AVALANCHE news

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photo courtesy of Jordy Shepherd

inside

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Canadian Avalanche Association
Box 2759
Revelstoke, BC V0E 2S0
250-837-2435
canav@avalanche.ca
www.avalanche.ca

table of contents

Table of Contents

Editor's View

One of the main reasons I moved to Revelstoke two years ago was because it is the home town of the Canadian Avalanche Centre (CAC). I did not plan to work for the CAC, but snow was definitely on my mind. After two years in a very plastic corporate marketing environment in Ontario, I craved a return to a simpler life in BC. I wanted to settle down in a small town with big mountains and an abundance of powder. I rationalized that if the Canadian Avalanche Association (CAA) was in Revelstoke, it must be snow central. I had no idea how complex things can be in the simple looking mountains.

My first winter in Revelstoke confirmed that I had found *the* place. I took my Level 1 (with Chris Stethem and Margie Jamieson), tail guided for CAT Powder, snowmobiled with the Revelstoke Snowmobile Club, and ski toured in Rogers Pass – it was an incredible winter for skiing and learning about snowpack. I also got to know the people at the CAA by volunteering to help out with their Avalanche Awareness Days, which is where I met the woman I'll be marrying this upcoming August. Lucky year.

My second winter season in Revelstoke got off to a slow start. Despite our sacrificial burning of old skis at Brent Strand's Ullr party last November, the gods just weren't delivering the goods. By Christmas I had skied no more than five times. At a Christmas Eve party in Revelstoke, I spoke to CAA professoinal member and local ski guide Sylvain Hebert about the *wicked* day I had just spent on Video Peak in the Connaught drainage of Rogers Pass. This face was the only SE aspect that had not slid during the latest cycle. Despite the good stability tests that my party found, Sylvain told me that we had made a bad decision to ski there. He said it was dumb luck that saved us from one of the most unpredictable snowpacks he had ever seen. He told me this while seated next to my concerned, non-ski touring fiancée, which pretty much kyboshed my hopes for another season of simple *go or no go* decisions. Considering the massive slide that happened in that same drainage a few weeks later, Sylvain's hard-to-swallow warnings made me question my **decisions in the backcountry** and helped me enjoy another winter season unscathed. Thanks to Sylvain for his experience and local knowledge.

The topic of decision-making in the backcountry was the focus of an entire day of presentations at the Continuing Professional Development (CPD) Seminar at this year's AGM in Penticton (May 5-9). Eight avalanche experts explored the differences between traditional situation-based decision models and the European rule-based decision making model of Werner Munter. The goal of **Munter's rule-based model** is noble: to simplify the *go or no go* decisions by eliminating the human factors that lead to bad decisions. Many issues were raised about European rules-based decision making models in the Canadian context. We have different terrain, climates and usage patterns, not to mention a different mountain culture and legal system than backcountry users in Europe. In light of these differences, panelists questioned the implications of imposing rules on Canadian backcountry users, avalanche educators, guides and industry. They wondered aloud whether local knowledge and experience outweigh hard and fast rules.

The end of the seminar featured a panel discussion with some passionate arguments about why rules may or may not work in Canada. For me, this session was the highlight of the AGM since it was so interactive, and I strongly encourage anyone who has never been to the AGM, especially new members, to at least try to make it to the one-day CPD seminar. In the fall issue, I hope to feature member points of view on the topic of backcountry decision making and I **invite your feedback**.

Interested in becoming a CAATS instructor? Ian Tomm has supplied us with a paper describing the process, on page 14. Steve Blake has also kindly shared the notes and graphs from his AGM presentation called "Considering Considerable and Other Considerations". Refresh you're memory by treating yourself to a Kokanee once your done reading the article – don't forget to share!

Thanks for all the positive feeedback on the last issue of the Avalanche News, which I guest edited – it looks like it helped since I'm now the **new editor**.

Have a good summer,

Todd Beernink
editor@avalanche.ca

President's Message

Thanks to everyone who made it to the spring meetings and AGM in Penticton. They were a great success due to your attendance and participation!

Speaking of participation at the AGM, a special thanks to those who submitted nominations for the Kokanee Glacier Summit Awards. These awards provide a chance for us to recognize a few of the many hard working members of the CAA community. I would like to congratulate this years recipients of the **Kokanee Glacier Summit Awards**.

- The Professional Member recipient is **Mike Boissoneault**,
  in recognition of the hard work that he did in working as chair of the explosives committee.

- The New Member award was given to **Stephane Gagnon**,
  in recognition of the work he has done in the Chic Chocs Range in Quebec to promote avalanche safety.

- The Volunteer Award winner was **Gord Burns**.
  Gord served as Associate Member Board Representative and, among other things, has been a great advocate of the CAA at various political levels.

- The Benefactor Award went to **BC Ministry of Transportation, (BC MoT),**
  for their past support in publishing the Avalanche News for the first 63 issues since its creation 24 years ago.

Congratulations to all the recipients and thanks for all your work on behalf of the CAA!

Since the Columbia Brewery was the sponsor of the Kokanee Glacier Summit Awards, we were fortunate to have their brewmaster, Graham Kendall join us for the presentations. Columbia Brewery has been a long-term Presenting Partner of Avalanche Awareness Days, and they came through once again at the AGM by providing product samples for everyone at the awards! Thanks also to the other awards sponsors, Marmot Canada, who provided a Marmot daypack for each of the four award recipients, and SOS safety equipment, who provided each with an SOS beacon, probe and shovel.

The awards session was once again a fun event, with great deals at the silent auction. If you didn't attend this year, plan to attend next year and get your nominations in early.

The *Provincial Avalanche Safety Review* is in its concluding stages. We are hopeful that the report will have some positive recommendations for avalanche safety in BC. The report is due to be presented to BC Solicitor General Rich Coleman on June 30th, 2003. The next step will be the provincial and federal governments taking responsibility for undertaking the recommendations in a timely manner for next winter.

The first stage of the **Educational Visioning Session** is complete. Action items for phase 2 include some small but immediate modifications to some of the CAATS programs. Janice Johnson will lead the project for phase 2 of this project. Thanks to all the folks who worked hard to complete the first part of the program. We look forward to the results of the next stage.

A reminder to professional members, don't forget to keep your CPD documentation in order as there will be random audits this summer! (Documentation can be downloaded on line at http://www.avalanche.ca/misc/cpd2003.pdf.)

Have a great summer,

Bill Mark

Executive Director's Report

During this past winter, Canadians from coast to coast once again became conscious of snow avalanches as a dangerous and powerful force, a natural component of the cycle of seasons in the mountains. In 1910, avalanches on the Canadian Pacific Railway line at Rogers Pass killed 62 people. Thirty-five miners and loggers lost their lives in two separate incidents on the north coast in 1965. This winter snow avalanches claimed the lives of 28 people engaged in backcountry recreation in Western Canada; this has been the third worst winter of the past century for avalanche fatalities.

In addition to this winter's tragic loss of life, rail and highway traffic was severely disrupted, and substantial damage to timber resources has been reported from the Coast range to the Rockies. June 3rd I was talking to Greg McAuley, a CAA member from the Prince George area, who reported numerous large avalanches in the past several days, failing on the November crust. Some crusty old mountain goats are suggesting that these deep instabilities could persist through the summer on high elevation glaciated terrain. Let's all be careful out in the hills this summer; we've been to enough memorial services for avalanche victims this year.

In discussions with members and the public at the CAA's AGM in Penticton in May, I sensed a renewed commitment to excellence from the entire spectrum of avalanche safety operators in Canada. At the AGM several new avalanche related initiatives were launched that are of interest to Avalanche News readers. Here are a few of the highlights.

XML Standard for INFOEX Data Exchange
Representatives from CMH, BC Ministry of Transportation, Parks Canada, UBC, the CAA Technical Committee and the CAC have been tasked with the development of an Extensible Markup Language (XML) data standard as an essential first step toward the goal of an internet based system for information transfer among INFOEX subscribers, for approval by the CAA's Technical Committee. This work is scheduled for completion by late July 2003. For more information, contact Evan Manners at em@avalanche.ca or the CAC in Revelstoke at (250) 837-2435.

BC Snowmobile Federation - CAA Collaboration on Training Course Development
BC Snowmobile Federation (BCSF) Executive Director Pat Whiteway came to the CAA AGM in Penticton on May 6th to discuss development of a "train the trainer" program for snowmobile riders. Pat suggested a course with a target audience of snowmobile professionals and club safety officers who could, upon completion of the program, deliver Recreation Avalanche Course (RAC) equivalent avalanche safety awareness training to club members and/or commercial clients. The CAA's Education Committee and Board of Directors gave their strong support to this initiative, and the Board committed up to $10,000 in the fiscal year 2003/04 for snowmobile course development. On May 31st, Ian Tomm and I traveled to Kelowna and met with the executive of the BCSF and the presidents of snowmobile clubs from around the province to discuss the concept.

Our discussions were friendly, open and businesslike. We agreed that in the past cultural differences between snowmobile riders and human-powered sliders may have clouded our dialogue between our respective organizations. We agreed that the time had come for those issues to be put into the past, and to bring together a working group of expert BCSF snowmobile riders, CAA avalanche specialists and an adult education specialist to review the existing CAA snowmobile curriculum, and amend it to meet the needs of the snowmobile community. The intent is to deliver a "beta version" snowmobile course this coming winter, and then fine tune course content over time. CAA Training Schools Coordinator Ian Tomm will organize a meeting in the early fall to get this work under way. If you are interested in getting involved in this project, please contact Ian Tomm at ian@avalanche.ca or (250) 837-2435.

CAA Training School instructors are experts in avalanche science, safety and winter mountain travel. In future, I look forward to welcoming BCSF members with those same qualifications as CAA Training School snowmobile course instructors. These are exciting times!

BC Avalanche Review
Work continues on this review being conducted on behalf of BC Solicitor General Rich Coleman. The mandate for this review includes avalanche forecasting and research, public education and awareness, development of funding options, partnerships with industry and government, and the public avalanche warning program.

A review steering committee comprised of Bob Bugslag (British Columbia Provicial Emergency Program - BC PEP), Jim McAllister (BC PEP), Jim Spencer (BC Heli Ski Snowcat Operators Association), Jack Bennetto (BC MoT), Bruce Jamieson (University of Calgary) and Clair Israelson (CAA) has been working closely with Bhudak Consultants (Ross Cloutier and Jon Heshka) through weekly conference calls and personal contacts to keep the project on track. The consultants will propose a strategic plan for public avalanche safety programs in BC in a report to Minister Coleman that is due June 30th, 2003.

It is the CAA's position in this review that if the provincial and federal governments are unwilling to take on the responsibility and workload of public avalanche safety in Canada, then these governments should partner with the CAA and provide reasonable ongoing core funding. This would enable the CAA to provide the public with basic public avalanche safety services. CAA President Bill Mark has recently had correspondence with Mr. Coleman's officials, urging them to ensure some tangible demonstration of commitment to improve avalanche safety in BC in time for delivery this coming winter. Stay tuned.…

Office Space for the CAC

Discussions with CP Rail for CAC office space in the Revelstoke CPR operations building have resolved that the available space is inadequate. The 1800-sq. ft. of space available is less than what the CAC currently occupies, and has outgrown. The CAA is sincerely grateful for CPR's generous offer, and look forward to other opportunities to partner with CPR to promote improved public avalanche safety programming in Canada.

The CAA is actively pursuing all options for reasonable office space for the CAC in Revelstoke. Based on a business case and advice from Ken Davidson (BDO Dunwoody, the CAA's accounting firm) the CAA's Board of Directors has authorized a bid for an office building on Mackenzie Plaza that is being offered for sale by the City of Revelstoke. The results of the bidding process are expected to be announced June 11th. The CAA's bid contains several "subject to" clauses (engineering inspections, etc), so the outcome of this offer to purchase CAC office space will not be known prior to press time. If the CAA's bid is successful, this purchase will reduce office rent expenditures over time, provide a permanent home for the associations activities, and improve the public and community profile of the CAA and our services to industry and the public.

Canadian Avalanche Centre Summer Hours

As work related to school registration, industry support activities, member services and public safety programs increases, it is no longer appropriate for the CAC to suspend operations during July and August. This summer we intend to stay open during regular office hours, Monday through Friday. As staff will be taking rotating holidays, we may not be able to answer all of your emails or phone messages immediately. However, if your issue is urgent, please indicate this and we will do our best to provide the service you need in the most timely manner possible.

Have a great summer folks!

Clair Israelson

CAA's AGM was a Success!

Considering the sunny weather this year at the AGM in Penticton, May 5-9, it was hard to believe that 160 avalanche folk packed themselves into this conference room. Some sessions were standing room only.

Gordie Burns going out in style!
We are going to miss that smile.

You didn't have to attend the sessions to find a crowd.

CAA Creates New Mission and Vision Statements

As Casey Stengel, baseball's "Old Professor" once said, "If you don't know where you're going, you're bound to end up someplace else."

Every few years we need to check our organizational bearing by reassessing our mission and vision statements. This past April (12th - 13th), the CAA's Board of Directors and several former presidents met to do just that. They discussed the CAA's core competencies: who we are, what we do and for whom, and how we are unique. Then they revised the statements to reflect the future direction of the organization. Here are the results.

Mission Statement

The Canadian Avalanche Association (CAA) is dedicated to bringing the avalanche community together to develop knowledge and understanding of avalanches, facilitate communication, promote professionalism and provide quality avalanche education.

Vision Statement

The Canadian Avalanche Association (CAA) is Canada's national organization promoting avalanche safety.
The CAA is a non-profit society that will:

- *Promote professionalism in Canadian avalanche safety programs.*
- *Enhance and promote public avalanche safety programs through partnerships with the private and public sectors.*
- *Facilitate information and technology transfer.*
- *Develop, maintain and deliver avalanche education programs.*
- *Promote avalanche research and development.*
- *Ensure value of membership and encourage participation.*

SAR*SCENE* 2003

Meeting Dates: October 15-18, 2003
Location: Kingston, ON
Contact: Lynn Tremblay, Registrar
E-mail: ltremblay@nss.gc.ca
Notes: SAR*SCENE* 2003 provides a forum for search and rescue (SAR) personnel to share expertise and experiences and to find out about new SAR technologies. More than 600 participants are expected from air, land and marine organizations across Canada – Department of National Defence, Royal Canadian Mounted Police, Environment Canada, Department of Fisheries and Oceans, Canadian Coast Guard, Canadian Heritage/Parks Canada, provincial and municipal governments, and numerous volunteer organizations. SAR organizations from other countries will also attend.

5th International Conference on Snow Engineering

Meeting Dates: July 5-8, 2004
Location: Davos, Switzerland
Contact: Snow Engineering Secretariat
E-mail: snow2004@slf.ch
Notes: The Snow Engineering Conferences is an established forum for snow practitioners and researchers to present, discuss and exchange research results. Unlike other snow conferences, Snow Engineering is dedicated to the application of snow science to industrial and engineering applications. The sponsor of the conference, the Swiss Federal Institute for Snow and Avalanche Research SLF, Davos, is calling for papers. The deadline for abstract submission is June 30th, 2003. For more information on the conference, visit www.snow2004.ch.
Tel: 1-800-661-0252 or (403) 762-7108
Fax: (403) 762-5879
E-mail: marionkingsbury@cmhinc.com

Symposium of Snow and Avalanche in Warm Climatic Zones

Symposium of Snow and Avalanche in Warm Climatic Zones (SAWCZ) will be held in Manali, India (third week of April 2004). First call for papers and participation in International Symposium Snow and Avalanche Study Estt. (SASE)
RDC Him Parisar
Sector 37A
Chandigarh
UT – 160036
Tel. No.: 0172 699804-06
Fax No.: 0172 699802
Email: afg_sase2000@yahoo.co.uk

Avalanche Photography Contest

When: CAA AGM 2004
Location: Penticton, BC
Contact: Brent Strand
E-mail: canav@avalanche.ca
Notes: Enter to win incredible prizes, not to mention the glory of having your photo published in the Avalanche News or on-line. There will be three categories: CAA members in the field, events & occasions and, of course, avalanches! All images entered will be displayed at the next AGM. Stay tuned for more details.

Sledder's Avalanche Poker Rally a Hit

Black Diamond, Alberta - This past March, the CrowSnow Riders Snowmobile Club from the Crowsnest Pass and Zac's Tracs of Black Diamond teamed up to host an event to teach avalanche safety skills and raise funds for the CAA.

Snowmobilers from Airdrie, Calgary, Claresholm and even southern Saskatchewan joined the locals and were introduced to snowpit analysis and rescue skills.

Cory Boschman and Matt Greeno from Pincher Creek demonstrated snowpit tests and discussed the significance of weather events and layering within the snowpack. They even created a mini avalanche by breaking off a cornice to trigger a small wind-drifted slope. This gave visual examples for discussions of slide layers, shear and tensile failure areas, and the huge impact that wind drifted snow has on snow stability.

Dwayne Wilner of Toys for Boys, and Jamie Drockner of Crowsnest Motorsports, both from Coleman, AB, guided participants through a probing exercise in the search for a buried dummy. Sledders probed through 2.5 metres of actual avalanche debris and learned to identify the difference between the ground, dense packed snow, a body, rocks, trees, helmets and various sled parts. Peter Kimmel, avalanche consultant with Incline Research and Control Ltd. of Revelstoke, BC, generously offered his expertise throughout the day's events.

Randy & Lori Zacaruk, avalanche awareness instructors with Zac's Tracs of Black Diamond, AB, offered tips and assistance during beacon searching exercises. Many participants had only a limited understanding of effective search techniques with their equipment. Even participants that had practiced with their gear previously recognized the need to test themselves with multiple 'victims'. It was also clear that depth of burial and the angle at which the victim is buried can have an impact on efficient pinpointing during a search.

> *"...a few people had to be guided in order to turn their beacons over to receive. There is definitely a need for these types of events."*

"All those involved really enjoyed the event and awareness acitivities," said Lori Zacaruk. "For some it was a refresher, for others they said it really opened their eyes. A few people had to be guided in order to turn their beacons over to receive. There is definitely a need for these types of awareness events."

Tammy Tracey, president of the CrowSnow Riders, and Lori Zacaruk were pleased with the day and plan for the event to grow next year. They would like to work with other local snowmobile clubs to increase participation and the fundraising objective of the event. $425 in cash donations were collected on behalf of the CAA to help support the Public Avalanche Bulletin. More than $750 in cash prizes were awarded to those with winning poker hands and over $1500 in door prizes were won.

Kirk's Vacuum Service Ltd. of Taber, AB, and Mammut, a company distributing the Barryvox avalanche transceiver, were the event's main sponsors.

Peter Kimmel talks to sledders about the ins & outs of probing.

Job Postings

KHMR Mountain Safety - Senior Patroller / CARDA Dog Handler

Pre-requisites:
- C.A.A. Level I
- B.C. W.C.B. Blasting Ticket
- C.A.R.D.A. Validated Dog
- 80 Hr First Aid w/ Experience

Preferred Qualifications:
- C.A.A. Level II
- 3-5 Yrs Avalanche Control Experience
- Outdoor Emergency Care First Aid (www.nsp.org)
- Medical Protocol Training

Ski patrollers maintain the safe conditions of ski trails, perform avalanche control duties, administer first aid to injured guests & staff, perform lift evacuations and search and rescue operations. As a validated CARDA dog handler you will share responsibility in maintaining the CARDA facilities and program. This is an excellent opportunity to join a highly skilled and active team.

Please forward resumes to:
Jeff Haack
Kicking Horse Mountain Resort, Mountain Safety Manager
Ph: (250) 439-5406
Email: jhaack@kickinghorseresort.com

BACKCOUNTRY ACCESS - Technical Representative - Canadian Rockies

Backcountry Access is a leading manufacturer and distributor of ski touring and avalanche safety equipment, based in Boulder, Colorado. We are looking for a part-time technical representative based in Calgary, Canmore, or Banff to service the Canadian Rockies region. BCA tech reps educate retailers, consumers, guiding and snow safety professionals on the proper use of our products. The product line includes Tracker DTS avalanche beacons, Companion and Chugach Pro shovel systems, Alpine Trekker ski touring adaptors, Low-Fat climbing skins, and our new Stash pack series.

Responsibilties:
- Provide morning and/or evening "product knowledge" clinics to sales staff at key outdoor retail shops
- Provide on-snow demonstrations to snow safety professionals, ski patrols, search-and-rescue groups, and at public avalanche awareness events
- Make verbal/slide presentations to groups at workshops and conferences
- Network with influential members of the backcountry skiing, guiding, and snow safety communities
- Provide demo products to professionals and groups on a loan basis
- Obtain product feedback from users and communicate with BCA product development team
- Provide documentation of tech rep activities to sales management at BCA headquarters

Requirements:
Strong backcountry skiing and snow safety experience, a knack for teaching others, and occasional travel.

Remuneration:
Payment is on a per-event and per-day basis. Travel, phone, food, and lodging expenses are covered. Two days of technical training is provided at BCA headquarters, Boulder.

Please e-mail or fax resume to:
Bruce Edgerly
Backcountry Access, Inc.
(303)417-1625 fax
(303)417-1345 phone
www.bcaccess.com

sincere thank you

The Canadian Avalanche Association would like to thank the following orgranizations for their support over the past winter.

Our Presenting Partners

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Public Avalanche Bulletin Sponsors

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Ministry of Forests
Provincial Emergency Program
Recreation Outfitters Inc.
Survival on Snow
The North Face

Other Public Avalanche Bulletin Group Donors

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Avalanche Pizza, Whistler
Backcountry Access Inc.
Big White Ski Resort
Calgary Mountain Slide Show Festival
Canadian Avalanche Rescue Dog Association
Fernie Pro Patrol
Golden Snowmobile Club
Grouse Mountain Resorts
Kelowna Snowmobile Club
Longhorn Saloon, Whistler BC
Mt. Cain Volunteer Ski Patrol
Pemberton Valley Snowmobile Club
Prince George Backcountry Recreational Society
Revelstoke Avalanche Awareness Days Committee
Same Sun Hostel, Revelstoke BC
Tetrahedron Ski Club
Varsity Outdoor Club, UBC, Vancouver
Whister Avalanche Awareness Days Committee
Whitecourt Trailblazers Club
World Adventure Consultants, Kamloops BC

Please accept our sincere thanks.

canadianavalancheassociation

SnowSmart and Recreational Avalanche Course Comes to Jasper High School by Terry Winkler

Last winter Jasper students were learning valuable lessons in avalanche awareness and ski hill safety with a new program introduced at the local high school. Through a partnership between Jasper Jr/Sr High School, Parks Canada, Ski Marmot Basin, the Friends of Jasper and the Regional Health Authority, local students had the opportunity to take part in the SnowSmart program as well as a Recreational Avalanche Course.

Kids growing up in a ski town are surrounded by a wide variety of winter recreational activities. Jasper kids often get their first introduction to skiing and snowboarding at Marmot Basin. These same local kids use not only the slopes of Marmot Basin and other resorts, but also ski or board out of bounds and participate in activities such as cross country skiing, ski touring and climbing, where the risk potential is high. The knowledge, skills and attitudes that they learn in the early years are key to their safety as well as their lifelong enjoyment of these sports.

That's why the partners responsible for the program felt it would be a perfect fit for local students. Ski hill statistics show that the number one cause of resort incidents is skier error and that the 10-19 year age group comprises 88% of all snowboarding injuries. The vast majority of these incidents are preventable and are often caused because kids are not recognizing and managing the risks involved. This probably results from the fact that the majority of kids who ski or board at the hill don't really consider that once they go outside the ski hill ropes, the rules and risks are different due to avalanches.

"the majority of kids…don't really consider that once you go outside the ski hill ropes, the rules and risks are different due to avalanches."

Recognizing and managing risks is an important component in reducing preventable injuries to themselves and others. This will in turn make them aware of the risks involved with the activities on and around ski hills and will provide them with skills that would help them to use Marmot Basin and the surrounding National Park in a safe manner.

The program is delivered in two components. The first level focuses on delivering the SnowSmart program to grade 7 students. The Edu-kit contains a video, six-lesson curriculum which meshes with the grade 7 physical education and science curriculum. This component was delivered by high school teachers. The second component is offered as an elective, open to students of grade 10-12 and is eligible for course credits through CTS (Career Technical Studies program). This portion of the program is more in depth and includes the Grade 10 "SnowSmart" program (phys ed and physics) combined with a Recreational Avalanche Course. Guest speakers from the Marmot Basin ski patrol and a Parks Canada dog handler and public safety specialist were also brought in to supplement course material. On completion of the course, students have gained insight into assessing risks and making informed choices. They also gain insight into assessing avalanche terrain and travelling safely in winter terrain.

Peter Amann, Director of Public Safety at Ski Marmot Basin, speaks to a group of Jasper high school students about safety issues beyond the ski hill ropes.

All the partners in the program have been extremely enthusiastic and supportive. Special thanks go to Ski Marmot Basin for providing the teaching expertise of Peter Amann (Director of Public Safety) and transportation for students to and from the hill for the field sessions. "We already have funding in place for next year and hope to have the program continue on a yearly basis into the future," says local organizer Terry Winkler.

Anonymous Donor Buys CAA New Radios

Revelstoke, BC – A gift of $1500 was recently sent to the CAA in memory of all the skiers and snowboarders who have lost their lives to avalanches. The sole request of the anonymous Alberta-based donor organization is that the funds be used to purchase programmable rescue radios for the CAA. The letter accompanying the cheque said "We all recognize the quality and importance of the work the Association does and we trust that this small gift will assist you to make our mountains just a little safer for all to enjoy." Evan Manners, operations manager of the CAA says, "These radios will go a long way in helping our avalanche training school instructors improve safety in the field."

Becoming a CAATS Instructor by Ian Tomm

During my presentation at the AGM in May, I stated that the Canadian Avalanche Association Training Schools (CAATS) program is growing and expanding to meet the increasing needs of industry and students. Development of our instructor pool is vitally important in order to meet these demands. Since I took over this position a year ago I have been constantly bombarded by questions like, "How do I become a CAATS instructor?" or "What do I need to do to teach on the Level 2 program?" For the past 13 months I have talked with people individually and informed them on what the 'process' is and how to start the ball rolling in order to become a CAATS instructor. I have also realized that much of our membership doesn't know what the process is. It is my hope that this article will shed some light on this process and help clarify any confusion that may exist.

All of the policies that govern the CAATS program have been developed and approved by either the Education Committee or Board of Directors. The executive director (Clair) and operations manager (Evan) provide guidance and support for day to day, operational considerations. Some of the policies like instructor standards, instructor hiring, promotion and student evaluation have been initiated in course leader and instructor meetings during AGMs and have then been taken to the appropriate committee for further refinement and approval for use in the CAATS program.

CAATS Instructors
CAATS instructors come from a diverse and varied background in the avalanche industry. Some are long-time, highly experienced front-line workers while others have equal or greater experience but occupy more managerial positions. Our current instructor pool comprises a cross-sectional representation of the industry including transportation and resource industries, ski hills, research and mechanized and non-mechanized guiding. One facet of our industry that is currently not represented well is the snowmobiling industry. This is a deficit in our program that I am currently trying to address.

Traditionally, CAATS instructors were those members who were active in our association and that held more senior positions in their respective industry. As the CAATS program expanded we had to recruit instructors that showed significant promise as instructors in the program but did not necessarily come from backgrounds of experience or seniority that traditionally was required. Therefore, promotion within the instructor pool is a balance between industry forecasting experience, experience on courses, approval by course leaders and feedback from students. It is common with some instructors that they may stay at the assistant instructor level for several courses before promotion to full instructor.

Minimum Qualifications for CAATS Instructors
These guidelines were developed by the course leaders, reviewed by the Education Committee and approved by all who have worked in CAATS. There is no doubt that with the increasing demands placed upon our program that these standards become more important. We have to weigh the importance of maintaining high levels of standards in all our instructors with the fact that some of the qualifications may limit the participation by some industry specialists. The resource specialist position was developed to address this issue without diluting the importance of the approved instructor qualifications.

Prerequisites include:

- Good standing as a professional member of the CAA
- A current 80-hour First Aid Ticket (AWFA, OFA3, EMT)
- Five or more years actively working in the avalanche patch

Recruiting and Hiring
New members that are interested in becoming a CAATS instructor should be aware of the process before applying. It has been my experience during the past 13 months that some, albeit a minority, interpret the opportunities within CAATS as an alternative income stream. I think that many of our long-time instructors can confirm that being a CAATS instructor requires as much volunteer time as it does paid time.

In order to be considered for an instructor position you must have the following:

- Professional Member, in good standing, of the CAA.
- Current First Aid (min. 80 hr) and CPR.
- Module 1 of the Operations Level 2 program
- Letter of Recommendation from a *current* CAATS Instructor

Preferred requirements for new applicants:

- Teaching and instructional experience (formal training preferred)
- Experience in a senior position in the avalanche industry
- Diverse experience in industry (i.e. ski hills, highways, etc…)
- Participation as an active member of the CAA
- 10+ years of experience in the industry

Each application that is received is reviewed and compared to the above criteria. Some applicants are not yet at the required level of experience or training to be considered a potential CAATS instructor. Difficult applications, those that show promise but may be lacking in one or more areas, may be referred to the Education Committee for further input. A short list is then made of those applicants that have the necessary prerequisites.

From here the process gets complicated. A top priority of the program is to provide students with a cross-section of instructors from the industry. We strive to have representation from guiding, ski hills, research and transportation and resource industries on each course whether it be a Level 1, 2, TRI or any other course CAATS offers. Due to the nature of scheduling instructors that have other work commitments we sometimes don't do as well as we like in this regard. In these cases we rely on the experience level of the instructors scheduled on the course to offer their insight into other facets of our industry.

We then take new potential instructors and weigh their qualifications against the current and estimated future needs of the instructor pool. The guiding industry is quite active these days and there are many applicants who come with that background. Our greatest need for new instructors is those from the transportation or resource industry, and those from a ski area work environment. This is not to say that if you come from a guiding background that you need not apply. Simply keep in mind that, only the more experienced guides will be considered for a position within CAATS.

This is not an easy task. Sometimes the duties of managing the program's logistical and operational needs takes priority over instructor recruitment, and therefore I rely heavily on the recommendations from course leaders and the Education Committee. It is a reality of this program that no matter how hard I try to incorporate some sort of formal process to ensure no member gets lost in the fray, that applications do get buried only to remerge months later around the time the snow is melting.

After an Instructor has Been Recruited

I have an aversion to using the word *hired*. I'm pretty sure that no CAATS instructor considers themselves as ever having been 'hired' by the CAA. When you only work one week per season, and that week requires a significant amount of unpaid preparation and training time, it is more like an honorarium than anything else. Being a member of the CAATS instructor pool includes a significant amount of unpaid involvement in the program. Attendance at AGMs, technical training, instructor skills workshops, work groups and numerous other initiatives within the CAATS program are all, for the most part anyway, unpaid time commitments. This is something that not many new instructors, or potential instructors are aware of. It is the very nature of our association, and the CAATS program is no exception, that it is run by the volunteer efforts of its members. If not for the continuing volunteer efforts of our instructors, the CAATS program would be decidedly different than it is today.

After being recruited into the instructor pool as an 'Observer' there is a significant time investment required. While it is not my intention to go through this in detail, here is a list of the commitment and involvement required by program before a 'paid' position can be expected:

- Participation at Instructor Skills Workshops (ISW's)
- Participation at Instructor Technical Sessions
- Observing on a Level 1 Ski Operations Course
- Attendance at AGMs

There may be several opportunities to observe on courses throughout the season and it is encouraged that new recruits take advantage of these opportunities. For the most part this work is volunteer, and expenses are the responsibility of the observer.

At the spring CAATS Course Leader meetings we discuss the new observers of the year and promote them to Assistant Instructor as appropriate. The above requirements of new recruits may be interpreted as a 'checklist' of involvement in the program in order to be promoted to certain positions, but this is not the case. There are many other considerations about new recruits, and current instructors, that are beyond the scope of this article and any checklist that could ever be developed. It is important to recognize that while someone might be considered an exceptional avalanche professional that their suitability to a teaching and instructional position may be not be as good. Our technical training programs have gained international stature, in large part due to the quality of our instructor pool. This entire process, including the course leader review of recruits and instructors at the AGM, has played a significant role in that prestigious reputation that our association has built for this program.

Due to the natural ebb and flow of scheduling and the randomness in student enrolment that we battle every year, even long-time instructors run the risk of being cancelled from a course that does not fill. We have mechanisms in place to try and address this and hopefully lessen the impact on instructors if they are affected by a cancellation. New instructors should be aware that we tend to schedule our experienced instructor pool first and then try to fit in new recruits where we can. We also try to team them up with the most experienced course leaders to facilitate a fast and positive learning experience in becoming a CAATS instructor.

Taking Applications?
The short answer is yes, always. However, in practice it may not seem the case. In the 13 months that I have been in this position, I have received 80+ (yes that's right, *eighty*) applications and many more emails of inquiries and interest in becoming a CAATS instructor. Granted, some of these applications come from people who aren't even members, or do not have the necessary prerequisites; however I think you realize what I'm up against. This year we invited eight people along to train and observe, and those were primarily members that had been recommended already in past years. We have a few deficits in the representation of industry in our instructor pool, including gender representation, that I am currently trying to address so new recruits will reflect those requirements.

I encourage you to contact me and further discuss this process if you are one of the many members that are interested in working on CAATS programs. I hope that this information clarifies the process a little and will help lay to rest some of the frustration that I have been hearing from members in the past year. If no opportunities exist in the CAATS program currently for instructors I would recommend and encourage that you get involved with other aspects of our association, (committee member, RAC program, Avalanche Awareness Days, CAF work, AGM help - the list goes on).

Ian Tomm
Training Schools Coordinator
ian@avalanche.ca

20 Years of AVI Dog Courses at Alta / Snowbird Utah by Pat Coulter

The Wasatch Backcountry Rescue (WBR) latest dog handling course, held March 31th-April 4th at Alta / Snowbird, Utah, was attended by 26 handlers and dogs from seven states: California, Colorado, Idaho, Montana, New Mexico, Oregon and Wyoming.

The level of participation was a testament to how dog handling courses have grown from their humble beginnings in the early 80s. Many of the handlers at the original American courses are now moving into roles as instructors. WBR members say that attending CARDA courses has supplemented their original training and helped prepare them as instructors.

The 26 handlers and dogs that took part in WBR's latest course enjoyed sunny, cool training days at sites as high as 3600m. Hats off to Mongo, the Area Manager of Snowbird, for setting up a helicopter rescue day. It was the ultimate practice scenario.

Each dog team was separately helicoptered to its own wilderness search site to practice a rescue scenario. Upon arrival, handlers practiced search management and dogs were set to work as soon as they exited the helicopter. All of the dogs that took part, 75% of which were Labradors, turned out to be excellent searchers. Roughly 10 local media were present to observe these practice exercises.

Thanks to Gordie Burns and Wasatch Backcountry Rescue for a job well done.

Book review: *Snow Avalanche Management in Forested Terrain* by Bruce Jamieson

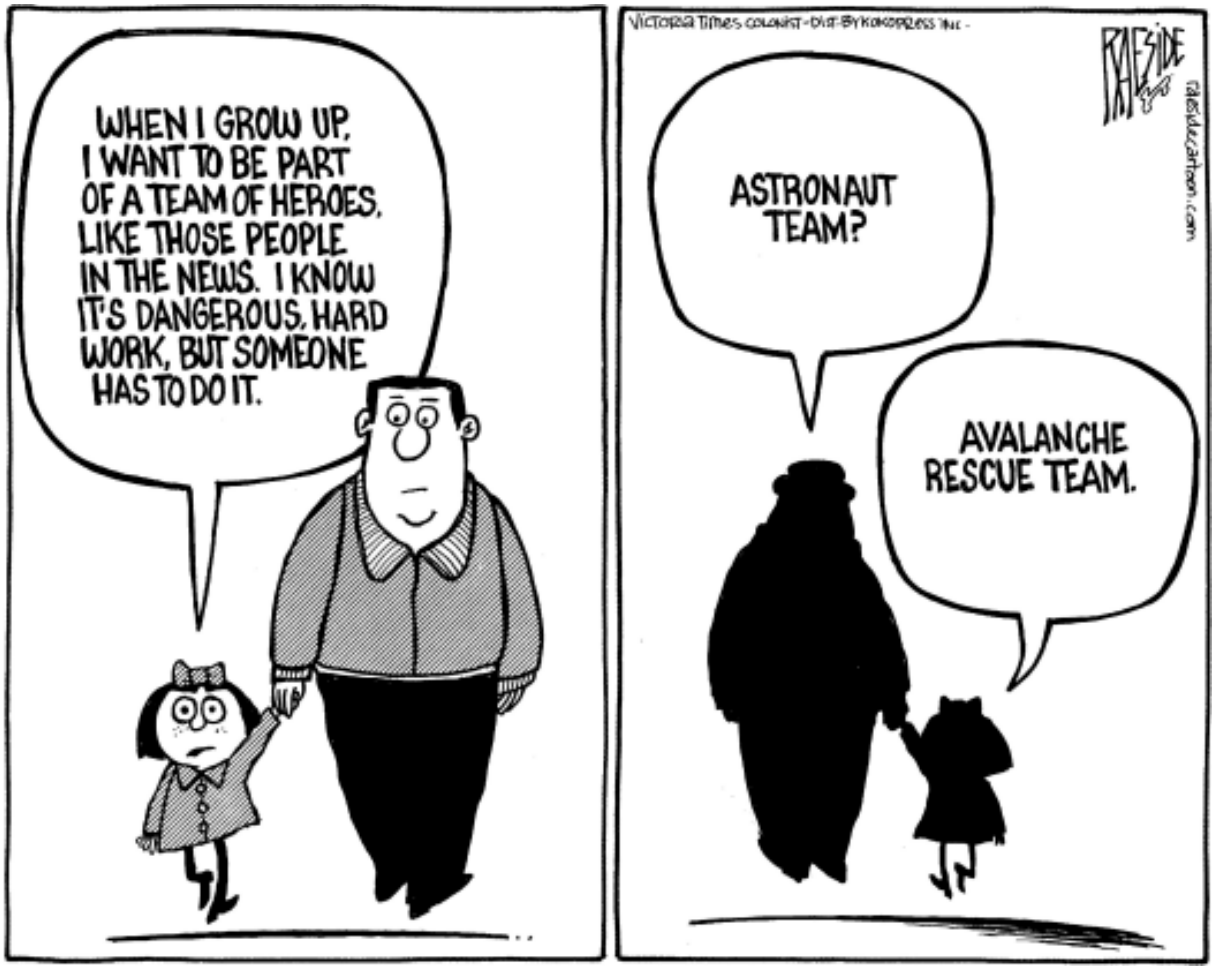
In September 2002, Paul Nystedt of the BC Ministry of Forests asked me to review a proof of *Snow Avalanche Management in Forested Terrain* by Peter Weir. The 182-page book is due to be published by the BC Ministry of Forests in February 2003, and is for the wide range of people involved in reducing snow avalanche risk in forestry.

The book includes sections on avalanche phenomena, avalanche motion, terrain, risk assessment, pre-harvest mitigation and planning, as well as management of operational avalanche risk. The interdisciplinary character of snow avalanche problems and solutions in forestry is made clear by relating avalanches to wildlife habitat, hydrology, weather, geomorphology, roads and silviculture. The photographs are one of the book's strengths: there are more than 130 images that illustrate key points in the text. On the topic of designing cutblocks to minimize the frequency and consequences of snow avalanches, Weir discusses some practical ideas, again with excellent illustrations. The book concludes with seven case studies, ranging from planning to operational problems.

Considering the International Snow Science Workshop in 2002 and the International Glaciological Society conference on avalanches scheduled for 2003, Weir's book comes at a time when more than 100 papers on snow avalanches are being published per year. Weir summarizes much of the current research and provides the reader with more than 150 references. The book acknowledges that the research—notably the work by Dr. David McClung and the UBC Avalanche Research Group—will provide new results in the near future.

The book successfully assembles current ideas from diverse sources and offers up-to-date solutions for managing avalanche risk in forested terrain. It is an important resource for the diverse occupations involved in reducing snow avalanche risk in BC forestry.

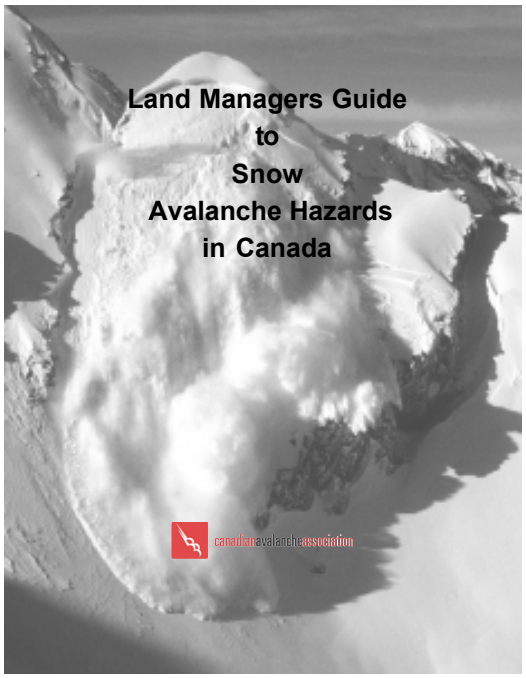
Humour by Adrian Raeside



CAA Publications Now Available:
Land Managers Guide to Snow Avalanche Hazards in Canada

Did you know that snow avalanches in Canada result in direct costs of more than CAD $5 million annually (Jamieson and Stethem, 2002)?

Most of the direct and indirect costs associated with avalanches can be reduced by recognizing, mapping and mitigating the hazards to fixed facilities and operations. The CAA has recently published a book to lay out the framework to do exactly that.



The ***Land Managers Guide to Snow Avalanche Hazards in Canada*** was designed to help local land managers and their consultants recognize and mitigate potential snow avalanche hazards that might affect existing or proposed fixed operations and facilities in their jurisdictions. Such facilities and fixed operations include:

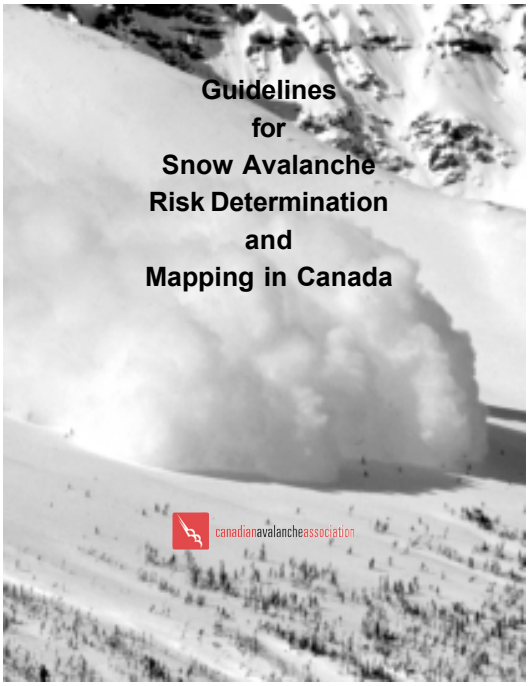
- Corridors for transportation, energy or communication
- Temporary occupied structures, industrial plants and mine facilities
- Work sites such as construction projects and forest harvest operations
- Commercial backcountry recreational operations
- Ski areas and the associated lifts and buildings
- Residential and permanently occupied structures

The guide book was prepared by the CAA's Avalanche Hazard Mapping Project Team: Dr. Bruce Jamieson, Chris Stethem, Peter Schaerer and Dr. David McClung. If you're trying to figure out whether you need an avalanche consultant, this book lays out the process to help you decide. It covers the following topics:

- Recognition of potential avalanche problems
- Typical methods for avalanche hazard mapping
- Elements of a hazard/risk map and report
- Selecting avalanche expertise
- Typical mitigation and mapping for various land uses
- Avalanche protection (location planning, protection of forest, acceptance of risk and temporary and permanent measures)

While this guide book is intended for local land managers, a companion volume entitled ***Guidelines for Snow Avalanche Risk Determination and Mapping in Canada*** (Canadian Avalanche Association, 2002) provides the technical reference for avalanche consultants and others interested in a definitive statement for guidelines. This document describes concepts for determining avalanche risks and contains proposed guidelines for avalanche mapping and acceptable risks. The guidelines were produced with support from the National Search and Rescue Secretariat (NSS) under sponsorship from Parks Canada and the publication is part of an NSS accident prevention program.

Both pulications can be purchased on the CAA's on-line store at www.avalanche.ca/shop/index.html



Considering Considerable and Other Considerations by Steve Blake

Let's think for a minute about how many of the world's problems are solved late at night, over large amounts of drinks. This is, in fact, where many of the following ideas were hatched. It is important to keep in mind that the content herein does not represent new ideas.

For the sake of granting this paper some structure the general population is divided into four groups. We have The Unaware, The Untrained Recreationalist (which my spell checker maintains is not a word), the Trained Recreationalist and the Avalanche Professional. Each group has it own idiosyncrasies in regards to avalanche exposure.

The Unaware

In mountainous areas of our country avalanches are naturally occurring phenomena. The Unaware user group is exposed to this danger most often without realizing it. Urban common sense provides no basis for decision making in mountainous places. What The Unaware do not realize is the thin line between controlled and uncontrolled terrain. Drivers on our highways cruise through serious terrain at breakneck speeds (though they are substantially more at risk of running into an oncoming vehicle than they are of being hit by an avalanche). In areas like the North Shore in the lower mainland of BC, a walk out of a trailhead parking lot can bring you into avalanche terrain before you are out of audio range of your car alarm. At ski areas, often all that separates The Unaware from significant avalanche danger is a few signs and a thin strand of yellow poly-pro rope.

From a Canadian perspective The Unaware user group is not at significant risk. The message for this group is simple. Avalanches happen. Programs like Snowsmart go to great lengths to raise the basic awareness by introducing the core concepts of avalanches at both junior high and high school levels.

The Untrained Recreationalist

Differing from The Unaware, The Untrained have specific intent to go into the mountains and seek out steep slopes in the pursuit of their recreational goals. This is the yet-not-fully-tapped RAC market. Skiers, climbers, boarders, sledders, snowshoers - they are all included.

Because this group has no formal training they frequently miss key natural warning signs. The Untrained will attack slopes adjacent to those which have slid naturally because these slopes still have snow on them. At present this segment of the population derives little or no benefit from the public avalanche information systems that exist. I suggest that even if these folks had the wherewithal to access to the various public bulletins that the information provided would go over their heads.

The concept of avalanche danger signs on roadways giving the one-word danger rating to passing public (see figure 1) has long been viewed as an inadequate means of delivering the message. My thought here is if you think the one-word danger descriptor is adequate to help you make better decisions, then you would not understand the contents of a detailed avalanche bulletin in the first place. (This may also serve to increase The Unaware user's basic concept that avalanches happen.)

Figure 1. Roadside signage. Would it work?

The Trained Recreationalist

These are the folks with avalanche awareness training of various levels now referred to as RAC and ARAC. This segment of the population is most at risk during periods of *considerable* avalanche danger.

Figure 2 illustrates a bell curve of avalanche accidents and how they relate to the various danger rating. The considerable rating is where the bulk of fatal accidents occur. This graph is meant to illustrate the concept, but if you were to take the actual number for the 2002-2003 winter you would see a more significant spike in the Considerable range.

Figure 2. Danger rating vs number of accidents.

Figure 3 illustrates the same point relating the danger scale on the left to a relative "Risk" scale on the right. Through the spectrum of danger ratings an individual's risk actually decreases after considerable.

Figure 3. Danger vs Risk

cont.

Another dilemma The Trained Recreationalist demographic face is the quantity of information available. Figure 4 and 5 show the discussion section of two actual avalanche bulletins produced this winter. Figure 4 is quite clear and concise and was posted during a period of high/extreme danger. Figure 5, a well-written example of a *considerable* discussion, clearly demonstrates that while the quality of the product may be good the quantity of information is awry. Most of the considerations regarding snow stability are covered in this discussion. Snowpack structure, crystal structure, the effects of temperature, wind, sun and aspect as well as triggers, avalanche types, terrain and field tests are mentioned. But the bottom-line? The important nuggets? Well, you decide.

> Widespread natural avalanche activity has continued at all elevations and on all aspects throughout the forecast area. Many of these avalanches are stepping to the ground and are running full paths to valley bottom. All backcountry travel should be limited to low angle terrain well away from avalanche path runouts.

Figure 4. A High/Extreme avalanche bulletin discussion.

> Very cold temperatures are providing a temporary stabilizing influence in the upper portion of the snowpack. The cold weather doesn't benefit the snowpack in the long run however, as the strong temperature gradient causes facetting and restricts snow settlement. The Alpine has a hard windslab formed on lee features and various layers of weaker facets in the midpack are still present. Stability tests continue to demonstrate that the 40cm of depth hoar crystals near ground is the layer most prone to collapse. This indicates that any slide triggered could start in, or step down to, these basal facets and have large snow volumes associated. The right trigger, possibly a backcountry traveller, would be sufficient to propagate a slab moving on these lower weaknesses. Conservative terrain selection is still very important. This time of year allows strong, direct sun effect on southerly aspects. Loose snow avalanches are still being triggered from rocks and ridgelines from strong solar radiation despite the cold air temperature. Don't discount this danger even though your hands may be freezing to your ski pole or ice tool!

Figure 5. A Considerable avalanche bulletin discussion.

Professionals

This general class includes the avalanche professionals themselves. To complete the picture of this user group The Professionals and their charges must be considered. When including highway avalanche workers the motoring public must somehow be included, avalanche control teams as they care for ski area users, as well as guides and their clients.

Scale

A large number of "professional" level accidents are the result of avalanches propagating larger than expected. "I'm not surprised that it slid, but the size is what shocked me," may be the related quote. Most accidents in this class see the professional worker with extensive knowledge of the snowpack and local terrain. The suspect sliding layer(s) has usually been identified and tracked over time.

Experience

In January 1996 the Parker Ridge area in the north of Banff National Park received 205 cm of snow during a single storm that lasted several days. The excited junior forecaster asked the well-seasoned senior forecaster what happens next? The veteran, perhaps in an effort to quiet the youngster or maybe with true profundity in mind says simply, "I don't know. I have never seen a storm of this size." Wise words indeed.

Figure 6 plots years of experience versus height of snow. In the highlighted five-year period it is apparent that this individual has five years of experience within an "average" set of years. It is incumbent on us as professionals to recognize this limitation. In subsequent years when conditions range outside of the average by half or twice as much this person will be in a "new place" in regards to conditions. As a group of professionals, we are good at maintaining a healthy respect for new places. We need to adopt this approach for new temporal places as well.

Figure 6 Relative experience factors.

Caution must also be exercised in this regard at an organizational level. The Parker Ridge avalanche fatality report begins with a sentence that states that park wardens had been using this area for 20 years for the purpose of snow observations. This corporate knowledge must be carefully evaluated as to how it relates at a given time. One thing for sure, the "corporate" feel for a place like Parker Ridge will change in the future. After this lesson it will certainly be considered a serious place where it wasn't before. But what has changed?

In summary, as the broader avalanche community, we must always consider:

- Our audience. We must understand to whom we are speaking.
- The clarity of messages. We must be clear about what we are saying.
- The scale of terrain. It seems size does matter!
- Any personal knowledge/experience gaps that may exist. This occurs through a process of continuous self-evaluation.

RAC Trained Sledders Save Lives by Sabine Lutfring

BEFORE (left): An arrow points to sledder Randy Dortman, stuck on the north face of Nelson Mountain minutes before a massive slide that buried him and two friends.

AFTER (right): An arrow points to the place where Randy's sled was stuck and shows the scale of the slide. The line crossing the slidepath horizontally below the arrow is the bench where most of the group was sitting while Randy dug out his sled.

On March 16, 2003, Sabine Lutfring set off for a day of snowmobiling on Nelson Mountain with her partner and his son, not far from their home in Vernon, BC. Later that day a size 3 avalanche hit the group and three fellow sledders, fully burying one person and partially two others. One of those buried was her partner. In an excerpt from her journal, Sabine describes how the group dealt with the search for the buried sledders and fortunately rescued all three. Her account is followed by a brief description of the avalanche from the perspective of Randy Dortman, who was fully buried for 15 minutes.

As someone who has taken avalanche training, Sabine considers herself a strong safety advocate and is, "embarassed to say that later on that afternoon, we just let our guard down." Sabine and her group, whose rescue efforts are nothing to be embarrassed about, go to prove what she says, "Avalanche awareness programs do work!"

As we drove to pick up our friends early that morning, the sky looked brilliant and it promised to be an awesome day. We met up with fellow snowmobilers Eugene and Mike and there were now five in our group including myself, my partner Kevin and his son Byron. Once unloaded, we travelled up over the peak of Nelson Mountain and tracked up the south slopes. It was just a beautiful day and everyone was enjoying the ride.

> *"I feared more for my life at that moment than I ever had."*

At about 2 pm we met up with Randy Dortman, Brian, Bill and Frank, who were all sitting on by the trees at the bottom of the slope, taking a break from an awesome day of sledding. We chatted for a while and then Randy's group headed up for another run over the peak of Nelson. We watched them snake up the hill in a loose line.

Randy was the first up the hill and instead of turning on the bench that we normally take to the peak of Nelson, he continued straight up and hit some snow that was so deep that he didn't have time to react and turn out. He was stuck. Soon the rest of his group was gathered on the bench below him. Our group was still at the bottom, watching. In hindsight, this is where we all started making mistakes, letting our guard down.

It had been such a beautiful day and, even though I remember thinking about slides while we were sitting at the bottom of the north face, we made the mistake of riding back up onto the bench to join Brian, Bill and Frank, directly below Randy. I think the wide bench gave us a false sense of security and caused us to ignore the crucial rule of "one person on the hill". Randy was stuck for a while, so Mike played down at the bottom of the slope, Eugene to the east of us along the bench and Frank pulled out his digital camera to take a few shots. The rest of us (Brian, Bill, Frank, Byron and Kevin) just soaked in the view. Frank had just put away his camera when a big crack got all our attention. The entire mountain shifted from east to west releasing the snow in one big thunder. Byron screamed "Get the hell out of here!" (I'm thankful he did as it made us all react) and I saw horror and disbelief in Bill's eyes. I looked beyond him at the slope and the whole mountain was in motion just metres above me. It is hard to describe the impact on your senses when that much snow is set in motion so close to where you stand, I feared more for my life at that moment than I ever had.

Looking west on the bench where most of the group stopped while Randy dug out his sled.

I can never start my snowmobile on the first pull, but somehow on that day I had immense power. I started it no problem and rode throttle wide open down the steep hill. It seemed dark and surreal as I rode down. There was a cloud of snow dust around me. I knew I was outriding it, but I still feared being caught.

Anyone who has ever ridden a snowmobile down a steep hill will tell you what a fast, uncontrollable ride it can be, even when you apply the brakes. So to have my sled full throttle down this slope gives me a good sense of how fast the avalanche was moving. Byron, Brian, and Frank also rode down and ended up with me at the bottom, where we met up with Mike. My next recollection was seeing a snowmobile making its final roll at the bottom of the slope, covered in snow, with no one on it. It was a horrifying sight. I knew there were three people in the combined group that rode that particular sled, Randy, Eugene and my Kevin. Words cannot describe the sinking feel I had at that moment. Byron and Frank turned their sleds and saw Kevin buried to his shoulders. They dug him out partially and then left him to look for others.

Our group of six (Byron, Brian, Frank, Kevin, Mike and Sabine) all simultaneously *commanded* each other to turn our beacons to receive. Adrenalin had kicked in and although we were shocked, we were incredibly focused on the task at hand. Byron screamed my way "Should we ride back up to the ridge?" I screamed, "Yes!!" Brian and Byron rode back up. Mike, Frank, Kevin and I started searching at the bottom. We were all intensely aware of the value of time, but I had no concept of how quickly it was passing.

As I was searching for a signal I was trying to figure out who was missing, but I could not wrap my head around the numbers in our group. Randy had been in a bad position when the slide started, as he was the one stuck on the hill, and Bill had been parked right in front of me when the avalanche hit, but I had not seen either of them since. I continued searching, thinking of funerals. None of us at the bottom of the slidepath were getting a signal. I couldn't believe this was happening. We had taken avalanche training and still I couldn't get my damm beacon to pick up a signal! That was one thing that had never crossed my mind in all the scenarios we practiced. It was just awful.

Meanwhile, Eugene was facing a nightmare of his own. He was riding on the far edge of the start zone when the slope first released and obscured us with a cloud of snow that ran far into the trees. As he rode over the part of the ridge where we were last seen, he realized that he might have been riding on top of buried friends. That shook him. When he finally saw Byron and Brian ride up on the bench, it was an incredible relief. The three then noticed Bill buried up to his shoulders. Byron and Brian began digging him out while Eugene started searching with his beacon near the tip of a ski loop, the only part of an otherwise buried snomobile.

Eugene immediately got a strong signal from a beacon and started digging. He found Randy's hand two feet under and followed his arm straight down. Randy, who was buried in a vertical position with one arm fully extended upwards, remembers calming himself to preserve oxygen and then passing out when his hand was touched. Eugene called for the other two to help him dig down to Randy's head, and when they reached his helmet they found his visor half open and full of snow. They uncovered his mouth and he started breathing on his own. It took the three of them a long time to uncover Randy and Bill.

Finally a call came over our radios from the bench that everyone had been located and was OK. I found it hard to believe until I saw Randy and Bill with my own eyes. We all carry radios and a few calls went back and forth naming names. Everyone was accounted for, but the experience made me intensely nauseous – I just about lost it. We all regrouped at the bottom - there were a lot of hugs and tears.

We finally had time to look at the size of the avalanche. There had been several sympathetic slides that happened in the area as a result of the one that caught us. In total, the fracture line was more than a kilometre wide, spanning the entire mountainside. The snow above the bench filled the indentation in the bench and stacked itself into a convex roll. The weight of this deposit caused a second slide below the bench, which travelled down the entire slope and formed a huge 20-foot deposit on the bottom. Further west there was another slide far into the trees that we noticed as we left the area. It was massive. Randy was the happiest man alive.

It actually feels good to pass this information on. I hope it will help build avalanche awareness and let people know how quickly you can loose focus and put your life in danger.

P.S. - Now I can definitely say that Avalanche Awareness Programs work. Before this avalanche, Byron, Kevin and I participated in Recreation Avalanche Course with encouragement from our friend Richard Rotteveel. As I mentioned earlier, when I first started searching with my beacon I was completely stressed by the fact that I was not picking up a signal. I was not mentally prepared for that scenario. I can't emphasize enough how important it is for people to trust their beacon. If they are not picking up a signal then there is no one buried in the beacon range.

The Victim's Perspective by Randy Dortman

On March 16th, eight local snowmobile club members and I were caught in a very large avalanche on the north side of Nelson Mountain, just north of Lumby, BC. Three members of the group were buried. Kevin and Bill were partially buried with only their heads above the snow and I was completely buried, as was my sled.

As I mentioned, this was a very large slide, approximately a kilometre wide with debris over 10 metres deep in places. If it was not for the quick, cool and level-headed response of the six remaining members of the group, there is no doubt that I would not be alive today.

Sabine Lutfring, Frank, Byron, Brian, Eugene, and Mike all coordinated perfectly to quickly find and assist Kevin who was near the bottom of the avalanche. Eugene, Byron and Brian, under considerable danger to themselves, made their way back up the slope and quickly located and rescued Bill who was not only buried up to his head but was also pinned under his snowmobile. At this point, Eugene, Byron and Brian very quickly coordinated their efforts to locate the signal from my beacon and started digging. Two feet down they found my up-stretched hand and continued digging another three feet down to get to my head. By this point, 15 minutes had passed since the slide hit. When I felt a hand touch mine, I was so relieved I started to drift into unconsciousness. I was out when Eugene cleaned the snow away from my mouth and I gasped for air. It took another hour of hard work and digging by these same guys under these very dangerous conditions before we all made it back down the slope to safety together. It is a truly a miracle that no one was seriously injured.

Randy "happy to be alive" Dortman moves in to hug a rescuer shortly after he was rescued from a full burial.

"Everyone in the group was wearing avalanche beacons and several in the group had taken avalanche training courses, which made the difference in saving my life"

Everyone in the group was wearing avalanche beacons and several in the group had taken avalanche training courses, which made the difference in saving my life. Needless to say everyone involved will now be crusading the dangers of avalanches and the benefits of awareness training.

I owe a huge thanks to Sabine Lutfring, Byron Beck, Eugene McAreavy, Brian Skinner, Frank Bird and Mike Laverdiere for their efforts in rescuing me. I think that Eugene McAreavy, Byron Beck and Brian Skinner in particular should be recognized for their tremendous efforts in saving my life. I am truly indebted to them for their gratitude and I will never forget what they did for me.

Randy (happy to be alive) Dortman

P.S. - To see additional photos of this slide, visit www.vernonpolaris.com/Pictures.htm

Anyone who has ever ridden a snowmobile down a steep hill will tell you what a fast, uncontrollable ride it can be!

Pinpointing on a Line:A modern technique for solving deep burials

Bruce Edgerly
Backcountry Access, Inc.

Abstract: Deep burials can provide a vexing challenge to even the most experienced of transceiver users. "Null"and "misleading maximum"signals surrounding the victim often result in excess bracketing, probing, and excavation. By pinpointing on a line using dual-antenna and digital technology, advanced users can reduce the pinpoint area from a plane to a line, minimizing their exposure to these pitfalls and maximizing their chances of making a live recovery.

Nulls and the Vertical Field

Most avalanche professionals will tell you that during a beacon search, signal strength is highly dependent on the orientation of the receiving beacon's antenna with respect to the field of the transmitting beacon. Maximum signal strength occurs at any given point when the receiving beacon's antenna is in line or parallel to the field of the transmitting beacon. However when the receiver is rotated away from that orientation, the signal becomes weaker and will approach zero if perfectly perpendicular. This directional sensitivity is the basis of performing an induction line search; while performing a fine search on the horizontal plane, the searcher periodically reorients the receiver to maintain a parallel orientation with the field of the transmitter.

Many people don't realize, that the same phenomenon occurs in the vertical plane, which is the realm of the pinpoint search. Within approximately three metres of a transmitting beacon – more as the depth of burial increases – the flux pattern starts curving sharply in the vertical plane, into the snow. Since most searchers are not trained to adjust their orientation vertically, they typically lose their alignment with the field. At some point their searching beacon, which is horizontal, becomes perpendicular to the field, which is now vertical, and the signal strength approaches zero. This point is commonly called the "null" for analog/audible-based beacons because the sound fades sharply. It's called the "spike" for digital/visual-based beacons because the distance reading on a digital display "spikes" to a higher number. In addition, the lights will go off centre and the distance display might temporarily go blank.

"Misleading" Maximums and Minimums

Nulls and spikes are a concern because they can create what are sometimes called "misleading maximum" or "misleading minimum" signals. A misleading maximum refers to the relatively loud signal an analog/audible-based beacon receives right before the searcher hits the null. Novices and experts alike often hear this null, then bracket around the loud signal they heard right before it. As they bracket to the sides and reach other fade points in the horizontal plane, a "misleading maximum" is created. These other fade points occur because as the field curves, the searching beacon loses alignment with it. And in such close proximity to the transmitter, the field curves very sharply.

With a digital, visual-based beacon, "misleading maximums" are called "misleading minimums" because the distance reading is relatively low when compared to the anomalous high distance reading at the spike. As explained below, a "misleading minimum" using a digital, dual-antenna beacon is only a point along a line, rather than a square created by bracketing on a plane. In either case, if the burial is deep, these misleading signals can be offset from the victim's actual location by as much as the burial depth. For instance, in a horizontal burial two metres deep, a searcher could unknowingly start probing or digging nearly two metres away from the true maximum/minimum under which the victim is located.

The problem of nulls and misleading maximums is exacerbated by the limitations of single-antenna technology. With a single antenna beacon, which has very little directional precision, it is very unlikely that your fine/induction line search will bring you directly over the top of the transmitter, where you would most often find your only true maximum reading. Instead, you are more likely to pinpoint around a misleading maximum. This problem occurs because with a single-antenna beacon, the pinpoint search is performed by bracketing within an area surrounding the transmitter, not along a line. And within this pinpoint area, there can be up to six misleading maximum signals that could be mistaken as the victim's location (Figure 1).

In a deep burial, this area of misleading maximums can be very large. All beacon manufacturers recommend starting the pinpoint search at least three metres out; if bracketing, this corresponds to an area of 36 square metres. However, pinpointing on a line with a dual antenna reduces this area from a large plane with up to six misleading readings to a line just six metres long, with a maximum of only two misleading readings.

[1] *Corresponding author address:* Bruce Edgerly
Backcountry Access, Inc., Boulder, CO 80301
(303) 417-1345; edge@bcaccess.com

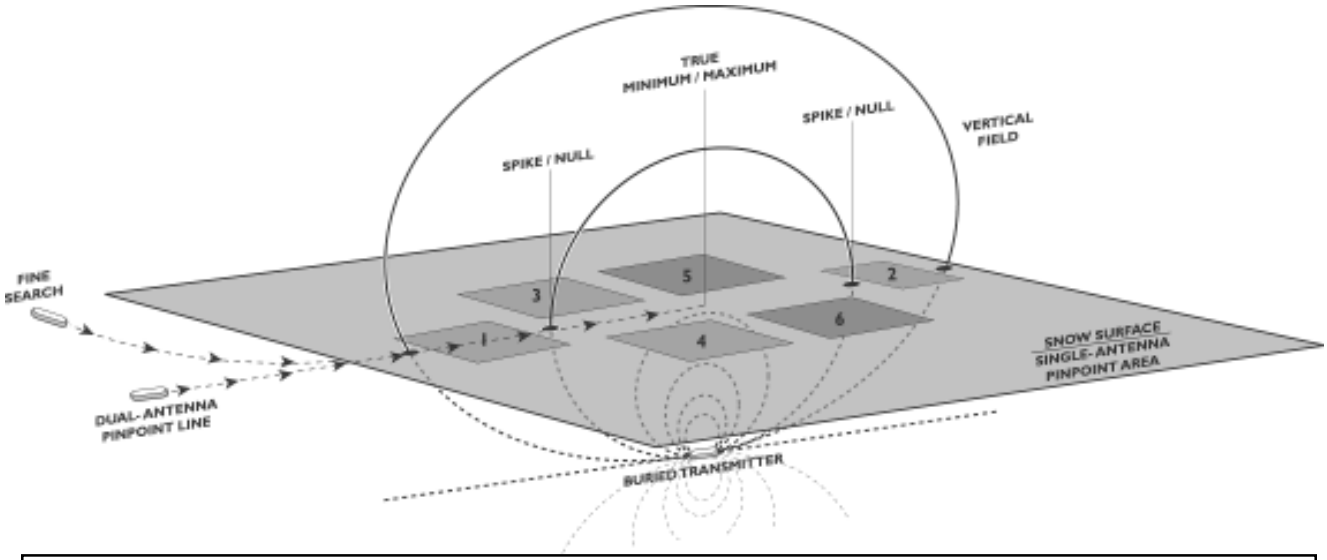


Figure 1
Misleading Maximums/Horizontal Burial: *When bracketing with an analog, single-antenna beacon, the pinpoint area can be a large plane containing up to six misleading maximum signals. Misleading maximums #1 and #2 will be encountered when bracketing with the searching beacon approximately parallel to the transmitter. Misleading maximums #3-6 will be encountered when bracketing with the searching beacon roughly perpendicular to the transmitter. When pinpointing on a line with a digital, dual-antenna beacon, the search is reduced from a plane to a line, and the searcher avoids misleading maximums #3-6.*

Vertical Burials

Pinpointing can get even more interesting in scenarios where the transmitting antenna is buried approximately vertical. In this case, the null or spike will be located directly on top of the transmitting beacon and there will be a box of maximums surrounding it (Figure 2). This phenomenon is sometimes called the "shadow box." Searchers bracketing with a single-antenna beacon will often probe the entire box to locate the victim. By pinpointing on a line with a dual-antenna beacon, this box of maximums is reduced to two minimum distance readings along the pinpoint line, with one on either side of the spike.

It should be noted that vertical transceiver burials are quite common. Statistics have shown that the majority of completely buried victims are found in a horizontal position. Since many beacons are worn on the side of the body, the antenna would be roughly vertical.

If the transmitting antenna is buried at an approximate 45-degree angle, the field will show characteristics similar to that of a horizontal burial, only the true maximum will be closer to one misleading maximum than the other. For the "shadow box" phenomenon to occur, the transmitting antenna must be very close to vertical.

For clarity, misleading readings in Figure 1 and 2 are only shown where they occur above the snow surface. Misleading readings also occur below the snow surface, but would only affect the searcher if the slope were extremely steep.

Existing Techniques

Several techniques currently in use address the issue of misleading maximums. One solution is to push through all fade signals in the pinpoint search to see if there is a true maximum reading on the other side. With enough practice, this method can be effective for both analog and digital beacons, although it requires extensive and time-consuming bracketing. Another solution is to pinpoint with the beacon oriented vertically, which can reduce the number of misleading signals. Whether the searcher is holding the beacon horizontally or vertically, however, he or she must always continue to extend his or her brackets to test for more misleading maximums. Using a more recent technique, called "pinpointing in a circle" (Genswein, 2001), the searcher holds the beacon vertically. Once a first maximum is bracketed, the searcher backs off until the signal disappears, then walks in a circle to search for a second maximum. If a second maximum is detected and bracketed, the searcher then turns his or her beacon horizontally and walks in a straight line between the two. A true maximum reading should then be encountered somewhere on this line. If no second maximum is detected, the searcher returns to the first maximum, which is then determined to be the "true" maximum in a vertical burial. This technique is mainly applicable to single-antenna, analog beacons as an aid for establishing a straight "pinpoint line" in the absence of a dual antenna.

Pinpointing on a Line

Do the techniques above seem somewhat convoluted? If so, that's because they address the symptoms, not the problem. The cure is to avoid these nulls and misleading maximums as

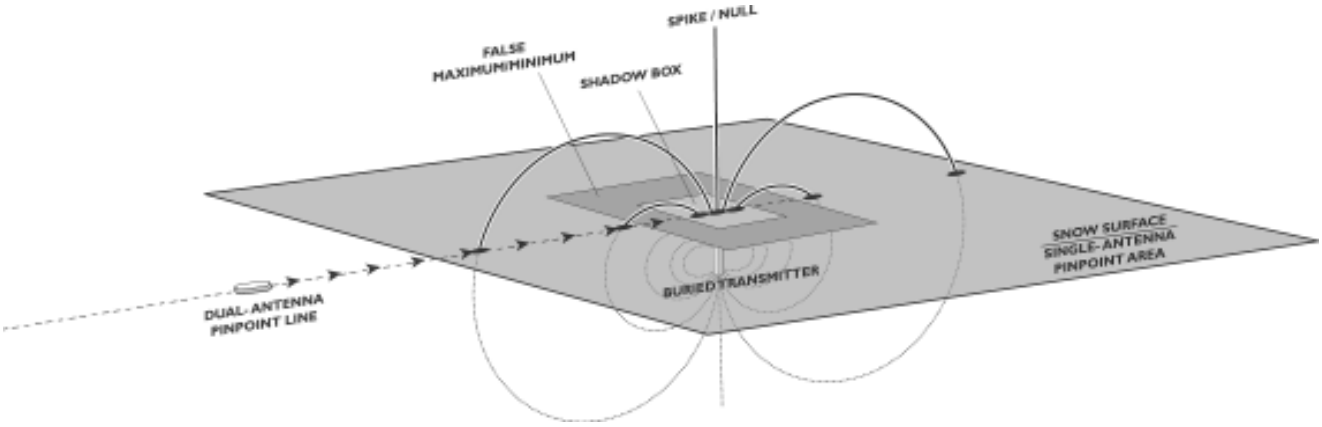


Figure 2
Misleading Maximums/Vertical Burial: *If the transmitter is oriented vertically, there will be a "shadow" directly over the victim, surrounded by a "box" of maximum readings, using a single-antenna, analog beacon. By pinpointing on a line rather than bracketing, this box is eliminated.*

much as possible by reducing your pinpoint search from a plane to a line: the axis of the transmitting antenna. The only way to do this is to pinpoint on a line, which can only be done with a modern dual-antenna, digital transceiver. Single-antenna, analog beacons do not have the directional precision required to establish a precise pinpoint line without first walking in a circle. And by pinpointing on a line, the searching beacon can be held horizontally. This is the easiest orientation for reading distance and directional information while performing an induction search with any beacon.

The key to pinpointing on a line is to establish a straight line before the pinpoint search, or at the spike reading(s). In most cases, this task is very straightforward. If you have picked up the signal from its maximum distance, you will most likely be traveling in a straight line before reaching the spike. However, if your search path is still curved when you reach the first spike, back up and approach the transmitter from another angle (Figure 1). After one or two different approaches, you will be able to extrapolate a straight line that will closely correspond to the axis of the transmitting antenna. At this point, it is helpful to lay a long object, such as a ski or probe pole, down on the snow surface in the direction you have established. You can then limit your search to this line, avoiding all but two of the six potential misleading readings.

Once you have narrowed the search to this line, ignore all directional arrows and simply look for the lowest distance reading along the line. When you detect a minimum reading, extend past it, along the line, to see if there is another one. If there is only one minimum reading and two spikes, probe at the single minimum reading, because the transmitter is buried approximately horizontal. If there are two minimum readings and one spike between them, probe at the single spike, because the transmitter is buried approximately vertical. If the number of spikes is unclear, probe at lowest reading.

Before probing, it is helpful to confirm the minimum reading(s) by bracketing once perpendicular to the line. This step will add more precision in case the line wasn't established properly. In a horizontal burial, keep the searching beacon horizontal and bracket at the lowest reading. In a vertical burial, orient the searching beacon vertically at the spike and bracket. In both cases, ignore directional readings and pay attention only to the numeric distance display. With enough practice, an expert searcher should never have to probe more than once.

Bracket searching is a valid and reliable pinpoint search technique using both analog and digital avalanche beacons, especially for novices in shallow burials and for experts in close-proximity multiple burials. For most professionals, however, pinpointing on a line promises a much-needed cure for the deep burial blues.

References

Genswein, M., 2001. Pinpointing in a Circle.
The Avalanche Review. 19, 3.

For complete instructions on teaching this and other transceiver search techniques, see the new Tracker DTS Instruction Guide and Advanced Tutorial. These are available from Backcountry Access at (303) 417-1345 and can be downloaded at www.bcaccess.com

Bruce Edgerly is vice-president and co-founder of Backcountry Access, Inc. He is a CAA affiliate member and avid backcountry skier. Many years from now, he hopes to retire and move to Nelson, BC.

Progress Report on the Quebec Collaborative Avalanche Project by Marc Deschenes

The Quebec Collaborative Avalanche Project successfully completed it's second year with a series of activities in Quebec and lots of collaborative hard work on the part of the the CAC staff, CAA instructors, the Quebec Facilitation Team, the Centre d'Avalanche de la Haute-Gaspesie (CAHG) and many Quebec-based stakeholders. Great job everyone!

Last fall I found myself back in Quebec to scope out new course sites, meet with the Facilitation Team, take part in the multi-media avalanche awareness campaign, and travel to Gaspesie to meet with park officials and start setting the ground for our courses. We also moved the Quebec Collaborative Avalanche Project (QCAP) storefront (our project services and course registration centre) from the Fédération Québécoise de la Montagne et de l'Escalade (FQME) in Montreal to the CAHG (Gaspesie), which put the CAHG staff in closer contact with course participants and interested parties. Two CAHG staff and two SAR managers attended the International Snow Science Workshop in Penticton last October. Many hours were spent translating, reviewing and preparing the French OGRS document and the Level 1 student manual. Many thanks to translators Marc Perron, Françoise Muhn, and layout specialist Brent Strand at the Canadian Avalanche Centre.

In December, Dominic Boucher and Stephane Gagnon, of the CAHG, spent two weeks in Blue River at Mike Wiegele Heliskiing to take part in an intership, followed by a completion of the CAATS Level 2 course. In January, four Quebec candidates were also sent to Golden, BC to complete a CAATS Level 1 course. Congratulations to all of you!

This past winter, Quebec experienced plenty of snow and much cold weather! QCAP courses were delivered a little later this past season, from February 6th to March 23rd. CAA instructors included Marc Deschênes, Marc Ledwidge and Sylvain Hébert. Courses were delivered with the help of assistant instructors comprised of the CAHG staff and the Quebec candidates who were sponsored on a Level 1 course in Western Canada. Courses were attended by a total of 98 participants including recreationists, outdoor leaders and educators, ski patrollers, provincial and national park employees, provincial police, search and rescue volunteers and professionals:

- Four 2-day RAC's: Bromont (English), Mont Ste-Anne and in Gaspesie (41)
- Two 4-day ARAC's, all in Gaspesie (28)
- One 4-day SAR course in Gaspesie (13)
- One French CAATS Level 1 course in Gaspesie (16 of which 15 passed)

A draft report of the QCAP research project on avalanche accidents in Quebec and related weather events was completed by Bernard Hétu of l'Université du Quebec à Rimouski and Alain Bergeron of Environment Canada.

The multi-media campaign continued with a series of radio, TV and newspaper interviews, regional TV coverage of RAC - ARAC courses, avalanche awareness presentations to outdoor clubs, youth groups and the public, and the on-going development of public service announcements (PSA) for cable TV. Last October, we organized an avalanche awareness kiosk at the Warren Miller Film Festival in Montreal. Two members of our Facilitation Team organized and took part in Avalanche Awareness Days at Quebec's Mont Sainte-Anne. A well-attended press conference was held in January in Montreal to promote QCAP, avalanche safety awareness and the training courses in Quebec.

The QCAP was extended six more months to March, 2004. The proposed activities will include :

- A wrap-up meeting in Quebec followed by a presentation at the SARScene Conference in Kingston, ON
- Delivery of an ARAC & SAR courses to first nations people in Northern Quebec
- Deliver a CAATS Level 1 course and a Module 2 Terrain course in Gaspesie
- CAHG staff mentoring by a CAA professional
- Extend the Quebec avalanche accidents/weather research project
- Continue avalanche awareness presentations to youth and public
- Complete the PSA video for cable TV
- Align Quebec into the national avalanche safety initiative by the CAA

I would also like to acknowledge and thank very much the NSS New Initiatives Fund for our project funding, our sponsor Parks Canada, our Quebec partners (Environment Canada, Surete du Quebec, Société des Établissements et de Plein Air du Québec, Parc de la Gaspesie, FQME, CAHG and la Municipalité Régionale de Comté, les Productions), Vic Pelletier, Susan Hairsine, the CAC staff, BC MoT, CMH, Survival on Snow (SOS), Stethem and Assoc., Dr. Bruce Jamieson, and l'Association Nationale pour l'Étude de la Neige et des Avalanches. Thanks for all your support!

Marc Deschênes
QCAP Coordinator

BC? Mais non! Carving *la neige poudreuse* in the heart of Quebec.

Dominic Boucher, Stephane Gagnon and Marc Deschenes of the Centre d'Avalanche de la Haute-Gaspesie.

Test profiles in the Chic Chocs range of the Gaspesie region of Quebec.

Sylvain Hebert, ski guide and CAATS instructor from Revelstoke, back home in Quebec. "Ah, je me souvien!"

New Web-Based InfoEx in the Works by Simon Walker

The InfoEx subscribers' meeting on May 7th in Penticton saw some interesting developments. For the first time, a subscriber from outside of Canada – Southeast Alaska Avalanche Centre – will be joining for the 2003 / 2004 season.

On the technical front, Colani Bezzola and Jan Bergstrom of CMH introduced a prototype version of a web-based InfoEx that uses an XML file format to transmit its data. They gave a brief demo of the prototype and answered subscribers' questions at an impromptu meeting following the AGM on May 8th. This innovation could enable subscribers to both submit daily reports and retrieve all or parts of the InfoEx bulletin using a web browser, accessing an InfoEx server via the internet. The main benefits of this change would be:

- Assembly of the daily InfoEx could be furthur automated since all subscribers' input would come in a standardized format.
- Data would be structured and consistent, allowing it to be used in other software, and more easily analyzed by researchers.
- Subscribers will not require any special hardware or software; the InfoEx in its existing format could still be emailed or even faxed to those who prefer those methods.
- Additional information such as photos or snow profiles could be sent along with the daily reports as 'extension' files. Subscribers would have the option of whether or not to download this extra information, so that those with slow connections or limited bandwidth could opt for "InfoEx Classic".
- Open architecture, so that the system could be expanded on, improved or modified over time, and individual subscribers could submit their own data viewers or enhancements as they see fit.
- Daily submissions could be automatically archived into an InfoEx Database without the need for costly and time consuming 'hands-on' intervention.

A working committee representing the subscribers' community will be established to move this initiative forward during the summer. This group will report to the CAA's Executive Director, and through the Technical Committee to the Board of Directors. Its main task will be to further refine and adopt an XML scheme that will form the basis for the web-based exchange of InfoEx data as it currently exists.

The working committee expects to have a functional version of the new web-based InfoEx data exchange in place by the end of September 2003.

The SNOW-SWORD by Scott Flavelle

The snowsward is a medium-duty 100-cm-long folding snow saw, designed to fold and be light enough to *want* to take on snow observation missions. The saw makes quick work of all precise cuts required in snow work: 100+ cm-deep Rutschblock tests, compression & shovel test columns, and pit wall cuts prior to excavation.

- 100-cm-long cutting blade
- Folds to 54-cm pack length
- Engraved 1-cm measurement markings
- Tube handle accepts telescopic snow shovel handles for added leverage
- Carrying case

For more information, contact Scott now: scott@flavelle.ca

The next generation starting to get a hands-on understanding of snow.

Presenting Partner of the Recreation Avalanche Course Program

Presenting Partner of Columbia Brewery Avalanche Awareness Days

Education Visioning Committee Report to the CAA's Board of Directors

At the CAA Board of Directors (BOD) plenary meeting in Revelstoke on April 12th, Janice Johnson and Dave Smith delivered the Education Visioning Report from the Education Planning Committee. The complete PowerPoint presentation is available from Dave but is summarized here.

Approximately 40 people attended a public forum at the ISSW in September 2003. Online surveys were distributed to seven stakeholder groups and data was obtained from all of these representative sectors (i.e. employers, CAATS instructors and students, CAA members, RAC providers, and snowmobilers). They had no response to date from educational institutions. Janice reviewed the data collected from the sectors that responded.

She then led a discussion on professional certifications and reviewed the different designation categories and existing certification programs. The Board discussed the value in the recognition of consistent avalanche credentials, and of adding a professional designation option (i.e. ASTT). The BOD asked what segment of employers would want to hire the ASTT graduate in their operations.

Janice discussed industry trends and added that there is growing demand for professional credentials. She discussed the adequacy of current programs and an apprenticeship processes that could be implemented. Informal apprenticeship programs already exist in almost every operation. Janice reviewed the responses to these survey questions.

Discussion points following the presentation were as follows:

- Develop a strategy for approaching certification standards. (i.e. Would the CAA support and assist individuals to obtain the certification or would individuals apply on their own?)
- In conjunction with industry, determine the number of trained employees they require and at what incremental level.
- Establish a standard of recognition and ensure avalanche skills are well packaged so employers are aware of the value of the service – training is not always commensurate with the salary but pay will be determined by industry.
- Avalanche forecasting is more technically demanding now and may require a different tier to deliver the products that industry requires.
- Education programs are enhancements that should appeal to members – not self-imposed limitations.

Janice reviewed the findings from employers hiring preferences and qualifications sought based on the survey questions.

On behalf of the BOD, Bill tasked the Education Planning Committee with providing more information about the options before obtaining feedback from employers.

Options for student learning programs were discussed. These included:

- Build on and improve existing programs
- Add a formal apprenticeship process option
- Add a professional designation (ASTT) option

Options for Accreditation and Partnerships for CAATS were discussed and Janice distributed some possible options with the Justice Institute regarding online learning. Janice advised the BOD that there are significant costs incurred and expertise required, in the delivery of online learning programs. She added that we will want to partner with another institution involved in this realm if this is pursued for the CAATS program.

The group discussed the concept of online learning and agreed there are many benefits to it and that online learning is a student expectation now. However, there are some instructor concerns.

Janice discussed potential links and integrations of the programs. These included:

- Complete accreditation process with the successor to the Private Post-Secondary Education Commission (PPSEC) of BC.
- Establish a partnership/relationship with the Justice Institute.
- Negotiate approved articulation of CAATS courses with public post-secondary institutions.

A review of the Education Planning Committee options included:

Student Learning:

- Build on and improve existing programs.
- Formal apprenticeship option.
- Professional designation (ASTT) option.

Accreditation/Partnerships:

- Accreditation process with PPSEC.
- Partnership/relationship with the Justice Institute.
- Articulation of CAATS courses with public post-secondary institutions.

Next steps will include follow up from this report, recommendations to stakeholders, online survey feedback, and continued consultation and analysis of results. The Education Planning Committee will be updating the membership on this initiative at the spring AGM.

There will be specific recommendations for improvements to individual courses and to services for specific groups. A report with final recommendations and review by an external consultant will be distributed to the BOD by the end of June 2003. Janice added that next steps will be a period of 2-5 years.

The BOD discussed report recommendations they thought were priorities:

- Building on and improving existing programs (12 – 36 months). Ian Tomm cautioned that given the current administrative workload, this would be impossible in the next 12 months.
- Formal apprenticeship options – explore more thoroughly, consult with employers and develop some good options (5-year plan).
- Relationship with Justice Institute (JI) should be further investigated including costs and protection of intellectual property – CAATS curriculum, liability issues, etc.
- Following the JI investigation, professional designation, accreditation process with PPSEC and articulation of CAATS courses with public/post secondary institutions should be examined.
- Determine if the apprenticeship option includes trade certification. These linkages should be built in at the inception of an apprenticeship program if this is the case.
- Do a cost-benefit analysis – what we want to do and what we can afford to do are realities we must face.
- Determine demands on instructors, administrative workload, finances etc.
- Would it be good strategically to offer some of this as public awareness and a component that government could offer funding for as part of public service (i.e. the online portion could be available as a public service for a small fee)?

Dave Smith recommended we use caution in continuing the RAC instructor certification until we determine training level and qualifications for RAC instructors.

Action for the Education Planning Committee:

- The Education Planning Committee will try to develop a timeline for building on and improving existing programs with priorities to BOD before the 2003 AGM.
- The group will make a presentation at AGM to keep the membership informed on developments in this initiative.

On behalf of the BOD, Bill thanked Janice and Dave for doing such a great job on this initiative. He also thanked everyone that also participated and contributed to this project.

Carving it up, sledder style!

Dave's wave, Galloping Hills

Byron catches a little air at Park Mountain.

If you missed the AGM, these folks are probably talking about ***you***!

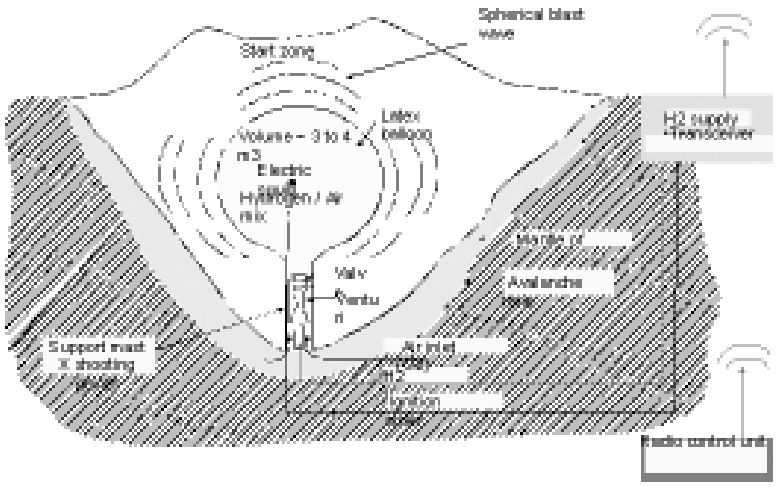
Mountain Management's Remote Avalanche Triggering System

Penticton, BC – Quebec-based manufacturer Mountain Management unveiled its modular, remote controlled avalanche triggering system at the CAA's recent AGM in Penticton, this past May 5th-9th. The system, known as the **AVAL**auncher **H**ydrogen **Ex**plosive (**AVALHEX**), uses a hydrogen-air mixture as a substitute for conventional explosives to protect avalanche paths.

The technique used in the AVALHEX system is based on tests carried out by France's Atomic Energy Commission (CEA) and CEMAGREF during the 1970s. Since then, various research teams have established that an explosion detonated above the snow is more efficient than one detonated in contact with it.

How the AVALHEX works:

A mixture of explosive gas (32.5 % hydrogen and 67.5 % oxygen) is formed inside a balloon, which is then deployed above the exploder during the firing sequence. An electric charge detonates the gas mixture 2-3 metres above the snow, producing an omni-directional shperical blast wave around the exploder. This creates the same effect as a charge of dynamite that is detonated by a CATEX carrier cable.

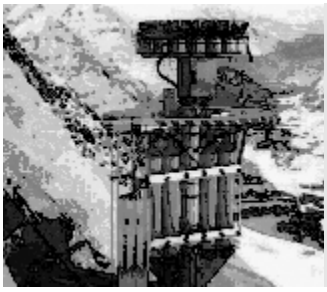


By using an inflatable balloon to separate the explosion from the mechanical structure of the exploder, one can vary the volume of the gas mixture and adapt the force of the explosion to different snow and weather conditions:

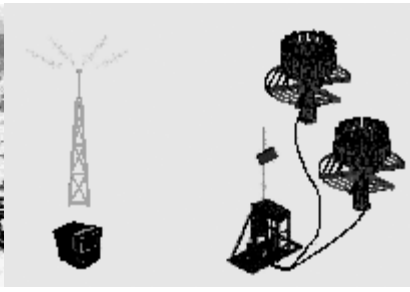
- "Short" detonation (3 cubic meters of gas mixture)
- "Long" detonation (4 cubic meters of gas mixture)

Full scale tests at the CEMAGREF test site in Col du Lautaret, France, show that a sudden overhead pressure surge of 30 mb is enough to trigger an avalanche.

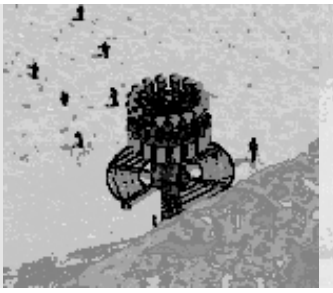
There are two main types of systems, self-contained or pipe-connected, and two alternatives types of exploders, one featuring 17 detonations and another featuring 26:



Self-contained



Pipe-connected

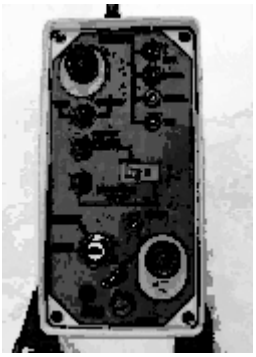


26 Detonations

17 Detonations

The system is managed by computer software or by remote control and can be equipped with weather stations (see photo below left). The micro-computer control unit is associated with detonation management software that controls:

- Weather data
- Snow transportation
- Firing procedures
- Mapping zone of AVALHEX (locations, status)
- Database (recording of all events, even from other triggering devices)



The portable control unit (above right) has a simple signaling system for triggering detonations on site.

Safety procedures are implemented at different levels throughout the entire system:

- 1 password to access the software
- 1 password with a key to start the firing procedure
- 1 key for unit maintenance on site

The maintenance required for the AVALHEX system is very minimal because of the durability of the materials used in its construction. Some preventative maintenance is required during the summer and fall and there is limited operational maintenance required when placing the unit in and out of service, as described below:

- At the end of winter, protecting materials for summer and/or repairing parts whose operational parameters exceed tolerances.
- Either removing containers where balloons were consumed during the winter and replacing them with caps to guard against weather conditions, or installing new containers loaded with balloons. This operation does not require any special tools and takes less than a minute.
- Exchanging the hydrogen tanks with loaded tanks in order to reconstitute the fuel gas reserves.
- In preparation for winter, reloading the balloon containers which would have been withdrawn at the end of the previous winter.
- Placing the unit in service and verifying the parameters of operation for winter start-up.

In conclusion, Mountain Management claims the following advantages of the system:

- Simple installation
- Capability to move equipment if needed. Since the AVALHEX weighs only 1654 lbs (750kg), each self-contained system can be transported by helicopter in a single trip
- Removable during the off-season
- Capable of multiple firing without the wait
- Spherical blast area
- Low operational cost
- Easy maintenance all year around
- Less wear; longer life
- All procedures can be followed and recorded on a PC

New Members of the Canadian Avalanche Association

associate members

Arc'Teryx Equipment Inc.	Vancouver, BC
Bella Coola Heli Sports	Whistler, BC
Ferno Canada Inc.	Kelowna, BC
Ice Creek Lodge	Windlaw, BC
Infomagnetics Technologies Corp.	Winnipeg, MB
Karavaniers du Monde Inc.	Montreal, QC
Powderquest Tours Inc.	Richmond, VA

professional members

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Don Schwartz	Blue River, BC
Jason Remple	Meadow Creek, BC
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Robert Beaudry	Clearwater, BC
Robert Hachey	Jasper, AB
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David Owen	Richmond, VA
Don White	Whitehorse, YK
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Jim Preston	Calgary, AB
John Brennan	Aspen, CO
Junichi Matsunaga	Whistler, BC
Karine Pigeon	Calgary, AB
Mark Harrison	Revelstoke, BC
Mike Wilson	Whistler, BC
Paul Decarie	Squamish, BC
Philippe Gagnon	St. Denis Brompton, QC
Rob Davidson	Calgary, AB
Rob McCurdy	Squamish, BC
Scott Garvin	Calgary, AB
Scott Newsome	Revelstoke, BC
Tom Morgan	Calgary, AB

Snow Avalanche Management in Forested Terrain

Snow Avalanches are a common phenomena in most mountain ranges of British Columbia. This land management handbook is a must have for natural resource managers, ski hill and land developers, backcountry tour guides, forestry workers and winter recreationists. This book presents a risk assessment procedure suitable for incorporation in the terrain stability field assessment process. This book outlines harvest design and silvicultural strategies to reduce the risk of snow avalanches. Approaches for managing avalanche risks in winter are also presented. An extensive bibliography is included, along with links to relevant publications, data sources and resources available on the internet.

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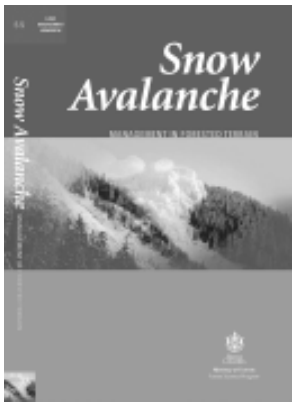

New Directors Elected to Board

Four members were elected to the Board of Directors at this past AGM in Penticton, May 5-9: Alan Jones (Director at Large), Alison Dakin (Director at Large), John Birrell (Director for Associate Members) and Lori Zacaruk (Director for Affiliate Members). To introduce these member representatives, we will publish a profile on each Director over the next few issues of the *Avalanche News*.

Name: Lori Zacaruk
Title: Director for Affiliate Members
Member since: 1999
Age: 35
Residence: Family farm near Black Diamond, AB
Employer: Self-employed through her own company, Zac's Tracs / Zac's Ventures Inc. Lori also operates equipment in the agricultural and film industries.
Preferred method of snow travel: Snowmobile

Bio: Lori is an Affiliate Member of the CAA who has been teaching avalanche courses across Western Canada for four years now. She has a Business degree from the University of Calgary and is one of a handful of graduates of the CAA's snowmobile safety course *Avalanche Safety for Leaders*. She is one of the most active snowmobilers in avalanche safety and has helped the CAA test-drive new course content for professional level avalanche courses. Lori is also a Sled Smart Snowmobile Safety Instructor for the Alberta Snowmobile Association and has taught snow safety to over 10,000 people! Aside from teaching, she is heavily involved in powder riding, hill climbing, trail riding and the upbringing of her two daughters, Monica (age 3) and Nicole (age 2).

Days after the January 20th avalanche in Revelstoke, Lori taught a RAC for snowmobilers at the Revelstoke campus of the Okanagan University College.

Hopes as a Director: To encourage stakeholders in the snowmobile community to see the benefits of partnering and supporting the CAA. Ideally, I would like to see the four main snowmobile manufacturers recognize the seriousness of backcountry travel and the need for avalanche training and gear. The social attitude towards safety needs to change and these stakeholders have the persuasive influence (peer pressure) and marketing resources to do it. I believe that many snowmobilers, due to their occupations and risk propensities, are desensitized to safety classes. They have a wallet full of safety tickets, many repeated every three years. They tend to think that courses are simply a formality. High profile snowmobilers or industry leaders need to 'endorse' the courses to build credibility and to promote the incredible value of hands-on field training.

Also, I would like to see the standards for Recreational Avalanche Course (RAC) instructors raised, but still remain manageable for Quebec, snowmobilers and the northern communities to comply. I am very happy to see continuing professional development courses geared for RAC providers. This is a constructive way to raise the level of skills within the RAC provider group, an approach that benefits the experienced instructors as well as the new providers.

Biggest challenge facing the CAA? Long term, consistent funding.

RAC for snowmobilers.

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