

## **Exploration, Science and MRA Teams**

**-MRA Teams Explore Mount  
St. Helen's Glacial Caves-**

**-Mission Data Collection Updates-**

**-ICAR at Lake Tahoe-**







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ASSOCIATION

## Fall 2014

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Cover photo by Eric Guth.

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## Exploration, Science, and MRA Teams from the Northwest

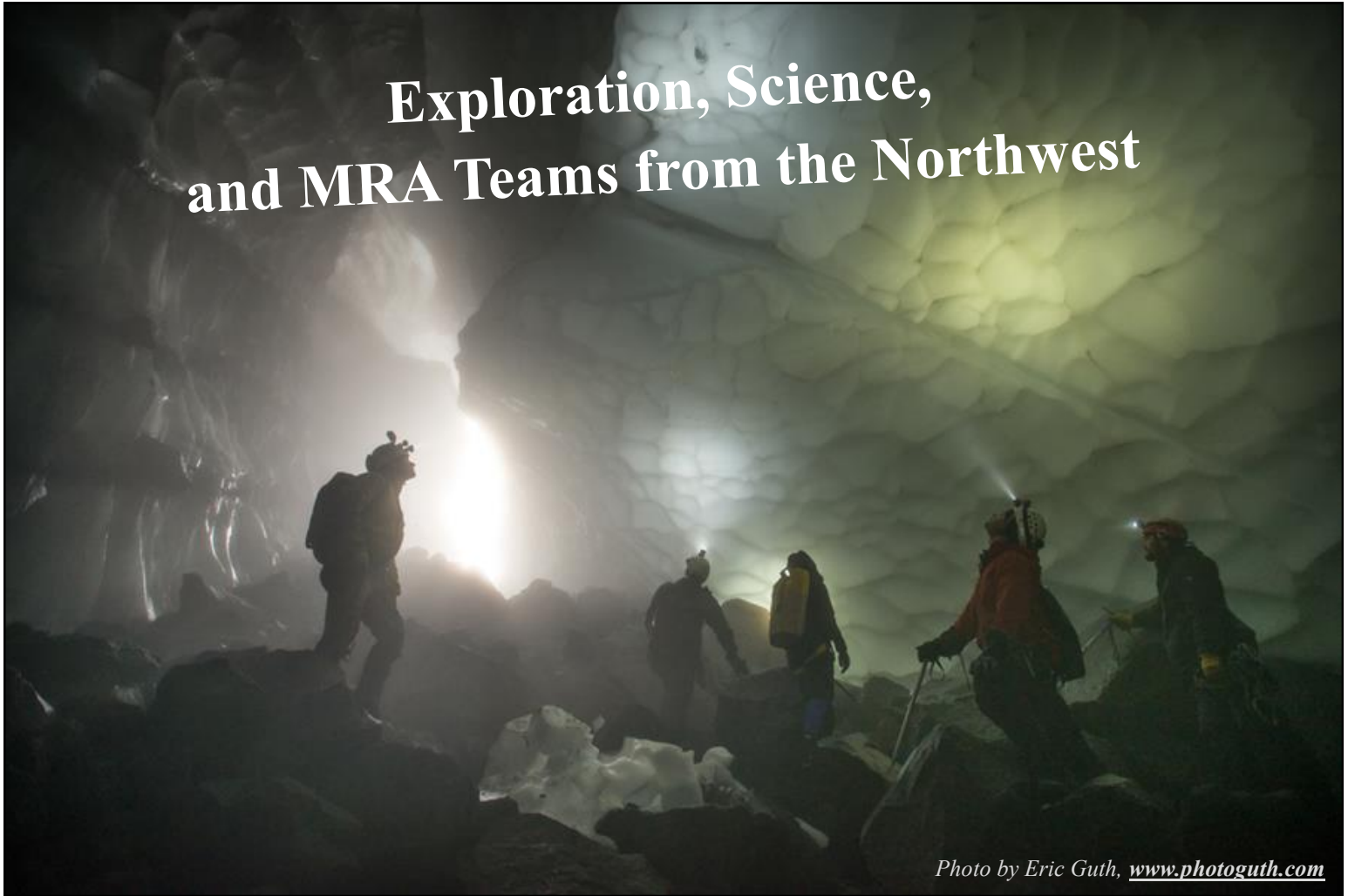


Photo by Eric Guth, [www.photoguth.com](http://www.photoguth.com)

By Craig McClure, Deschutes Mountain Rescue Unit

In late June of 2014 a team of scientists, cavers, and mountaineers ventured into the Crater of Mount St. Helens for a week. The team of twelve had representatives from four northwest MRA teams. Below is one team member's interpretation of their story.

Mission: to access, map, and document part of the unexplored glacial cave system in the Mount St. Helens crater.

After months of planning, permits, and occasional spousal skepticism—yup, we were going to camp in an active volcano and seek out ways to crawl deeper inside—we met at a locked gate to begin our adventure. Several miles down a side hill “road” shoveled into a disagreeable series of shale ridges we found our trailhead and LZ for gear staging. We staged nearly 1000 lbs. of expedition, documentation, and scientific gear for later sling load lifts, by helicopter and made for the trail. Two members of the Oregon Public Broadcasting (OPB) film crew would fly in later in the day and meet us at our campsite leaving a chipper group of ten to push up the mountain; through the eruption breach, up the moraine, under the boulder spitting black glacier, up the crater glacier, and to our camp nested between the 1980 lava dome and the glaciated and growing, new dome. (The USGS has asked that we be purposely vague about our off-trail route and access to the crater interior.)

Contrary to my preferred method of climbing in which every vertical foot gained is greedily held, we managed to climb, descend, climb, descend, lather, rinse, and repeat for most of the day. After reaching camp I could speak for the whole team when I say we'd have climbed it two or three times for the privilege of standing where we were. At this elevation and aspect we were looking north over the old dome and through the breach. Spirit Lake spread out below us and Mt. Rainier highlighted the horizon as we were surrounded by 1000 feet of crater rim rising around us for 300 degrees.

For background, the Mount St. Helens Crater is a working USGS laboratory normally limited to only USGS employees. It is closed to the public and we were the only group permitted to enter and camp. It is an area ripe with objective hazards and we found ways to experience nearly all of them. Volcanic gasses, constant rock fall, open moulin (vertical shafts in the glacier), avalanche, and crevasses. This list of hazards paired with the necessity for on-site rescue capability during the cave exploration is why we required such a strong contingent of MRA team members. The baseline level of trust and cooperation because of our joint association in MRA was clear and a true pleasure. Represented on the volcano were Corvallis Mountain Rescue (OR), Deschutes County MRU (OR), Portland Mountain Rescue (OR), and Volcano Rescue Team (WA).

***“It is an area ripe with objective hazards and we found ways to experience nearly all of them.” - Craig McClure***



The team roster was as follows:

- Brent McGregor, OHDG, National Speleological Society (NSS): Base station communication and logistics
- Eddy Cartaya, NSS, PMR / Deschutes MRU: Expedition IC
- Scott Linn, NSS, Corvallis MRU: Expedition Survey lead
- Neil Marchington, OHDG/NSS: Survey team and collections
- Craig McClure, Deschutes MRU & Crackerjack RS: Logistics, Medical and Safety Officer
- Jared Smith, Volcano Rescue Team: Route guide and underground rescue leader
- Iain Morris, Portland Mtn Rescue: Above ground rescue leader
- Dave Clarke, Portland Mtn Rescue: Hazmat advisor and rigging (& lots of logistics!)
- Barb Williams, Deschutes MRU: Survey team
- Dr. Woody Peeples, MD, Deschutes SAR: Expedition Medical Officer
- Eric Guth, Lindblad Expeditions-National Geographic: Photo documentation
- Ed Jahn, Oregon Field Guide, OPB: OFG Producer
- Todd Sonflieth, Oregon Field Guide, OPB: OFG Camera

Day two was the first of three days of planned cave surveys. In order to start we had to ferry about 300lbs of gear up the right arm of the Crater Glacier. We had ropes, anchors, sked, OSS, three SCBA units, gas monitors, topside shelter, cave phones, survey equipment and camera gear. By 11:00 a.m. we had bomber anchors in place over the first hole and one man on rope positioned to lower a gas monitor. The air tested clear and he descended to the bottom. Via our cave phone link (wired voice power phones) he reported up with an all-clear and the rest of the initial survey team dropped in. With an hour wait to the scheduled check in time the surface team set up shelter and lamented the lack of foresight to bring a deck of cards. Just prior to the scheduled check in time we heard voices and the team popped out of a different hole higher up on the dome. They were linked, and there was a walkout. Having a walk-able entrance immediately lessened many of our safety and extraction concerns and we swapped jobs so the surface team could get some underground time.

"WOW." I don't use that word for lack of vocabulary but because as the first one down and the fifth human to ever stand there, I heard each member of my team say "Wow." repeatedly and reflexively as they dropped into the cave. Other normally overused words suddenly had real meaning and power. "Awesome." "Unreal." "Fantastic." "Humbling." Echoed off the walls of 100ft tall ice caverns while we slowly picked our way over the rocks and ice and up into the glacier. An hour later we joined the surface team and after a short jaunt to route find for a future trip to the top of the dome, we repacked our gear and left the newly named "Godzilla" hole.

Day three started with more great weather and we worked our way back up the gear cache at our second survey site. This day, the plan was to survey another cave network of presumably linked entrances on the right arm of the glacier. The rescue team set anchors and access lines at the center pit and the survey team scouted a safe route through a small crevasse field to the upper entrance.

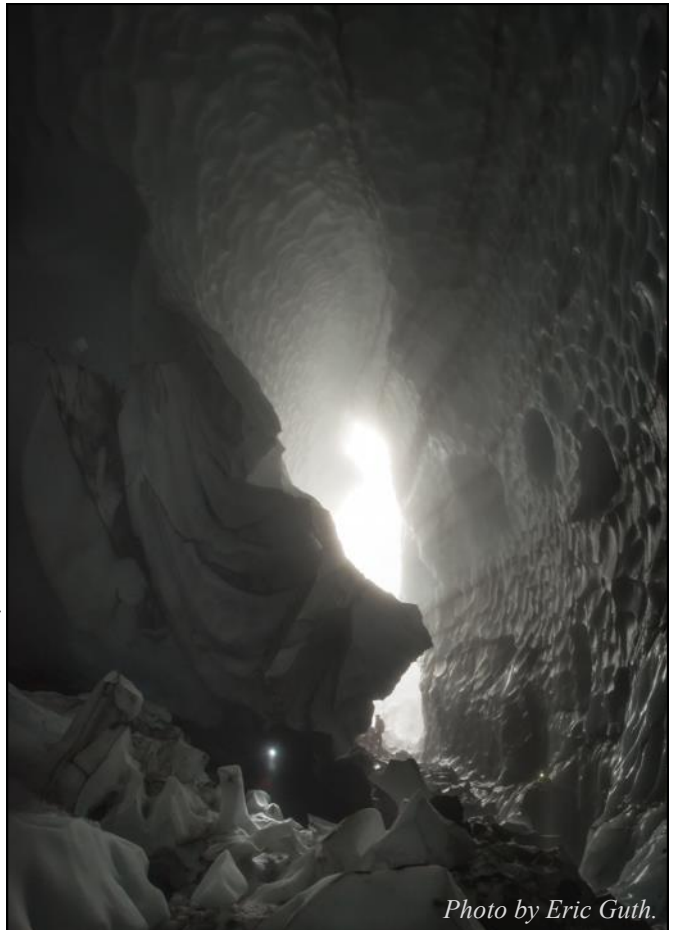
This passage proved much longer and a partial survey took most of the day. While very different than Godzilla, it was equally as spectacular with narrow squeezes and winding passages; and where the doctor and I inadvertently found a new route. There were deep slots, and a large cavern contouring down steeply under the glacier and ending in an opening that looked out over our camp and Spirit Lake.

Day four opened with a lowering cloud ceiling and reports from our in-town coordinator that we were losing our weather window to fly gear and the film crew off the mountain. Sat phone calls to our pilot confirmed this and we prepared to modify plans and shorten our trip. Getting off the mountain wasn't an easy hike and rain or low visibility could make it treacherous. While part of our team consolidated camp and prepared for a possible helo lift in the afternoon, a survey team went back up the glacier to tick off a few more objectives and take advantage of the likely end of our good weather. While weather forecasts for inside the crater proved nearly upside down and backwards the trend of deteriorating weather continued and the flight was grounded.

Plans were made to cache gear on the mountain and hike out the following day if needed. During the night, a *significant* wind event blew our tent away and sent four of us exposed and scrambling for shelter. We spent the night in what we called "the igloo," a natural domed firn cave 1500 sq. ft. in size at the edge of glacier. Gear sharing, teamwork, and our remaining hot meals made for a somehow pleasant but damp night.



*Photo by Eric Guth.*



*Photo by Eric Guth.*



*Photo by Eric Guth.*

In the morning with gear compromised, worsening weather, and an even worse forecast, we made the decision to cache all non-essential gear and hike out light and fast. The rains and snowmelt had swollen a creek we crossed on the way up into a small, fast moving river. An engineered rope assisted crossing and athleticism brought us across and we arrived back at the trailhead with zero injuries, some wet boots, and packs full of damp gear impregnated with ash and pumice that I'm still finding in my pack and in the screw gate of every carabiner on the rack.

Five days later, three of us returned and with the help of our pilot, Pete, removed every piece of gear and swept the camp for any lost or forgotten items. The camp and glacier were left as we found them.

Rock fall, crevasses, wind, rain, sulphur gasses, getting coked in glacial caves, food poisoning (I spared you all the details on that.) When do we go back?

An excerpt of the trip summary from our trip leader Eddy Cartaya:

**“Conclusion:** The expedition was a big success, with our main objectives met. We confirmed that there ARE several systems of large and very significant glacier caves formed by both the melting actions of rising geothermal heat and steam, as well as some hydrological action running them downward. It is a unique formation process with both gas and liquid water forming caves in opposite directions, up and down. A total of 1,412.22 feet of cave passage was mapped to a grade 5 standard; both caves were mapped with atmospheric data, 2 seedlings collected, and several rock samples collected for analysis. No one was injured, and a lot of experience was gained on how to approach these unique caves and study them safely. Furthermore the general layout of the glacier and the major cave entrances are now known and marked. This will make future survey trips much quicker to initiate.

Our other objectives of safety and leaving this sensitive area site as clean and undisturbed as possible were also met. There is nothing completely “safe” about an active geothermal area or an evolving alpine environment—we encountered rock falls, snow bridges, severe weather, and the usual hazards of being in a remote place. We also recognized the potential for noxious gases, but determined that, at least in the area of our camp and caves we studied, that there was no bad air. All that said, our team was experienced, aware, and equipped to mitigate and avoid these safety concerns. Our team also respected this special place by using camp toilets and practicing Leave No Trace back country guidelines.”

To see Oregon Public Broadcasting's show on the exploration click here: [Discovery on Mount St. Helens](#).

*Photo by Dave Clarke.*



## Mission Data Collection Update

By Paul Doherty, PhD. Paul is the Technical Lead for the ESRI Disaster Response Program.

In April 2014, the Mountain Rescue Association began a rollout of a mission data collection system that uses a form and map for data entry. This system uses ArcGIS Online as a platform to support the back-end database and the front-end application. The [Esri Disaster Response Program](#) subsequently released a prototype application to support this project and begin data collection.

Based on feedback from the Mountain Rescue Association, this prototype has informed the release of a web mapping application known as the GeoForm that can be configured for a wide variety of simple structured geo-enabled data collection, read [this blog](#) for more details.

### Getting Started

- 1) If you have not yet logged into ArcGIS Online, have not read an invitation email, or are having difficulties signing-in please contact Monty Bell ([rescue89@att.net](mailto:rescue89@att.net)) as soon as possible.
- 2) To use the new GeoForm all you need to do is go to this website <http://bit.ly/MRAGeoForm> and follow the instructions.
- 3) For a more detailed explanation of how to use this form, watch the first training video on this playlist: [Mountain Rescue Association - ArcGIS Online Videos](#). You can also explore the other videos provided here to begin using ArcGIS Online for other search and rescue workflows.

### What has changed?

- **Simplification:** Since the start of the project and the [last Meridian article](#) was released, both the process for entering data has been simplified with fewer fields and a cleaner more responsive interface. You no longer need to go to the MRA Home Page to login and the older form prototype has been replaced.
- **Participation:** Over 80% of MRA Team representatives have logged into their ArcGIS Online account and 350 missions have been entered into the system.
- **New Features:** The MRA GeoForm has been configured with some new additional capabilities.
  - A simplified date picker for entering the mission date
  - Dropdown lists can be searched more quickly by simply starting to type the word you are looking for
  - The addition of UTM and USNG as acceptable formats for selecting location
  - You can now expand the map in the GeoForm to full screen to more easily see the area around your location of interest
  - Support for offline editing: If you open the form and begin entering data, you won't lose your work if you lose Internet momentarily (just keep the form open and when you make a connection to the internet the data will sync)
  - Future improvements will include a "Review" mode so you can see previous mission entries and additional usability enhancements that come with the GeoForm template

Above is a preview of the [Operations Dashboard](#) configured for monitoring the progress of mission data collection. Summary statistics can be monitored in real-time and presented to stakeholders by opening the [MRA Dashboard](#) in the Windows App or [via the browser](#) (you will be prompted to sign-in).

Through this initiative the Mountain Rescue Association can more adequately describe where and when trained volunteers are offering their services. This is very important for securing more support for the entire organization as well as individual teams. We are pleased with results of this new project so far and appreciate your participation in making this mission reporting system the first of its kind. The Mountain Rescue Association Statistics Committee will discuss potential improvements to this workflow and is looking forward to your feedback and increased participation.

### Why Keep Stats?

*"Having accurate stats helps with fundraising at the national level. It lets the people beating the bushes for the MRA tell would-be donors how important the MRA is."*

*"At the national level, a compendium of good stats also gives the MRA credibility. Conversely, if a national organization can't even say how many missions it's been on, it's hard to be seen as the go-to resource for search & rescue."*

*"Most sheriffs want some sort of statistics from their SAR teams. ArcGIS is a tool that will enable teams to generate data with a little less effort." Art Fortini*

The image displays two screenshots of the Mountain Rescue Association's data collection system. The top screenshot shows the 'Missions GeoForm' interface, which includes a header with the MRA logo and the title 'Missions GeoForm'. Below the header, there is a section titled '1. Enter Information' with fields for 'Team' (a dropdown menu), 'Number' (a text input), 'Date' (a date picker), and 'Total Hours' (a text input). A small instruction box says 'Enter the mission number that your team or agency uses to make it easier for cross-reference.' The bottom screenshot shows the '2. Select Location' section, which includes a map of North America with several blue location pins. Above the map, there are buttons for 'Current Location', 'Search', 'Lat/Long', 'USNG', 'UTM', and 'Locate Me'. The map shows the United States and parts of Canada and Mexico.



## MESSAGE FROM THE PRESIDENT

This September my team, Portland Mountain Rescue (PMR) started our training academy for a new group of trainees. Watching their enthusiasm and pride led me to reflect on my own experience, years ago, as a new mountain rescue volunteer and how much I've learned since then. It's been quite a journey for me. Along the way I've been taught and mentored by some truly outstanding people. In fact I can say that while being able to help a person in need is a big reward, being a part of PMR and the MRA has been equally rewarding. The learning, teaching and dedication to our mission is an inspiration for me. I hope that your experience with the MRA is equally valuable.

Speaking of learning and teaching, I recently attended the International Commission on Alpine Rescue (IKAR) Congress which was hosted by the MRA at Lake Tahoe. The Douglas County, NV Sheriff's Search and Rescue Team did an outstanding job of organizing the event. The IKAR Congress is a forum for the exchange of the most up to date mountain rescue knowledge from around the world. Even if you weren't able to attend you can still learn from the IKAR reports from the four sub commissions: terrestrial rescue; air rescue, medical and avalanche which should be on the MRA website soon. Meanwhile you can enjoy the article by Tom Wood which provides an overview of this year's Congress.

Next month the International Technical Rescue Symposium (ITRS) will convene in Colorado, on November 6-9. This is another venue for the latest and greatest in SAR knowledge. The MRA has recently renewed our commitment as an ITRS co-sponsor. You can learn more about ITRS and view the archives of past year's presentations at [www.itrsonline.org](http://www.itrsonline.org).

Plans are in the works for next June's MRA spring conference in Estes Park, Colorado. Yet another great place to share knowledge with other SAR professionals.

If you aren't able to travel to one of these events our MRA website has a variety of training programs as well. You can find them at [Mountain Rescue Training - Mountain Rescue Association](#). You can also check out the archives of our webinar series at [Webinar Training - Mountain Rescue Association](#) and look for new webinars each month.

So by now I hope my ramblings have an obvious thread. The MRA is working to create world class opportunities for you, our members, to further your SAR education. About that enthusiasm and pride, yeah, I still feel it; I hope you do too.

Dave Clarke  
MRA President

### Help Wanted!

**MRA Webmaster**, this job entails making updates and performing minor maintenance on the MRA website. The time commitment should be about two hours a month. Contact [Neil Van Dyke](#) for details.

**Tee Shirt Designer**, Our small stores is looking to create some new offerings. One of them is a tee shirt for MRA supporters. The design parameters are wide open except that it should clearly show that the wearer is a MRA supporter, not a MRA member. The winning entry will receive \$50 credit at the small stores. Designs can be submitted to [Cindy England](#).

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## ASTM Standards History

*By John McKenty, Montrose Search and Rescue Team Los Angeles, California*

Ten months ago Dave Clarke asked me to write a short history of ASTM F32 and how the MRA has been involved with the committee. It has taken a while for me to complete that request. Like standards development- this has been a slow process.

The American Society for Testing and Materials, now formally ASTM International was founded in 1898 by steel manufacturers and railroads to write specifications for steel rails. During the 116 years since the scope has expanded from standards on basic commodities such as steel, rubber, oil, & cement to consumer products such as business machines, food service equipment, fences and snow skis to environmental and service standards. Over 12,000 standards are published each year. According to ASTM "Membership includes more than 30,000 technical experts from 150 countries." There are currently 143 technical committees developing standards on a wide range of subjects. Those that are probably of the most interest to MRA members are F32 on Search and Rescue, and F30 on Emergency Medical Services. There was a subcommittee on Climbing and Mountaineering equipment as part of Committee F08 on Sports Equipment but it went inactive and it's standards are now part of F32.

The standards are created through a voluntary consensus process. That means that the standards are written by members of the committee and through a voting process are modified and eventually approved by the committee and the society as a whole. You don't need to be a member of the committee to write or comment on standards but you do need to be a member to vote. Standards come in different types: test methods, specifications, guides, and practices. That is important to know because while specifications and test methods are very precise a standard guide or practice is less so.

How did ASTM get involved with search and rescue? In the mid eighties The National Association of Search and Rescue (NASAR) was considering developing standards in conjunction with the work they were doing for FEMA. They already had some training courses that some referred to as a "standard." Just as the Mountain Rescue Association had some practices that some considered a "standard." Upon closer review none of those would really qualify because of flaws in their wording but especially their development process. Rather than create their own system the NASAR Board invited ASTM to consider a new activity to write standards for search and rescue using their tried and true system. Announcements of the proposal were sent to hundreds of key individuals and organizations who might have a stake or interest in the process and an information meeting was held at ASTM headquarters in Philadelphia in 1987. A second meeting was held in St. Louis six months later and from the interest shown at those meetings it was determined that there was a need and interest so committee F32 on Search and Rescue was formed.

This might be a good time for full disclosure. I have been a member of a MRA team for over 40 years. In that time I have attended many MRA and other SAR conferences. I have long recognized that there is more than one way to perform a rescue. A team's operational area, membership requirements, history and traditions as well as their legal authority all can play a part in how they do things. I also know that some methods work better than others and that not every team has the benefit of the exposure to others that I had. My team is one of 6 MRA teams that work under the authority of a Sheriff's department in a very populated area, with a high call volume, and while we enjoy a considerable amount of latitude in how we operate we also know we are never far below the radar. I heard about the ASTM proposed activity and figured if someone was going to be writing standards I should at least see what it was all about and went to one of those first organizational meetings. I have been part of the process ever since.

There were over a hundred people at each of the semiannual meetings for the first few years. Cavers, government agencies, training companies, equipment manufacturers, specialized SAR enthusiasts such as trackers, divers and dog handlers all were represented. The largest single contingent was from wilderness SAR specifically, the Mountain Rescue Association. As time has gone by the attendance numbers

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have gotten much smaller but MRA members still comprise the largest subset of our membership and have always held the majority of committee leadership positions.

The ASTM process is what is termed as *full consensus*. That means that anyone can contribute to the standard by being on a task group, suggesting wording changes or if that doesn't satisfy them, voting negative on the proposal until they can live with it. Unfortunately there was a small group of MRA members who were opposed to any idea of standards and who joined the committee to do just that. I hate to think about the number of hours we discussed descriptions of items that could be found in most dictionaries to resolve a negative vote. Eventually we all learned the process and ASTM made both the promulgation of standards and dealing with negatives easier with procedural changes that took us from balloting by mail to online voting.

Some of the more traditional test methods and specifications standards for hardware and equipment seemed to pass through the process with relative ease and are widely used and referenced in other industry documents. Other proposals related to training, and qualification levels of individuals had a harder time with the approval process. Part of that was the learning curve for the standards writers. Unlike most other ASTM committees F32 is made up almost entirely of volunteers. All committees must have what is called "balance" meaning it has to have more users than manufacturers but almost 100% of our committee is users. In fact even the few manufacturers on the roster are search and rescue volunteers in their spare time. As volunteers we are participating "on our own time and our own dime" which limits how much of that time we can spend learning the process and writing standards.


I would also hope that in those years the concept of standards became less onerous and that those opposing them realized that no one was going to come into their area and say how they had to do things. During that time there have been other changes to search and rescue. The Federal Emergency Management Agency (FEMA) began to classify resources and they want to cite existing standards whenever possible. In many cases the slow, sure, voluntary full consensus ASTM process worked against us so FEMA opted to try the less appropriate NFPA standards if that was all that was available. The bright side of that was that for a short time FEMA did fund a consultant to help us with the writing of some standards to have some appropriate alternatives for their use.

Where are we now? A few years ago the Committee chair proposed co locating F32 meetings with other industry events to make it easier for participants to travel as well as to encourage participation by others. Currently F32 meetings are after the International Technical Rescue Symposium (ITRS) in November and the MRA/NASAR conference in June. While the FEMA funding has dried up for the present there was a lot of headway made on several training standards. Many of the original members of the committee have moved on so we need new members to review existing standards as they come up for their mandatory 5-year reapproval cycle. As was mentioned earlier the process has been simplified. You don't need to attend meetings to write or comment on standards. There are templates to guide you through the process and ASTM has editors who can help with the nuts and bolts of formatting and even correct your grammar and spelling.

The idea of standards can be intimidating to many but as I said earlier, they will never be in the detail that will define how you do a rescue. But they can provide a guide for organization, training, equipment and who knows, maybe with the input of many other people there are some things that can help you perform your operations easier, faster or safer.


For those of you who are attending ITRS in Fort Collins why not delay your flight home until Monday and join us. For those of you not attending ITRS you should.

If you don't have the time on Monday, or if you are local to the Denver area you can come just for the ASTM meeting on Sunday afternoon. Anyone willing to participate can join the committee. Voting membership costs \$75 per year, which is good, no matter how many committees you want to be on. If you don't want to join you can still participate by requesting to be on a task group working on any number of standards activities. Go to [ASTM.org](http://ASTM.org) or contact Staff Manager Tom O'Toole, [totoole@astm.org](mailto:totoole@astm.org) for more information.



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## Using Distance Alerts to Further the Search Effort

*By Marcia McMahon, Coordinator, Search and Rescue Dogs of Colorado*

The Rocky Mountain Region is famous, of course, for its unparalleled mountains, valleys, and foothills with their corresponding variations and weather. People love to come and climb, hike, etc. and sometimes they get lost in the process for whatever reason.

Searches in this type of terrain can quickly expand into miles and miles of area should the subject not be found right away, not be noticed missing for several days, not have left any information as to their travel plans, etc. In these cases, clues become terribly valuable.

This article will explore the training and use of Scent Discriminating Airscent Dogs and Cadaver Dogs for the purpose of aiding in the search effort to provide clues to further the search. It is to be emphasized that dogs are just one of the many specialized resources that work together to achieve a successful search outcome. When used properly, dogs can and should have a strong impact on the information available for furthering the search.

The thought on searches is all too often that either the dog found the subject or he didn't; and no other information is retained from the debrief. However, dogs can very positively impact every search in one or more of the following ways:

1. Locate the subject.
2. Provide directional alerts in the direction of the subject allowing for successful placement of other dog teams, foot teams, or helicopters in the current or subsequent operational period.
3. Indicate the subject is not in the area.

\*For this article, "Alert" means when the dog enters, reacts to and follows scent and the corresponding body language. "Distance Alert" would be these alerts initiated from a minimum of ½ mile or more from the subject. Well-trained dogs can begin to follow scent from well over a mile away; even farther with nighttime downslopes above timberline or from subjects who have been missing for several days. (Please see maps for examples.)

### Training:

Traditional methods for working search dogs mandate using a grid pattern and working until the dog alerts and finds the subject or comes up with no indications. Using distance alerts, however, emphasizes a much stronger trust of the dog earned by careful training and education. Education is the key here, as the dog is learning to compile his scent information from quite far away, when properly trained, and to work the area on his own initiative if enough scent is present to draw him forward.

This portion will briefly address the progression method of establishing the foundation for proper scent cone work. It will not address the issue of scent discrimination, which the dog should already have learned. It is expected that the dog will always use a scent article or, in the case of the cadaver dog, the appropriate command. Depending on the terrain, time of year, corresponding temperatures, and time the subject has been missing, scent discriminating dogs can be effective for up to 2 weeks, even in the event that the subject is suspected to be deceased, which is almost never a known variable. These dogs can and will give accurate alerts in spite of how many searchers, hikers, etc. are in the area.

### Basic Scent Cone Education:

When thinking about basic scent movement, envision water flowing down rivers—it will follow the path of least resistance. Scent is impacted by wind, terrain, temperature, vegetation, time of year, obstacles, etc. Heat makes scent rise upwards, sometimes causing it to loop up into the air and come down in a different location and flow onwards, bouncing and swirling unpredictably. Cool air helps the scent flow settle into more complete, careful downslope patterns. Then the wind will aggravate or enhance the entire process.



*Photo by Marcia McMahon. Border Collie, Yinnie, analyzing and alerting on scent traveling high.*



*Photo by Jess Brauch. Yellow lab, Freyja, in full blown alert.*



1. Start training with small areas of a specific terrain characteristic with straight-forward scent flow-i.e. down drainage with subject at top, bowl feature with subject higher in bowl, etc. These problems can be worked in a matter of minutes-the scent cone from subject to dog will be continuous from the beginning and immediately workable by the dog. The goal is a find based on a hard hit scent cone.
2. Continue the size of the problem, keeping the scent cone strong and continuous, but vary the terrain style. Always do 2-3 problems of the same terrain type in a row for sequential days so the scent cone work will be similar and the dog will learn the scent patterns.
3. Remember that dogs learn from short problems when a new variable is introduced. Types of problems will include: up/down drainage, cross drainage with subject placement on different sides with different wind directions, intervening high ridges (features) with valley floors, looping culprits such as isolated aspen groves, subjects in trees, cross-ridge problems with scent gaps, etc. The list is endless; the point is to educate the dog and the handler in a progressive sequence, and let the dog educate himself so he will be able to figure out how to work increasingly longer scent cones.
4. As the dog learns, and it doesn't take long, the distance involved can be increased so he is learning to work through scent pools and scent gaps (often confused with scent pools or negatives), interspersing short problems with the long problems to work on sharpening the brain skills and enthusiasm, while adding in new types of scent problems and endurance. Care must be taken to avoid doing too many long problems so the dog doesn't learn to chase scent. Dogs trained on too many blind distance problems will begin to chase the scent and will have difficulties entering the subject's scent pool.
5. Always allow the dog to follow the nose pop. A trustworthy dog is a joy to watch working scent. Encourage him. Dogs need to have the freedom to learn to work scent the way it makes sense to them. If the dog can't put enough pieces together, continue the grid from the location the scent was discontinued and move on through the search area, following the dog as soon as he gets more information and wants to break the grid. As his confidence grows, and his faith in you to trust him, the farther the distance over which he'll be able to work scent.
6. Watch all body language, including scent rolling and grass biting. Learn to recognize deposited ground scent and understand what it means to your dog and how it relates to subject location/activity. Your dog is not messing around when he rolls, eats grass or analyzes the ground scent. These are clues. GPS them. Clues come in packages-note and learn the clue patterns your dog uses while working scent and when he is not in scent.
7. Include all types of weather and times of day/night in trainings. Understand when the dog is working scent and try to understand how that scent is travelling. Avoid the common mistake of calling quick negatives. These can very often be scent gaps. Think positive information and work forward from that location.
8. Most problems should be known problems. This is the only way to understand what your dog is doing, learn to use the clues, and have the confidence to follow him.



*Photo by Marcia McMahon. German Shepherd, Annie, deciding which way to go with scent.*



*Photo by Marcia McMahon. Border Collie, Koert, examining blown and deposited ground scent before picking up subject's trail a little further upwind.*

#### GPS work and direction:

*Google Training Map-The bluish line is the scent cone worked by dog. Dog was working scent the entire time and chose this route. Subject was high up in a rock formation on south side at the "Find" marker. Time of day was 11:00-14:00 on Labor Day. Hot conditions. Strong winds out of south. Notice the geography and how the scent followed the paths of least resistance. Scent was popped up high by rocks and then blown NW.*

The GPS is the key to successful distance work. As your dog works, you will be marking his clues onto your GPS, as well as the track. The fastest way to do this is to carry a small notebook in your radio harness and write down the number of the waypoint with a quick note and compass bearing (if applicable). This will begin in training when your dog starts becoming good at following his cones and his problems increase in size. Things to note especially in training will be scent rolls, nose pops with bearing, grass biting, ground scent analysis, etc. As you become more of a team, you will have your own clues that you recognize that are important to putting the scent picture together to try to determine the direction and location of your subject. I.e. ground scent is particularly important to one of my dogs. He can pick his way right

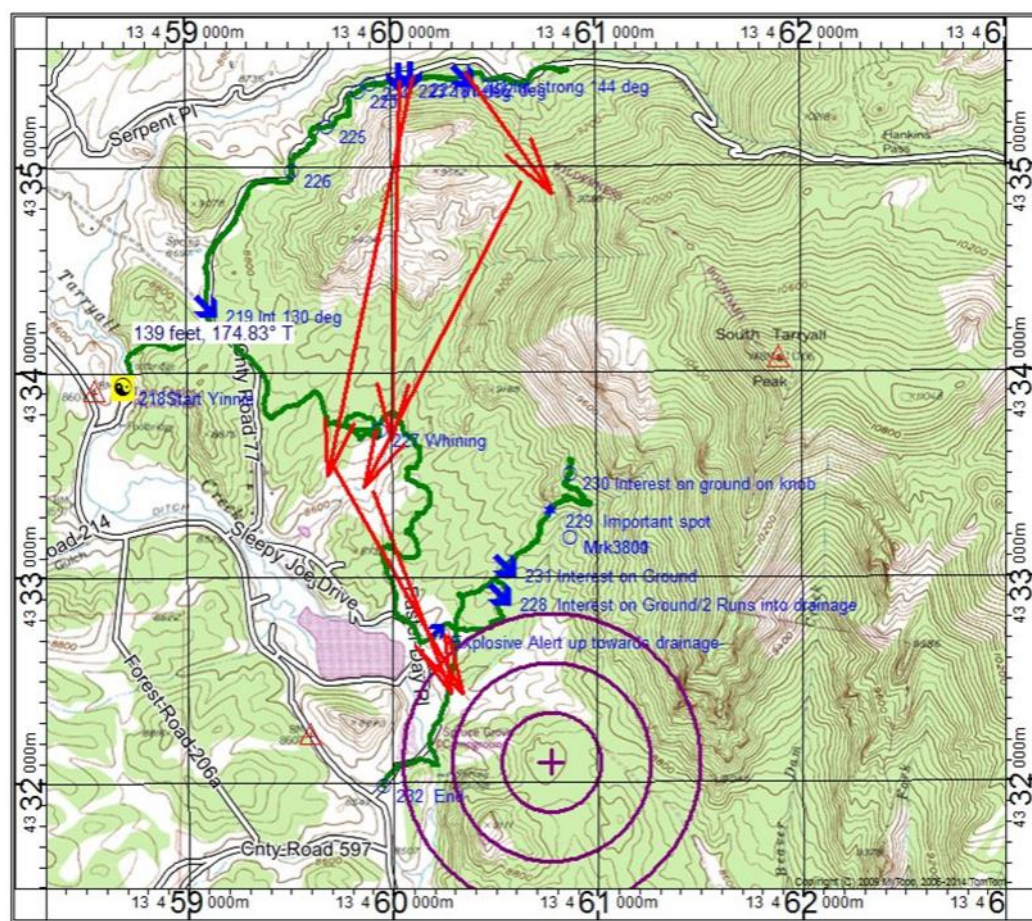


over a ridge by analyzing the line of ground scent that has deposited and the strength. Excessive ground scent can often mean the subject is fairly close. Why is the scent depositing so heavily in one spot? For relatively recently deceased subjects, the ground scent deposits can be extremely strong; some might misread the dog's interest as trailing when it is actually "scent pecking"- trying to get a direction towards the subject to get into an airborne scent cone. At night, the scent puddles can be quite strong and occur frequently en route to the subject.

At home, you will download the tracks and waypoints onto your mapping program, adding a description of each waypoint and directional arrows for alerts, as well as the start and find locations. Draw lines out from these waypoints according to the bearings and see how the triangulation flows. How do the alert directionals line up with the find location? What terrain features are affecting direction and scent flow? For your training maps, all this information should be saved and printed onto topographical maps so you can study the scent flow patterns as they are affected by terrain and visualize the dog's style of working through the issues caused by terrain, wind, subject placement, etc. By studying the training maps, the handler will learn how to better work through difficult times on searches by hopefully recognizing similar terrain, etc. patterns from problems set up and studied in training so as to achieve a much more positive result on real searches.

Information that will be relayed to I.C. upon debrief for real searches:

The information above is mostly for the handler. When giving the results of your search to base, you will relay only the important information:



*Twin Eagles Mission Map-Excellent example of scent flow following terrain. Green line is dog's path following scent; Blue arrows are locations of original dog alerts with bearings; Attaching orange-red arrows draw out the alert in direction of bearing taken off dog's nose; sequential arrows drawn to follow probable scent flow through terrain. Especially interesting because they all intersect. Purple circles are high probability areas in which to begin to select further search areas towards SE. Subjects walked out of the area SE of the arrows. Search from 23:30-4:00 in September with light upslopes out of SE.*

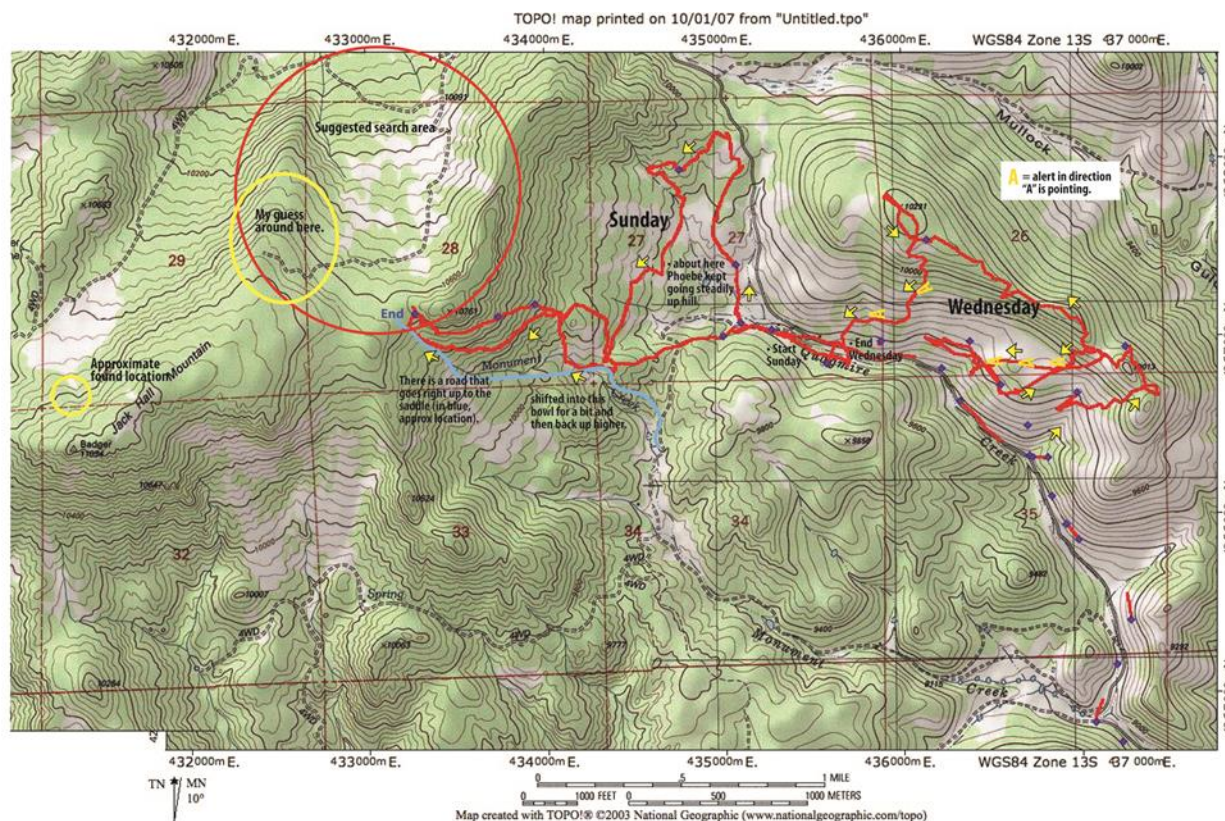
1. Coordinates of dog interests and alerts with bearings.
2. High probability areas according to the above.
3. If interest is high enough while searching, ask for the area ahead to be checked out by ground teams, helicopter, etc.
4. Triangulation of all alerts (particularly if several dog teams bring information back to base) that might point to the high probability area for the subject. Mark the points with bearings and draw the lines well out across your map.
5. What factors might be affecting your information?
6. Do not give excess information. I.C. only needs the information that might directly lead the search forward. Don't over emphasize, either. Misleading the search is a very bad thing.
7. Negative areas, areas cleared, holes that you missed in your area, and POD.



### How I.C. can use this information:

Good information from well-trained, reliable dogs teams can help further the search in a major way. In addition, having a “Dog Team Leader,” or the equivalent, at base to help analyze the dog information and consolidate it all onto one map to look for the areas of dog interests and where they lead can give a good idea as to where the subject might be and assist in a find in the next operational period.

1. Record interests from all dog teams, with coordinates and bearings, onto one base map. Include the cleared areas and areas not searched.
2. Draw lines forward in the direction of the bearings looking for triangulation of interests.



*Cotopaxi Mission Map: Mission map of dog's work and alerts. Subject found at "approx. found location" 1 month later. Winds out of the SW. Red line is the route taken by dog; yellow arrows point in the direction of the alerts. Yellow circle, "my guess is around here," was pretty accurate. Base can consider a wider circle extending in the direction of alerts for moving the search forward. Search during daytime in October. (Map by Paula Bindrich and Phoebe.)*

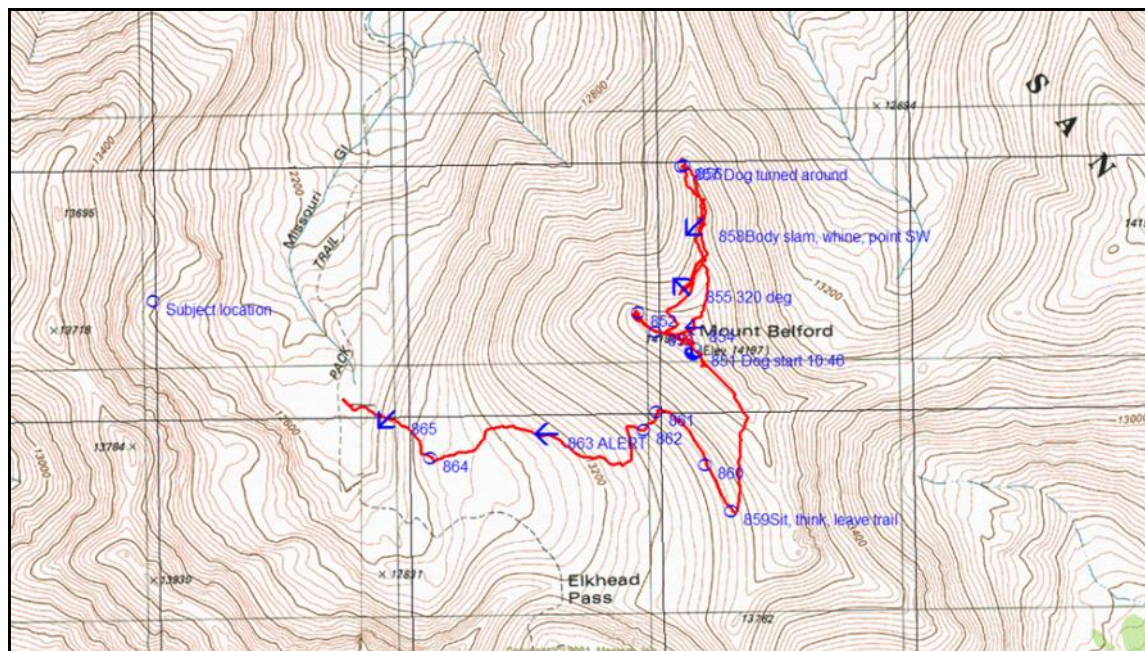
3. If dog alerts appeared skewed, look for terrain features, weather issues, etc. and how those might be affecting the direction of the alerts. (Again, think rivers and how the water runs around the rocks, eddies, etc. when thinking about scent movement through wind and terrain.)
4. Draw the lines well out; find out the strength of the alerts, as lighter alerts with lots of scent gaps can mean the subject might be quite a bit farther away, and circle your high probability area(s). Dogs jumping for scent in the air can mean several things, such as subject is up high somewhere or the scent is having to bounce over a very high ridge, rock formation, etc. to travel across the area.
5. Do not redirect all resources to the area; continue the search as you would normally for any other clues, but do send enough appropriate resources out to the dogs' area of interest to check it out thoroughly.
6. It must be remembered the subject might also be moving which might explain inconsistency in alerts-but direction of travel might be determined by noting the direction of the alerts.
7. In the case of a deceased subject, several issues exist:

\*Scent from recently deceased parties will manifest as fairly strong scent, along with very strong ground scent deposits that might look like trailing, especially when humidity is high, evaporative conditions exist, etc.

1\*Scent from deceased subjects who have been out for several months will manifest quite differently-this type of scent tends to "poof," as well as set up as scent pools in different locations, due to the repeated depositing of scent, from possibly different sites (depending on the condition of the subject, possible burial situations, etc.). Often the scent pool can be stronger than the source. It is critical to research the history of missing persons in the area, including animal activity, if relevant, to understand the entire picture

8. Take note of patterns in the GPS track. A long line with consistent direction followed by a sudden change in course could mean the subject is close. The change in direction might be caused by heavy scent pooling or by intervening terrain that suddenly interferes with the scent and widens the cone. A high probability area in this type of situation could be farther along the original line of scent, possibly inside of the sudden loop or just past it.





Missouri Mission Map-Dog was dropped by helicopter onto Belford southern shoulder; dog immediately went on scent. Worked cone north, then turned around and worked south, with several sit and points towards the Missouri ridge. Scent was traveling along the 13,700' contour line as well as depositing on top of Belford. Dog examined scent (scent-pecking) on top of Belford for quite awhile before deciding to continue cone south and then down the mountain. Scent was extremely "sticky" due to heavy, late snowpack melting rapidly. Winds out of W consistently. Subjects had been in place for 10 days. Subjects located by helicopter on first flight the next morning. Search during daytime in July.

9. Another very important consideration is the wind. When working the dogs early in the morning on a multiple day search, which way was the wind moving during the night? In the Colorado high country, the wind often moves out of the east through the night, which leaves early morning scent deposits well west of the subject. This is especially true in areas with lots of deep, wet drainages. When the west winds begin in the morning, the strong nighttime scent pools will create very strong eddies which might cause the dogs to alert towards the west even though the subject might be well east of the dog's search area. Care must be taken here if drawing a high probability area of the alerts to draw a swathe that will include the area east of the alert in order to cover the possibility of eddies. This type of eddy will often lighten and clear late in the morning. Heavy moisture always aggravates this type of situation.
10. Location of the subject also impacts the strength of the scent-If subject is up high in the wind, scent will be much stronger and easier to follow than that of a subject down in the bottom of a cold drainage, etc.

Again, dogs are just another one of all the wonderful resources available to help in the search for the missing person. However, scent discriminating Airscent and Cadaver dogs well-trained in large area distance scent work can have quite a successful impact on difficult searches involving moderate to difficult terrain in the Rocky Mountain Region.

*Search and Rescue Dogs of Colorado has been serving Colorado since 1983. We take pride in our Regional Standards, which are some of the highest standards in the country, designed to meet the unique rugged requirements of missions in the Rocky Mountain Region. Specialties include Human Remains Detection, Water Search, and Avalanche, in addition to Airscent and Trailing Dogs. All of our handlers are fielding members of their local Search and Rescue Teams. Please visit <http://www.SARDOC.org>.*

*Acknowledgements: Thanks to SARDOC members Paula Bindrich, Phoebe, and Freyja (Alpine Rescue Team), Sabine Johnson and Annie (Park County Search and Rescue), Jess Brauch (Larimer County Search and Rescue), Ann Brown and Monty (Park County SAR and North Fork Fire), Yinnie, Koert and Maui (Park County Search and Rescue) for their help with pictures and maps.*



Photo by Marcia McMahon. Monty, reacting to and following scent cone.



<https://www.facebook.com/MountainRescueAssociation>



<http://twitter.com/MtRescueassoc>



<http://mtrescueassoc.blogspot.com>



## Pain Management in SAR; Is Ketamine the Answer?

*By Will Smith, MD, Paramedic, FAWM*

Your search and rescue (SAR) team is responding by helicopter to a remote wilderness area for a report of a hunter mauled by a bear. As the lead medical provider you are forming a lot of questions, including what would be the best medications to take in order to treat the patient for pain.

Pain management in SAR is required in virtually all operations when a patient has a major injury. All levels of providers must remember the simple basics of pain management: comfort care and PRICE (*protection, rest, ice, compression, and elevation*). The Wilderness Medical Society has developed practice guidelines for the treatment of pain in remote environments.<sup>1</sup> There are several medication options from the basic acetaminophen (Tylenol) to medications generally limited to more advanced providers: opiates such as fentanyl and hydromorphone (Dilaudid), benzodiazepines such as midazolam (Versed), and other options such as ketamine.

Ketamine for pain has proven very effective on the battlefields of Iraq and Afghanistan. The latest Tactical Combat Casualty Care (TCCC) guidelines that have emphasized tourniquets for bleeding control go on to recommend ketamine as the primary pain medication of choice for patients in shock or with significant injuries. Many of the situations we encounter in SAR have direct similarities to battlefield situations with remote patient care and limited patient access. Although there may not be bullets flying, a patient on the side of a cliff has other dangers that limit traditional patient care. Adequate pain control can dramatically increase the operational efficiency of the team as well as provide patient comfort.

Ketamine can be used for moderate sedation in the traditional larger doses and in smaller titrated doses it treats pain and gives some degree of amnesia. Side effects of lower dose are usually limited to difficulty focusing the eyes. This lower dose range also gives a large margin of safety from respiratory depression. Ketamine can be given by several routes, some of which are easy in remote environments: intranasal (IN), intramuscular (IM) and orally (PO), as well as intravenous (IV) and rectal (PR).

Back to our case, the patient had an isolated closed femur fracture from the bear pushing him over a log. Companions scared the bear off, before it was able to injure the patient further. Ketamine was administered in small, titrated doses, and the patient tolerated the ½ mile carry out to the SAR helicopter with excellent results. Ketamine alone was all that was needed to control the patient's pain.

As with most aspects of SAR, having the right tool makes the job much easier. We often have to improvise, but when we can plan for patient care and anticipate pain management, we should strongly consider ketamine for advanced SAR medical providers.



*Photo by Will Smith, Grand Teton SAR.*

### References:

1) Wilderness Medical Society Practice Guidelines for the Treatment of Acute Pain in Remote Environments - online at:

<http://dx.doi.org/10.1016/j.wem.2013.10.001>

Accessed September 20, 2014

2) Tactical Combat Casualty Care Guidelines – online at: [http://www.naemt.org/education/TCCC/guidelines\\_curriculum.aspx](http://www.naemt.org/education/TCCC/guidelines_curriculum.aspx)

<http://www.specialoperationsmedicine.org/Pages/resourcelibrary.aspx>

accessed September 20, 2014.

Will Smith, MD, Paramedic, FAWM

(2014 MRA MEDCOM Article for Meridian)

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All medical articles for the Meridian are reviewed and endorsed by the MRA Medical Committee; however, this article is for general information only. The MedCom makes no representation regarding the medical or legal information provided, and the views expressed do not necessarily reflect those of the MRA.

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

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## Rescuer Spotlight

*Interview with Tacoma Mountain Rescue Member, Jeff Sharp*

To suggest someone for an interview submit his or her name to [Meridian Editor](#).

**Can you tell me what first attracted you to mountain rescue?**

One night I received a call from my first climbing partner's mother. "Brian was caught in an avalanche. Will you help look for him?" I said yes without hesitation and we drove to the North Cascades to meet the mountain rescue teams at daylight. Brian and I had been climbing for four years, but not on this climb. I met members of Skagit and Bellingham Mountain Rescue. The year was 1978 and I was paired up with one of their members and the search began. We found Brian partially buried in the avalanche's runout an hour or two after the search began. Unfortunately his injuries were fatal so we packaged his body and performed a carry out to the trailhead.

I was deeply saddened by the event but the hook was set. I learned a lot about rock, snow and ice climbing in my first four years of climbing. The mountain rescue side of climbing was foreign to me. I wanted to learn everything I could about SAR so I joined Tacoma Mountain Rescue. Thirty-four years later I'm still learning.

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

Everything that I know today! We work in a variety of environments, rock snow, ice, high altitudes, rain, wind and shine. It all involves a large skill set. The more knowledge and experience you have the better you can perform on a mission.

Our team's training was not as organized and comprehensive as it is today. I had to learn some things the hard way. I made a lot of mistakes. Luckily neither me nor anyone else got hurt.

**How do you balance spending time with your family, your job, SAR training and missions, your other interests and finding time for yourself?**

That is the million-dollar question. Since my wife, Fran, is also a member of the team it makes that part simple. We love going on missions together. Work is the tough part. My managers are very supportive of my SAR activities. If I don't have a meeting or a particular deadline I can usually go on a mission. We also spend a lot of time on our sailboat. That can compete with trainings or missions on the weekend. Time is something we never seem to have enough of.

**Looking into the future, what direction would you like to see Tacoma Mountain Rescue, and the MRA going in?**

I hope that we can continue to provide and support volunteer SAR for years to come. We provide a valuable service to the community that sometimes is not recognized by folks. Educating the public; and our sheriffs and parks need to be an important part of our efforts. The MRA is a vital part of the individual team's resources. You can learn a lot by participating and sharing information with other teams at MRA events.



Photo by Fran Sharp.

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

I think it was my first “save.” A young girl tried to commit suicide after she and her boyfriend got into a fight in the Cascade Mountains. First she tried to kill herself by drinking too much. When that didn’t work she cut both wrists—not very effectively, so she jumped off a cliff. In the darkness she didn’t see the tree about ten feet below her. Instead of falling several hundred feet to her death, she only fell ten feet, hit the tree and wrapped herself around the tree and received bilateral compound femur fractures.

When our team arrived she was a real mess. Upset that we were not going to let her die, intoxicated and experiencing significant pain made her a difficult patient. We didn’t think that she would survive the carryout to the LZ and flight to the ER. She started to sober up during the carry out and begged me to keep her alive. Without our mountain rescue team she would not have survived. It was an incredible feeling knowing that we played a very important role in saving this girl’s life.

The late Tim Cochran once said at a winter meeting, “We all want to be the hero.” He was right. I got to be the hero that night and it sure felt good.

**Of the SAR missions that taught you the most, what factors contributed to that learning?**

Having an open mind is the best thing for me to have when I am in a learning situation. It is surprising how many times I see a piece of equipment or technique and think to myself, “Wow that looks stupid.” I think about it later, usually after more information is obtained and realize I was wrong. An open mind has a lot of value. Then I ask myself, “How can our team incorporate this concept or gear?”

The SAR world continuously evolves. We have to keep our hearts and minds open to new and better ways of performing search and rescue. Until we know it all we should never stop learning.

## 2015 Spring Conference Update

*By Dave Clarke, MRA President*

As you probably know, the long time model for our MRA Spring Conferences has been for a local team to volunteer to host the event. In 2012, we tried a new model of partnering with the National Association of Search and Rescue (NASAR) for the conference at Tahoe, and then again in 2014, in New Jersey. These conferences went well, and NASAR has been a good partner. Their board and staff did much of the work in running these conferences.

When we left New Jersey, the plan was to hold another joint conference in 2015, at Estes Park, CO. Since then, the NASAR board has decided that because of other priorities, NASAR staff is unable to take on the workload of organizing the conference. While this came as a

surprise, it is a good thing they informed us when they did, allowing us time to come up with an alternative plan. It is common for a host team to take 2-3 years in planning and preparing for a conference, as Olympic Mountain Rescue is doing now, for the 2016 conference in Port Angeles, WA.

Since NASAR’s announcement, MRA member-at-large, Skeet Glatterer, has worked diligently with Colorado Search and Rescue Board (CSRB) to find a host team. Larimer County SAR has recently stepped up to be the ‘boots on the ground’ organizers with the MRA and CSRB providing financial support.

The conference is planned for Estes Park, CO, June 3-7, 2015. We are working hard to make it a valuable experience. Stay tuned.



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A rescue team sets up in the Gunks for a litter pickoff scenario during a *Ropes That Rescue*™ course. photo: Chad Kelsey

Sterling Rope is a proud sponsor of the Mountain Rescue Association.



## True GIS Innovation at Your Finger Tips –No Charge!

*By Michael St. John, Unit Leader, Marin County Sheriff's SAR Unit*

SARTOPO is among the greatest innovations in incident mapping to come along in years, yet remains largely unknown among many emergency response professionals. This is a FREE, easy to use GIS program at your fingertips today. With a little self-paced training you can build an incident and make maps fairly comparable to those of GIS professionals. Matt Jacobs with Bay Area Mountain Rescue Unit based in San Mateo County, California, developed [SARTOPO.COM](http://SARTOPO.COM). Matt combined his software writing experience with his extensive SAR background to develop this powerful free mapping tool for search and rescue teams.

The Marin County Sheriff's SAR Unit has extensively used this program during the last eight months. In this short time, it has helped manage dozens of SAR missions, several LE incidents, and complete initial GIS in support of a fire. We have found it to be an amazing tool that greatly enhanced our planning and GIS capabilities.

### Map Layers

SARTOPO allows you to quickly swap between seventeen map layers, or combine them to form hybrid maps. Layers include USGS Topos, USFS road maps, Google layers and marine charts to name a few. You can also add shaded relief, contour lines and even show current fire activity, allowing you to display any map your incident might need in short order.

### Search Management

You can create a SARTOPO planning map using a wide variety of object types, including routes, tracks, waypoints, line and area assignments. Additional features include range rings, bearing lines, point elevations and a UTM grid, along with multiple datum and coordinate formats. A number of styles are available for lines and waypoints, including fire symbology.

### Importing/Exporting

You can import and export GPS tracks in nearly all formats using SARTOPO, including talking directly to Garmin GPSs through a browser plugin. You can also easily add tracks sent by email, or use smart phones to view maps and record tracks utilizing the free Avenza PDF Maps application, <http://www.avenza.com/pdf-maps>.

### Sharing

One of the most impressive features of SARTOPO is its allowance for real-time collaboration: people from different locations can work on an incident map together at the same time! Settings can be adjusted to allow read or write access, or password protect the entire map. In one recent case, in a matter of minutes after a SAR activation, we texted a SARTOPO map link to our entire team with the location of the PLS, Staging and ICP along with several assignments. From smart phones, members could open the link instantly, providing excellent situational awareness and allowing rapid team deployment.

### Printing

SARTOPO allows flexible printing options. Google layers must be printed from the browser, but all other layers can be printed as high resolution Geospatial PDFs. You can print custom maps as needed or easily produce a stack of auto-centered and zoomed assignment maps. Team assignment forms can also be printed as fillable PDF's with most information pre-populated, saving time.

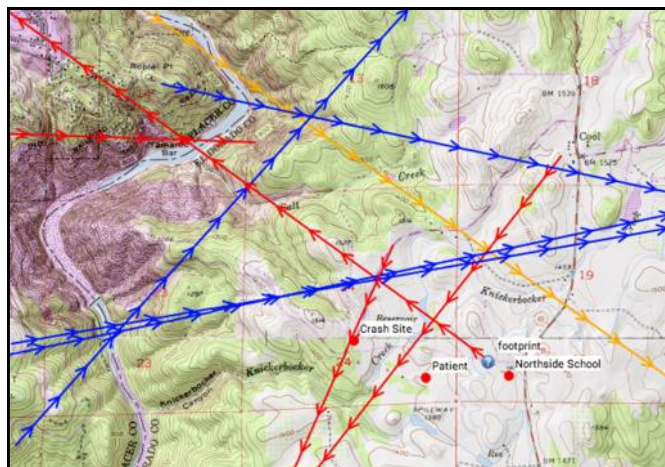
### Getting started

To get started, just type in [sartopo.com](http://sartopo.com), go to the "about SARTOPO" and watch the four YouTube instructional videos Matt put together. The four clips are each no more than 3 minutes long. If you're like me, you may need to watch them several times to digest all the information presented. There are also additional instructions below the clips. SARTOPO works best on Chrome, but is compatible with recent versions of all major browsers. Key points: to start building a map, create an operational period under "Add New Object", and add a marker such as an ICP. Projects can be linked to a Yahoo or Google account.

### What if there is no Internet access?

You can also run SARSOFT (<http://sarsoft.org/>), the software that powers SARTOPO, on a laptop in the field; projects can be easily transferred between SARTOPO and SARSOFT when needed. Offline copies of most map layers, including topos and aerial imagery, are available on a statewide basis from Matt Jacobs and take up 100-200 GB. A one-time fee of \$100 may apply to create the initial snapshot of your state if none exists yet, but you are free to share the map data with other SAR teams at no additional cost. More information about SARSOFT is available in "About SARTOPO" along with contact information for Matt.

Matt Jacobs has put a tremendous amount of work into this product and offers it free of charge, well aware of the tight budgets we all have. This is a powerful GIS and SAR planning tool. SARTOPO continues to be a work in progress, but as it stands today, I have found it to be among the best GIS applications out there. There is no software to load, no fees and I particularly like it because of the ease of sharing maps, of collaborating, the number of map layers available, and the ease of printing and auto filling of team assignment forms. Take the time to review it, and I believe you will come to the same conclusion.



*Photo by Michael St. John. Utilizing SARTOPO during the Glinkowski Search on Mt. Tamalpais, April 2014.*



## Look Into the ProKit: Telecommunications for Expeditions and Mountain Rescue Missions

*By Christopher Van Tilburg, MD, FAWM, CTH*

On a fall evening, while checking into a lodge at Dochula Pass, Bhutan, 3150 meters, I was struck by a spectacular clear view of the Himalayas, a cozy fire, and a plate of dhal. One thing stood out on my two-week tour of Bhutan: it was the only night without cell phone and Internet service. In this age of telecommunications, in the most remote corners of the globe—the hill country of Haiti; at 5200 meters in Gorek Shep, Nepal; atop 5895-meter-high Mount Kilimanjaro; or anywhere above tree line on Mount Hood—we are connected. Here is a smattering of my favorites space-and weight-efficient telecom devices for expeditions and mountain rescue missions.

Although my Apple iPhone works all over the world, I also carry an inexpensive Samsung phone which accommodates two SIM cards and holds a charge for two weeks with limited use.

Asus T100 notebook is my favorite option for using a tablet with a keyboard mostly because it has durable flash memory. For fieldwork, the Panasonic Toughbook series is armored for austere conditions.

Coghlan's Portable Power Pack provides cell and computer power via a battery you can charge via USB plug, a small solar panel or a dynamo (which is a hand crank), although, I still prefer using lithium AA batteries as backup whenever possible.

Suunto watches have long been my pick for adventure travel—I'm still using my Vector after 18 years. The new Ambit2 is USB-rechargeable wrist-top GPS with surprising accuracy. For a full size GPS, our team uses Garmin Map62.

I have a super bright Gemini Xera 950-lumen headlamp with a 2-cell battery and both head and helmet straps. The Princeton Tec Vizz is a good AAA batteries backup producing 165 lumens.

For short callouts with no notice, I may rely on my iPhone for images, but for documenting rescues and training, I use the compact Panasonic DMC-ZS5.

Radios are ultra compact now, like the Yaesu VX-3R, clocking in at 4.6 ounces (although FCC regulations prohibit certain uses and a license is required).



*Photo by Chris Van Tilburg, MD, FAWM, CTH. Cell phone reception around the world, Punakha Dzong, Bhutan.*



*Photo by Chris Van Tilburg, MD, FAWM, CTH. A good headlamp, extra batteries and a solar charger: sorting meds after the generator turns off. Verettes, Haiti*



*Photo by Chris Van Tilburg, MD, FAWM, CTH. Using the Suunto Vector in the Gammow Bag (inside bag, 10,000feet, outside 15,000 in Denbouché, Nepal.)*



*Photo by Chris Van Tilburg, MD, FAWM, CTH.*



## 2014 ICAR-CISA Congress

*By Tom Wood, Alpine Rescue Team, ICAR Terrestrial Commission Alternate*

For the first time in its 66 year history, International Commission for Alpine Rescue (ICAR-CISA) Annual Congress was held in the U.S. at Lake Tahoe, bringing together the best and brightest of the international mountain rescue community for four days of camaraderie, networking, learning and sharing of the art and science of mountain rescue.

“Up above tree line, we all speak the same language,” said Dan Hourihan. Hourihan, a member of the Douglas County Search and Rescue Team (Nevada), spearheaded the MRA’s efforts to plan and organize this historic event. With the support of the MRA, the Douglas County Search and Rescue Team took on the lion’s share of the hosting duties. They provided planning, logistical and operational support for the conference, which was held from October 6-9 at Harvey’s Casino and Resort in South Lake Tahoe. More than 300 rescuers representing 29 countries participated.

Comprised of four commissions (Air Rescue, Medical, Terrestrial Rescue and Avalanche Rescue), the International Commission for Alpine Rescue (ICAR-CISA) meets annually in a different host country. Their Mission Statement sums up their purpose well. “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. It is an independent, worldwide organization that respects its members and promotes international cooperation.”

Each year, the MRA sends elected delegates to the ICAR Congress to represent the U.S., and each of these delegates are then tasked with generating a report for the MRA and also sharing what they learned with the American mountain rescue community as a whole. For the first ever U.S.- held ICAR, all delegates and their alternates were in attendance.

### MEDICAL COMMISSION

Dr. Ken Zaffren

Dr. Skeet Glatteer (alternate)

### AIR RESCUE COMMISSION

Casey Ping

### TERRESTRIAL COMMISSION

Dan Hourihan

Tom Wood (alternate)

### AVALANCHE COMMISSION

Dale Atkins

Marc Beverly (alternate)

The theme for this year’s congress revolved around Mass Casualty Incidents (MCI) in the mountain environment, and many of the presentations offered up related insight on everything from medical triage recommendations to case studies of actual MCI incidents.

As part of the Pre-Conference Practical Day, participants were treated to a scenic ride up the gondola to Heavenly Mountain Resort where the Avalanche and Medical Commissions set up multiple stations to both educate and challenge the more than 200 rescuers in attendance.

The final day of the Congress dealt with ICAR business and elections. Dan Hourihan was elected to replace Thomas Griesbeck as ICAR-CISA Assessor, the first time that someone from the United States would be elected to serve on a Board of Directors that is usually made up of individuals from European mountain rescue organizations. In other election news, ICAR-CISA President Gerald Biner stepped down in the third year of a four year term. Swiss mountain rescuer Franz Stampfli was subsequently elected as the new ICAR President, narrowly beating out Air Rescue Commission president Patrick Fauchère.

Also, the ICAR Board of Directors unveiled the new ICAR-CISA logo and announced that a new, more user friendly website will soon be up and running. Next year’s ICAR-CISA Congress will be held in Killarney, Ireland, and Bulgaria in 2016.

Stay tuned to the MRA website for the four commission reports and links to the Topograph Media videos of the 2014 ICAR-CISA Congress. Also, a summation of the conference will be presented at the 2014 International Technical Rescue Symposium (ITRS) in Golden, Colorado November 7-9, 2014.



## Photo Gallery



As part of the ICAR-CISA Annual Congress off-site festivities, Washoe County Sheriff's helicopter wowed the audiences on the shore of Lake Tahoe with a dramatic helicopter rescue. Photo by Andrew Duran, PMI.



Waiting for the gondola to take them to field day activities, at Heavenly Village. Photo by Jen Konopka.



MRA past President and ICAR-CISA Terrestrial Rescue Commission Delegate Dan Hourihan chats with some IKAR members during the Field Day held at the Heavenly Resort. Photo by Tom Wood.



No, this isn't the ICAR-CISA version of the Ice Bucket Challenge, it's a demonstration on ways to combat hypothermia during the Field Day at the Heavenly Ski Resort. Participants were encouraged to try three different rewarming techniques. Photo by Tom Wood.



The sign says it all! Photo by Tom Wood.



Manuel Genswein briefs rescuers about reverse triage techniques for multiple burials on an avalanche field. Photo by Tom Wood.



## Photo Gallery



Rescuers were challenged by the scenario of a mass casualty event on a gondola during the Practical Day of the ICAR-CISA conference. Though many different languages were spoken in each group, rescuers were able to put together comprehensive and realistic theoretical response plan that addressed the triage and evacuation of a dozen subjects. Photo by Tom Wood.



Unknown to each other before the 2014 ICAR conference, these three people share the same last name of "Konopka." They just might be cousins! Photo by Laurie Clarke.

### Note From the editor—

Autumn: Golden glowing aspens, scarlet maples, donning favorite fleeces, and soup! As you start to focus on preparing for cold season rescues, don't forget to think of ways to contribute to the Meridian so other members can find out what's new and of interest.

- ◆ We are always looking for articles for future editions. Have you been thinking about reviewing a technique or some gear? Do you think other members would enjoy and/or learn from a recent SAR experience? Your article can be short and sweet, or it can include recent and thorough research findings. It's up to you. Without you, there is no Meridian.
- ◆ Please consider volunteering your favorite SAR team member to be interviewed by the Meridian for **Rescuer Spotlight**.
- ◆ We are seeking digital image contributions to the **Photo Gallery**. A picture really is worth a thousand words. Photos can be SAR related, or of something that inspires or educates the viewer.



All submissions can be made to the [Meridian editor](#).

Content Deadlines for Submission to the Meridian:

Thursday, Jan. 1, 2015

Wednesday, April 1, 2015

Wednesday, July 1, 2015

Thursday, Oct. 1, 2015

Friday, Jan. 1, 2016



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