. Once they feel the same, call for letting out rope at the same speed. When someone is simultaneously gripping one rope in each hand, it is also visibly evident if one MPD operator is feeding rope out faster than the other. The person tailing the ropes can also help significantly in keeping the respective rope tensions similar by feeding both ropes at the same rate to the operators. Using Enforcer Load Cells behind each MPD is a high tech solution to the problem but is very accurate and removes all doubt. The same practices can be used to gauge respective rope tension when raising loads.

Above are only a few of the key Two-Tensioned Rope system Strategies. There are certainly others and these systems also offer other advantages over dedicated mainline/back-up systems. While the objective may be to try and maintain roughly equal tension between the two ropes, the inherent ability to easily transfer tension between ropes allow for simplified knot passing, management of edge protection, or even moving ropes to different sections of terrain if the current rope path is undesirable. For example, if the ropes are rubbing on a sharp edge, then stop can easily be called, slack given to one line and it can be lifted over to a more desirable edge or padding placed under it, and then the same can be done for the next rope. Tension transfers between ropes in a dedicated main/back-up system are nowhere near as quick and efficient as with Dual Capability Two-Tensioned rope systems.

**Final Thoughts: Improving Rope Rescue Risk Management Strategies:**

Over the years, rope rescue techniques, systems and equipment are continually being improved. Recent advances in Two Tensioned Rope Systems have led to a number of significant improvements in rope rescue risk management from the norm of dedicated mainline and back-up rope systems. However, in order to keep advancing we need to keep examining and re-examining the key factors that can affect failure. There are four main factors affecting the probability of a system failure that need to be continually reassessed:

1. Human Factors (e.g. improper technique; inadequate training; loss of situational awareness, etc)
2. Material Factors (i.e. the equipment being used, what they are made of, quality, etc.)
3. Method Factors (i.e. the techniques and systems being used; some inherently have more risk)
4. Environmental Factors (e.g. sharp edges, chemical, temperature, etc.).

It would be fair to say that Human Factors are likely the greatest single source of potential failures, yet there is a strong tendency – at least in North America - to focus on Material Factors (i.e. equipment). Keep in mind that rarely is it just one factor that can lead to a system failure; it is often a series of factors that act as a domino effect that only require a trigger(13). A hypothetical example of this would be a rope rescue team that rigs a system at an off-angle to the edge, and then during the edge transition with the load it naturally makes it more difficult for the attendant to properly control the load, and this leads to a sideways stumble and fall at the edge, missing the edge protection, and the ropes are then slid sideways on a sharp unprotected edge, leading to…the outcome can often be luck, or chance. The point is, however, that one can find all four factors in this example, and potential failure cannot be narrowed down to just one element.

This document summarizes a systems analysis of how risk management strategies can be improved using Two Tensioned Rope Systems with MPD's, particularly with management of Human Factors. Improvements to rescue systems are an ongoing process and changes are made as new compelling evidence becomes available. The written word is only as current as the time of writing and it is a work in progress. Basecamp Innovations Ltd welcomes any and all feedback and input with the goal of continually improving rope rescue systems and techniques.

(13) The Reasons Model (aka Swiss Cheese Model) is an often cited reference for further understanding that failure modes are often a composite of latent and active errors in a system/organization, and are rarely based on a singular factor.

# 2015 ICAR Congress: Killarney, Ireland

*By Tom Wood and Dan Hourihan*

The 67th annual International Commission for Alpine Rescue (ICAR) Congress, held in Killarney, Ireland from October 15-17 and hosted by Mountain Rescue Ireland (MRI), was an unqualified success, with a full slate of MRA delegates and members in attendance.

Comprised of four individual commissions (Air Rescue, Avalanche Rescue, Alpine Emergency Medicine, and Terrestrial Rescue), ICAR provides a platform for mountain rescue and related organizations to disseminate knowledge with the prime goal of improving mountain rescue services and their safety. ICAR is an independent, worldwide organization that provides opportunities for mountain rescuers to meet and exchange techniques and ideas with the goal of making the mountains of the world a safer place for those who recreate and rescue in that environment. This year's Congress saw more than 400 international attendees from nearly 40 countries and 70-plus organizations.

"Human Factors in Mountain Rescue" was the theme of this year's congress and many of the presentations reflected that theme. For more information on these presentations and each commission's full report to the MRA, stay tuned to the Meridian and the MRA website.

The pre-conference practical day, organized by members of the 12 teams that make up MRI, was held at the Gap of Dunloe, a scenic area within the response area of the Kerry Mountain Rescue Team. Scattered amongst the ubiquitous sheep of the area, mountain rescuers had the chance to visit five different stations to get some hands on experience before returning to town for the presentations and the annual congress.

The Alpine Emergency Medicine Commission ran a station that demonstrated delayed/intermittent CPR techniquesfor hypothermic patients. When long or technically difficult carry-outs are a consideration and rescuers are faced with a severely hypothermic subject in cardiac arrest, the commission suggested that rescuers might want to stop at least every five minutes to give five minutes of CPR, repeating this process until the subject reaches

*Carrauntoohil, Ireland's highest mountain. Photo by Dan Hourihan.*

advanced medical care.

Dog handlers from the Dog Handlers Sub-Commission of the Avalanche Commission demonstrated the skills of their search dogs at their station, much to the dismay of the farm dogs working the sheep nearby.

On the terrestrial side of things, MRA President Dave Clarke, Olympic Mountain Rescue members John Myers and Tiffany Royal ran a lowering/raising station that demonstrated a two-tensioned rope rescue system. With help from Joe Flachman (Santa Barbara SAR), Marc Beverly (Albuquerque Mountain Rescue), Tom Wood (Alpine Rescue Team) and Oyvind Henningsen (Snohomish County Helicopter Rescue Team), the station offered attendees the opportunity to work up a sweat by participating in the lowering, changeover and then finally the raising of two rescuers on a vertical cliff face.

Members of Mountain Rescue Ireland ran an anchor station that demonstrated various techniques for ground anchors. Using various tools and techniques that ranged from simple ground stakes arranged and tensioned in series to interesting devices called hedgehogs, the Irish rescuers took full of advantage of the area's abundant peat and loamy soil to demonstrate that with the proper placement, ground anchors can be capable of supporting rescue loads.

Members of TOPR, from Zakopane, Poland, ran a lightweight, high angle system using Dyneema ropes with shock absorbers built into the system instead of the traditional nylon or polyester kernmantle ropes. This allows them to accomplish the long lowers in remote

*Photo by Mountain Rescue Ireland.*

locations with much less weight and rope stretch.

As with previous ICAR conferences, Topograph Media was on hand to capture the event on video. They created a 15 minute long highlight reel, which was shown at the International Technical Rescue Symposium (ITRS) in Portland, Oregon, on November 8. By the end of the month, a full ICAR video will be featured on the Topograph Media Vimeo channel. (http://www.topographmedia.com/)

During the General Assembly of Delegates, several new organizations were voted on and approved to join ICAR. These new member organizations include:

Bulgarian Mountain Rescue Service (A member)

Chinese Mountaineering Association (A member)

GSSUBiH, Bosnia-Herzegovina (A member)

Japan Mountain Guides Association (A member)

BEX Med, German Association of Expedition Medicine (B member)

CHUV, Switzerland (B member)

FiPS, Federation Internationale de Ski Patroilles de Ski (B member)

Norwegian People's Aid (B member)

Norwegian Society of Mountain Medicine (B member)

UIAA Medical Commission (C member)

Avalanche Canada (C member)

Alpine SAR, Victoria (C member)

The Snow and Avalanche Association, Spain (C member)

Membership categories reflect the number of votes allotted in the General Assembly. "A" member organizations have two votes, "B" member organizations receive one vote and "C" member organizations do not vote but can participate in ICAR activities. The MRA is an "A" member organization. The ICAR Board of Directors approved a new category of sponsor partnership for manufacturers, with more information forthcoming this next year.

Next year's ICAR Congress takes place in Borovets, Bulgaria, on October 18-22, 2016. The theme for next year's practical day and presentations will be The Search Function: Improving the Search Before the Rescue. The 2017 Congress will be in Andorra.

The MRA Commissions and their delegates:

Air Rescue Delegate: Casey Ping (Travis County, Texas)

Avalanche Rescue Delegate: Marc Beverly (Albuquerque Mountain Rescue)

Alpine Emergency Medicine Delegate: Ken Zafren (Alaska Mountain Rescue Group)

Alpine Emergency Medicine Alternate Delegate: Skeet Glatterer (Alpine Rescue Team, Colorado)

Terrestrial Rescue Delegate: Dan Hourihan (Douglas County Search and Rescue, Nevada)

Terrestrial Rescue Alternate Delegate: Tom Wood (Alpine Rescue Team, Colorado)

*On the Gap of Donloe, County Kerry. Photo by Tom Wood.*

*One of the ground anchors used by the Irish as part of the practical day, at ICAR. Photo by Tom Wood.*

*The Hedgehog is a soft ground anchor system used in bogs by Mountain Rescue Ireland. Photo by Rick Lorenz, Topographic Media.*

*Tom Wood, ICAR Terrestrial Rescue Alternate Delegate. Photo by Rick Lorenz, Topographic Media.*

# The Use of GPS for Transitional Anchors

*By Paul Bongaarts, Seattle Mountain Rescue*

The use of transitional anchors is a widely accepted method for steep angle rescue (i.e., slopes of 30 to 50 degrees) over distances greater than a single rope length. Transitional anchors involve both main and belay stations positioned (typically) along the fall line of the slope, at distance intervals that are less than or equal to the rope length. One such example might be a series of lowers down a snowfield or glacier.

It is also accepted that the most rapid subject transport will occur when anchor stations are pre-rigged and safety-checked prior to the arrival of the subject package at the station. In order to pre-rig the stations, this requires the advance team to estimate the distance from the previous anchor(s). This article will describe an innovative approach that leverages advances in GPS accuracy to assist the rescuer in mapping a route for transitional anchors down (or up) a steep angle evacuation route.

**Understanding the accuracy of your GPS**

GPS accuracy has improved tremendously over the years. Historical accuracy may have been on the order of 50 feet, but with the combination of techniques like the wide area augmentation system ("WAAS"), and use of the Russian global navigation satellite system ("GLONASS"), accuracies of <9 feet have been observed with the latest generation of GPS, such as the Garmin GPSMAP64 handheld (released in 2014).

In order to appropriately apply our approach to measuring rope distance, you will need to first understand how your GPS reports positional accuracy. For the Garmin GPSMAP64, select the "satellites" page of your GPS. There you will see the current configuration (e.g., GPS or GPS+GLONASS), along with the relative signal strength of all the satellites in view. Additionally, it will tell you the accuracy of your current position (e.g., +/- 10 ft.).

It is also recommended to configure your GPS for maximum accuracy. With the GPSMAP64 you can achieve this by ensuring both WAAS and GPS+GLONASS options are enabled. It should be noted that these options will sacrifice some battery life of the unit in order to achieve the higher degrees of positional accuracy.

**How to use your GPS for judging distance**

To apply our approach you need 3 things:

1) An accurate GPS that can measure the distance between your position and another location on the map
2) An accurate tool for measuring slope angle. A compass with a clinometer is preferred, but a snow study slope meter could also work.
3) A lookup table relating the slope angle to your working rope length.

The methodology for using the GPS is very straightforward. It leverages the native capability of the GPSMAP64. From the "Map" screen, the user can move a cursor around (with the directional keypad) and the GPS will then display the distance from the current position, to the location of the cursor (see Figure 1).


*Figure 1: Measuring distance on flat ground (Source: Paul Bongaarts)*

To test this on flat ground we used at 60m climbing rope (which a tape measure confirmed to be 198 feet). Standing at one end of the rope, we placed a marker waypoint with the GPS. We then walked to the other end of the rope, placed the cursor on the marker waypoint, and read the resulting distance on the GPS. The GPSMAP64 showed a distance of 196' (see Figure 1). Not bad!

When it comes time to apply this in the field, the critical point is that the GPS does NOT correct for the slope angle, so this must be done by the user.

To compensate for slope angle, we must recall some high school trigonometry. For simplicity, we can model the slope as a triangle, where the GPS displayed distance is the base, and the length of the rope is the hypotenuse (See Figure 2).

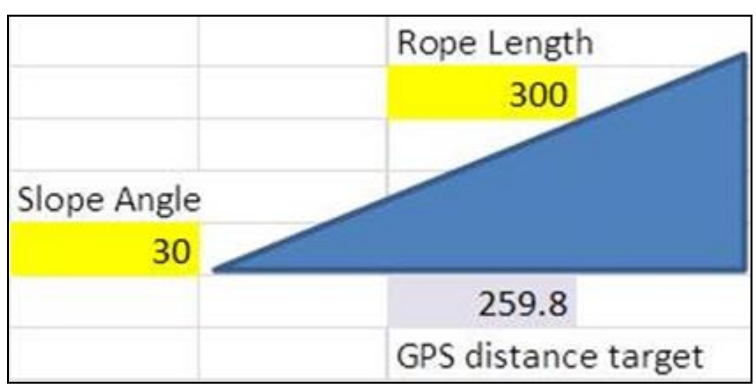


*Figure 2: GPS distance model (Source: Paul Bongaarts)*

Given that the rope length and slope angle are fixed, we would then solve for the resulting GPS distance that would indicate where our next transitional anchor station would be placed.

Specifically:

GPS_Distance = Rope_Length * COSINE (Slope_Angle)

or,

GPS_Distance = Rope_Length * COSINE (Slope_Angle) -

[2 *] GPS_Accuracy

to take into account the accuracy of your GPS.

The calculations in this paper will use this latter method, as we believe it is best practice to incorporate GPS accuracy to ensure you do not overestimate the working distance that is available.

Lastly, we can make a simple "clip-n-save" cheat sheet to take into the field. If we know our MRA unit uses 300 foot ropes, we can create a table that is a function of both slope angle and GPS accuracy (see Figure 3)

So for example, if we are on a slope of 30 degrees, with a GPS accuracy of 15 feet, we would target a display GPS distance of 245 feet between anchors (for a 300 foot rope)

**Conclusion**

The use of an accurate GPS like the Garmin GPSMAP64 can greatly improve efficiency when establishing transitional anchors for steep angle lowers. By maximizing the distance of each lower, teams can save time, and ensure that subjects reach definitive medical care in a timely manner.

As with any new rescue technique, MRA teams considering adopting this system should practice extensively in familiar terrain, and fully understand how the system will integrate with established equipment and practices.



Lastly, it goes without saying that rescuer experience and good judgement is still paramount. While the described GPS methodology will provide key information, it still relies on the rescuer to make sound decisions on anchor station placement. This includes a comprehensive analysis of the terrain, natural anchors, and other intangibles better qualified through personal experience.

GPS Distance Target calculator for 300 foot rescue rope

| GPS Accuracy (feet) \ Slope Angle (degrees) | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 295 | 290 | 282 | 272 | 260 | 246 | 230 | 212 | 193 | 172 | 150 |
| 5 | 290 | 285 | 277 | 267 | 255 | 241 | 225 | 207 | 188 | 167 | 145 |
| 10 | 285 | 280 | 272 | 262 | 250 | 236 | 220 | 202 | 183 | 162 | 140 |
| 15 | 280 | 275 | 267 | 257 | 245 | 231 | 215 | 197 | 178 | 157 | 135 |
| 20 | 275 | 270 | 262 | 252 | 240 | 226 | 210 | 192 | 173 | 152 | 130 |
| 25 | 270 | 265 | 257 | 247 | 235 | 221 | 205 | 187 | 168 | 147 | 125 |

*Figure 3: Field calculation sheet for GPS distance as a function of slope angle for a 300 foot rescue rope (Source: Paul Bongaarts).*

# Automated External Defibrillators (AEDs) in SAR/Mountain Rescue

*By Richard Duncan, Operations Leader, Everett Mountain Rescue Unit, WA; Paramedic, Snohomish County Helicopter Rescue Team*

*In May 2015, a Snohomish County Volunteer Search and Rescue (SCVSAR) volunteer was hiking up a mountain trail to assist in the rescue of two stranded hikers. While ascending, the volunteer found himself exhausted and short of breath. Command requested the volunteer return to the trailhead, but while descending his condition deteriorated and he collapsed. After evaluating the volunteer who was now a patient, a fellow rescuer requested an Automated External Defibrillator (AED) be brought up trail from the command post approximately one half mile away. Once applied, the AED analyzed the patient's heart rhythm and advised the operator to deliver a defibrillatory shock. CPR was continued for two minutes. The AED again analyzed the patient's heart rhythm and a second defibrillatory shock was delivered. Post event analysis of the electrocardiogram record on the internal memory card reveals that this second defibrillatory shock allowed the heart's electrical conduction system to begin firing correctly. The patient was subsequently placed in a litter, and extricated to emergency medical services (EMS) at the trailhead. He was then transported to a safe landing site where care was transferred to the county's own advanced life support (ALS) equipped Helicopter Rescue Team (HRT) and flown to a tertiary care center. Tests revealed that the volunteer's sudden cardiac arrest was the result of an acute myocardial infarction (AMI), commonly referred to as a heart attack. After a lengthy and tenuous recovery, the volunteer was released with full neurological function.*

Search and rescue teams often operate in remote and difficult to access locations. While prehospital emergency medical services may be ubiquitous in the urban environment, response times in remote locations may be measured in hours or even days. Treatment of a patient suffering from a sudden cardiac arrest (SCA) must be initiated within minutes if the patient is to have any chance of a favorable outcome. The efficacy of AED use is directly correlated with time from insult to application of the device. While it cannot be expected, given the current technology, that rescuers routinely take an AED into the backcountry, having an AED available to treat SCA where large groups of individuals gather, such as at public relations events, during disasters and at remote locations such as trailheads has proven to be lifesaving. It is in recognition of these opportunities that the International Commission for Alpine Rescue (ICAR) recommends that, in addition to other recognized locations, "Automated External Defibrillators should be available to first responder groups in mountain-rescue teams."

In 2012, Snohomish County Volunteer Search and Rescue, Everett Mountain Rescue and the Snohomish County Helicopter Rescue Team secured a generous donation of 18 AEDs from the Philips Healthcare Corporation. Eight of these AEDs were distributed to other Washington State Mountain Rescue Association (MRA) units. The remaining ten were strategically dispersed across the Snohomish County Volunteer Search and Rescue units. It was one of these AEDs that was available at the trailhead when the volunteer suffered his SCA. It is evident that without this AED, the patient would have had no chance of surviving the event.

MRA teams should have access to and be trained in the use of AED's, CPR, and first aid. The life you save may very well be one of your own teammates.

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1 Elsensohn F, et al. The use of automated electric defibrillators and public access defibrillators in the mountains. International Commission for Alpine Rescue recommendation REC M 0019. 2006.

# Call for Speakers

## MRA National Conference
## June 10-12
## 2016

Hosted by Olympic Mountain Rescue
Port Angeles, Washington

NATIONAL SPRING CONFERENCE
PORT ANGELES, WASHINGTON

The MRA National Conference is the largest gathering of mountain rescue professionals in the world. The 2016 conference will feature instructional courses, technical field sessions, equipment demonstrations and social events that cater to all experience levels. From Search and Rescue professionals and incident commanders to first year members, all will have the opportunity to learn new skills and share their knowledge with peers.

Subject matter includes mountain rescue techniques and skills, search skills, incident command management, and pioneering technology discussing the future of mountain rescue. Attendees will include professionals, both paid and non-paid, and all facets of search and rescue from throughout the United States and abroad. Attendees will represent many job functions and all will share a favorite pursuit: search and rescue.

Please come join us in Port Angeles, Washington located on the Olympic Peninsula. Just minutes away from Olympic National Park, encompassing nearly one million acres and home to glaciated mountains, old growth rain forests, undisturbed rivers and a vast network of wilderness trails. This years conference will take advantage of all that Olympic National Park has to offer.

Interested parties will be able to present to a captivated audience, lead an interactive field session, or demonstrate the latest technology. Presenters will be given a discounted registration fee for the 2016 MRA National Conference. Deadline for submission is January 18, 2016. Please provide the following information for program consideration or questions to the Presentation coordinator: Jonathan Evarts - jsevarts@gmail.com.

# 2016 MRA Presenter Request Form

NATIONAL SPRING CONFERENCE
PORT ANGELES, WASHINGTON

Presentation Title ______________________________

Organization ______________________________

Presenter(s) Name ______________________________

Email ______________________________

Phone ______________________________

Presentation Type ☐ Lecture ☐ Demonstration ☐ Field Session ☐ Panel

Length of Lecture ☐ 30 mins ☐ 45 mins ☐ 60 mins

Length of Field Session ☐ 2 hours ☐ 4 hours ☐ 8 hours ☐ Other

A/V Equipment Required ☐ Laptop ☐ Projector ☐ Speakers ☐ Wifi

Presenter Biography

______________________________________________________________
______________________________________________________________
______________________________________________________________
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Presentation Description

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

For a field session what logistical/equipment needs do you have?

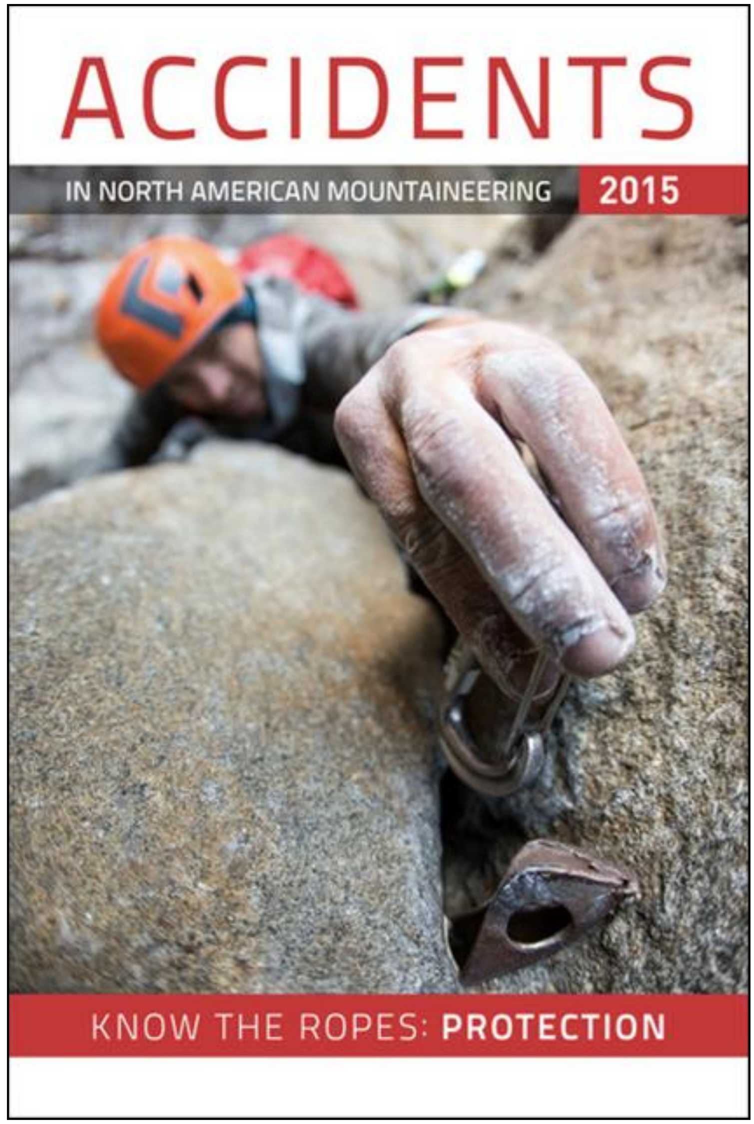
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

Presenters will be given a discounted registration fee for the 2016 MRA National Conference. Deadline for submission is January 18, 2016. Please provide the following information above for program consideration or questions to the Presentation coordinator: Jonathan Evarts - jsevarts@gmail.com.

# Book Review: Accidents in North American Mountaineering

*By Christopher Van Tilburg MD, Hood River Crag Rat, Oregon*

Dougald MacDonald, editor
Golden, CO: American Alpine Club Press, 2015
US $12.95 (trade paper), 128 pages
The American Alpine Club Journal 2015
Dougald MacDonald, editor
Golden, CO: American Alpine Club Press, 2015
US $35 (trade paper), 400 pages




I always look forward to cracking the American Alpine Club's *Accidents in North American Mountaineering*. Published annually since 1948, Accidents is a rare collection of first-hand narratives of mountaineering injuries. After longtime helmsman, Jed Williamson transitioned to Editor Emeritus, current Managing Editor, Dougald MacDonald made a few changes, mostly increasing quantity of images and diagrams, and adding regional editors. The book includes two informational chapters: one on rope protection and another summarizing accidents on Yosemite National Park's famed El Capitan big wall. Short sidebars highlight frostbite, rappelling, and head injuries. The volume is capped with statistical tables. But the gems are the vignettes of accidents, each containing both a narrative summary and an analysis. Because the accounts are penned by climbers involved in the mishaps, the stories reveal first-hand insight on what when wrong. In addition, some 4,000 reports from this and past editions are now available at publications.americanalpineclub.org. Accidents is an interesting read for climbers, and a good study in trends for mountain rescuers.

The companion to Accidents, the venerable classic in mountain literature The American Alpine Journal 2015, has been published annually since 1929. The paper is thick, the book is heavy, and the pages are jam-packed with beautiful, high quality images and illustrations for "The World's Most Significant Climbs." The lovely route maps are lines overlaid on clear pictures of rock walls, crags, glaciers, and snow-clad peaks. The climbers' personal narratives recount adventures from both well-known locals as well as blank spots on the climbing globe like Mt. Namuli in Mozambique, Hkakabo Razi in Myanmar, South Simvu Glacier in India, and a rock tower called Poumaka in Marquesas Islands. The beauty of the collection is that the first-person vignettes which are not cohesive in style or tone, but share the commonalities of thrill, anguish, beauty, and challenge of mountaineering, which ooze through the pages in varied voices.

# Snohomish Helicopter Rescue Team: Training Exchange in Portugal

*by Bill Quistorf, Miles Mcdonough, and Oyvind Henningsen*

The Snohomish County Helicopter Rescue Team (HRT) has close ties with the Everett Mountain Rescue Unit (EMRU). All assigned helicopter rescue technicians and some of the assigned Flight Paramedics are also qualified Mountain Rescue Association members.

HRT responds to about 80 search and rescue missions per year in Washington State. The team provides advanced life support (ALS) with a crew on duty 24/7/365, from an ALS equipped Bell UH-1H, call sign: "SnoHawk 10." We strive to bring a high level of mountain and medical competency to any rescue. Most team members including pilots, crew chiefs, rescue technicians, and flight medics are volunteers with training specifically geared towards helicopter mountain rescue operations. HRT rescuers are trained and equipped for self-sustainment in the mountains in the event that the helicopter cannot return for extraction of all team members.

We have a strong training philosophy and use every opportunity to share knowledge and information with others. HRT recently took advantage of a training exchange by visiting the 751 Rescue Squadron in Lisbon, Portugal. Both 751 and HRT were award recipients at the Helicopter Association International "Salute to Excellence" banquet in March of 2015. It was there that the two teams first met and discussed helicopter rescue operations. A bond among crewmembers was formed and invitations to visit each other's program were extended. In August 2015, the Portuguese Air Force approved joint training between 751 and HRT. Three members of HRT, two Helicopter Rescue Technicians: Oyvind Henningsen & Miles Mcdonough, and one Flight Paramedic: Brian Schleicher, traveled to Lisbon and were hosted by members of 751 for a week of training, briefings and information sharing.

The 751 Rescue Squadron operates twelve Augusta Westland's EH-101 Merlin helicopters. The squadron's primary mission is Search and Rescue and they have saved over 3,100 people since inception in 1978. Their response area encompasses a region three-quarters the size of the continental United States and they routinely fly missions up to 800 nautical miles round-trip. Just prior to HRT's arrival, the squadron flew a hoist rescue mission that required 7 hours and 42 minutes of continuous flight time.

The rescue squadron's mission is similar to that of the U.S. Coast Guard with an emphasis on open water and distressed vessel rescue. The standard aircrew is two pilots, 1 systems operator, 1 rescue swimmer and 1 flight nurse. In addition to vessel and open water rescues, 751 also performs cliff rescues. Two versions of a rescue strop are used for extractions and a titanium litter is used for non-ambulatory subjects. Unlike HRT, which conducts technical rope rescue operations, 751 relies on civilian fire departments to conduct rigging operations for rescues in technical, land based terrain.

The squadron emphasizes frequent training under conditions that closely approximate actual rescues. For instance, they routinely train in the open ocean, with moving marine vessels, and on ocean-side cliffs. When they depart for a vessel training operation, the crew utilizes an onboard radar system to track down an ocean bound vessel suitable for hoist training, and requests permission to board via marine radio. While these training practices offer less of a controlled environment, they allow their crew to accumulate critical experience that is directly transferable to actual missions. The 751 training regimen also includes Night Vision Goggle flights. The auto-hover capability of the EH-101 allows 751 pilots to perform night rescue operations over the open ocean despite lack of reference points normally needed by the pilots to hold a hover.

Rescue squadron 751 keeps detailed records that are updated electronically in an online database. Duty calendars, training participation, certifications, e-learning modules, protocols, standard operating procedures (SOPs), etc. are all hosted online. The squadron enforces a strict policy of crewmember currency, especially when it comes to SOPs. When a SOP is issued, all crewmembers receive an immediate electronic notification and until they digitally sign that they understand the new SOP they are not cleared for flight duty. This is just one example of an effective and efficient mechanism 751 has put in place to assist in mitigating risk.

HRT came away from this training opportunity with a great deal of appreciation and respect for the demanding missions performed by the 751 Rescue Squadron. It was invaluable for HRT crewmembers to directly work with 751 crewmembers during training flights. Critical insights relating to hoist operations, rescue gear application, and flight procedures were documented and are currently being reviewed by HRT leadership.

HRT was sent off with a farewell barbecue hosted by both the Air Force Base Commander and the 751 Squadron Commander. The 751 Rescue Squadron will be invited to the U.S. as a return favor to conduct joint training with HRT and other regional rescue agencies in the Pacific Northwest. Joint training ventures such as these surely enhance safe helicopter rescue operations worldwide through the sharing of information, techniques and operating procedures.

# Personal Medical Equipment for BLS First Responder

*By Christopher Van Tilburg MD, Hood River Crag Rat, Oregon*

This summer I was asked to recommend medical supplies to a mountain bike team riding the Trans-Cascadia backcountry mountain bike race. Mountain rescuers, like mountain bike racers, must balance having the appropriate medical equipment commensurate with skills, while keeping one's kit as light and compact as possible. The minimum knowledge requirement for first responders in most states is Basic Life Support (BLS). This includes American Heart Association/American Red Cross Basic Life Support (CPR), First Aid, and Blood Borne Pathogen training. Here is a shortlist of the bare essentials for BLS personnel.

Minimum BLS Gear for every responder

1. Personal Protective Equipment: CPR Mask, 2 pairs of medical gloves, eye protection, and a medical face mask.
2. Cloth Medical Tape (athletic or waterproof) can be used to improvise a splint, secure a cervical collar, bandage an open wound, create an upper extremity sling and swath, cover blisters, and repair gear.
3. Hand Sanitizer, alcohol or benzalkonium, is to disinfect rescuers' skin.

Optional Supplies for individuals or team

1. Malleable splint (e.g. SAM Splint), to fashion an extremity splint.
2. Adhesive compression wrap (e.g. Coban, Coflex), gauze roll and/or ACE bandage, for bandaging and splinting.
3. Paper tape for blisters or commercial blister bandages (duct tape is a reasonable substitute).
4. Glucose paste, electrolyte powder, or sports gel for hypoglycemia.
5. Epinephrine (autoinjector or ampule including syringe/needle) and non-sedating antihistamine (loratadine or cetirizine) where laws/protocols allow. *
6. Headlamp, while not really a medical item, it is essential for after-dark patient care.
7. Small tarp or space blanket, for exposure.
8. Paper and pencil to document care.
9. Small first aid kit, for basic wound care and over the counter medications, is optional:
   a. Acetaminophen
   b. Antihistamine, preferably non-sedating
   c. Antiseptic wipes
   d. Antibiotic ointment
   e. Syringe, 20 cc
   f. Adhesive bandages
   g. Butterfly bandages
   h. Gauze, 4x4
   i. Non-adherent dressing, 4x4
   j. Forceps, small
   k. Safety pins

*Epinephrine autoinjectors are more expensive and have shorter shelf life compared with ampules. Most states restrict this to personal use, not for third party administration, such as BLS responders. MRA members should check with their medical control.

# Rescuer Spotlight: An Interview with Casey Ping, the MRA's Air Rescue delegate to ICAR

To suggest someone for an interview submit his or her name to Meridian Editor.

**Can you tell me what it was that attracted you to mountain rescue, in the first place?**

My association with MRA is probably unique. I live and work in Austin, Texas. Austin is known for a lot of things but I'm sure mountains are not one of them. My participation with the MRA and ICAR is based on my experience with air rescue. Locally, Travis County has spent 20 years in developing our local air rescue capability. That capability was built to address the frequent flash flooding events that impact Central Texas. Central Texas is known as 'flash flood alley' due to frequent high intensity storms because of our proximity to the Gulf of Mexico and the Pacific. That brings incredible amounts of moisture. These conditions, combined with our limestone (which does not allow rain to soak in) and Hill Country geology make these storms especially dangerous. Regardless of the type of rescue performed there are always similarities between them. I think the physical and mental challenge associated with rescue attracts many of us, myself included. Certainly, assisting other human beings during a time of need is very rewarding. The personal challenge combined with helping people and their families is what attracted me to the rescue environment.

**What do you wish you had known when you started, that you know now?**

Oh, where do you start? Experience is probably the most important thing I wish I had sooner. Hopefully, that experience allows me to make better decisions—and those decisions improve the safety of the mission while improving outcomes for victims.

**Can you tell us a bit about what you do when you are not on a mission, or training for one?**

Generally, I am involved in family oriented activities. I am a board member for my son's lacrosse team so that keeps me very busy, especially in the spring. My daughter is part of a competitive cheer team, and my son attends Baylor University. Between work and family activities we always seem to be occupied.

**Five years from now, what do you want to have accomplished or contributed to the MRA?**

It is my hope that the guidance I've helped to develop, by working on ICAR's Air Rescue committee for reviewing incidents and accidents, will be informative to rescue personnel. It can be discouraging when incidents and accidents continue to include similar themes. We haven't invented new ways to have incidents and accidents; they are always the same. It should be our goal to share the lessons learned from past accidents to keep from repeating mistakes in the future.

**Can you share a story about an event that involved you and the MRA that was a game changer for you?**

The meetings during the 2014 ICAR congress at Lake Tahoe were game changers for me. It was incredible to see the MRA come together and put on a great conference and show the rest of the ICAR delegates what SAR in the United States is like. The distances that challenge our rescue teams and the diversity of the geography are not generally found in Europe.

**Of all the SAR missions you have been on, what one mission taught you the most?**

I was deployed to Hurricane Katrina for 10 days. It challenged our team in every way: from navigating to the scene; communication (internally and externally); logistical support including fuel, water and shelter; where to take victims; how to care for them; when to treat them and when not to. Early in the response there were inadequate resources and we could have easily consumed all of the supplies we brought with us within hours. What responders normally take for granted was simply not available. At the same time, the victims had overwhelming need for every basic service. It challenged us in ways that we really couldn't have imagined. We saw the very best and worst humanity had to offer. It taught me, as a responder, to take nothing for granted. Our man made systems can fail and we have to be able to work around them. The challenge is to do so without crippling the day to day response by building in too many redundancies. We can't prepare for every possible contingency but we need to be better prepared for the adversity that catastrophic incidents bring.

# Rescue in the Adirondacks

*by New York State Forest Ranger, Rob Mecus*

On August 17, the New York State Forest Ranger dispatch center in Raybrook received a call about an injured climber on Wallface Mountain. At over 800', Wallface is New York's tallest vertical cliff. It is also one of its most remote, requiring a four-mile trail hike and half a mile bushwhack to reach the base. Wallface has become increasingly popular since the release of the first edition of *Adirondack Rock*, a large and detailed climbing guide for the Adirondack Mountains. The standard route on the cliff, 'The Diagonal' at 5.8, used to see a dozen or so ascents per year, it now has parties on it routinely every day in the summer.

The caller stated that a climber had fallen and was hanging from the rope unconscious. I received the initial call from our dispatch center, and immediately headed towards Lake Placid, about twenty minutes away. The day was bright and clear, and it was 3:15pm. I started putting together an initial access plan that included the use of the State Police helicopter to insert rescuers and equipment as close to the base of the cliff as possible. While enroute, I called the initial caller back, and was updated that the climber was now conscious, and had been lowered to very near the belay ledge, roughly 200' off the ground.

Armed with this information I decided to activate our volunteer climbers list, a group of local climbers and guides who regularly train with us in technical rope rescue. We needed someone who could lead the first pitches of the route quickly and safely, and get rescuers to the ledge. Two volunteers were available, and met us at the Lake Placid airport.

The ship arrived, and one of the volunteers and I were inserted by five p.m. I was hoping to get at least ½ mile from the base of the cliff. To my delight, we found a small opening in the talus field a mere 150' from the base of the route. Within minutes of leaving the airport, we were racking up at the base. The volunteer climber quickly dispatched the first pitch, and I followed with a large rescue pack, and trailing a sixty meter static line. Meanwhile, another Ranger and more equipment, including a break apart litter, were inserted behind us. In all, three Rangers and two volunteers were delivered by helicopter. Additionally, five more Rangers hiked in from the south to assist.

The belay ledge was a mess of ropes, anchors of varying quality, and backpacks. The ledge was about three feet wide and seven feet long, sloping down at about thirty degrees, and out away from the cliff. Beside the climber and his partner, two other climbers who were a pitch above when the accident occurred, were now on

*Photo by Rob Mecus.*

the ledge assisting with the rescue. Those climbers had rappelled down and stabilized the injured climber, anchoring him while his belayer continued to hold him on the lead rope tensioned to his top piece of protection.

The leader had fallen roughly sixty feet, pulling two pieces of protection out on his way down. His initial complaint was serious pain to his right shoulder and an ankle injury. The primary medical assessment did not find anything life threatening. A large, bone deep, laceration to his forehead was a distracting injury, but it had stopped bleeding. When the patient's neck was palpated, he had significant tenderness and pain at C4. Everything we did from here on out was slow and methodical, to prevent additional trauma to the spinal column.

While I evaluated the patient and developed a plan for getting him stable and into a littler, the volunteer and other climbers hauled the rest of the rescue gear up on the static line I had trailed. It is difficult to explain the level of complexity on this small sloping ledge. There were six people, a lot of gear, and a lot of blood on the rocks and ropes from his head wound prior to our arrival. Our initial challenge was getting him on a KED with a cervical collar on. Once that was completed, we were able to roll him sideways and slide the litter underneath.

At this point, I delegated control of the rigging to our rescue volun-

*The Wallface. Photo by Rob Mecus.*

teer, whom I knew could handle it; he attended every training we had put on in the last two years. I concentrated on getting the patient package secure and communicating with the ground crew. I had to attend the litter down because I had no one else on the ledge that had the training to do that. I enlisted one of the climbers to assist me due to the broken nature of the cliff face and the challenging angle between steep and high angle. With daylight quickly fading, the lowering began. A call was placed to the helicopter to arrive 5 minutes before dark, and to have a critical care EMT on board for insertion if we could not complete the raise before darkness.

I felt the second hand of the watch speeding up as we lowered slowly over ledges, through trees, and into voids. If we could not complete the hoist mission, we would be spending the night at the base of the cliff until first light. Thirty feet from touching down on the ground, I heard the thump of the helicopter rotors. When we landed, the litter was immediately freed and carried 150’ over large broken talus. The crew hiking in had arrived moments before to affect the carry. As soon as the litter arrived in the small clearing, the hoist cable came down from above.

Ten minutes later the patient was being wheeled into the hospital in Saranac Lake, the rest of the rescue party on the cliff was cleaning up gear and rappelling down, and we were all breathing a collective sigh of relief. It had been over forty years since the last Wallface incident. That one took more than a day. This time, luck, technology, and training were on our side. The patient was in the hospital five hours and fifteen minutes after the initial call was placed. No one else was injured in the operation. Not bad for a remote, back country rescue.



## A Note From the Editor—

This edition has been gratifying to work on; gratifying in the sense of being a fly on the wall as committees and individuals work together to put together these wonderful articles. I feel quite honored to witness people contributing and sharing information, working to hone it into a quality product, and never complaining. A lot of work goes into this content, and readers from all over the globe appreciate the efforts.

It strikes me that the contributors approach their efforts, much the same way they approach a rescue mission. They focus, communicate, think creatively, are open to feedback, and are the people you want on your team! The next time you meet someone who contributes to *Meridian*, please say “Thanks!”

I would like to thank Todd Lemein, from Corvallis Mountain Rescue, in Oregon, for agreeing to assist with editing. He has no idea what he is getting into!

Also, please consider contributing your stories, insights, data, images, and lessons learned. They all contribute to making the MRA a great organization.

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The deadlines for sending in articles, photos, and announcements are:

April 1

July 1

October 1

January 1

Contributions can be submitted to Meridian Editor.

# Richard “Dick” R. Pooley

## Sept. 6, 1920 - Oct. 26, 2015

*President’s note: It is often said, in the world of search and rescue that we stand on the shoulders of giants. We have lost a giant this fall; a visionary, a gentleman and one of the founding fathers of the MRA. May he find peace.*

*A memorial service celebrating Dick’s life will be held January 30, 2016 at the Trinity Cathedral in Portland Oregon. More details will be announced as they are finalized. At the family’s request donations in Dick’s honor may be made to the MRA or the MRA Honor Guard.*

Dick was born in Haverford, PA to Richard Williamson Pooley and Margaret B. (McIntire) Pooley. He had one older brother, Bob who died in the 1960's. Dick's grandfather founded the Pooley Furniture Company in Philadelphia. The family moved to Victoria, BC, in 1928. In 1937, after the death of Dick's father and grandmother, Dick moved to Hood River, Oregon to live with his uncle, E.R."Ted" Pooley, an emerging Hood River fruit grower who owned Pooley Orchards. Dick returned to Victoria in 1938-1939 to finish his preparatory schooling at Brentwood College. In 1939, he went back to Hood River where he became interested in radio. He received his first amateur radio license that year, operating as W7HUY. During his time at Hood River he also became interested in mountaineering.

His first climb of Mt. Hood was July 17, 1939 on the Cooper Spur route with a climb organized by the American Legion. Dick moved to Los Angeles later that year and attended National Radio School for 18 months, followed by employment there with RCA Communications. He returned to Hood River in 1940 to work for KODL in The Dalles, OR. There, he met Paul Walden, chief engineer at KODL, and they became lifelong friends. Dick remained in Hood River, working for KODL, except for a short time in Pendleton, OR where he and Paul helped to build radio station KWRC.

He joined the Navy, in May 1942. After his basic training, he completed further Navy radio technician training in Oklahoma and Texas, (1942-43). Afterward, he was stationed at Moffett Field, in CA, before shipping to the Fiji Islands, and eventually to Espiritu Santo Island, in the South Pacific. There, he repaired radios for the four air bases of each branch of the armed forces. In 1944, he was transferred to Naval Air Station Pasco, in WA. It was at Pasco that he met his future wife Dorris Clifford, a Navy air traffic controller. He was discharged from the Navy in January 1945 and married in June 1946. He served in the US Navy Reserve until 1951.

Following his service in WWII he attended Oregon State College, graduating in 1949, with a degree in Electrical Engineering. His first job was building the radio station KBKW in Aberdeen, WA. In 1952 he moved the family, (now two children) to Portland, OR, to work for KPOJ radio. Tektronix hired him in 1955, where he spent the remainder of his professional career, retiring in 1986.

Dick scaled all of the Northwest’s major peaks and many lesser peaks on hundreds of climbs over 50 years of active climbing.

He joined the Hood River Crag Rats in 1946 and was a life member. In 1953, he joined the Mazamas and served in many capacities including work on the executive council, as vice president, on the climbing committee, and as mountain rescue director. In 1955, he was instrumental in forming the Mountain Rescue and Safety Council of Oregon, (MRSCO). Between 1955 and 1961, he served two terms as its education chair, one term as vice president, four terms as President (1958, 1959, 1968, 1969), and one term as Jr. past president. In addition, he joined Wy’east Climbers in 1956, and served two terms as secretary, and one term as the president.

*Dick Pooley, on one of his last trips to Cloud Cap Inn, on Mt. Hood, Oregon, on September 28, 2012. Photo by Laurie Clarke.*

Then, in 1959 he was a charter signer of the constitution of the newly formed Mountain Rescue Association, (MRA). He was elected to be the first president in 1959, and was reelected in 1960. Shortly after this, he became a member of the American Alpine Club. This was followed by his active participation on the Mt. Hood Ski Patrol from 1963 to 1984.

He worked diligently as the Project Engineer on the Silcox Hut restoration project on Mt. Hood, in Oregon, putting in thousands of volunteer hours between 1986 and 1990.

In 1986, he had the honor of being crowned “King Winter” by the Skiyente Ski Club. (Many Mt. Hood legends were also “King Winter” over the years.)

In addition to having a family, a full time job, and being involved with so many climbing and rescue groups, he spent three years as a BSA Cub master for Pack 463, in Portland, OR; four terms as the Professional Engineers of Oregon, Columbia Chapter trustee, and one term as vice president. From 1978-1985, he was on the Oregon State Electrical Board; and served from 1991-1995 on the Oregon State Plumbing Board, both appointments by the Governor.

Amateur radio operating was one of Dick’s passions in life. As W7HUY, he was active on the air from 1939-2012; and especially active on the air when his increasing years caused him to retire from mountaineering and skiing. He worked every country in the world, received numerous awards and was an ARRL life member.

Dick's life was filled with tens of thousands of hours of volunteer work. He gladly gave of himself, volunteering time and attention to others, with many lives saved along the way.

He is survived by his son William Pooley, of Aloha, OR, and his wife of 20 years, Carolyn Pooley, of Battleground, WA. There are no grandchildren. His second son, John Pooley, passed away in 2004 and his first wife, Dorris, passed in 2013.

After Dick's passing, his son Bill was going through Dick's records and found this letter sent in April 1959, shortly before the MRAs incorporation at Timberline Lodge, at Mt Hood, Oregon in June of 1959. It proposes four names for the new organization. As Bill wrote: "the rest as they say is history." It is our history.

MOUNTAIN RESCUE & SAFETY COUNCIL OF OREGON

April 27, 1959

Dear Council Members:

Enclosed is a proposal for a Regional Mountain Rescue organization with the suggested names as follows:

Mountain Rescue Association
North American Mountain Rescue Assn.
American Mountain Rescue Assn.
National Mountain Rescue Assn.

As your rescue director, I am a representative of a rescue unit in Portland, namely the Mazamas. I represent this club when so directed by the Mazama Council on affairs relating to our participation in activities of Mountain Rescue & Safety Council of Oregon (MoReSCO).

This proposal will be brought before a scheduled Ad Hoc* regional meeting on Saturday, June 6, at Timberline Lodge, during the Mountain Rescue Spring Training Conference. Various rescue units and organizations from throughout the Northwest will be represented.

The need for a loosely-organized regional group became apparent last year when members of Mountain Rescue and Safety Council of Oregon, of which the Mazamas are a member, questioned members of the Mountain Rescue Council relative to the use of the MRC patch, which is in common use between the two groups. Two meetings, held in Olympia during the winter by representatives of the various rescue units throughout the Northwest, indicated that it was possible to bring about a settlement of the different views shared by the delegates on questions of this type. Unfortunately, since the representation was on a purely volunteer basis, the conclusions reached merely represent a consensus of opinions by the delegates present and does not in any way bind the organizations other than to a so-called "Gentlemen's Agreement."

Some of the delegates of this "Ad Hoc" Regional Committee were also those who have been seriously interested, over the past several years in forming a regional mountain rescue organization which could unite the various rescue units and organizations under an elected board of directors.

Such a group would function with representation from the various units throughout the Northwest. It is felt that the area such as that comprising Oregon, Washington, and British Columbia could form a so-called Cascade Region, meeting together and working to solve mutual problems of these states having areas of operation in which similar rescue conditions are encountered. The proposal placed in your hands at this time has been drawn up by lawyer, Paul Williams (a MRC member) of the firm Williams and Morris, Seattle, and has been worded to include the basic structure so that if the occasion eventually arose, it would be possible for growth into a national organization. It is with this in mind that the Enabling Clause as noted in Article XIII, Section 1 is included.

Please give this proposal some consideration so that I may be advised of your particular feelings at the forthcoming council meeting on May 11.

Respectfully,

Dick Pooley

Richard R. Pooley
Mazama
Director - MRSCO

* Ad Hoc with respect to this (Particular thing) up to this time.

# Photo Gallery


*Irish Coast Guard Helicopter, County Killarney, Ireland. Photo by Laurie Clarke.*


*No explanation needed. Every year, people are pulled from what is beyond the sign.*

*Carrauntoohil, in Killarney Nat'l Park, County Kerry, Ireland. Photo by Dave Clarke.*

# Show your support of your team!

## Outfit yourself with goods from the MRA store.

## Log on to the MRA website, and place your order!

**SHOP HERE (Members Only)!**