



THE TRACKER

Monthly Newsletter of the Inland Empire Search and Rescue Council

April 2004

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The Hardest Lesson

Sonny Lawrence, Central SAR

One of our SAR lessons is concerned with first protecting oneself, then fellow rescuers and finally the subject. That lesson is easy to learn intellectually. It can be quite diffi-

oxygen saturation ran 77%, 20 points lower than usual. There is no desire to eat nor drink. However the daily requirements are 5 to 6 liters of fluid and 5000 calories.

At 22,000 feet on the way to the summit, we passed a climber in a yellow jacket who was coming down. He was obviously fatigued. We continued the climb, peaked and started back down. We observed the fellow in the scree field hundreds feet below the trail. He apparently was attempting to go directly to a camp barely visible in the distance, Nido De Condores, 4200 vertical feet below.

On this particular route, there is a mountaineer's trail, Schiller's Traverse. It crosses the top of the Gran Acarreo which is a huge talus/scree slope. It is 7000 vertical feet high and miles wide. I have included two photographs in this article. One of Schiller's Traverse, the other of the Gran Acarreo one day later after a storm, looking up from camp Nido De Condores. However none portray the immensity of the Gran Acarreo. There is no protection from the elements on this slope. The literature warns climbers to stay off of it. Many have perished. Instead the route follows the ridgeline wherein firmer footing and wind protection can be found. The Gran Acarreo with a slight covering of snow performs similar to quicksand. One step up, two steps down. At that elevation, it is exhausting to try to climb in any direction on it, even downward. The footing gives way. Down a climber goes, even with trekking poles. Add to this El Viento Blanco. This is



cult to internalize and operationalize in the SAR environment. Doing so can rip at the heart of the individual rescuer.

I had the opportunity to climb Mt. Aconcagua in February of this year. It is located in the Andes in Argentina. At 22,841 feet, it is the highest peak in this hemisphere. It is an old disintegrating volcano just off the main ridgeline of the Andes. My climbing partner was Chuck Laird, a 20 year veteran of the San Bernardino Mountain Search and Rescue Team.

Climbing at altitude is extraordinarily physically demanding. Three or four breaths were needed for every step. My

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What's New in Volunteer Forces?

Lt. Virgil Merrett, Volunteer Forces Unit

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The end of March 2004 brought more sworn personnel changes to the San Bernardino Sheriff's Department and SAR Council.

On March 19, 2004 Deputy Chief Mike Cardwell retired and will eventually move to the Sacramento area for his retirement years. Chief Cardwell has been a major supporter of the Volunteer Forces Unit and all the functions of the individual volunteer groups. We would like to thank Chief Cardwell for his many contributions to the Volunteer Forces units over the years.

On March 27, 2004 we conducted the Katz airplane search in the Lytle Creek area. The search areas consisted of the canyons and ridges West of his last radar contacts on June 8, 2001 and the South Fork Canyon.

The planning for this search differed because we took three weeks and utilized a twelve person planning team concept. Coordinators and other unit commanders were brought in and joined with Volunteer Forces sworn personnel to create the search plan. The twelve participating personnel were assigned ICS positions, responsibilities, and authority to create a thorough and safe plan to search the areas with a high degree of certainty of finding the aircraft or finally eliminating the area. The plan was created and we meet most of you at 0600 hours that morning. An Extra Thanks

to all of you who gave the additional time and effort to put the plan together.

The search procedurally went well with the command post layout, sign-ins, team assignments, and assigned search areas by GPS. There was the medical evacuation of a team member which has been followed up on and that person is doing fine with some soreness. We all wish her well.

The search resulted in an airplane crash site find. Unfortunately, it was not the Daniel Katz Piper that we were searching for. It was determined to be that of a December 1997 Cessna 172 crash site.

There will be additional air searches and limited (training days) ground searches for the Katz airplane in the South Fork Canyon area based on witness statements.

The Sheriff's Department budget will continue to be frugal during the next several months. I am currently working with our front office to secure some safety related unit equipment from your submitted lists. The mission of the volunteer units will continue as always and we will continue to respond to the calls of citizens who need our help. These budget cuts should not directly affect the functions of the individual volunteer units.

*Take Care,
Virgil Merrett*

Communications and the Katz Search

Bill Maclay, SAR Comm Team

I knew that something was wrong as soon as I started to close the door on the repeater truck. Call it a sixth sense, call it something else, but I had a tingling sensation and the hair was

deployed. The site just North and West of Lytle Creek would be excellent for a portable repeater.

West Valley supplied the repeater and we borrowed a truck from the Cave Team. The battery voltage was measured, the magnetic mount antenna was placed on the roof, and the repeater powered up. The signal report from Holly, in the COMM Trailer, was outstanding. I informed the Command Post that the repeater was operational and they passed the word. But I still had that sensation that things were amiss?

The crackling of the power line brought me back to the present, and I looked up at them, then down at my boots, which were wet from the morning dew. I was standing in the grass and holding the metal door frame of the truck. I guess that tingling feeling was not so ominous after all. It seems that I was just completing the circuit! I moved the truck about fifty feet away from the power line and felt a lot better.

All and in all, communications for the search went very well. The repeater was a great asset that helped extend the communication range of the handhelds. This was a good learning experience for all of us. One of the things that we need to address is that transport needs to be moved off the OPS channel on large deployments. Also, whenever a radio operator, in the field or CP, moves off their designated channel that information needs to be stated. (Example: CP *this is* Team 3 on 8-ATAC-1).

There is still some need, for communications training, as well as the standardization of radio programming. To help accomplish this, the COMM Team is



standing up on the back of my neck! This was the right location, I was sure of it. Above Glen Helen Parkway just passed Sycamore Fire Station, through the Edison Gate, and near the power lines. But something was still not right?

The communication pre-planning for the Katz Search that was taking place today was somewhat unprecedented. We were able to take a couple weeks to put together the COMM PLAN that included six VHF channels, two 800 MHz channels, a portable repeater and a backup repeater.

"...the hair was standing up on the back of my neck!"

Bob Gattas, Wes Podboy, Darren Goodman, John Amrhein and I had studied the Topo's of the area, scouted the possible repeater locations, and drove the fire roads where the search teams would be

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Lesson

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a white icy wind. Within hours, temperatures can drop 80-100 degrees. Light breezes can become 60-70 mph gales.

It was the end of the day. The sun was setting. I was exhausted. I was moving across Schiller's Traverse, watching this solo climber try to move. Even with trekking poles, he stumbled, slipped, skidded, rolled and collapsed his way down the slope. He could stand with difficulty, take one or two steps and tumble to the ground. With each of my steps, I could see his energy being drained as he pointed himself towards a camp far, far away. It was totally beyond his reach. I kept stopping to peer down at him. Chuck and I discussed rescue. We each knew if we ventured into the Gran Acarreo, it was highly probable we would not return. The elevation, a day of climbing, bitter cold temperatures, unstable scree, minimal equipment and nightfall made rescuing the man virtually impossible and our own deaths highly probable if we made the attempt. As we descended the mountain, I had to remove my glacier glasses. They were fogged up. I cried my way across

the ½ mile Traverse. I knew I was watching this climber descend to his death. A part of me was driven to point myself down the slope and prepare for rescue. Another part of me kept my body on the Traverse back toward my camp. My friend Chuck softly muttered a few times, "I know you want to help him, but we can't."

Finally the Traverse ended at the ridgeline that separates the east from west sides of the mountain. In the twilight I could just make out the yellow jacketed climber far below. He could no longer stand. He just scooted down the snow with his hands at his side. I knew that summit day would be one of the most physically challenging in my life. I had no inkling it would also be such an emotional test. I had made the decision to protect myself, knowing this climber was inching his way to his death.



The Bottom Belay: An Exercise in Futility?

Paul Stovall and Jeff Lehman, Cave Rescue Team

After discussing the interesting results of some bottom belay testing that was presented by Jim Kovach at the International Technical Rescue Symposium (ITRS 2003) my colleague, Paul Stovall shared with me some theoretical work he had completed on the same subject. The results are surprising, and corroborate some of the experimental data that has been collected by Kovach so far.



The details of the calculation are presented later in this article. To make it easier to play a variety of scenarios, Paul has prepared an Excel spreadsheet that allows you to enter a variety of variables to see if your bottom belay would be stop an out-of-control rappel. This spreadsheet can be downloaded at

www.thetracker.info/bottom_belay.xls

The principal variables that enter into this calculation are: The type of rope (Blue Water II or PMI), the length of rope that is being used, the distance the rappeller is from the ground, the amount of force that the belayer can apply to the rope, the weight of the rappeller, and the time that it

takes for the belayer to notice that there is a problem. Also, note that the values calcu-

lated are for a 4-bar BMS micro rack *without* the hyperbar in use.

One thing that was determined by the empirical testing, and corroborated by this theoretical treatment, is that the sooner the belayer realizes that there is

an out-of-control rappel, the greater are his chances of stopping the rappeller. For example, according to these calculations, if a 200 lb rappeller is traveling on 60 feet of rope and loses control 50 feet from the ground, he will travel nearly 26 feet if the belayer is able to apply 100 lb of force and notices that there is a problem within 1 second of freefall. If the belayer takes an additional half second (1.5 s) to realize that there is a problem, the rappeller will hit the ground! Now, you may think that you can apply more than 100 lb of force to the rope. This may be true if you are pulling down and you can hang on the rope. Still, with 1.5 s delay it would take 200lb of force by the belayer to stop the rappeller. Note, that the rappeller will fall nearly 50 feet in that time. Keep in mind, that if you are using a redirectional pulley at the bottom of the drop so that the belayer can stay out of the fall zone, that studies (Mauthner, et. al. "Gripping Ability on Rope in Motion", 1994) have determined that the average one-hand gripping strength of a horizontal moving rope (11.1 mm) is approximately 50 lb.

The response time of the belayer is crucial, and it was determined by Kovach's work that it is not easy to identify an out-of-control rappeller. Looking up at the rappeller does not give the belayer a perspective that allows him to determine the rate at which a rappeller is moving. This greatly impacts the belayer's ability to stop the fall.

Also keep in mind, that the belayer will need to pull through a fair amount of rope stretch. For the example above, where a belayer applies 200 lb of force to stop a rappeller, the belayer must pull nearly 2 feet of rope stretch. If the amount of rope

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*"Download the file at
www.thetracker.info/bottom_belay.xls"*

Bottom Belay

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in play is increased to 100 feet (rappeller still 50 feet from the ground) the amount of rope that needs to be pulled through increases to 3 ft. For this reason, the length of the drop, regardless of where the rappeller loses control, plays a large roll. It is much easier to pull on a rope without having hand-over-hand motion. That is, pulling and hanging is much easier than pulling through.

Take a few moments to download the spreadsheet file and run a few scenarios. Prior to Kovach's presentation at ITRS he polled the audience as to the number of bars they would use on a long drop, and whether they think they could hold a number of bottom belay scenarios. I was surprised at his findings, as I thought that a bottom belay in many of the scenarios that he presented would work. He video-taped his testing, so the failure of the belay in a variety of situations was clearly illustrated.

Does this mean that a bottom belay is not effective, and shouldn't be used? Of course not. Like anything that we use in our craft, we must understand the conditions under which it is effective and know its limitations. We welcome any response to this work; feel free to send email to editor@thetracker.info and it will get directed to the appropriate parties.

Below is the equation used for this study with a short description of each variable.

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Communications

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busily completing a Basic SAR Comm. course, which should be available to all SAR teams in June.

Keep up the good work; keep your batteries charged and your antennas vertical!

Calendar

For information or to submit an event, contact the editor at editor@thetracker.info. Appearance of items in this section does not necessarily imply endorsement by the SAR Council or the County of San Bernardino. Call if you have any questions about a particular listing. To save space, persons to contact and numbers for multiple listings of *Department-approved training providers* are consolidated in one place at the bottom of this page.

April

April 3—Volunteer Forces Picnic at Glen Helen Park

Contact Darren Goodman in VFU for more information.

May

May 15–16—National Cave Rescue Commission (NCRC) Basic Cave Rescue Orientation Course

Contact Mark Kinsey (mkinsey@caverescue.net) for details or visit www.caverescue.net for a registration form.

May 15–16—West Valley SAR Rope Training

At Hole-in-the-Wall. Contact Bob Gattas at rgattas@earthlink.net for more information.

May 19—Inland Empire SAR Council

19:00 in the Main Conference Room at SBSB HQ

June

TBA—Technical Rescue Basics Course (TRBC)

Contact Don Welch (760-244-7340) for more information.

June 4–6—Swiftwater Team Leaders Course, National Outdoor Leadership School

Thermopolis, WY. You need to either be a boater or in excellent shape to take this course. Contact john_gookin@nols.edu for more information.

June 2–5—NASAR '04 Conference & Expo

"Life, Liberty, and the Pursuit of Lost People", Lansdowne, VA. Visit www.nasar.org for more information.

June 5—West Valley SAR ELT Training

Night operation. Contact Bob Gattas (rgattas@earthlink.net) for more information.

June 19—West Valley SAR Rope Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

July

July 21—Inland Empire SAR Council

19:00 in the Main Conference Room at SBSB HQ

August

Aug. 21—Rope Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

September

Sep. 15—Inland Empire SAR Council

19:00 in the main conference room at SBSB HQ.

Sep. 18—West Valley SAR Search Scenario

Contact Bob Gattas (rgattas@earthlink.net) for more information.

October

Oct. 1–3—Morongo Basin Search and Rescue Desert Run

For more information call 760-369-9999, or visit www.desertrun.org

Oct. 16–23—National Cave Rescue Commission (NCRC) Level I and Level II Cave Rescue Seminar

Week-long NCRC seminar at California Caverns, CA. Contact Mark Kinsey (mkinsey@caverescue.net) for more information.

Oct. 16–17—West Valley SAR Map & Compass Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

November

Nov. 17—Inland Empire SAR Council

19:00 in the main conference room at SBSB HQ.

Nov. 20—West Valley SAR Night Scenario

Contact Bob Gattas (rgattas@earthlink.net) for more information.

*Course / Provider

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$$T_1 + \sum U = T_2 \quad \text{or} \quad \frac{1}{2} m(2aY_1) - F_r Y_2 - 55Y_1 = 0$$

$$Y_2 = \frac{Y_1(w - 55)}{F_r}$$

a = acceleration due to gravity

F_b = The amount of load applied by the belayer

F_r = Resistance force of the rack. $F_r = 1.465 F_b + 91.783$.
This was derived from various testing.

t = Time it takes for the belayer to notice that there's a problem.

T_1 = Kinetic energy from the fall. $T_1 = \frac{1}{2} mV^2$

T_2 = Final kinetic energy, which equals zero.

V = Velocity

$$V^2 = 2aY_1$$

Y_1 = Falling distance. $Y_1 = \frac{1}{2} at^2$

Y_2 = Distance it takes to stop the subject on the rope.

$W = ma$ or weight = (mass)(acceleration)

U = the amount of work done from the drag of the rappelling rack during the fall before the belayer notices a problem plus the amount of work done by the rack with the extra forces applied by the belayer taking action.

Classified Section

Contact the Editor to place or remove any item.

SBSD Commuter cups with star and motto. \$16. Features generous 16 oz. capacity, stainless steel construction, double-walled insulation and fits virtually all auto cup or mug holders.



SAR Tech patches. NASAR-approved, straight version of the standard SAR Tech I/II/III patches. Send check made out to IESARC for \$3 each and a SASE to: IESARC, PO Box 108, Barstow, CA 92311.

SBSD Search and Rescue decals. \$5. The decals are 3.5" X 3.5" and can be stuck on the outside of just about anything or on the inside of a window. The price is \$5.00 each and can be purchased by contacting SarDesertRun@aol.com or calling 760-369-9999.



Earrings (1/2") \$10 and **Lapel Pin/Tie Tacks (5/8")** \$8.

Fund-raiser for Morongo Mounted SAR Team. For ordering info contact Kim Miller at millerkm@29palms.usmc.mil or call Kim at (760) 367-1148 or (760) 367-1148 evenings.

SBSD Coffee cups \$5. High-gloss ivory coffee cups with gold-colored SBSD star on the side is microwavable. Available at Volunteer Forces.



SBSD SAR Pens \$10. High-quality, refillable ink pens with SBSD star and "Search & Rescue" on side. Great gift idea! Available at Volunteer Forces.

Custom SAR/Expedition Topo maps. \$14.95. See the web site for full details!

Granite Gear Nimbus Ozone Backpack. Size regular. Highly adjustable, and brand new. Comes with large shoulder straps, but Granite Gear will swap them for one your size if they don't fit. \$105. Contact Jeff Lehman at jlehman@caverescue.net.

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