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Volume 76 *Spring 2006*

AVALANCHE news

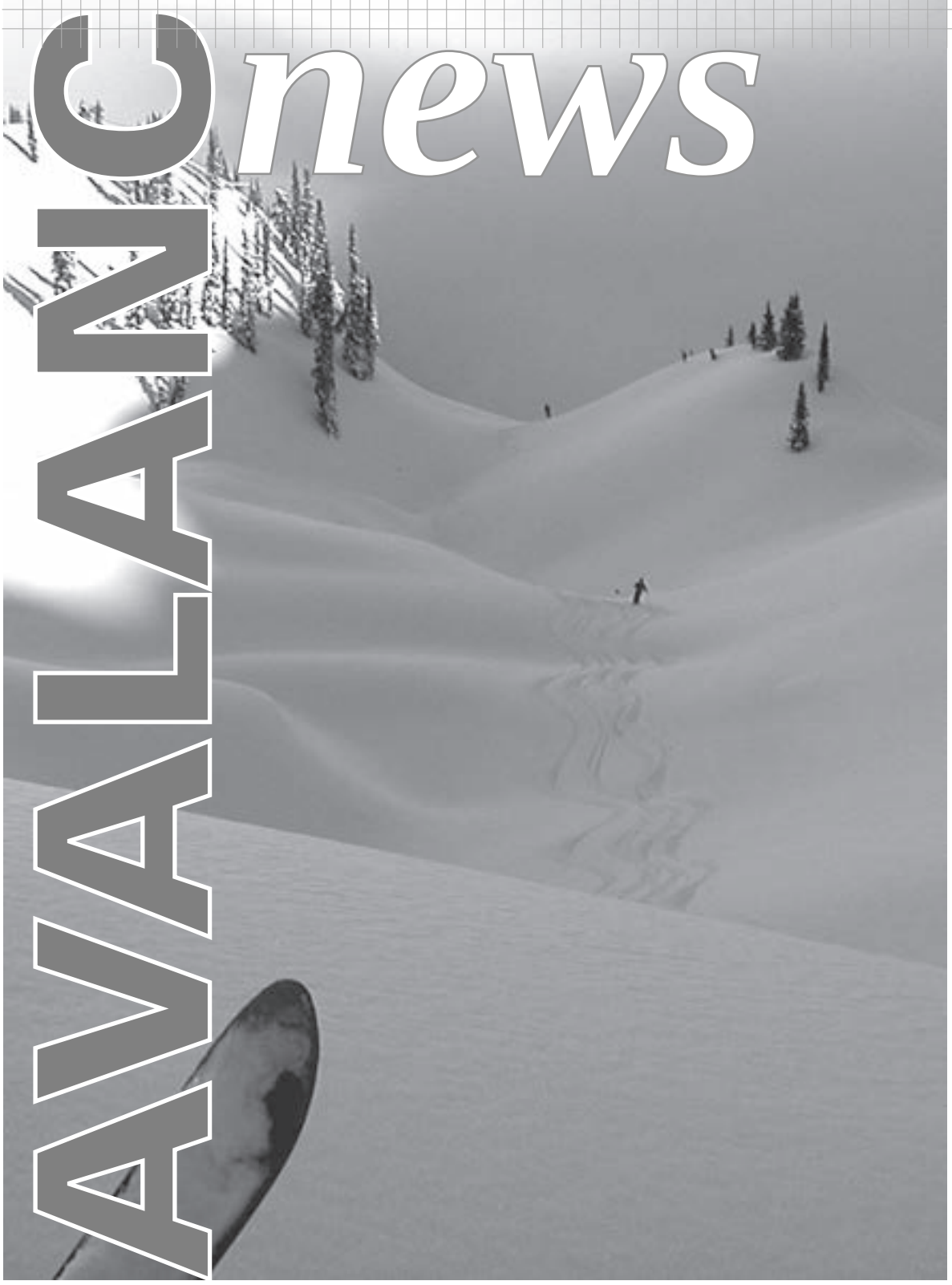

Photo: Andy Freeland

inside

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BC'S
GLACIER
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TASTE
Kokanee is a proud supporter of the Canadian Avalanche Association
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canadianavalancheassociation **Avalanche News** Volume 76 ❄ Spring 2006

Avalanche News is the official publication of the Canadian Avalanche Association, a non-profit society based in Revelstoke, BC, that serves as Canada's national organization promoting avalanche safety. The goal of *Avalanche News* is to keep readers current on avalanche-related events and issues in Canada. *Avalanche News* is published quarterly.

Avalanche News fosters knowledge transfer and informed debate by publishing submissions from our readers. Responsibility for content in articles submitted by our readers lies with the individual or organization producing that material. Submitted articles do not necessarily reflect the views or policies of the Canadian Avalanche Association.

Avalanche News always welcomes your opinions, teaching tips, photos, research papers, survival stories, new product announcements, product reviews, book reviews, historical tales, event listings, job openings, humourous anecdotes and really, anything interesting about avalanches or those people involved with them. Help us share what you have. Please send submissions to:

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Content Deadlines:
Material is due on the 1st of February, May, August and November for our spring, summer, fall and winter editions respectively.

Note: Digital contributions work best for us. For details, contact Brent Strand at publish@avalanche.ca.

Ahead, For Now

It seems like we're doing our jobs. As the national organization responsible for avalanche safety, the numbers would indicate that we're getting somewhere. We're nearing the end of our third consecutive winter with fewer than average avalanche fatalities. Our public avalanche bulletins are read by an ever-increasing number of people, and participation in recreational avalanche courses is at its highest yet. We have acquired a higher profile, and polished our reputation as the nation's avalanche experts.

All good, yet, it's not nearly enough. We may be winning, but it's not by much. The incident reports coming into our forecasting office make that painfully clear as we hear, again and again, how fatalities have been narrowly averted. A few metres further, a little bit deeper, or mere minutes longer would have made the difference. It can be such a fine line between life and death.

Of course, no matter how few we get in a season, every fatal avalanche accident is a tragedy. This season's statistics include the death of a promising aspirant guide, Aidan Oloman. With talent to spare, Aidan had already made a significant mark in the mountain community in the too-few years she was with us. It's heartbreaking to those who loved her, and a tremendous loss to the profession, that she'll never have the chance to fulfill her potential.

It's sobering how many incidents have occurred this winter where a similar loss was just a heartbeat away. The message is clear: we can't let up. We need to reach a wider audience and we need to continue to find different ways to get our message across.

That's our mission for recreational backcountry users. For professionals, it's another story. One aspect of standard practice that could use some work is the issue of transparency. It should be of tremendous concern to all of us that we, as a community, aren't taking the opportunity to gain and share knowledge from the close calls many of us experience in a winter. The link between near misses and fatalities is clear. If we're not learning from the former, we risk suffering more of the latter.

Bruce Jamieson tackled that issue with his avalanche research team at the University of Calgary. In an effort to improve their safety record, the ASARC crew made some remarkable changes – to both accident reporting protocol and behaviour – that has yielded some promising results. His article, on page 18, tells in more detail how the safety culture within his team was transformed.

One of the key factors of this success, says Bruce, was changing his own attitude. As the boss, he discovered some students and research assistants were not reporting their near-misses because they were afraid of his reaction. To the students, the risk of being judged for their choices in the field outweighed the advantages of sharing lessons learned.

Bruce's article centres on how his team has been working together to overcome those barriers. I think the ASARC experience is a microcosm of the challenges we face within the avalanche industry. Together, we have to recognize how much there is to gain by encouraging more open dialogue, and what we risk by not changing attitudes and behaviour that inhibit it.

Open dialogue is what the AGM is all about, and I hope many of you are planning on attending the meetings in Penticton. This year there will be an important vote on some proposed amendments to the CAA by-laws. You owe it to yourself and your colleagues to be informed, so you can be prepared to join the discussion in May. For more information about these changes, go to page 38 where CAA President Steve Blake and Secretary-Treasurer John Hetherington have done a great job of laying it all out.

On a final note, as you can see below, we've added a new photo feature to Avalanche News. It's an opportunity for sharing the spectacular scenery so many of you enjoy every day. This inaugural view is from Monashee Powder Snowcats, just southwest of Revelstoke. Consider this an invitation to brag about your backyard. Send us a photo, along with some information about what we're looking at, and we'll include it in a future "View from Up Here."

See you at the AGM.

View from Up Here

View to the east from Monashee Powder Snowcats' Tsuius Mountain Lodge, looking at the Blanket and Cranberry Mountains.

Photo: Ellen Dewar

Leading By Example: A Tribute to Volunteers

BY CLAIR ISRAELSON

It's March 8, 2006 and suddenly I'm in a melancholy mood as I sit down to write this piece. A few minutes ago I called a colleague to discuss some details of our work together on avalanche programs, and learned that he was taking time off from his job to deal with the emotional turbulence of losing a close friend in an avalanche last week. Most of us in the Canadian avalanche community have experienced a similar loss, and I suspect these losses of colleagues, friends and loved ones motivate many of us to work even harder to understand avalanches, and to professionally manage the risks they present. We're a small and close-knit community, we're all in this together, and we can all help to reduce the number of lives lost in avalanches each year in Canada.

We're nearing the end of the fiscal year for the CAA and the CAC, and this brings me to reflect on the reasons for the successes we've achieved this past year. The reasons I come to identify are membership participation, effective governance and wise leadership.

The work of our boards of directors to provide excellent leadership and governance continues to inspire me. These volunteers contribute countless hours throughout the year listening to and questioning our members and many others, gathering information relevant to the issues they are responsible for. During the monthly board meetings, they consider and respect each other's opinions, yet clearly state their individual thoughts on the issues. Board decisions, once taken, are not changed without good reasons. It's my sincere pleasure to take direction from this highly principled, honest and incredibly fair group of people. At the AGM this spring I urge you to take a moment, shake their hands, and thank them for the excellent work they do on your behalf.

Without the volunteers who serve on the boards and committees of the CAA and the CAC neither organization could succeed.

During the past year all committees were active in developing recommendations for consideration by the board, or working on standards and issues relating to CAA/CAC programs. Significant achievements include development of a data sharing policy by the information technologies committee, working descriptions for fracture character by the technical committee, and proposed revisions to the CAA's bylaws by the board and audit committee.

The education committee dealt with standards issues and curriculum reviews for our Industry Training Programs, the professionalism and ethics committee developed guidelines for CPD reporting, and the membership committee reviewed scores of membership applications and conducted CPD audits on a selected number of professional members. Again this year, the explosives committee continued to work with product manufacturers and regulatory agencies to ensure avalanche operations in Canada continue to have access to explosives products and operate safely.

The board of the CAC board established a new committee this year to consider issues and develop recommendations that relate to the recreational avalanche course (RAC) programs. Their work over the past year is appreciated by the board and the CAC staff. Take a moment to check the list of committee members listed on page four, and at the AGM in May please thank them for their good work this past year. Without the volunteers who serve on the boards and committees of the CAA and the CAC neither organization could succeed. Let them know you recognize and appreciate their efforts on your behalf.

As we go into this year's AGM I urge each and every one of us to celebrate our participation in the activities of these two great organizations. Our collective energy, ideas and wisdom have positioned us to truly achieve our vision: *To be a world leader in avalanche awareness, education and safety services.* Individually and collectively, we all know that anything less is simply not good enough. We have great talent on this team. In the years ahead let's show Canadians, and the rest of the world, what our Canadian avalanche community is capable of accomplishing.

I wish you a safe conclusion to you winter season, and look forward to seeing everyone in May at our AGM in Penticton!

Clair Israelson
Executive Director

By-Laws and You

BY STEVE BLAKE

With the AGM on the horizon I thought I might spend a bit of time going over some of issues we have been concentrating on. There will be a by-law ratification vote at our next meeting and I think it is important that everyone clearly understands how we came to this juncture and the purpose of the proposed changes.

The fall visioning session, which I wrote about in the last issue, clearly confirmed that membership diversity is not only appropriate but integral to the dynamics of our organization, the CAA. What this means to me is we welcome and encourage professional, affiliate and associate members alike. Then comes the curve ball. Over the past several years our association has drifted, unintentionally, into a state of non-compliance according to the BC Societies Act. Turns out we can't have more non-voting members than voting members. This is quite significant to us on the board, and now that we know about this violation we feel obliged to correct the situation.

We brought the dilemma to the audit committee (comprised of past presidents) and following lengthy discussions we proposed the following as a solution. The new by-laws will contain some re-defined membership categories – most importantly, the creation of an "active member." This will be a person who has a Level 1 or equivalent and has worked in an avalanche-related activity for at least a couple of years. These members will have CPD requirements but will need fewer points than a practicing professional member to maintain their status. These active members will have full voting rights, which are explained in the article "By-law Amendments at a Glance," on page 38

Mike McKnight, the elected representative for associate members, indicated his constituents are happy with their current level of representation, that being a seat on the board. Since associates are companies and not individuals, I would suggest their need for a vote at this time is not indicated.

What about the CAC? Isn't this the organization where non-avalanche workers should fit? It is important to remember the CAC is a distinct organization with a distinct reason for being. I'll recap how CAA, CAC and CAF fit together. Our common goal or mission, if you will, is: *To be a world leader in avalanche awareness, education and safety services.*

The purposes of the CAA are:

- To represent persons who are professionally engaged in avalanche work in Canada.
- To establish and maintain high standards of professional competence and ethics for persons engaged in avalanche safety programs.
- To exchange technical information and to maintain communications between persons engaged in avalanche safety programs.
- To establish and maintain standards of education in avalanche safety.
- To organize training courses in all aspects of avalanche hazard control for professionals.
- To promote and to act as a resource base for public awareness programs about avalanche hazards and safety measures.
- To promote research and development in avalanche safety.

As a nationally incorporated not-for profit, the CAC is legally distinct from the CAA, so supporters can write a cheque directly to the CAC, an organization whose sole purpose is "public good." The CAC serve as Canada's national public avalanche safety organization by:

- Coordinating public avalanche safety programming;
- Providing public avalanche safety warnings;
- Delivering public avalanche awareness and education;
- Providing avalanche training for non-professional winter recreation;
- Serving as point of contact for public, private and government avalanche information;
- Encouraging avalanche research.

The Canadian Avalanche Foundation is a registered charity formed to provide a tax-deductible fundraising mechanism for the support of public avalanche safety initiatives. The CAF was formed to:

- Raise and administer funds in support of public avalanche information
- Support education in public avalanche awareness and safety
- Support programs that will prevent or minimize avalanche risk to the public
- Support research projects that facilitate public avalanche safety

It is easy to see the how closely related, yet distinct these organizations are. I am looking forward to this year's AGM. I expect some vigorous discussion on this matter and other issues facing us. Drop me a line if you would like some clarification or if you would like to discuss this or any other concerns you may have.

Cheers!

Letters to the Editor

Editor – Avalanche News

A decade after the Bay Street judgment, I have two questions for those attending the spring meeting of the CAA. Both questions ask whether we are truly helping all our members meet the industry standard. The first question concerns who is permitted to join our CAA. The second asks about the purpose of InfoEx. Both questions concern the issue of whether our association is inclusive or exclusive.

As it stands there is a double standard for professional membership. The CAA allows professional members to work out of the country, yet to become a professional member, one is required to be employed in Canada at the time of application. This rule prevents Canadians who work outside of Canada from becoming professional members. What relevance is the location of employment as long as the person has trained in Canada and work according to current CAA standards? When this question was discussed at ISSW, the CAA plea for membership (money) was drowned out by xenophobia. The result is that CAA is missing out on a source of professionalism and revenue based on nothing more than semantics. What are we afraid of?

There's a good reason Japanese, Kiwis, Europeans, and Americans want to become professional members of the CAA. It's a damn fine organization. One way to keep it that way is to remove the requirement of employment in Canada at the time of application. Another option is to remove the memberships of all who earn money in the industry outside the country.

I also ask there be a general membership discussion at the spring meeting about the purpose of InfoEx. Now that accident management has been separated from InfoEx, how does being private and confidential help anyone meet the ever-moving goalposts of industry standards? Why not have the "Avalanche Bulletins" link to all the information available? Why are weather, avalanche occurrences, and snowpack observations exclusive property? Why would any InfoEx participant serious about safety not share such basic information? How does hoarding, rather than sharing, knowledge help anyone? Certainly, we can't believe we've got our observations wrong. I live where the result of this irrational fear of litigation, from getting the basics wrong, is pathetic communication between professionals when most needed – ensuring only more work for the lawyers and paid witnesses and more fear in the ground troops.

Considering how much public money funds our mission "to promote safety and facilitate communication," why not post InfoEx weather, avalanche occurrences, and snowpack observations on our CAA webpage for all to study? Again, what are we afraid of? Are we inclusive or exclusive?

Sincerely,
Peter Carter

Pete Carter is a professional member of both the CAA and AAA. He works for the Alaska Department of Transportation at Thompson Pass, and welcomes visitors.

Spring weather anyone? Howling winds challenge drivers on the Thompson Pass highway in Alaska.

Photo: Peter Carter

Sponsor's Corner
The North Face: Not Just Another Pretty Face

BY MARY CLAYTON

The North Face has a well-established reputation for high-performance mountaineering equipment and clothing. Founded in 1966 by two hiking enthusiasts in the North Bay area of San Francisco, the company has a long tradition of using real-life experience for product development. By using field testers who are often pushing the limits of their sport, The North Face has managed to stay at the forefront of a very competitive field.

Since being acquired by the Vanity Fair Corporation in 2000, product development has been on the fast-track at The North Face. Chris Nadeau is the company's sales and merchandising coordinator for Canada, and he says he's excited about the direction his company is heading. "VF is willing to put the money into research and development," Chris explains. "So we're developing all sorts of products, with a focus on our core activities – skiing, mountaineering and climbing."

NEVER STOP EXPLORING™

More recently, the company has been applying its leading-edge technology to another field – corporate social responsibility. In 2004, The North Face signed on with an international aid organization called GlobalGiving, which funds and promotes community-based development projects in areas of need. Now, the company's expedition objectives include philanthropic goals as well as first ascents. The list of accomplishments is already impressive and growing, including raising money for cataract operations in Nepal, building a women's shelter on Baffin Island and funding agricultural and business training for indigenous people in the Chiapas region of Mexico.

GlobalGiving was founded in 2001 by two former World Bank executives with a vision to create the first internet-based platform for international philanthropy. They have created a very efficient virtual marketplace, where individuals and corporations can find and fund locally-run social, environmental, and economic development projects around the world. This forum allows donors of all sizes to effect change, and gives social entrepreneurs around the world access to a new source of funding.

"GlobalGiving provides an exciting new opportunity that streamlines international aid," said Letitia Ferrier, Strategic Marketing Manager at The North Face. "Through this partnership, The North Face funding goes directly to high-impact development projects overseas. This allows us to directly give back to the communities and regions where we send our athletes to explore."

The North Face also makes an impact closer to home, becoming a sponsor of the CAC in 2004. Chris Nadeau sees this sponsorship as meshing perfectly with their corporate philosophy. "Most of our athletes are out there in the mountains, not only promoting our products but for different philanthropic reasons," he explains. "You're out there promoting awareness and I think the CAC is a great resource for people in the backcountry. The North Face is proud to support your work."

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Traffic Fine Contributes to Avalanche Safety

FROM A CAC PRESS RELEASE ISSUED FEB 9, 2006

A recent legal settlement in Revelstoke brought an unexpected benefit to the Canadian Avalanche Centre (CAC). A semi-truck driver, charged by a Park Warden with failing to stop during an avalanche control closure, agreed in early February to donate $500.00 to the CAC on behalf of Parks Canada in lieu of going to trial.

The incident took place last April in Glacier National Park. The Trans-Canada Highway is occasionally closed in this area, to allow the Park's Avalanche Control Services to carry out safety measures designed to lessen the possibility of an avalanche being big enough to hit the highway or railway. These measures include firing artillery rounds into targeted zones of the high mountains to trigger smaller avalanches. This prevents the snow from accumulating there, which could create larger and more destructive avalanches.

Ian Brown, Chief Park Warden for Glacier National Park, says he's pleased with the message this decision sends. "The avalanche control program at Glacier National Park is one of the biggest in the world, with an exemplary safety record," he explains. "The driving public needs to know these closures are created for their safety and must be respected. Donating the fine to the CAC underlines the importance of the avalanche safety work performed throughout the mountains of Western Canada."

For Clair Israelson, Executive Director of the CAC, the donation reflects a long-standing and productive relationship. "Our organizations have a long history of collaboration, which has contributed greatly to avalanche research, education and safety in this country," he says. "We have always been grateful to Parks Canada for their commitment to public avalanche safety, and we appreciate this innovative solution to what could have been a very dangerous situation."

Beacon Basin at Rogers Pass

BY JOHN KELLY, CAC OPERATIONS MANAGER

One of Canada's most popular ski-touring areas now has a Beacon Basin. This newest addition to Rogers Pass has been set up in front of the visitor's centre. Free to use by everyone from professionals to recreational skiers, the basin offers a terrific teaching opportunity for beginners as well as honing advanced skills of the more experienced.

Beacon Basins feature 10 permanently-buried transmitters wired to a central control panel. These transmitters can be controlled via switches on the central control panel to instantly create an avalanche rescue scenario, without the need to do the time-consuming preparation of the search area. With proper set up, the Beacon Basin can also be used to simulate different and challenging patterns of transceiver burial, enabling rescuers to practice difficult multiple burial and deep burial scenarios.

National Park Warden Jordy Shepherd said the site at Rogers Pass was chosen for its accessibility and visibility for park visitors. As well, the attendants at the visitor's centre will have training in using the basin, so they can act as a resource for users. Despite those advantages, Jordy said there is a concern the area might be too small. "We'll keep it there as a trial site, and possibly look for a different site if it is not working out there."

The Beacon Basin program was started by Backcountry Access (BCA) five years ago in Colorado, and has grown to 50 sites in Europe and North America. "Beacon Basin is the cornerstone of our education program at BCA," says Backcountry Access Vice President Bruce Edgerly. "Buying a transceiver is only the first step. Practicing with it is next. We're trying to make that easier for the typical recreationist."

With this newest addition at Rogers Pass, beacon basins can now be found at 10 locations in Western Canada (see list below). BCA is expanding the Beacon Basin program both in number of venues and the technology in use. In cooperation with Manuel Genswein, BCA is now distributing the Easy Searcher 3, a sophisticated radio-controlled beacon trainer. These units are especially well suited to high-traffic use and professional applications.

The Beacon Basin program is largely a public service initiative of BCA, and in some cases organizations can apply to BCA for a donated unit. Among the criteria assessed by BCA when determining new installation sites is the commitment of the requesting organization to avalanche awareness and beacon training, and the readiness to maintain the unit to specified operating standards. To learn more about participating in the Beacon Basin program contact Steve Christie (steve@bcaccess.com).

Beacon Basins in Canada:

Sunshine Village, AB
Whistler, BC
Whitewater Ski Resort, BC
Mount Carlyle Lodge, BC
Sol Mountain, BC
Mount Norquay, AB
Blackcomb, BC
Kokanee Glacier Provincial Park, BC
Fernie Alpine Resort, BC
Rogers Pass, BC

CAF Fundraisers a Tremendous Success

The Canadian Avalanche Foundation's fundraising dinners just keep getting better and better. This year, through ticket sales and silent auctions, the CAF raised close to $100,000 in two evenings. The Vancouver event, held February 24, was just 10 tickets short of a sell-out. The next night was Calgary's turn, where more than 500 tickets were sold – a complete sell-out.

The Calgary dinner was moved this year from the Calgary Zoo to the Hyatt Regency's Imperial Ballroom. Patrons in this city have always shown a tremendous amount of support for the CAF, which is why the choice was made to use a larger location. In both cities, the evening was hosted by CAF President Chris Stethem and CAF Director Justin Trudeau. The guest speaker was Laurie Skreslet, the first Canadian to summit Mt. Everest, and he entertained the audience with his talk on risk and adventure.

One of the highlights of both gala evenings was the silent auction. Thanks to the generosity of many friends and supporters, the items up for bid were varied and valuable. Ranging from a "ride-along" with the Calgary police helicopter, to original works of art, to days of guided climbing and skiing, the auctions were an especially exciting event this year.

Thanks once again to all those who helped organize these evenings. Your hard work and commitment is much appreciated and the money raised will go far in promoting avalanche education and awareness.

All photos by Cory Shannon, cory@corephoto.ca

Strathcona-Tweedsmuir School students sold raffle tickets at the Calgary event.

SILENT AUCTION

DONORS	*ITEMS*
Calgary	
4 Living	Four handmade glasses
Angela Morgan	Painting: It's All Up In the Air
Anna Truderung	Painting: Larix Lake, Sunshine
Brad White	Framed Photograph: East Creek Fog, Bugaboos, BC
Byron Smith	Motivational posters
CAA	Eider Gore-Tex jacket
Calgary Police Service	Fly-along in the HAWC1 helicopter
Canadian Hotel Income Properties	CHIP Hospitality gift certificate
CMH	Three-day heli-skiing trip for two
CPR	Leatherman Wave Multi-Tool
Eau Claire YMCA	Fitness package
Grant Statham	One day of climbing for one or two people
Hyatt Regency Calgary	One night stay plus dinner at Hy's steakhouse
Island Lake Resort Group	Three-day cat-skiing tour for two
Janet Horbacio Photography	Family portrait sessions (2)
Janice Beaton Fine Cheese & J. Webb Market Wines	Cheese & wine sampling for 10
Jeff Honig	One day of climbing for one or two people
Kan-Alta Golf Management	One round of golf for two at Kananskis Country golf course
Karen McRae	Painting: Lost Knife Creek
Kicking Horse Mountain Resort	Dinner for two at Eagle's Eye restaurant
Kicking Horse Mountain Resort	A day with the avalanche control program
Laurie Skreslet & Byron Smith	Climbing with Laurie Skreslet & Byron Smith
Le Chocolatier	Le Chocolatier Chocolate Mountain
Liz Wiltzen	Painting: Divide Creek
Monashee Powder Snowcats	Three-day snowcat skiing package
Nakiska	VIP ski day for two at Nakiska
Ortovox Canada	Ortovox F-1 Focus

SILENT AUCTION

DONORS	*ITEMS*
Pascale Quellette	Painting: Restes d'Automme
Peter Spear	Everest 1982 poster, signed by Pat Morrow and Laurie Skreslet
Peter Spear	Everest Light 1986 poster, signed by Dwayne Congdon, Sharon Wood and Laurie Skreslet
Petro-Canada	Four Calgary Flames vs. Colorado hockey tickets
Prudential Steel Ltd.	Weekend condo in Radium with golf
Rebound Cycle	Mountain bike jacket and ½-day mountain bike course for two
Rubaiyat Artisan Gifts	Indian silver bracelet
Sound Relaxation	Mobile Relaxation Studio services
Yamnuska Mountain Adventures	Introductory recreational avalanche safety course
Zelda Nelson	Oil painting

Vancouver

Arc'teryx	Men's and women's Beta AR shell jackets
Al Safrata/Sporttech Marketing	Highland Powder cat skiing
Brad White	Framed photograph: Selkirk Shadows
CAA	Eider Gore-tex jacket
Canadian Hotel Income Properties	Two nights accommodation at any CHIP hospitality hotel in Canada
Chris Green/Sedillo 500, Inc.	ABS Avalanche airbag
CMH	Three-day heli-hiking trip for two
Cypress Mountain	Two lift tickets and two cross-country ski tickets
Dick & Colleen Gibbons/Osler Developments Ltd.	Two-night ski package Coast Westerly hotel and Mount Washington
E.M. Bennetto	Hand-thrown ceramic teapot with mugs
Fletcher Golf	Men's and women's Sun Ice jackets
G3	Avitech shovel and Bonesaw
Grouse Mountain Resorts	Observatory chef's taster dinner for two
Icebreaker	Men's 100% merino wool underwear
Intrawest Corporation	Reserved parking space Whistler/Blackcomb

Keynote speaker Laurie Skreslet speaks before a sold-out audience at the Calgary event.

CAF Director Donna Broshko with CAF Secretary Treasurer Gord Ritchie and his wife Debbie Ritchie.

SILENT AUCTION

DONORS	*ITEMS*
Intrawest Corporation	Whistler/Blackcomb five-day Edge pass
John Hetherington/Whistler Heli Skiing	Whistler heli-ski package
Labatts	Two framed prints
Liz Wiltzen	Painting: Divide Creek
Louise Olinger	Painting: Blanket Glacier Chalet
Lucie Bause	Painting: Mt. Hector
Mountain Equipment Co-op	MEC Sceptre jacket
Mountain Equipment Co-op	MEC Halo jacket
Mountain Hardware	Men's and women's Synchro jackets
Purdy's Chocolates	Gift basket of assorted chocolates and treasures
Tatianna M. O'Donnell	Painting: Snowbird Glacier
Whistler Mountain Bike Park and Spokeswomen Mountain Bike Camps	Mountain bike camp

DONORS

Calgary

Bill Maslechko	Donation
Cadillac Fairview Corporation	Donation
Calbridge Drywall Ltd.	Donation
Cracked Pepper Events	Marketing
EnerPlus Resources Fund	Donation
Fairmont Hotel & Resorts	VIP hotel accommodation
GAPS The Pro Shop Ltd	Décor items
Graphicon/Conrad Habing	Poster and brochure design
Jeff de Boer	Limited edition sculptures for centrepieces
Nexen Inc.	Donation
RBC Foundation	Donation
Ski Cellar Snowboard	Donation

Strathcona Tweedsmuir School	Supporter
TBS Sports	Raffle item: men's and women's watches
West Jet	Raffle item: two tickets anywhere WestJet flies in Western Canada
Willow Park Wines & Spirits	Wine

DONORS

Vancouver

Graphicon/Conrad Habing	Poster and brochure design
Okanagan Spring Brewery	Donation
Thorsteinssons, LLP	Supporter
Whistler Water Company	Bottled water for patrons

SPONSORS

First Energy Capital	Canadian Pacific Railway
Canetic Resources Trust	BMO Nesbitt Burns
Tristone Capital	Scotia Capital
Calgary Herald	Hyatt Regency Calgary
Fairmont Hotel Vancouver	

This patron embraced the "mountain casual" dress code at the Calgary event.

A special thanks to the following people, whose hard work and dedication helped make the CAF Gala Fundraisers such a great success.

Gord & Debbie Ritchie, Dave & Donna Broshko, Peter Spear, David Thompson, Ian MacLeod, Jack Bennetto, Mike & Heather Mortimer, Alix Nichol, Geoff Freer, Justin Trudeau, Laurie Skreslet, Sharon Wood, Dwayne Congdon, Grant Statham, Jeff Honig, Tom Riley, Iain Stewart-Patterson, Dan Markham, Lynette Demicell, Marsha Bennetto, Jane Mitchell and Ben Thompson.

Industry Training Program Update

BY IAN TOMM, CAA OPERATIONS MANAGER

CAA Applied Avalanche Forecasting Course

The CAA is proud to present a new course in avalanche forecasting, developed in collaboration with the CAC, the public bulletin forecasters and numerous CAA professional members. The Applied Avalanche Forecasting course will soon be part of the regular programming offered by the Industry Training Programs. Currently, a beta form of the course will take place this spring, from April 30-31. It will run in Revelstoke and is limited to 16 students. Details on the curriculum will be posted on the CAA's Industry Training Program pages as soon as they are confirmed. The course is expected to be 50% lectures and 50% exercise and case study work. If you are interested in participating you can enroll online at www.avalanche.ca > Industry Training Program. Tuition will be $275. If you are interested in participating on the advisory committee for this course, please contact Greg Johnson at greg@avalanche.ca.

CAA Introductory Avalanche Mapping Course

Due to the overwhelming success of the Avalanche Mapping course we ran in fall 2005, we are planning to run it again. It will be based out of Nelson, BC and tuition will be $1200.

Editor's Note: *Shortly before Christmas 2005, we received this document from the Technical Committee. These guidelines will be appended to the current issue of OGRS and should be considered the standard for field tests.*

Guidelines for Observation and Recording of Fractures in Small Column Snowpack Tests

Research supports the observation of Fracture Character in stability tests (van Herwijnen 2005, van Herwijnen & Jamieson 2004, Johnson & Birkeland, 2002) as helpful in improving the interpretation of these tests. Experience suggests that fracture character may also be observed in shovel shear tests (OGRS 2003), shovel tilt/burp tests, deep tap tests (Campbell, 2004) and other tests which load a small column of snow until fracture appears.

Three major classes of fractures are identified: Sudden Fractures, Resistant Fractures and Breaks. These major classes are used to qualify and communicate test results that are significant for avalanche forecasting when test conditions will not allow direct observation of the fracture character subclasses.

When practical, experienced observers should observe the fracture using the recommended procedure and describe the results using the Fracture Character description outlined in the table below.

Procedure for observing Fracture Character in small column snowpack tests*

The front face and side walls of the test column should be as smooth as possible. The observer should be positioned in such a way that one side wall and the entire front face of the test column can be observed. Focus attention on weak layers or interfaces identified in a profile or previous snowpack tests as likely to fracture. For tests on low-angled terrain that produced planar fractures, it may be useful to slide the two fracture surfaces across one another by carefully grasping the two sides of the block and pulling while noting the resistance.

Observations: Use the following table to characterize the fracture:

Fracture Character Major Class	**Code**	**Description Sub Class**	**Code**	**Fracture Characteristics**
SUDDEN *(Pops and Drops)*	SDN	**Sudden Planar** *(pop, clean & fast fracture)*	SP	A thin planar** fracture suddenly crosses column in one loading step AND the block slides easily*** on the weak layer.
		Sudden Collapse *(drop)*	SC	Fracture crosses the column with a single loading step and is associated with a noticeable collapse of the weak layer.
RESISTANT *(Others)*	RES	**Progressive Compression** *(step by step "squashing" of a layer)*	PC	A fracture of noticeable thickness (non-planar fractures often greater than 1 cm), which usually crosses the column with a single loading step, followed by step-by-step compression of the layer with subsequent loading steps.
		Resistant Planar	RP	Planar or mostly planar fracture that requires more than one loading step to cross column and/or the block does NOT slide easily*** on the weak layer.
BREAK** *(Others)*	BRK	**Non-planar Break**	NB	Non-planar, irregular fracture.

Notes:

*"Small Column Snowpack Tests" refer to snowpack tests performed on an isolated column of snow where the objective is to load the column until a fracture (or no fracture) occurs. Typical small columns are less than 50 cm x 50 cm in cross section.

** "Planar" based on straight fracture lines on front and side walls of column.

*** Block slides off column on steep slopes. On low-angle slopes, hold the sides of the block and note resistance to sliding.

****For tests which result in no fracture of the column, record as No Fracture (NF).

Recording:
Record test results as follows:
<type of test> <test score> <(Fracture Character)> @ <Depth in Profile>, < Layer Characteristics (form, size, date of burial if known)>
e.g.: CTM 17 (SC) @ 34 on SH , 8mm, Jan 22.
Fracture Depth: Whenever the test is performed in conjunction with a snow profile, the location of the fracture should be recorded according to the location of the weak layer in the profile.

Examples:
If multiple tests at the same site produce results on the same layer, record the results as follows:
<type of test> <test score #1> <(Fracture Character #1)>, <test score #2> <(Fracture Character #2)>, <test score #3> <(Fracture Character #3)>, etc, @ <Depth in Profile>, < Layer Characteristics (form, size, date of burial if known)>
e.g.: CTM 14(SP),17(SP),19(RP) @ 45 on SH (rounding) , 6 mm, Feb 12.

Example 1
Compression Test: 36-degree slope, Weak Layer (SH 3 mm) at 45 cm below the surface.
Results: Column fails @ 45 cm on the second tap from the elbow (CTM12). When the column fails, the fracture crosses the column suddenly ("pops"), and the block slides off the column.
Recording: CTM12 (SP) @ 45 on SH size 3 mm

Example 2
Shovel Test: 25-degree slope, Weak Layer (SH 11 mm) at 65 cm below the surface. Date of burial known to be Jan 12.
Results: Column fails @ 65 cm below the surface with moderate pull applied. When the column fails, the fracture crosses the column suddenly and the block slides easily at the fracture surface.
Recording: STM (SDN) @ 65 on SH size 11 mm, Jan 12.

Example 3
Two Compression Tests in the same profile: 20 degree slope, 20 cm wind affected storm snow overlying PP and DF.
Results: First Test - Column fails @ 22 cm on the third tap from the wrist (CTE3). When the column fails, there is squashing of at least part of the thickness of a soft snow layer but there is no horizontal displacement of the block. Additional loading steps continue to squash the soft snow layer.
Second Test - Column fails @ 22 cm on the seventh tap from the wrist (CTE7). When the column fails, there is squashing of at least part of a soft snow layer but there is no displacement of the block. Additional loading steps continue to squash the soft snow layer.
Recording: CTE 3 (PC), 7(PC), @ 22 on PP size 4 mm

Example 4
Shovel Tilt /Burp Test: Testing near surface layers, a 30 cm x 30 cm column of snow is isolated on the shovel blade and the bottom of the blade is tapped until a fracture appears in the column.
Results: A fracture crosses the whole column 18 cm below the surface after tapping with moderate force on the blade of the shovel. The weak layer appears to be small DFs and the block above the weak layer does not slide easily on the fracture surface.
Recording: Shovel Tilt Test M (RP) @ 18 on DF 2 mm.

Reflections on Near Misses and Safety Culture

Bruce Jamieson
Dept. of Civil Engineering, University of Calgary
bruce.jamieson@ucalary.ca, http://www.ucalgary.ca/asarc

During field work for avalanche research during the winters of 1999 and 2000, ASARC staff and graduate students were involved in three avalanches. These involvements ranged from being dusted by a large avalanche, to a skier accidental size 2.5. Thankfully, there were no injuries. Given that in the past 18 winters, we have logged more than 4600 person-days in the field, travelled more than 800,000 km on winter roads, and observed profiles and tests on more than 500 skier-tested avalanche slopes (Fig. 1), are three near misses (incidents without injuries) in two winters a problem? In this case, yes, because these three incidents had one worrisome factor in common: none were well reported to their co-workers and supervisor.

Figure 1. This size 2 avalanche was accidentally triggered by a snowboarder who was not injured. Although it did not involve ASARC staff, it is typical of some of the terrain we are exposed to during field work.

We did not learn as much as we should have from the near misses of 1999 and 2000. The pyramid on the left of Figure 2 shows that in the construction industry, serious workplace incidents are much less frequent than near-misses and unsafe acts. Since near misses have risk factors in common with serious and fatal incidents, they provide powerful opportunities for us to learn how to reduce the likelihood of serious incidents. Because we were not learning enough from our near misses around 2000, our injury pyramid had the potential to look like the steeper pyramid on the right. For the sake of current and future employees and their families, as well as our employer, we needed to improve our reporting of incidents.

In response to these poorly reported near misses, I started to react by putting many "must do" statements in our safety manual. Fortunately at the time, I was helping develop the CAA Level II Module 1 course, and was exposed to many new ideas on workplace risk control (safety). Two books—neither which I had read in 2000—have been particularly helpful: *Managing the Unexpected* (Weick and Sutcliffe, 2001) and *Human Error Reduction and Safety Management* (Petersen, 1996). (To get some of Petersen's key ideas on safety culture without reading his book, do a web search or search http://www.ishn.com/CDA/Archives for "Petersen problem policies" and read the two-page article.)

Petersen (2005) is emphatic that regulations and policies require a safety culture to be successful: *"Safety system elements do not determine safety results. You might have all the correct elements or components in place. You can look great on paper. But it's the culture in which these elements are used that determines your success."*

To improve our safety culture, we have made several changes. These include improved training and communication, getting staff input into our safety system, positive feedback for no-go decisions, and getting me (at least part way) off my supervisory pedestal. We also have developed some resonant catch phrases that may help. These include: *safety before science, small-lines research, and consistent cautious decisions.* Our visual safety goal for every winter is for us all to be sitting together without serious injury at the end of the season, discussing the winter.

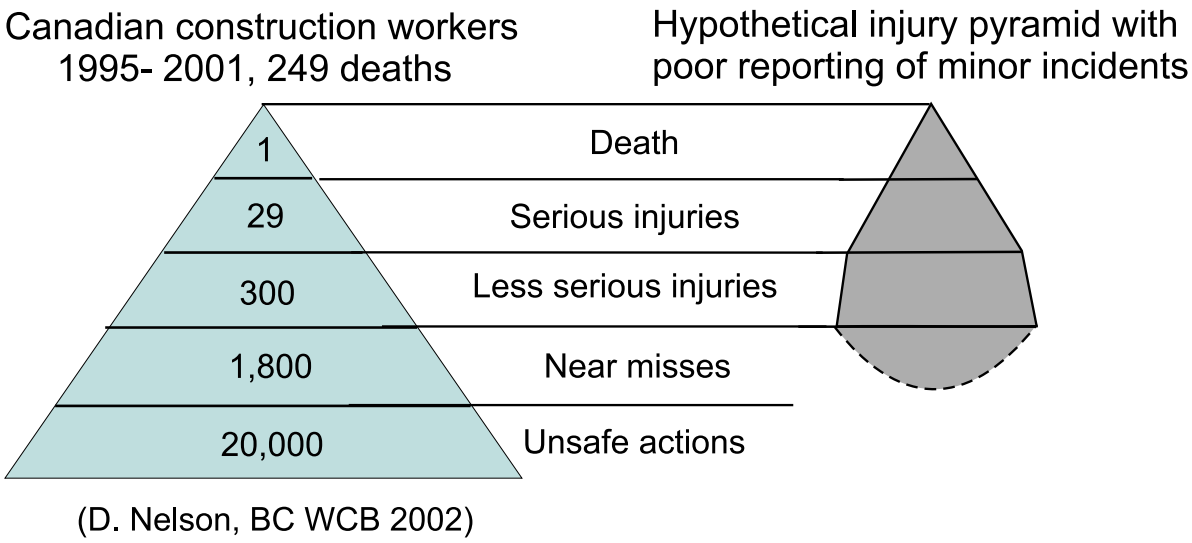

Figure 2. Real and hypothetical injury pyramids.

Staff buy-in

The research technicians and graduate students have made many improvements to our safety manual (which is intentionally short so it is more likely to be read). While visiting training sessions for other operations we have picked up many useful ideas. Our internal risk review last spring included a staff survey, the results of which have improved our safety system. This is part of listening to staff and giving them a voice in operational updates.

One of the reasons that the three near misses in 1999 and 2000 may have been poorly reported is that the staff were concerned that I would react negatively with questions like "What were you doing *there* under *those* conditions?" Now our objective for debriefing near misses is: What can we learn? For example, in 2003, two staff ski cut a size 2.5 avalanche—much larger than expected! When they contacted me later that day, I thanked them and asked them to call the other field station and discuss the lessons learned with their co-workers.

I now think that an incident report can be *finalized* a few days after the incident. In my own minor incidents in recent years, I am better able to acknowledge the human factors and my errors after a couple of days. Apparently, some lessons are not learned until after reflection.

For a report of a near miss to effectively reveal the ideas that might help prevent similar and potentially more serious incidents, the reporter should ideally be beyond blame. This may not be fully achievable, but to learn more from our incidents we are trying to get towards blamelessness.

Although I did not feel I was on a supervisory pedestal (a.k.a. high horse) in 1999 and 2000, I had to get off it! Now when debriefing near misses from past, the only person we identify by name is me. Also, while I bring experience to the decision process, I acknowledge my limitations and strive to be equal during travel and when making decisions.

Training

Since most people who have taken the CAA Level II Module 1 course report that the course has improved their personal safety and that of their co-workers, we now pay wages for full-time staff and reimburse travel costs for this course. We also hire a mountain guide to coach us during three to five days of low-risk travel in avalanche terrain every winter. This is in addition to other staff training. In our internal risk review last spring, the field staff rated our training program highly.

Positive feedback for no-go decisions

Like many operations we select our possible routes for the day based on a forecast and a review of specific terrain in a morning safety meeting. Once in the field, any member of the team can veto the route, initiating a more cautious route or a turn-around. These no-go decisions result in a few days each winter when we return to base with no data—an empty field book. The person who initiated the no-go decision—even if they cannot explain their concerns about the route—is supported by the team members and by me. Sometimes when more information is reviewed the next morning, we realize the no-go decision was overly cautious. This is fine! We can continue avalanche research with quite a few overly cautious decisions but not with a lot of decisions that, in hindsight, were overly risky. While an excessive number of overly cautious decisions would prevent us from reaching our research goals, this does not occur primarily because the graduate students and technicians are highly motivated to collect the best practical field data.

Outlook

Although we have never had an avalanche injury, we have had several injuries and destroyed two vehicles while driving to and from our worksites. Last spring's risk review suggests that our avalanche risk is now lower than our road risk. Also, our one-minute afternoon risk reviews often identify road risk as being greater than our avalanche risk. We have made a number of changes to reduce our road risk and plan a driver training session for next winter. We are also implementing changes to reduce our risk of injuries while snowmobiling (and while getting them unstuck) as well as while skiing. However, as long as we are gathering important field data for avalanche research, these risks will not approach zero.

Petersen (1996, p. 75-77) includes a 19-question survey for safety system success as perceived by various levels of an organization. He reports that the scores correlate highly with worker safety in industrial worksites. This survey provides some indices for the hard-to-measure safety culture. It includes questions such as:

1. How much confidence and trust are shown in workers?
2. How often are workers' ideas sought and used constructively?
3. How accurate is upward communication?

On questions such as these, we now score higher than we would have in 2000; however, developing a safety culture is an ongoing process. We have made progress and have found resources from outside the avalanche community such as the books by Peterson, as well as Weick and Sutcliffe. Most importantly, we are actively exchanging ideas on the safety of avalanche workers with other operations.

Acknowledgements

For sharing ideas on the safety of avalanche workers and encouraging me to talk and write about it, I am grateful to Rupert Wedgwood, Phil Hein, Ian Tomm, Alison Dakin, Grant Statham, Ken Wylie, Ilya Storm, Paul Langevin, Sylvia Forest, Ian McCammon, Greg Johnson, the ADAPT project team led by Clair Israelson, and especially the ASARC team.

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Small Operators and the Canadian Avalanche Information System (CAIS)

BY ROGER ATKINS

The Canadian Avalanche Information System (CAIS) is being developed by the CAA to provide a system for electronic exchange of avalanche related information and to capture this information in a database. The industry information exchange (InfoEx) is the primary source of information for the CAIS, and the CAIS technology promises to greatly enhance the capabilities of the InfoEx. Since the start of the 2004-2005 season, InfoEx has been produced using the fledgling CAIS technology. Many of the inevitable growing pains are now behind us, some enhancements to the InfoEx have already been implemented, and we expect to bring many more enhancements to the InfoEx for the 2006-2007 season.

The CAIS technology can also support additional information exchange groups besides the industry InfoEx group. A pilot project for exchange of information between the Back Country Lodges of British Columbia (BLBC) is currently being tested, there is interest in an information exchange within a network of volunteer backcountry observers, and there is also interest in establishing an avalanche information exchange for Eastern Canada.

Some of the larger organizations involved in avalanche work in Canada have invested a great deal of time and money to develop internal avalanche information systems, and these systems have been integrated to communicate with the CAIS. Some smaller organizations have also developed computer systems to manage their avalanche information, but these systems are not yet integrated into the CAIS. The majority of the smaller operations do not use a computerized system for their avalanche information at all, but many have asked about the availability of a system for this purpose.

Part of the CAIS initiative is to develop some tools to assist the smaller organizations to integrate their internal systems to the CAIS and to offer a service that provides a universal avalanche information system for small operators that is compatible with the CAIS.

Online Services Update

BY IAN TOMM, CAA OPERATIONS MANAGER

InfoEx and SnoInfo

As of February 15th, 2006, the CAA's InfoEx system is running at more than 90% compliance with the new SnoInfo input tool and online services introduced in fall 2005. It has been a steep learning curve for both the CAA and the subscribers as we adopt this new technology and format for the InfoEx program this winter. We are pleased to have cleared the biggest hurdles in transforming to the new system, and look forward to working with subscribers for the rest of the season to enhance this service further.Work is already being planned for the next round of updates to both Web portal services and the SnoInfo tool. The 06-07 operating season promises to bring significant new tools for avalanche operations across Western Canada, including the visualization of subscriber data in numerous ways, snow profiling, image transfer, and time profiling capabilities. Thanks again to all subscribers and their staff for their tireless work in transferring to the new system!

BLCB Information Exchange Pilot Project

The CAA is very pleased to announce that the BLBC Exchange pilot project started operations on February 3, 2006. Extensive work by Margie Jamieson, Brad Harrison, Roger Atkins, Pascal Haëgli, Chris Larson, Mark Mallet and I made this project possible. We hope to run it until the end of the operating season for the six lodges participating, ideally into April. A full project report will be part of the meetings at the spring conference in Penticton.

The six lodges participating are:
- Campbell Icefields Chalet
- Purcell Lodge
- Mistaya Lodge
- Powder Creek Lodge
- Valhalla Mountain Touring
- Kootenay Mountain Holidays

CAA Data Management Policy Approved

BY ALAN JONES, CHAIR, INFORMATION TECHNOLOGY COMMITTEE

On February 13, 2006, the CAA Board of Directors voted to accept a new Data Management Policy. This policy has been under development for almost two years, and was the culmination of a lot of hard work by the Information Technology Committee, CAA Board of Directors, the Executive Director and other volunteers. Special kudos go out to Jeff Goodrich from Glacier National Park for leading the development of this policy, and to all volunteers for their hard work and perseverance.

So what is this policy and why should you care, you might ask? As the policy introduction states, "This policy is intended to guide decisions and actions of the CAA personnel, Board of Directors and Committees regarding collection, use, access, and distribution of electronic datasets owned, managed, maintained or used by the CAA." The CAA's data is becoming increasingly valuable, especially with the launch of the database-driven InfoEx, and we are receiving more and more requests for access to all sorts of data. This policy defines the types of data that the CAA owns or manages (i.e. Public, Proprietary, Personal and Sensitive), sets guiding principles for managing this data, and defines a procedure so CAA staff can determine who should get access to what data.

This policy also outlines how the CAA may charge a service fee to help cover the administrative and overhead costs for collecting, producing, processing or delivering data to others. The idea is to share data whenever possible to support the goals and activities of the CAA, while protecting the data from misuse. This policy will help guide the CAA in the future as data management becomes increasingly important with developing technologies.

The policy is short and sweet, and actually readable (I know it sounds boring, but it's not all that bad!). You can check it out in the "members only" section of the CAA website, listed under "Information/Bylaws and Policies." If you have any questions or concerns about this policy, feel free to contact the Information Technology committee at itcom@avalanche.ca, or contact Alan Jones at the CAA.

Membership Committee Approves Changes to CPD Policy

BY STEVE PARSONS, CHAIR, MEMBERSHIP COMMITTEE

I hope this quick update finds everyone feeling satisfied by the spoils of a generous winter. Time is certainly flying by as we head into March, which means the spring AGM isn't that far away. This winter has proven to be both interesting inside and outside of the snowpack. Much has happened in the CAA during the recent months, with challenges and ongoing issues continuing to arise. Some are as easy as dealing with a five-cm soft slab, while others can be as tricky as that seemingly dormant layer of facets buried deep in the snowpack.

These challenges continue to strengthen the make-up of the membership and its board of directors. Several of the CAA committees have been working diligently on ways and ideas to benefit the membership. The CPD program has been reviewed by both the membership committee and the professionalism and ethics committee. They were tasked with coming up with a proposal to provide a more rigorous process for monitoring CPD compliance and maintaining professional standards.

The following recommendations have been passed by the Board of Directors:

1. The number of CPD audits will be doubled from 10 to 20 annually. Members who have been successful in the CPD audit will have their names posted in the "members only" section of the CAA website. Our hope is this will provide more transparency in the CPD audit process.
2. ITP instructors who have submitted their CPD for the previous year will be eligible to instruct professional CAA courses. Applicants for instructor positions will provide a record or their previous year's CPD. Records will be checked by the hiring committee for the professional courses. This action will likely add 40 additional audits a year.

That's what we have currently, but affiliate members can expect to be included in the CPD program under development as well. It's high time all members of the CAA were involved. I see it's almost 0730, and I have to run out the door. We're on day five of the Golden Mod 3 and for a desk jockey like myself, those CPD points are getting harder to come by.

Play it safe and have fun.

Explosives Committee Report

BY BERNIE PROTSCH, CHAIR, EXPLOSIVES COMMITTEE

A reminder to all members that, effective May 2007, all Type Six magazines will be limited to 100 kilos of explosives and 500 fuse assemblies or detonators. Please be sure your operation is preparing for this new standard.

Terry Matts, WCB's Senior Inspector of Explosives for the Pacific Region, will be attending the AGM in Penticton to speak about these new standards and will be available for questions. He can also be contacted at tmatts@nrcan.gc.ca or by phone at (604) 666-0366.

The explosives committee is also working on putting together updated training videos for hand-charging, heli-control, cornice blasting and avalauncher use. There's still lots of work to be done, but we have the funding which has been provided by Everett Clauson of CIL Orion.

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Avalanche Awareness Days presented by Canadian Pacific Railway January 13-15, 2006

BY MARY CLAYTON

Avalanche Awareness Days 2006 was our most successful yet, with extensive media coverage, enthusiastic participation by our host Big White and great winter weather with plenty of snow. This year, our focus was on out-of-bounds skiers and snowboarders. It was a sad coincidence that Canada's first avalanche death of the season fit that description, but the incident served to heighten media attention on our event and the need for better avalanche education and awareness.

Our press conference on Friday was well attended by media from across the province.

Photo: Mary Clayton

The press conference on Friday morning was well attended by local media outlets, at least one of which fed footage to counterparts in Vancouver for provincial and national coverage. This year, the media attendance figures were the highest yet. Speaking at the press conference were CAC Operations Manager John Kelly, Big White VP of Sales and Marketing Michael J. Ballingall, CAC Executive Director Clair Israelson, AdventureSmart Ambassador Dave Norona and CAF Director Justin Trudeau. In addition to thanking our sponsors and supporters, our main message was our focus on youth who venture out of ski-area boundaries.

The AdventureSmart team takes a break from beacon practice to say "cheese."

Photo courtesy of Cindy Jones

Immediately after the press conference, the team from AdventureSmart went to the Big White School to instruct a short module on avalanche awareness to a class of eight- to ten-year-olds. The module took about an hour and a half. Near the end of the session, Justin Trudeau and Dave Norona stepped in to take some questions from the kids. The media were allowed access to the class room at this point and got some terrific footage of Justin and Dave interacting with the students.

After the school session, Clair demonstrated the Avalanche Balloon System for the media. He inflated the pack while cameras were rolling and answered numerous questions about the design, purpose and efficacy of the system. This was popular with the media and it was clear that many of them had never heard of this technology before.

In the early afternoon, attention shifted towards the mock avalanche accident and rescue scenario that had been put in place by the Big White ski patrol and Jeff Honig from the Association of Canadian Mountain Guides. The scenario was well planned and executed, and gave an exciting show to the media and members of the skiing public who had gathered to watch.

Two lucky volunteers were buried and the scene set up to look like an avalanche accident, with various bits of equipment and clothing scattered on the surface of the snow. The weather

cooperated by giving us some very "real" conditions – heavy snow and strong winds. Patrol director Kris Hawryluik did an excellent job of coordinating his team for the initial search of the scene. Then the local RCMP dog handler Gary Creed was brought in with his partner Axel. This duo impressed everyone with their training and the two buried volunteers were found in minutes.

Our final event of the day was an informal get-together with members of the media and participants of the weekend. Held at Michael Ballingall's home in the village square, this was a good opportunity for informal chats and forging new connections for the future. This was the end of the media day and we all looked forward to the next two days of public events.

The new snow from the previous few days brought big crowds to the mountain, giving us an excellent opportunity to get our message out. We had a booth set up at Big White's main day lodge in the village, alongside the ACMG and Brian Kelley from Kelley Sports International. With Big White's help, we had a transceiver search practice area set up at the bottom of a popular lift – the Ridge Rocket – and snow profile demonstrations set up at the top. The snow profile area was especially popular. A pit had been dug to allow the pubic to enter in one end and exit the other, watching as John and Clair demonstrated observation and stability-testing techniques. In addition, a team from Pieps attended the weekend and they held a seminar for professional on the latest techniques and transceiver research.

Saturday evening was time for the silent auction, where we had close to $6000 worth of goods donated from our sponsors. One of Big White's ski instructors, Mark Tillotson, volunteered to act as emcee for the evening and he was terrific. Mark has worked as an actor and is no stranger to the microphone. He was very entertaining and kept the action going and the crowd laughing, adding tremendously to the evening. We also had some great avalanche-related short films showing in one corner, and Columbia Brewery donated beer which we used to entice the crowd to keep bidding.

The auction was very lively and we brought in more than $5000 for the CAC. After the auction was over, we had live entertainment from a local rock group that extended the party going for a few more hours. It was a very successful evening topping of an excellent weekend.

Justin Trudeau did a terrific job of connecting with these young sudents at the Big White school.

Photo: Cindy Jones

This snow profile site was a popular demonstration.

Photo: Mary Clayton

Avalanche Awareness Days Regional Venue Feedback

Mount Washington, BC
By Max Oudendag, Special Events Coordinator

Thanks again for the supplies for our Avalanche Awareness Days. Our event was very successful, and the people who participated in free demos and clinics were very appreciative and said they learned a lot. The avalanche rescue demonstrations we held were especially well attended. We also held a silent auction which raised more than $900 for the CAC.

Enthusiastic volunteers at Mount Washington.

Photo: Max Oudendag

Apex Mountain Resort, Penticton, BC
By Lisa Baadsvik, Guest Services & Special Events Manager

Our avalanche awareness days were very successful. We had the Penticton Search and Rescue perform demonstrations, and we had prizes and an information tent. During après-ski we did some fundraising which went very well. I would like to see a representative from CAC out next year. We had minimal coverage from the media front as most were in Kelowna. I think tying Adventure Smart with Avalanche Days would work well. We had them at Apex in mid-December and I would like to see the two together.

Fernie Alpine Resort, BC
By Laurie Frankcom, Events Coordinator

Fernie had more than 6000 people visit during the two-day weekend of events. Media covering the event included: The Free Press, The Drive and Shaw TV. Overall participation in the public events included:

- 30 people off all ages participated in the transceiver search.
- 9 kids participated in the kids scavenger hunt (rain affected turnout).
- 50 people watched the dog demo.
- 189 watched the auction in the Griz bar.
- 100 people for Avalanche Presentation over the two days.
- Throughout the weekend there was lots of traffic coming to the info tables and demonstrations that were set up.

Overall the event was very successful and we will continue to participate in the event and schedule it in conjunction with the National Avalanche Days across BC.

Kids enjoy a beacon demo at Kimberely Alpine Resort.

Photo: Dan Maissoneuve

Whitewater Winter Resort, Nelson, BC
By Chris Courtney, Special Events Coordinator

Our weekend went well - we had fresh snow both days so people were more excited to be out skiing than participating in the events. However, the kids' events were very popular; we held a scavenger hunt and a mountain jeopardy contest that were very fun!

With regards to the media coverage, as you heard, we were on CBC Radio One on the Monday following the weekend. We also placed a "news of the day" release in the local paper, and placed posters in ski shops and around Nelson.

Volunteers at Fernie model some of the great prizes to be given away.

Photo: Laurie Frankcom

Banff Centre, Mt. Norquay and Sunshine, AB
From a report by Deb Smythe, Manager, Banff Mountain Film Festivals

It was standing room only – the auditorium was packed with people. A quick poll of the audience indicated that 2/3 of the audience were "first timers" in the Banff area so we definitely hit the target audience. The talk from Brad White and others from Sunshine were very well received. The emcee thanked the CAC sponsors including Columbia Brewery for the beer donation which was used to raise funds for the CAC. The prizes were excellent. On-hill demonstrations at Norquay and Sunshine were busy, particulary the BCA Beacon Basin at Norquay.

Whistler and Pemberton, BC
By James Duffy, Backcountry Access, Coast Mountains Technical Representative

The ski patrol had a tent up at the top of one of the main lifts, but I'm not sure how much volume they got because it was really snowing hard.

It was good to see the event listed on the CAA website. The Pemberton Snowmobile Club had a successful poker run the next day, at which we were doing a beacon training station. The club should be forwarding their donation in the near future.

Panorama, BC
By R. R. Andrew Nelson, Avalanche Forecaster, Panorama Mountain Village

We had a few companion rescue demonstrations and races at the summit. Thanks very much for the prizes! Tania was on hand with her newly certified dog, Solo, for some demonstrations on Sunday. A profile demo was also staged at the bottle-neck of our summit ridge so lots of folks got a look.

North Shore, Vancouver, BC
By Rob Wilson, Provincial Park Ranger, Ministry of Environment BC Parks and Protected Areas

- Displays were held at Seymour, Grouse and Cypress.
- "Transceiver Search Challenge" was very popular.
- A CARDA handler and dog was present at all of the venues at some point over the weekend.
- G3 set up a booth to demo their products at Mount Seymour.
- We had more than 230 people enter for draw prizes.
- Arcteryx, G3, MEC and the CAC (and their sponsors) combined to provide more than 30 high-end prizes.
- BC Parks, Seymour, Cypress, Grouse, CARDA, Lions Bay SAR, North Shore Rescue, Coquitlam SAR, CSPS, Adventure Smart, RECCO and G3 were all at the event.

Overall, I think that we did a lot of things right for this event. The meetings that were held to plan the event were key. The NSAA developed a communications strategy early on (Oct) that contributed in bringing a consistent message to the public at each of our venues. Everyone who participated in the meetings was able to get a "big picture" look at what Avy Days was going to be like on the North Shore. Our sponsors received some positive advertising and the message we provided was well received by the public.

Shames Mountain, Terrace, BC
By Duncan Stewart, Mt Remo Backcountry Society

Better late than never, Avalanche Awareness Days took place at Shames Mountain on February 4th and 5th, presented by the Mt. Remo Backcountry Society. The weather was good and the snow was superb. More than 54 participants took part in the many events over the two days, which included basic single-victim beacon searches, more advanced searches for multiple victims, timed beacon searches, CARDA live buried skier/boarder demo, and snowpack assessments with demonstrations of compression and Rutschblock tests. For some it was good review and for others it was the first time they had handled a beacon.

CARDA demonstration at Shames Mountain.

Photo: Travis Carter

Special thanks goes out to our sponsors – Shames Mountain, for providing an awesome venue and demo gear, as well for transporting our equipment up and down the hill, AZAD Adventures and the CAC for providing great draw prizes and demo gear too. Thank you so much to Scott Hicks and Josey the rescue dog for a great show. (Josey Wales beat all of our beacon search times four paws down!) More thanks goes out to Rich Forget, Steve Brushey and Shane Spencer for sharing their tremendous knowledge of how to be safe in the backcountry. Last but not least, many thanks to all the volunteers who gave their time to help others when they could have been skiing when the powder was deep. This event could not have happened without you. Thanks again from Travis and the rest of the Mt Remo Backcountry Society executive.

Marmot Basin, Jasper, AB
From a report by Darlene Skehill, Marketing Co-ordinator, Jasper National Park

We set up exhibits and table displays for information booth at the ski hill. At the media station, 10 teams of five media people were given two options: use either a beacon or probe to find and dig up a buried knapsack. The teams had an unlimited time to complete this task. They then had to match avalanche icons with descriptors before they received a clue to the next relay station. This task gave the media experience with using avalanche safety equipment and raised awareness. The teams enjoyed themselves, the information booth (which was set up by Jim's Den) looked great and we received excellent media coverage after the events.

Saturday night was our "Staying Alive" Pub Night. We had excellent promotion of this event through posters, paycheque inserts, and flyers to delivery businesses. The bar was filled by 7:15 and we had to turn people away. We had lots of prizes, a raffle for cat skiing, free food, happy hour prices, and ski movies.

We also had three speakers, each covering a unique aspect of avalanche safety. Andre Chalabi from Marmot Basin spoke about the risks of skiing out of bounds, Grant Statham from Parks Canada spoke about managing risk the backcountry, and Jasper Park Warden Darian Sillence spoke about the wardens' role in monitoring snow conditions and search and rescue. Each speaker presentation was separated by a movie and prize draws.

The ambience was fun, people were happy and smiling, and we attracted the young audience we wanted. We heard from many afterwards and they enjoyed it. In terms of planning for future events – Yes, do it again!

Alberta Forecaster

BY JOHN KELLY, CAC OPERATIONS MANAGER

As part of the emerging relationship between the CAC and the government of Alberta to provide avalanche safety support and services specific to the needs of Albertans, we have seized on the opportunity to hire an avalanche forecaster in Pincher Creek. Some of you may recognize this cowboy from days spent on the other side of the divide where he was known as Cool Hand Manners. Anyway, Evan is back in the saddle again and forecasting avalanches.

Starting in January, we hired Evan to produce local forecasts for the South Rockies forecast area. We also asked him to interact directly with people in the Crowsnest Pass area to increase our understanding of user groups and patterns of use of backcountry terrain in the area between Kananaskis Country and Waterton Park.

The South Rockies area is a key high-use area for backcountry activities with a rapidly growing group of users practicing a variety of activities. Preliminary user group surveys in conjunction with the ADFAR project indicate that growth in backcountry use in this corner of the world is continuing at a rapid pace that may even outstrip some other traditional backcountry hotspots. We also know from our forecasting experience that the South Rockies contain a range of snowpack and weather conditions, sometimes with a Jekyll and Hyde character.

Our avalanche forecasts are often weighted towards the Lizard Range near Fernie, BC, where the snowpack is generally deep and often resembles the snowpack in the Columbia Mountains more than the surrounding ranges of the Rockies. This is because we receive a significant number of high-quality information reports from this area, but also because it is a hotspot of backcountry activity where a significant majority of historical avalanche accidents in the region have occurred.

One of the benefits of having a person on the ground in the region is the ability to get data from some of the data-poor areas of the region so that we can attempt to have a more balanced look at avalanche danger and snowpack conditions. Our program in the South Rockies includes interaction with local agencies involved in public safety activities such as the volunteer search and rescue associations in Blairmore and Pincher Creek. As well, we are making links with observers who are giving us valuable information on what they observe on their trips into the backcountry so that we can include it in our avalanche forecasts. We are also able to participate in the monthly snow survey flight in cooperation with the department of the Environment in Alberta which Evan has used to gain insight into snowpack variability on a regional scale.

Our thoughts for the future of CAC programs in the South Rockies point towards more detailed regional information and increased cooperative activities. We hope to continue to have a local presence especially during the key high accident months of January February and March. We aim to bring better safety information, to squarely target vulnerable user groups with outreach and awareness programs in order to reduce avalanche accidents and close calls, and also to provide people in the region with an avalanche safety infrastructure that will make them feel safe to get out into the mountains in the wintertime. After all, the name of the game is empowering people to get out, not causing them to stay home.

To accomplish our goal we foresee the approaching need to carve the current region into two smaller regions, one that will comprise the Fernie area and Lizard Range, and another region that includes the drier ranges and east slopes. We are beginning to engage regional governments and local businesses in discussions to arrive at a way to share the costs that this will incur. We hope that individuals will help with this too. Look on the CAA website for a call in the near future for locals to join a "Friends of the South Rockies" group whose membership dues will go specifically to projects in the South Rockies, including the establishment of a new forecast area. For now we are very pleased with this step in our evolution that has been made possible by our relationship with Alberta Community Development.

Evan Manners back in the saddle at the CAC.

Photo: Brent Strand

Avalanche Worst-Case Scenario – Eastern Canada

BY JOHN KELLY, CAC OPERATIONS MANAGER

The following briefing document was prepared for the Ministry of Public Safety and Emergency Preparedness Canada to assist in formulating the Natural Disaster Mitigation Strategy. The goal was to present a qualitative overview of what would be the maximum impact of a "bad avalanche year." In preparing this document, we came across some new and interesting information about the extent and number of avalanche accidents in Eastern Canada which has been compiled by Dr. Bernard Hétû of the University of Quebec at Rimouski as part of his ongoing work in avalanche safety in the province.

The nature of extreme avalanche events

Avalanches are a highly recurrent natural hazard and avalanche activity that harms people or damages infrastructure in Eastern Canada is recorded every year. Unlike other kinds of natural hazards, there is a great deal of difference between a one-in-100-year avalanche *season*, a one-in-100-year avalanche *cycle* and a one-in-100-year avalanche *event*. A maximum avalanche season will likely involve several distinct periods of avalanche activity affecting different regions of Eastern Canada at different times. These periods of avalanche activity may affect both recreation and industry. The greatest damage will likely be to recreational backcountry users, as it is more difficult to predict several different periods of avalanche activity that may each be sub-maximal in extent and impact. An example of a relatively severe avalanche accident season is the year 1998/1999 where avalanche activity caused damage in several areas of Quebec, resulting in 11 fatalities and several more injuries as well as damage to property.

The highest historical incidence of destructive avalanches in the province is in the Quebec City region – an area not known for high alpine terrain.

By contrast, an **avalanche cycle** usually affects a region (which may be vast) over a discrete period of time on the order of several days. In a big avalanche cycle, avalanches are numerous and will generally run to the full extent of natural runout zones, depositing large masses of snow at the bottom of slopes. Avalanche cycles usually pose more danger for industrial and residential damage, as recreational users generally see increased avalanche activity as a clear signal to avoid avalanche terrain. As an example of this kind of event, an avalanche cycle in March 1936 caused the death of 10 residents in Charlevoix, Quebec, and destroyed at least three dwellings in separate incidents.

An extreme **avalanche event** is again distinct from a cycle or season in that it involves a single avalanche that almost certainly exceeds the best predictions of maximum avalanche extent, impact and mass of snow transported. An example of an extreme avalanche event is the single avalanche accident of 1782 in Nain, Labrador where 23 people were killed in a single calamitous avalanche. Recreational, industrial and residential users of avalanche terrain are equally at risk from extreme avalanche events as they can affect areas previously identified as safe by the best available expertise.

Avalanche accidents in Quebec, Newfoundland and Labrador and Nova Scotia are related to the particular storm patterns of winter weather in Eastern Canada. Extreme avalanche events in this area will have impacts on recreation, transportation and industry. Liverman (1999) indicates that historically, avalanches have resulted in the highest number of fatalities due to natural hazards in Newfoundland, and Hetu (2006) indicates that, with 81 fatalities since 1825, avalanches trail only landslides in Quebec. There is currently very sparse information on avalanches in Nova Scotia. However, deadly avalanches with much the same character and impact as those in Quebec and Newfoundland have been recorded on Cape Breton Island. Avalanches also occur in Nunavut with four fatalities in the past 10 years. It is unknown whether the conditions leading to deadly avalanches in this area are similar to those in the more southern areas of the country.

Weather factors related to avalanche formation in Eastern Canada

Dr. Bernard Hétû reports the synoptic conditions responsible for most avalanche activity in Quebec (and likely Eastern Canada) are related to storms bringing large accumulations of new snow followed by blizzard conditions of strong or extreme winds and blowing snow. Avalanche activity peaks on the day of the storm and continues for one to two days following. A maximum avalanche season probably includes several of these storm periods. Intervening fine weather between storms may actually contribute to further avalanche events by bringing conditions that promote the weakening of the surface layers of the snowpack and setting the stage for the next period of avalanche activity.

A maximum cycle may involve such a storm that lasts for an extended period of time, or storms arriving back-to-back linked by a windy period. According to Hétû, another typical weather pattern associated with extreme avalanches in Quebec is sudden warming and rain events delivering 60 mm or more of rain occurring after a substantial snowfall. Wet avalanches and slush flows that can be very damaging, running abnormally long distances and entraining an enormous mass of snow, are the possible result. This is the type of weather that will produce maximum single avalanche events.

Avalanche terrain and incidence of avalanche accidents in the East

Research into avalanche accidents in Quebec shows that, historically, most damage occurs in the residential setting. The wide geographic dispersal of avalanches over the territory of the province (and Eastern Canada in general) is counterintuitive to our sense of avalanches occurring in well-defined high mountain areas with obvious avalanche paths and runout zones. The highest historical incidence of destructive avalanches in the province is in the Quebec City region – an area not known for high alpine terrain. These avalanches occurred in gullies, ravines and on short slopes of varied characteristics, many with as little as 50 m of vertical relief.

Residential risks

Consulting the historical record in Quebec we can see the incidence of avalanche fatalities occurring on short slopes in residential areas. Between 1825 and 1898 the city of Lévis experienced nine deadly avalanches that took the lives of 16 unfortunate victims. (Hétu, 2006). In the heavy snow winter of 1869 alone, at least nine dwellings in Lévis were damaged or destroyed by avalanches, resulting in five deaths and nine injuries. The largest recent avalanche event affecting residents was a single avalanche that killed nine people and injured 25 in Kangiqsualujjuaq, Quebec on January 1, 1999. Likewise, avalanche accidents in Newfoundland also typically affect residences. A single avalanche accident in 1959 killed five residents, destroyed two houses and damaged several more on Battery Hill in Saint John's.

With avalanche zoning at the nascent stage in both Quebec and Newfoundland, there is a good chance that avalanche hazard has not been taken into account in many existing residential and industrial situations. It is highly likely there are even more residences and other kinds of infrastructure currently in locations threatened by extreme-event avalanches than there were in 1869 or 1959.

It is highly likely there are even more residences and other kinds of infrastructure currently in locations threatened by extreme-event avalanches than there were in 1869 or 1959.

In a 100-year maximum season or single event in Eastern Canada, it could be guessed the number of residential avalanche fatalities would be between 10 and 100, in a probability distribution highly skewed towards the lower end. We could expect injuries on the same order and the number of dwellings and structures damaged might be on the order of 10.

Recreational users and risks

The historical record indicates residents and residences are the group most at risk for avalanche disasters, and recent accidents like the Kangiqsualujjuaq event of 1999 confirm that residential avalanche accidents are still problematic. However, since 1969 the majority of avalanche accidents involving humans or human activities have affected a new user group of avalanche terrain – the recreational user. There are several clear reasons for this, but one of the primary factors is that more and more people are engaging in winter recreational activities, using sophisticated equipment that enables anyone with moderate skills to access avalanche terrain. As stated earlier, the avalanche conditions that put recreational users most at risk are different from those threatening residents and infrastructure. Recreational users are more likely to be involved in deadly avalanche accidents when the uncertainty in avalanche prediction is high, not during large cycles of avalanche activity. For this group, therefore, we talk about the effects of an extreme avalanche season.

Effects of an extreme avalanche season on recreational activities and recreational users will involve both economic and human costs. Unique to this particular case are costs resulting from the loss of future revenue that may span many years. These include a loss of confidence in the public safety infrastructure that visitors assume is available to safely manage their experience. When this happens, visitors will choose not to return. Experience in British Columbia indicates these economic impacts are immediate and substantial (Cloutier, 2003). Also likely is the permanent closure of businesses faced with lower frequentation and increased insurance and safety infrastructure costs, and regulated closure of public lands to winter activities in areas such as the parc nationale de la Gaspésie and Gros Morne National Park, due to reactionary public pressure. This situation will affect many winter adventure tourism operations in Gaspésie, the Torngat mountains of Labrador and Quebec, parc des grands jardins and monts Groulx areas, as well as rocky and mountainous areas of Newfoundland widely dispersed on the island.

To estimate impacts of recreational avalanche accidents during a 100-year extreme season we suggest recreational use of avalanche terrain will be severely curtailed in Eastern Canada for the balance of the season after the occurrence of the most damaging cycles. It is also likely future activities would be reduced by a substantial percentage for a period of up to 10 years. Fatalities and injures will also occur to recreational users of avalanche terrain, and we can estimate these to be on the order of 10 and 20 respectively.

Transportation and Industry

The historical record in Quebec and Newfoundland has not been thoroughly examined to discover the effect of avalanches on the network of transportation. However, it is well known that avalanches can close major transportation routes in both provinces, such as in 1922 when an avalanche derailed a train in Rapid Pond Nfld. (Liverman, 2000), or in 1956 when a worker was killed and in a separate accident a snow plow was completely buried on highway 132 in Gaspésie Quebec. Since mitigation measures for avalanches on highways and railways are rudimentary or non-existent in either province, it can be expected that road and railway closures are just as likely to occur in the future.

The main avalanche threats to roads in Eastern Canada are along Highway 132, 299 and 198 in Gaspésie between Ste Anne des Monts and Grande Vallée, involving the principal – and in some cases only – routes for a dozen communities. Historically, these roads have avalanche closures up to a day in duration. In Newfoundland, the Trans-Canada Highway and rail line through the Humber Valley is also threatened with avalanche closures of the same magnitude.

Primary and secondary roads on Quebec's lower North Shore and the Charlevoix region, as well as many secondary roads in Newfoundland's steep and rocky shoreline communities, may also be threatened by avalanches. The historical record contains at least one transportation-related fatality in Charlevoix from Les Éboulements in 1936.

Avalanche activity in the past has threatened electric transmission and communication lines in Quebec. Known historical power and telephone outages are limited to the Gaspé region of Quebec where transmission lines lie alongside highways 132, 299 and 198. However, data linking power outages to avalanche activity has not been researched.

Conclusion

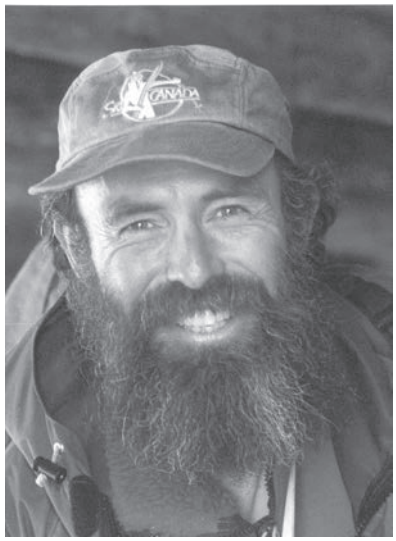
The widely distributed occurrence of avalanches coupled with an incomplete historical record of avalanche activity makes the development of a 100-year worst case scenario for avalanches very difficult in Eastern Canada. An easily drawn conclusion, which is supported by our expert contacts in Eastern Canada, is that avalanches are a much more significant natural hazard than commonly thought in both Quebec and Newfoundland, and have a wide geographical distribution touching areas not normally associated with the avalanche phenomenon. Affects from avalanches are likely on the rise due to the increased frequency of the type of severe weather events responsible for avalanche activity, coupled with an increased use of avalanche terrain for recreation and increased dependence on the flow of goods along threatened transportation corridors.

The damage caused by a one-in-100 year avalanche season in Eastern Canada, according to our assumptions above, will be mainly measured in the loss of lives and injury to individuals. However, as the weather pattern and character of avalanches in a season mainly affecting recreation is not fully congruent with a season affecting residential and industrial users, the potential fatalities for each category are not additive. The best estimate for potential loss of life is between 10 and 100, with a further 20 to 200 people expected to sustain injury in avalanches during the same period. Infrastructure damages are also certain to occur during an extreme avalanche season, ranging from the destruction of homes and buildings to destruction of vehicles and destruction of power lines.

Are you clearing out your filing cabinets or cupboards?

If you have old avalanche or snow-safety related material, the CAA Art Twomey Library will happily take it.

Contact Brent Strand at publish@avalanche.ca to make a donation.



caa/cac third annual photo competition

categories

Events and Occasions: Gatherings, celebrations, or maybe just a little bit of dirt on a member.

Members at Work: People working in the avalanche patch.

Avalanches:The white dragon itself!

People's Choice: Best overall image selected by the membership at the AGM. All entries will be submitted automatically.

prizes

There will be awards (first place, second place and special mention) in each of the four categories listed above.

1st Place: Marmot Sawtooth Sleeping Bag
total prize value $270

2nd Place: G3 AviTech Shovel
total prize value $100

Special Mention: TBA

rules

Entries: Contest is open to all members of the CAA and the CAC.

Entry Deadline: Entries must be received by April 24, 2006.

How to Enter: Each person may submit up to a maximum of three (3) images. Only one entry form is required per submission. You must be able to supply a signed release from any person(s) appearing in the photograph, but do not send with submission.

Specifications for Accepted Formats: 35mm slides (transparencies), unmounted prints up to 8 x 10 inches and high resolution digital (300dpi or 1200x900 pixels minimum). Digital images must be from original work. No digitally altered images will be accepted. Images must be JPEG, TIFF or RAW format only; all other formats will not be accepted. Digital images may be received on CD, DVD and e-mail.

Identification: Each participant must fully complete entry form provided. Please identify the top of each image.

Publishing Agreement: CAA/CAC reserves the right to reproduce and or publish (in print and on the CAA/CAC website) in various not-for-profit uses supporting educational and public awareness efforts. Photographer will be credited with caption on any images used.

Return of Images: If you want your images returned, you must include a self-addressed stamped envelope with sufficient Canadian postage (stamps only). We can not return submissions that are accompanied by US or other international postage.

Responsibility: CAA/CAC will take due care in handling all entries. However, CAA/CAC is not responsible for any loss or damage to entries, regardless of the cause, or for any delays in receipt of entries.

Judges: Images will be judged in terms of their appropriateness to the category theme, creativity and technical quality. Decisions of the judges are final.

Winners: Contest entrants may only be awarded one first place prize. For example if you win first place in "avalanche" category then win first place in the "people's choice" award at the AGM you must relinquish your first place in the "avalanche" category. Prizes will be adjusted accordingly.

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entry form must be fully completed for entry into the contest

Name (please print) _____

Address _____

Telephone _____ Fax _____ Email _____

I understand and agree to the rules of this photo contest.

Signature _____ Date _____

photograph details for each photo submitted, please provide the following information: **title, category, photo location**

mail in entries Photo Contest, Canadian Avalanche Association
Box 2759
Revelstoke, BC V0E 2S0

e-mail entries publish@avalanche.ca

Events Schedule

April 2-7, 2006

European Geosciences Union General Assembly 2006

This year there will be two sessions on snow avalanches. "Snow cover and avalanche formation" is devoted to the latest results and views on avalanche formation from field, laboratory and numerical studies. "Snow avalanche dynamics and risk assessment" will highlight the movement and effect of avalanches, and recent developments in the area of avalanche hazard/risk assessment and mitigation.
Where: Vienna, Austria
Info: meetings.copernicus.org/egu2006
Contact: Juerg Schweizer (SLF) at schweizer@slf.ch or Mohamed Naaim (ETNA-Cemagref) at Mohamed.Naaim@cemagref.fr

April 17-20, 2006

Western Snow Conference 2006

The theme of the 74th annual meeting of the Western Snow Conference is "Water Supply in a Time of Increasing Demand: The Importance of Snow in Arid to Humid Regions."
Where: Las Cruces, New Mexico
Info: www.westernsnowconference.org
Contact: Al Rango, Technical Committee Chair, alrango@nmsu.edu

May 1 – 5, 2006

CAA Annual General Meeting and Spring Meetings

Planning is already in place for our annual get-together and catch-up. Committee and instructor meetings are slated for April 31-May 1 and the AGM for both the CAA and the CAC will be held on May 2. Public and technical presentations will take place May 3-4. If you or your team has come up with some initiative to make life easier or safer, why not share it with your colleagues by giving a presentation during those two days. As always, the last day focuses on Continuing Professional Development. Our topic this year will be "Legal and Ethical Issues in Canadian Avalanche Risk Management."
Where: Penticton, BC
Contact: Call Ian Tomm at (250) 837-2435 or e-mail ian@avalanche.ca

May 7, 2006

HeliCat Canada Annual General Meeting

Where: The Grand Okanagan Lakefront Resort, Kelowna, BC
Contact: Call (250) 542-9020 or e-mail info@helicatcanada.com

May 8 – 11, 2006

Canada West Ski Areas Association

38th Annual Spring Conference and Trade Show
Where: The Grand Okanagan Lakefront Resort, Kelowna, BC
Contact: Call (250) 542-9020 or e-mail office@cwsaa.org

Sept 4 – 8, 2006

Avalanches and Related Subjects, International Conference

This year marks the third annual gathering in Russia. This year's topic is the contribution of theory and practice to avalanche safety.
Where: Kirovsk, Murmansk Region, Russia
Contact: PChemous@apatit.com or phone 00 7 81532 96230

Oct 1 – 6, 2006

International Snow Science Workshop

You are cordially invited to join other snow scientists and avalanche practitioners in attending this biennial international conference celebrating "A Merging of Theory and Practice." Set amidst a rich history of mining and avalanches in the spectacular San Juan Mountains, this meeting of the minds provides the avalanche industry a forum in which to discuss theories, present papers and explore innovative new research topics during a five-day period of interaction and conviviality.
Where: Telluride, Colorado
Info: www.issworkshop.org
Contact: Craig Sterbenz at (970) 728-3829 or e-mail info@issw.net

The 10th Annual CAA Continuing Professional Development Seminar

Working title: Legal & Ethical Issues in Avalanche Risk Management in Canada
Best practices for front-line workers, managers and CEO's.

May 5, 2006
0830 - 1700
Penticton Convention Centre, Penticton B.C.

How do your actions as a front-line worker compare to best practices?
How does your organization measure up?

Presentations, panel discussions and breakout workshops focused on real issues for real workers. If you've been wondering how your actions measure up to modern expectations this is the day for you and everyone you work with. Presentations include: mechanized and non-mechanized commercial backcountry guiding; snowmobiling; ski area programs; transportation and resource sector programs; provincial and national park programs; and the independent guide.

The day will be comprised of four sessions, each covering a distinct topic in Canadian avalanche risk management. There will be short presentations including panel discussions and questions, with discussion and comment from the audience.

Sessions
Traditions: "Old School" practice and "New School" trends, what are front-line workers and managers doing these days.
Law: Expectations, intent and actual outcomes. What it means to everyday operations.
Risk Management: Theory, practice and the role of emerging science.
Ethics in Natural Hazards Risk Management: Professional codes, ethics and practice in natural hazard professions.

International Workshop On Avalanche Awareness and Forecasting

Our friends and partners at the Meteorological Service of Canada (MSC) have been approved by the NSS New Initiatives Fund to hold an international avalanche workshop. According to their proposal, the workshop intends to "bring together the research, forecast, rescue, and outdoor user communities to determine strategies for efficiently overcoming knowledge gaps in avalanche processes, avalanche forecasting, and information dissemination."

The planning phase for the workshop is well under way. It will be held October 30th - November 2nd, 2006, at the Simon Fraser University's Harbour Centre conference facility in downtown Vancouver.

The CAA professional members sitting on the steering committee are Bruce Jamieson, Clair Israelson, Dave McClung and Grant Statham. We will have more details about the conference in the summer issue of *Avalanche News.*

2006 CAA/CAC Annual General Meeting & Spring Conference Draft Agenda

Ramada Inn, Penticton, BC

Monday, May 1, 2006

0900 - 1000	TBA	Explosives committee meeting
1000 - 1200	Atrium	ITP instructors meeting (ITP instructors and invites)
1000 - 1200	Ballroom	CAA/CAC BOD meeting
1300 - 1700	Ballroom	Canadian Avalanche Roundtable
1300 - 1400	Atrium	Level 1 curriculum review (ITP instructors only)
1430 - 1600	Atrium	Level 2 curriculum review (Level 1 course leaders and Level 2 instructors only)
1900 - 2100	Ballroom	InfoEx subscribers meeting: Ops Report
1900 - 2100	Atrium	RAC providers meeting

Tuesday, May 2, 2006

0800 – 0945	TBA	Associate and affiliate members meetings
0830 – 1200	Atrium	CAC Bulletin Writers Workshop
0800 – 1000	TBA	Education committee meeting
1000 – 1200	Ballroom	CAC AGM
1300 – 1700	Ballroom	CAA AGM
1800	Ballroom	CAA/CAC Member Night (food to be provided) CAA/CAC Photo Contest

Wednesday, May 3, 2006

0830 – 1730	Ballroom	CAA/CAC Spring Conference (public & technical)
1200 – 1300	Ballroom	CAF AGM
1800 – 1900	Ballroom	CAA/CAC Tradeshow/Pro Purchase Seminar

Thursday, May 4, 2006

0830 – 1730	Ballroom	CAA/CAC Spring Conference (public & technical)
1800 – 2000	Ballroom	CAC Silent Auction and CAA Summit Awards

Penticton Convention Centre

Friday, May 5, 2006

0830 – 1730	Main Hall	CAA Continuing Professional Development Spring Seminar Speakers: • Ken Wylie • Representatives from Strathcona Tweedsmuir School • Steve Blake • Mike Boissonneault

Prices

May 3-4, 2006 Spring Conference	CAA/CAC Members: FREE Non-members: $40 for the two days or $25 for one day.
May 5, 2006 CPD Seminar	Members $60, non-members $120

By-Law Amendments at a Glance

BY JOHN HETHERINGTON AND STEVE BLAKE

The by-laws we will be presenting at the AGM are three years in the works. What we learned this winter about the ratio of voting versus non-voting members has added a greater sense of urgency to this endeavour. Amending the CAA by-laws is no longer a "nice to do" but has become an absolute necessity. In light of this fact, we are taking this opportunity to summarize some of the more substantial changes being suggested.

The proposed by-laws incorporate many changes and additions from both the existing by-laws and from what was proposed at last year's AGM. Several of the amendments clarify ambiguities and language deficiencies, but there are some substantial changes dealing with issues integral to our association. It is important to note that both the audit committee and your board of directors have been extensively involved in the development of these by-laws.

You will receive a copy of the proposed by-laws in April, either by e-mail or snail-mail. Please take the time to read the proposed by-laws thoroughly. We will be voting on them in May! At the front of the documents you will see some new definitions for "avalanche-related activity," "engaged full-time" and "mail." There are changes to the practicing professional membership category and there are two new membership classes: non-practising professional member and active member. There are also some minor changes to the clauses covering the affiliate and associate member classes.

The Society Act of BC states: "A society may have non-voting members but their number must not exceed the number of voting members." For some years the affiliate members plus the associate members have outnumbered the professional (voting) members. This is not a comfortable position for the CAA to be in as it calls into question our status as an association and the status of any resolutions that are voted upon.

The audit committee debated the matter extensively and is recommending for inclusion in the by-laws a new membership class – called active members – with full voting rights. The membership and CPD requirements for active members would be more stringent than those for affiliate members but less than those for professional membership. The directors are confident that within a year or two the voting/non-voting numbers will be in compliance with BC's society act. The active member class provides a good place for members who have passed their CAA level 1 and are currently engaged in avalanche-related activities, but have not yet met the requirements for professional membership.

For several years, professional members could tick either practising or non-practising on their annual CPD form, but there is no definition or description of a non-practising professional member in the existing by-laws. This has been remedied in the proposed by-laws.

The board of directors is recommending two-year terms for board members with the goal of reducing the likelihood of a wholesale turnover at the board level. The description of the board's composition now reads:

47. The Directors of the Society shall be:
    a. A Professional Member as President, to be elected on even numbered calendar years;
    b. A Professional Member as Vice-President to be elected on odd numbered calendar years;
    c. A Member as Secretary-Treasurer, to be elected on even numbered calendar years;
    d. A Professional Member as Director, Membership Committee, to be elected on odd numbered calendar years;
    e. A Professional Member as Director-at-Large, to be elected on even numbered calendar years;
    f. An Active Member as Director–at-Large, to be elected on odd numbered calendar years;
    g. An Associate Member as Director, Associate Members; to be appointed on even numbered calendar years;
    h. An Affiliate Member as Director, Affiliate Members, to be appointed on odd numbered calendar years.
    i. Upon retirement from office, the President may serve as a non-voting advisor to the Board of Directors as Past-President (ex-officio) for a period of one (1) year

The following clause has been included regarding honoraria. This idea essentially came to light during 2003 when then-president Bill Mark entered headlong into the tremendous amount of work required in the aftermath of the major accidents in that year. Many felt his efforts deserved more than just a thank-you.

56. Directors may receive an honorarium as remuneration for their service to the Society when;
    a. The Director has completed the term of service for which he was elected or appointed; and,
    b. The honorarium payable to that Director is approved by a resolution of the Members at an annual general meeting.

Last year the dropping of the clause that says the membership can create a committee from the floor created plenty of debate. It is our contention that the membership retains the right to create a committee from the floor, that being the board of directors. If the BOD doesn't meet your needs or represent your views be rid of them! Here's how we propose this clause should read:

67. Other than the Membership Committee, the Directors may create and / or disband standing or ad-hoc committees consisting of such Directors, Members, or other individuals, as they see fit. Committees serve the Directors, and shall operate according

to written terms of reference and any other guidance or authority that may be approved by the Directors from time to time. Committees shall report to the Directors, through their Chairman, in a manner and frequency set by the Directors.

Under the proposed bylaws, the membership committee would be expanded from three members to five, due to the increased workload that will be generated by applicants for active member status. Membership committee members will continue to be elected by the members at the AGM. The appropriate clause now states:

68. The Membership Committee shall consist of:
    a. A Professional Member as Chairman, who shall be a Director of the Society, to be elected on odd numbered years;
    b. Four (4) additional Professional Members, two of whom shall be elected on even numbered years and the other two shall be elected on odd numbered years.

Under the Society Act of BC, by-laws can only be changed by special resolutions, which require a 75% majority in order to pass. The audit committee has conducted a thorough review of the proposed by-laws and has made substantial changes. Your board of directors has also reviewed them and is recommending acceptance. Please read the proposed by-laws and come to the AGM prepared to vote on them. Any questions? Fire us off an e-mail and we'll do our best to clarify.

RECCO System Going Into New Barryvox and New Bombardier Clothing

More manufacturers are installing the Recco system into their products. While ski equipment and clothing manufacturers have long recognized the advantages of this system, for the first time a snowmobile company is including avalanche safety technology in its riding gear.

Bombardier Recreational Products (BRP) will be installing Recco in one of its popular line of riding jackets and pants. "We care about our customers, and want them to be as safe as possible," said Pierre Arsenault, BRP vice-president of snowmobiles, watercraft, ATVs and sport boats. "Adding the Recco system to our Mountain Light gear is a perfect example of how we're constantly adding innovations to make our products more functional, stylish, and safe." The new 2007 Mountain Light Shell Jacket and Mountain Light High pants will be available only at authorized Ski-Doo dealers this fall.

In another first, the Barryvox VS 2000 PRO will be the first transceiver to integrate a Recco reflector directly into the unit's body, allowing the device to be located in the event of a burial both by traditional beacon search method and by Recco detector pinpointing. Willy Zurkirch, the electronic engineer behind both the analog Barryvox PRO and the dual-antenna Mammut Barryvox, says, "They are not two competing systems. The Recco system and the avalanche beacon are systems that work together. The Recco reflector adds additional safety to our Barryvox beacon."

Recco CEO Magnus Granhed also sees the new partnership as complementary. "We have never seen beacons as a competitor, because we know the beacon is an important part of rescue equipment when it comes to avalanche accidents," Granhed says. "Yet I know that almost every year rescue people search for beacons that are turned off. If you forget to turn on your beacon, this is another possibility to find it. A second advantage is that if you wind up with multiple beacons buried close to each other or a deep single burial, Recco would be an easier tool to pinpoint the person exactly. Third, if your beacon is damaged then you have an alternative."

The first production models will be selectively released to avalanche rescue experts in Switzerland, Germany, Sweden and the United States for advanced field trials this winter. Dominik Hunziker, technical director for the Swiss Alpine Club, will coordinate this first introductory stage. The analog beacon will then be made available to all rescue professionals in fall 2006 through Zurkirch's Girsberger Elektronik division, which supplies organizations worldwide with specialized equipment for avalanche rescue and training.

Norm Wilson Avalanche Education Fund

The early years of avalanche safety and education in North America have given us a rich and fascinating history filled with the exploits and adventures of many snow science pioneers. Norm Wilson is one of those who has left his mark, not only on many avalanche control programs throughout the Western US, but also on countless students who enjoyed his passion, enthusiasm and dedication to avalanche education.

Last spring, Norm was diagnosed with ALS (Lou Gehrig's disease). His daughter Robie Litchfield says he still gets around a little and enjoys spending a bit of time in the mountains with her. He also enjoys reminiscing with his old friends about working in the snow and says, "I've had more fun at my work than most people have at their play time."

In honour of his life and his work, Robie has established the Norman A. Wilson Avalanche Education Fund. The fund will provide money for avalanche education courses, scholarships, publications and other areas where needed, to make sure that avalanche education is available and affordable to anyone who wants it.

Norm in the late 60s or early 70s judging by the skis and the hair cut. Don't go by the boots, says his daughter Robie, he wore those to his last days on downhill gear.

Norm Wilson at Kootenay Pass in the summer of 1975.

Robie explains the reasons behind the fund this way: "Dad was not only excellent at avalanche understanding but he was also excellent at communicating that understanding in interesting, eloquent and sometimes humorous ways. Education was the backbone of what he did. He enjoyed it thoroughly and still to this day loves to talk about avalanches to anyone who will listen. It saddens him that people are still losing their lives out in the wilderness when education is available. For these reasons and more, it seems so important at this time to perpetuate his name in association with the legacy he has established and that will live on."

The fund will be administered by the Truckee Tahoe Community Foundation and all donations are tax-deductible. To make a donation please send a cheque or money order to:

The Truckee Tahoe Community Foundation
P.O. Box 366
Truckee, CA, USA 96160

Please be sure to note on the memo line "NAW Ava. Ed. Fund."

All photos courtesy of Robie Litchfield

Tenting sometime in the early 80s.

Editor's Note: *The following article comes to us with the kind permission of our partners at the Mountain Equipment Co-op. Pascal and Grant's article is part of the MEC's Avalanche Awareness Series, an online interactive educational project that has been running for the past two winters. Check out the complete series at www.mec.ca/avalanche.*

Decisions, decisions, decisions…

BY PASCAL HÄGELI AND GRANT STATHAM

You and your buddies are on a backcountry ski trip and after hours of hiking through a beautiful winter landscape you're there – you just made it to the top. You've been dreaming of this run all week, and since your friends don't know much about avalanches, the decision-making is pretty much up to you. Before leaving this morning you checked the avalanche bulletin, and at the trailhead you noticed about 10 cm of fresh snow on the trees. On the way up you observed some old avalanche debris and during a water break you even did a quick snowpack test: Compression Test Moderate down 25 cm – clean shear on surface hoar. You now have all these different pieces of information, but how does it all fit together to help you make a decision?

Other articles in this series looked at the physical factors that produce avalanches (terrain, snowpack and weather) and how to interpret related observations. This article focuses on the decision-making process and examines how to connect all of this information.

Risk Framework

It's an unfortunate irony of the backcountry that some of the very best and most exciting skiing and snowboarding is found in perfect avalanche terrain. We all know there is risk associated with backcountry activities, and when we choose to engage the backcountry in winter, we accept a certain level of risk. The crux of decision-making is to identify the risk associated with our route options, and then to make a careful and informed decision about whether or not that specific terrain remains within our personal risk comfort zone.

Risk is often described as the probability of an event happening weighed against the severity of the consequences. Traditional avalanche education has focused primarily on the probability, or chance of initiating an avalanche. However, the initial triggering of an avalanche is only one side of the equation; equally important is what happens once the avalanche is initiated. The following questions are designed to help you assess avalanche risk more comprehensively, and to stimulate your thinking about what risk means to you.

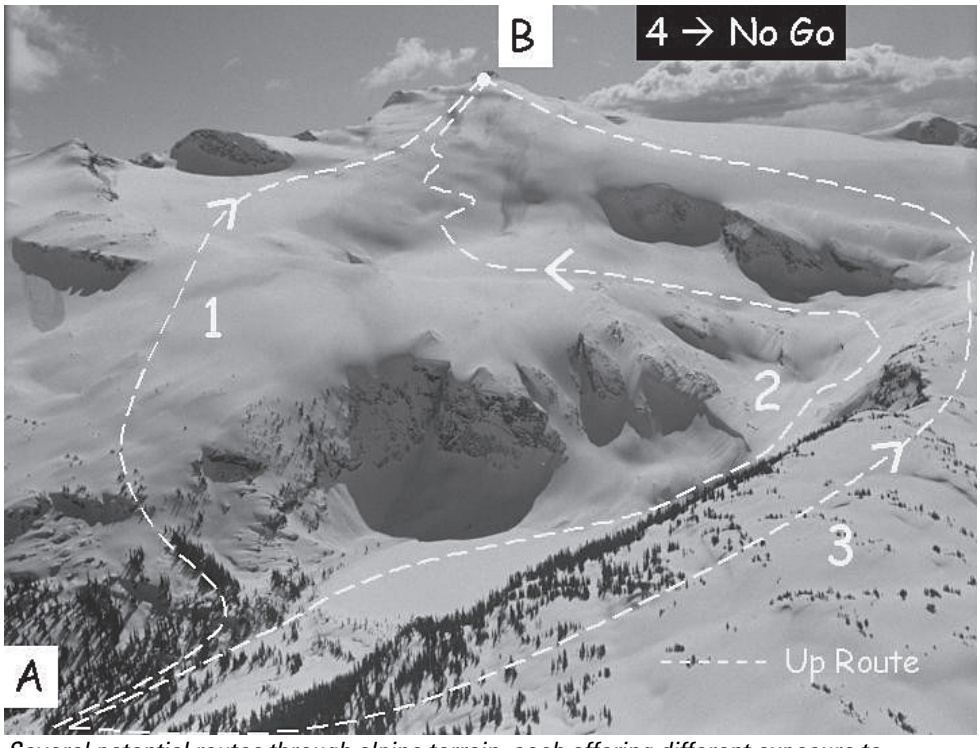
What is the main avalanche issue today?

Ask yourself this question right from the beginning when you start thinking about a backcountry trip. Depending on the kind of instability, you can immediately make conclusions about the distribution of avalanche hazards and plan your route accordingly. For example, if you're dealing with a thaw instability on solar aspects, your trip plan should avoid south and west facing terrain in the afternoon. The same trip might be managed quite differently if your main concern is recently loaded windslabs close to ridge crests.

Avalanche bulletin text provides information on the predominant kinds of instability, and forecasters will describe where these can be found – this will give you a huge head start on understanding the "character" of the avalanche hazard. Your job during the day is to verify this information – is the bulletin accurate or is everything different in the drainage you are skiing?

How easily can the instability be triggered?

Once you have verified the instabilities, you need to determine how easily you might trigger one. In other words, what



Several potential routes through alpine terrain, each offering different exposure to avalanche terrain. Your risk will be different depending on which route you select.

will it take to initiate an avalanche? Sometimes it is obvious – whumpfing sounds or natural avalanches are clear indicators – but not always. This part of decision-making receives a lot of attention through the use of snowpack tests, which can be used to quantify the strength of a weakness. These tests provide valuable information, but remember that assessing the strength of an instability is only one piece of the decision-making puzzle – it is important to figure out how these test results fit into the big picture.

Forested terrain presents many route-finding challenges, including dealing with large open glades. Are they full of surface hoar? You need to know this to make an accurate assessment.

Photo: Grant Stathem

How far is an initial fracture going to propagate?

Your next step is to visualize the potential size of a resulting avalanche, and with this we shift our focus to the consequence part of risk. Fracture propagation describes how easily and how far an initial shear fracture can travel along the weak layer, and is critical in determining consequence as it influences the size of a potential avalanche.

Consider the following examples: You're skiing a steep face after a fresh dump of snow and with each turn you trigger little sluffs in the top 10 cm – this is an example of high instability and low fracture propagation. The resulting consequences of these small avalanches are minimal, keeping the avalanche risk relatively low and allowing an awesome run. Contrast this with a low strength surface hoar instability down 60 cm, where initial shear fractures can travel fast and far. The consequences of triggering this instability are far more serious. The avalanche danger is probably high and you can reliably anticipate large avalanches.

How do you assess fracture propagation? Use your eyes first; large or remotely triggered avalanches are sure signs. However, these signs are not always obvious, so you need additional tools to assess this property of the snowpack weakness. This is easier than you may think – fracture classification tests are easily incorporated into conventional snowpack observations. As well, recently developed techniques for interpreting snowprofiles using "lemons" or "yellow flags" help take the mystery out of where the weak layer is. For more on these techniques, take a look at Bruce Jamieson's article in this same series.

What terrain options do I have to work with?

Terrain affects consequences in several ways. First, terrain has an effect on the size of potential avalanches. You might be traveling in undulating terrain with many small features, where the landscape is simply not capable of producing large avalanches. At the same time, catastrophic avalanches might be occurring in wide open bowls across the valley. Your personal avalanche risk is directly related to where you are positioned in the terrain. Second, consider terrain traps and what might happen if you get caught in an avalanche – above a cliff or in a deep gully even tiny avalanches have high consequences.

Consider the earlier example of skiing that steep face after new snow. It was reasonable when you were on a large open slope, but what about if there was a cliff below you? Everything just changed – small sluffs matter and your avalanche risk just skyrocketed.

Always consider your position in the terrain and recognize that every time you move, even a few metres, your avalanche risk changes. Terrain is undeniably your best tool for managing consequences. You can see it, and you can choose how to interact with it – you are in charge of where you go in the terrain.

How will I manage the terrain appropriately?

Deciding to ski avalanche terrain is one thing, but figuring out how to actually do it and where exactly to go is another. Where you travel in relation to the terrain is of huge importance – the subtleties matter. Centre punching the start zone is your most committing move, but what about skirting the edges? Can you reduce your risk by snowboarding beside the start zone until you are lower down and below the most likely triggering locations?

Staying high on a piece of terrain is a good habit – being above the majority of the slab is a huge advantage. The lower

you go into the start zone, the more committed you become. Also, which direction are you traveling? Are you wearing skins and setting an uptrack or are you carving your board downhill? You are much less mobile when touring up, and how you manage the terrain will be different depending on which direction you're heading.

What is the best route through this complex terrain that suits the comfort level for risk in your group? Is there one?

Photo: Grant Stathem

The final decision: Am I comfortable with the level of risk?

After examining all these questions about degree of instability and consequences, you will have a better understanding of the existing risk and how it varies with terrain. While the snow conditions and terrain are given to you by nature, the route choice is yours. Based on your assessment, you can make terrain choices that adjust the risk to a comfortable level for you and your group.

Managing risk is all about your position in the terrain. When the complexity of the snowpack threatens to overwhelm you, use your skills to find simpler terrain where you feel comfortable again. This comfort level is a personal choice and is different for everybody – some are willing to push a little more to achieve their goals, while others happily make more conservative choices. There is no right or wrong, but your decisions should be based on an informed risk assessment, and should represent the risk tolerance of everyone in your group. A calculated approach to skiing avalanche terrain is essential – have a plan before you go and make sure everyone in your group knows what the plan is.

More Information

Over the past few years, Parks Canada and the Canadian Avalanche Association have been working on a number of projects to better understand the decision-making process, and to develop tools that can help you make more informed decisions. The ADFAR Project (Avalanche Decision Framework for Amateur Recreationists) of the CAA and the Avalanche Terrain Exposure Scale (ATES) from Parks Canada are excellent examples of these efforts. If you would like to know more about the different initiatives, please visit our websites at:

CAA: ADFAR Project
http://www.avalanche.ca/default.aspx?DN=355,15,3,Documents

Parks Canada: ATES Project
http://www.pc.gc.ca/pn-np/ab/banff/visit/visit7a7_E.asp

Puzzling Over Propagation Propensity

Dave Gauthier, PhD Candidate, ASARC University of Calgary

"So, what do *you* think will happen?" Bruce Jamieson has asked me a lot of questions in the past year and half since I've been one of his students, but never like this. Something about this question was different. I'm not sure if it was the way he asked it or the quizzical look he gave me when asking it, but I had the distinct feeling that he didn't know the answer. And neither did I.

I could have told him what I *hoped* would happen, but he wanted to know what I thought would happen. I knew my answer needed to be a good one, considering we had spent the better part of the day digging two parallel trenches about three metres long and more than two metres deep on the flats of Cheops Bench, at Rogers Pass in Glacier National Park. Between the trenches sat a smooth 30 cm wide by 200 cm tall by 285 cm long "beam" with a one cm-thick surface hoar layer about 170 cm below the surface (Figure 1). It was 1500 hrs and my field book was empty.

Bruce asked his question on January 28 of this year, but my mind quickly jumped back to February 19, 2000. That was the day Crane Johnson and several ASARC staff and students triggered a whumpf in a flat meadow near Bow Summit and successfully measured the speed of the propagating collapse. It wasn't a novel idea to associate collapse with propagation in whumpfs, but Crane's description of how the collapse propagated was new.

His model required vertical collapse in the weak layer, and described how a "bending wave" could develop in the slab, shearing or crushing the weak layer as it travelled along. What's most interesting is that he showed the types of slabs and weak layers most often associated with whumpfs looked a lot like the ones associated with remotely triggered avalanches. This explains why most of us to look up, not down, when we trigger a whumpf with even a small slope above us.

Looking down at the "big beam" on Cheops Bench. The beam was 30 cm wide, 285 cm long, and excavated to a depth of about 2 m. The 060126 surface hoar layer was 170 cm below the surface. I'm deep in the trenches taking a close look at the weak layer in the area that the saw passed through. The collapse ran toward the camera.

This photo was taken before one of Alec van Herwijnen's fracture speed tests. The markers are rubber corks, and the weak layer is in between the two rows. He filmed the propagating fractures with a high-speed video camera, capable of capturing 250 frames per second.

I think a lot of Crane's inspiration came from seeing propagating fractures in a weak layer while performing his version of the cantilever beam test. With a specially-made saw that made a five cm-thick cut, he'd undercut the slab in a "beam" of snow until the slab finally overhung too far and broke. He was searching for information about flexural stiffness in the slab to improve his understanding of how they bend. His super-thick saw was cutting along a weak layer, so he was able to see that every now and again the weak layer progressively collapsed ahead of his saw before the slab broke. In the touchiest of layers, the weak layer collapse would run right to the end of the beam and stop at the pit wall.

But what does this have to do with my big beam on Cheops Bench? After all, my goal is to develop a practical field test related to fracture propagation propensity and apply it to regular skier-triggered avalanches, not these oddball whumpfs and remotes that Crane was so keen on. The beam that Bruce asked about certainly wasn't practical, and I wasn't chasing whumpfs.

Bruce was still staring at me, waiting for my answer, so I stalled with a drawn out "Well…," and returned to my academic

soul-searching. Again, I started by thinking about propagation speed. Alec van Herwijnen spent a great deal of time in the past few years measuring propagation speeds. He used a really fast video camera to record propagation in stability tests, Crane's cantilever beam test, and on skier-tested slopes. To do this, he filmed and tracked the movement of a series of markers placed in the slab above the weak layer in the side wall of the stability and beam tests, or in a trench in a small slope while it was being ski-cut (Figure 2).

"I asked what he thought would happen if I drove a hypothetical bulldozer around one end of the ground floor and started knocking pillars over."

When he analyzed the results, Alec found that in almost every case the markers moved down, one after the other, before they moved parallel to the slope individually or together when the slab started to slide. He calculated a propagation speed based on how much time passed between the onset of movement in each of the markers and how far apart the markers were. The speeds he calculated were very close to the same speed Crane measured at Bow Summit, and were quite a bit lower than he expected.

Alec observed progressive vertical movement in the slab before any slope parallel movement almost every time, in thin layers, thick layers, on the flats, on slopes, in stability tests, cantilever beam tests, and ski cuts. Even in Compression Tests with sudden planar fracture character, where we don't see any vertical movement of the slab, the video footage revealed there was at least a small component of collapse.

These things suggest, quite strongly in my mind, that there is a very real connection between fracture propagation in whumpfs, remotes and run-of-the-mill slab avalanches. The difference seems to be less in the fracture process than in the scale. Finding collapsing weak layers and slab bending in most cases may just depend on how closely you look.

Back on Cheops, Bruce waited patiently while I mulled it over. Another glance at our beam took me on one more ride down memory lane, this time to Mt. Ste. Anne near Blue River, BC. In the spring of 2005, esteemed ASARC technician Ken Matheson and I were struggling over another prototype propagation test. The layers weren't co-operating, the drop-hammer apparatus was cumbersome at best, and Ken was ready for a new direction.

I had been waxing philosophical over lunch about parking garages and the not-so-obvious similarity between them and the snowpack we were neck deep in. At that point I was familiar with Crane's results and had just read Alec's thesis, but I was stuck on concrete slabs held up by thin pillars. I told Ken about this hypothetical parking garage, about 30 m wide and 300 m long, with one slab floor held above the ground floor in the standard way these things are constructed.

I asked what *he* thought would happen if I drove a hypothetical bulldozer around one end of the ground floor and started knocking pillars over. Would the second floor come crashing down? At some point, of course it would. Would it only crash down above the pillars I had destroyed? Maybe. Would the collapsing slab drag more of the slab with it, causing a few extra pillars to break? Would the progressive collapse start at my dozer and run the whole 300 m and bring the whole garage down? Is this starting to sound familiar?

Ken was game, so we isolated a 30 cm across-slope by 3 m down-slope column of snow, and started knocking over pillars of weak layer. We did this with the back of a 3-mm thick regular snow saw, dragging it through the weak layer in the column starting at the upslope end. Bruce was well aware of what Ken and I observed that day. He knew that on the first test we cut about 50 cm of weak layer when suddenly, with a distinct "POP," the weak layer fractured from our saw to the end of the column. He knew that with some amazement we watched the 85-cm thick slab slide right off and landed on the slope below our pit. He also knew, that in the 100 or so tests like this that we did last year, we sometimes saw propagation in the weak layer to the end of the column, sometimes to a crack through the slab, and sometimes to an indistinct point where there was no obvious reason for the fracture to arrest.

Bruce knew we had tested many different layers and column lengths, and had shown we needed a slab *and* a weak layer to get good propagation. He was as convinced as I was that we were sampling propagation and arrest away from and unrelated to the initiation condition or the trigger. We were watching a bull dozer try to topple a parking garage by knocking over a few of the supports.

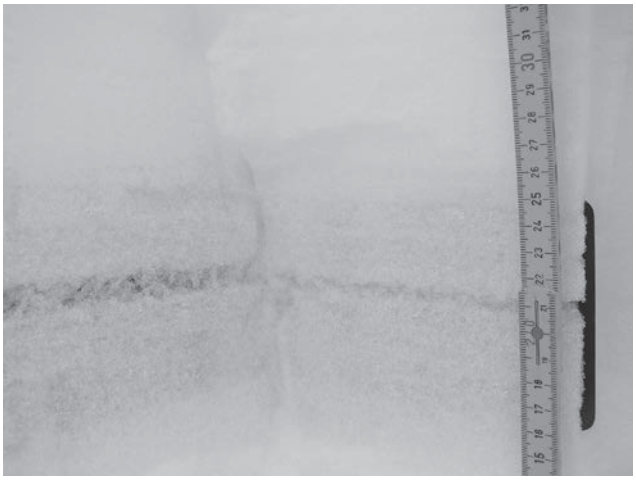
Most importantly, Bruce thought that maybe weak layer and slab combinations, possessing what we call "high fracture propagation propensity," might be enticed to collapse fully with just a small portion of the weak layer support removed. Those with low or no propagation propensity might never fall down, or might fall bit by bit as the weak layer pillars are destroyed

"'It went to the end,' I noted casually, disguising my amazement."

with the saw. With high propagation propensity you'd expect big avalanches, I guess, but I'm getting a little ahead of myself here. Bruce is waiting for his answer and I can't stall much longer.

"Well," I continued, "I'm going to cut about 50 cm of the weak layer with the back of my saw, and then it's going to run right to the end." I think Bruce agreed with me, but I didn't mention that secretly what I *thought* would happen and what I *hoped* would happen were the same thing. At the very least, if my prediction was correct we wouldn't have wasted all day digging a truly monstrous pit on the flats. In the spirit of true scientific ideals, I justified our time by mentioning whatever happened we would learn *something* about propagation.

"What happened?!"



The collapsed 060126 surface hoar layer on the right and the intact layer on the left. We took this photo at the end of the beam on Cheops Bench after the test. A vertical saw-cut separates the isolated beam from the rest of the pit.

I was still trying to figure it out myself when Bruce shouted this one through the beam. We were on opposite sides, only 30 cm apart, but in our own little worlds in the segregated trenches on either side of the beam. I had placed the saw in the weak layer, and Bruce had kept it on track on his side while I dragged it through the layer on mine.

"It went to the end," I noted casually, disguising my amazement. It must have been quite the sight, the two of us on all fours scrambling along the floors of our respective trenches, following a formerly 1-cm thick – now 4-mm thick – surface hoar layer for about 230 cm until it abruptly became 1-cm thick again beyond the extent of our isolated beam (Figure 3). I had predicted that we'd cut 50 cm of weak layer before the dynamic progressive collapse we call propagation would take over and run the length of the beam. I was wrong. We had to cut 58 cm.

Given the preamble that led to this prediction, the outcome doesn't seem that surprising. What I think *is* somewhat surprising is that we had arrived at propagation with a very thin saw, on the flats, without jumping or pounding on the end of the beam, and without slope parallel shearing that seems to be required for propagation on the slopes. However, what we observed looked almost exactly like what I saw a week later, when I repeated this very experiment on a 30° slope in a similar snowpack on Mt. Fidelity. I cut the weak layer from the upslope end of the beam, and got about 45 cm into it when, with a half "pop" and half "whumpf" sound the weak layer collapsed from my saw to the end of the beam, about 240 cm away.

"What does this mean?" Bruce inquired. It was 1530 hrs now on Cheops Bench, and we really had to make tracks to be at the highway before 1600 hrs. I hope this last question Bruce asked was meant to be rhetorical, because I never did answer it. I couldn't answer it then, and I can't answer it now. Don't get me wrong, I've got some ideas. I know what I *hope* it means, and I know what I *think* it means. I hope it means we are getting closer to understanding how fracture and failure propagation in weak snowpack layers works, and I think it means we're on a road that will lead to a practical field test for propagation propensity. But I don't *know* these things, and I don't know for sure how all this relates to avalanches. Or parking garages.

Acknowledgements

The Natural Sciences and Engineering Research Council of Canada, the HeliCat Canada Association, Mike Wiegele Helicopter Skiing, the Canadian Avalanche Association and Canada West Ski Areas Association support this research. Special thanks to the Avalanche Control Section at Rogers Pass/Glacier National Park, and the forecasters at Kicking Horse Mountain Resort.

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For his PhD in Civil Engineering Dave Gauthier is studying propagating, fractures in weak snowpack layers. Along with observations of fractures initiating, propagating, and arresting, Dave is working towards the development of a practical field test for fracture propagation propensity. Dave studied Geology at Lakehead University in Thunder Bay, Ont., where he received his HBSc and MSc degrees. After a few winters in Fernie, all roads led to Calgary. Currently, all roads lead to Rogers Pass between December and April, and the Canoe Meadows parking lot for the remainder of the year.

Infrared Communication with Dataloggers

BY LAURA BAKERMANS

The University of Calgary Applied Snow and Avalanche Research program (ASARC) has used Campbell Scientific dataloggers to collect meteorological and snowpack data since 1992. Prior to the winter of 2005, field staff retrieved information from these dataloggers using a basic keypad, or through a direct cable connection to a computer. The keypad commands for the dataloggers were not intuitive, and a computer connection not always practical for field applications. Locating the appropriate cables often proved to be a time- consuming step in the file transfer process and, on occasion, we would arrive at a field site without the correct cable.

PConnect Palm to Datalogger Software (includes PDA to CS I/O Connector, RS232 Cable and CD), available from Campbell Scientific, communicates with the dataloggers using a Palm personal digital assistant (PDA). The software, which is quite user friendly, allows the user to transfer programs, change datalogger settings and monitor/collect data on-site. Files are transferred between a computer and the PDA by hot-syncing with the PDA cradle or cable. The PDA then transfers information to and from the datalogger via direct serial or infrared communication. PConnect also supports communication with the datalogger using a PDA and two RF400 radios. As yet, ASARC does not have any experience using the radio communication option.

Serial communication using PConnect requires purchase of a PDA to 9-pin serial cable specific to the PDA. ASARC purchased a Palm Tungsten T3 PDA and serial cable in the fall of 2005. After several unsuccessful data transfer attempts, we discovered that an additional custom serial cable is required for this particular model. Campbell Scientific maintains a list of PDA model compatibility with PConnect, which is worth checking prior to purchase of the software or a new PDA.

The Tungsten T3 and PConnect software worked well for our datalogger communication needs. The downside to this system is the number of connections between the datalogger and the PDA (more cables to keep track of and sometimes forget). Assembling the cables in the wrong order prevents connection of the PDA to the datalogger and, without conscious care, the cables have a tendency to disconnect at inopportune moments during file transfer.

Serial compatibility is becoming less common with new PDA models. Because infrared ports are standard fare for PDA's these days, we found that a less expensive PDA was required for infrared data transfer than for serial data transfer (ASARC is also currently using Palm Zire 31's).

ASARC purchased three SC-IRDA CS I/O Infrared Communication Interfaces from Campbell Scientific this winter to test the infrared communication option at our field sites. One end of the SC-IRDA interface plugs into the datalogger's serial port. The other end is installed through the wall of the datalogger enclosure with the optical sensor mounted in a liquid tight cord grip fitting (Figure 1). This allows the PDA to communicate wirelessly with the datalogger and removes the need to open the enclosure and expose the electronics inside to the elements. The quiescent power draw of the SC-IRDA is very low, so it has no significant effect on the overall power consumption of the logging system.

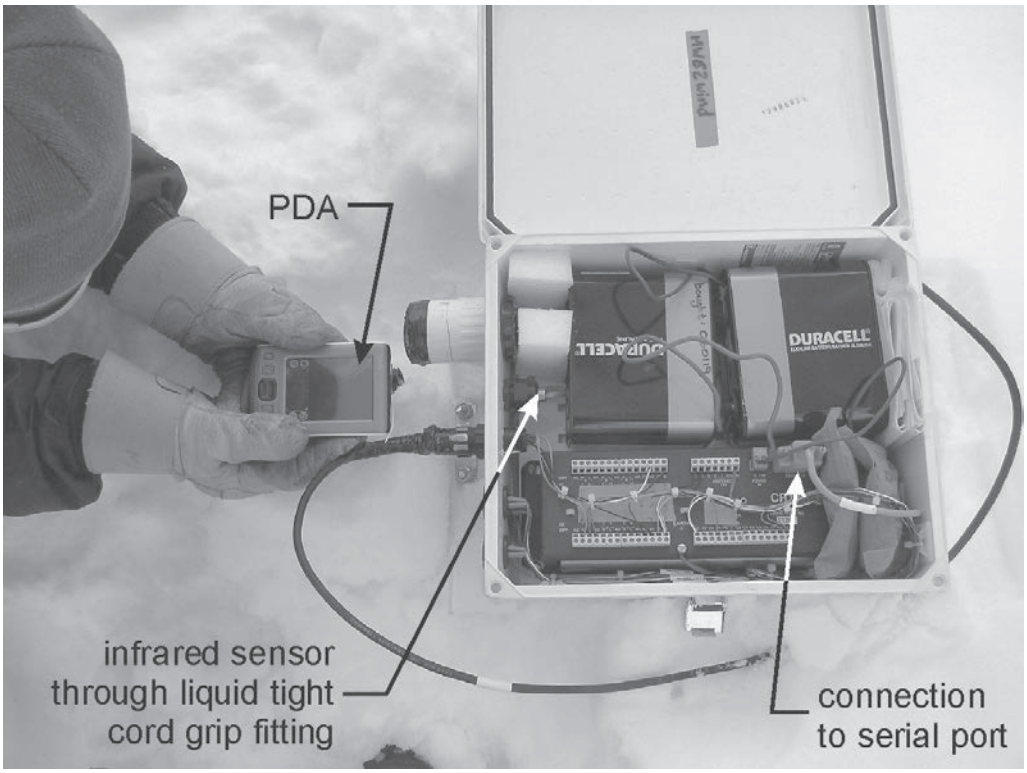


Figure 1. Transferring data to the PDA using a SC-IRDA unit. The enclosure is normally closed during data transfer.

The SC-IRDA manual indicates that the PDA must remain aligned with the infrared sensor and within a distance of approximately 20 cm. Indoor testing by ASARC staff has resulted in successful data transfer at distances of up to 80 cm. At a distance of 20 cm, small variations in alignment (up to approximately 20º) do not seem to interrupt communication between the PDA and datalogger.

The infrared units have proven to be easy to install and use. Data transfer in cold, snowy conditions or awkward locations is much simpler because the operator does not have to open the datalogger enclosure or fiddle with cable connections. So far, ASARC staff has not experienced any difficulty using the infrared units in the field.

PConnect software and SC-IRDA units are available from Campbell Scientific for approximately $400 and $280, respectively. The fittings required to mount the SC-IRDA units in datalogger enclosure can be user supplied and installed, or purchased for an additional $35 at Campbell Scientific and installed by their repair department.

ASARC would like to thank Karl Birkeland for his data transfer suggestions, Jeff Goodrich for sharing his experience with PDA-to-datalogger serial cable communication and Jessica Smith at Campbell Scientific for all her valuable assistance.

After receiving her BASc in Civil Engineering from the University of British Columbia, Laura Bakermans worked in the municipal engineering field for several years. She returned to school to study the snow in September 2004 and is currently working on her MSc in Civil Engineering with the University of Calgary Avalanche Research program.

Chris Larson: Software Developer/Database Guru

Chris Larson spends very little time in our office, but his influence is everywhere. Chris is a software developer who has been working on our computer systems for the past two years, and he's been instrumental in guiding the CAA and the CAC through the technological leaps and bounds we've made since then. He and his wife Cathy O'Connor live on the west slope of the Teton Mountains in Idaho, between the towns of Victor and Driggs. "This is where the 'poor' people live," he says with a laugh. "We're on the other side of the pass from Jackson Hole, the wealthiest county in the country."

Chris has been working with computer software since the early 80s and has amassed an impressive amount of experience in that time. Much of his previous work has been in research and development, and he's worked with some major players in the US. Moving from corporate America to a Canadian not-for-profit would be quite the transition, but Chris welcomes the change.

"I'm kind of over the corporate world," he explains. "I worked for two really fascinating R&D groups, designing and building some pretty sophisticated software, and both times they cancelled the funding and shut down the project because of the economy." Now, away from the frustrations of office politics and bottom-line decision making, Chris works out of his home office, in a log house he built himself, and chooses the projects that interest him.

He first became connected to the CAA through professional member, and long-time friend, Roger Atkins. "I was at a fundraiser for the Utah Avalanche Forecast Center and ran into him," Chris recalls. "He was all excited about the SnoInfo project and told me I needed to get involved. The project had developers in Vancouver at the time, but once I got on board, I slowly ended up taking over most of the development."

Since that fortuitous meeting Chris has continued to work with the association, adding considerable talent and experience to our expanding information technology. CAC Operations Manager John Kelly (who's no slouch behind the keyboard himself) has nothing but praise for Chris's work, and his work ethic. "The thing about Chris is that he's always told us straight up what we can get for our money," John says. "The computer world is full of people who promise the moon. Chris always delivers, often going above and beyond his contracted hours to ensure the product is what we want and within our budget."

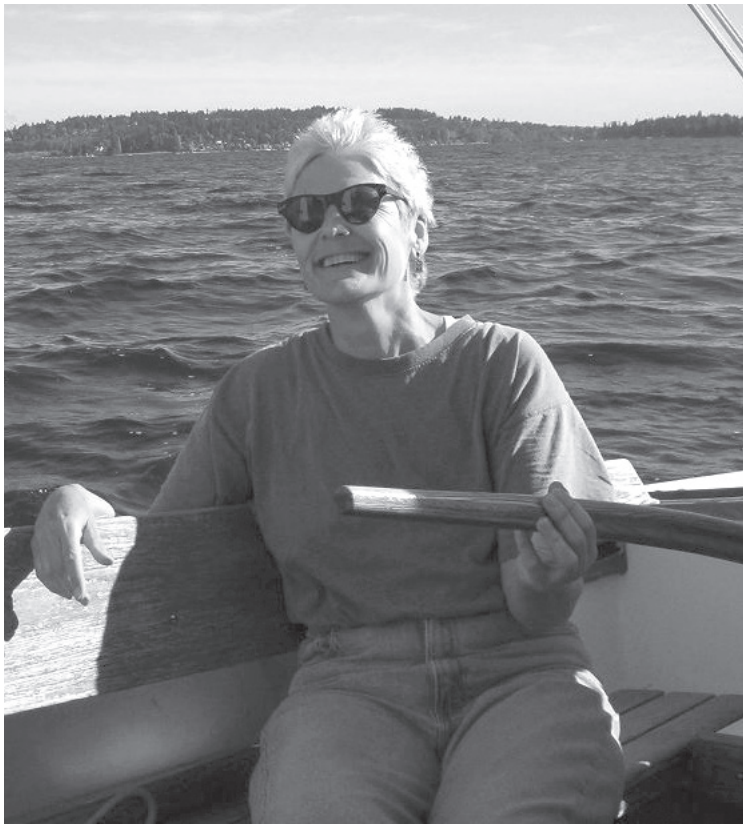
Chris has recently contracted with us to supply support services for the website and database, and he's already looking forward to the next project. "We have a lot of stuff planned for next year," he says. "Last year we sort of stalled over the data ownership issue, but now we're back on track and I'm pretty excited about it." So are the rest of us.

Chris in his local playground.

Photo courtesy of Chris Larson

Sue Ferguson Remembered

Obituary by Mark Moore, NW Avalanche Center



Sue Ann Ferguson, February 11, 1953 - December 18, 2005.

Dr. Sue Ferguson died at 3 pm December 18 on a gloriously beautiful, crisp, blue-sky Seattle day. Sue had been battling cancer for the past year and a half. She leaves behind a legacy of accomplishments in her and in her relationships with friends, family and co-workers. Her enthusiasm, tenacity and boundless energy were an inspiration to all who knew her.

Sue Ferguson had a 13-year career in avalanche forecasting before coming to fire research at the US Forest Service's Pacific Northwest Research Station in 1992. At PNW, she worked as a Research Meteorologist with the Fire and Environmental Research Applications Team (FERA) and later founded the Atmosphere and Fire Interactions Research and Engineering (AirFIRE) Team.

As an avalanche forecaster, Sue created the Avalanche Review, now a premiere publication for professionals in the field. She was also the initiator and a founding member of the American Association of Avalanche Professionals (AAAP), now known as the American Avalanche Association (AAA). She worked at a variety of avalanche centers throughout the US, all of which have been instrumental in saving lives and promoting avalanche safety.

Sue was not only a respective and thoughtful forecaster, but a great innovator as well. She developed several programs, applied new sensing techniques for weather and snowpack and generated new ideas which enhanced the operation of all centers. As a result of her many contributions to snow and avalanche research as well as avalanche and mountain weather forecasting, she was presented with an Honorary Membership Award in the AAAP in 1998.

In fire research, Sue helped found the Northwest Regional Modeling Consortium (NWRMC), a multi-agency effort to develop improved weather forecasts for the Northwest. Using these predictions, she was able to offer land and fire managers real-time tailored forecast products such as the Haines index, Fossberg fire weather index, a new dry lightning index, and more.

Through the National Fire Plan, she created the BlueSky smoke modeling framework, a tool that for the first time allows users to see real-time predictions of cumulative smoke impacts from prescribed, wildland, and agricultural fire. This tool has been hailed as one of the best research products to emerge from the National Fire Plan, and recently won the National Fire Plan's Excellence in Research award.

Sue enjoying shovel shears in the Northwest.

Photo: Mark Moore

The success of the NWRMC and BlueSky have prompted similar efforts around the country, and now real-time tailored forecasts of fire indices and smoke predictions are available throughout the lower 48 states.

Sue was instrumental in the revival of the American Meteorological Society's biennial Fire and Forest Meteorology Conferences. Through her efforts, the utility of meteorology in fire research has been elevated to an unprecedented level. Her efforts continue to benefit and assist managers and researchers in the fire management field.

Sue will be sorely missed by all she touched. Her talent and wisdom, and her infectious laugh, smile, and good humor made us all better for being with her. She inspired, encouraged and elevated all of us. Thanks, Sue.

Eulogy by Dr. Sim Larkin. Dr. Larkin, is a climate scientist for the AirFIRE Team, which Sue recently directed. Dr. Larkin delivered this eulogy at the "Celebration of Life" held in Sue's honour in Seattle this past January, 2006.

For the past four and a half years, I've worked with Sue in her second career – fire research. She was my boss, my mentor, my colleague, and my friend.

For those of you who didn't know Sue in her professional role, it is hard to adequately sum up her accomplishments. She was wildly successful. As one of only a handful of meteorologists within the Forest Service, she helped raise the status of atmospheric science within the fire community almost through sheer force of will. In her work Sue was energetic, buoyant, and driven. She knew just what she wanted and she went straight after it. Sometimes that meant leaving a Sue-shaped hole in whatever got in her way, like in the cartoons.

Avalanche students learning from Sue's inimitable teaching style.

Photo: Roland Emetaz

She thought big. She thought in terms of organizing collections of people towards a common purpose. She resurrected the American Meteorological Society's Forest and Fire Meteorology conferences, and turned them into meetings with national and international standing. She helped found the consortium that provides tailored weather predictions for the Northwest and that some of you probably know from Friday mornings on NPR. She created from scratch her own research team, the AirFIRE team, dedicated to meteorology.

Through all of this, her work won numerous local and national awards including the 2005 National Fire Plan's Excellence in Research award. Her research was considered so successful that it was duplicated across the country where today it provides smoke forecasts across the lower 48 states and helps better manage forest fires and protects people from smoke.

Despite all of these successes, this is not what I remember most about Sue. What I remember most is that even while she was thinking big, she was always human and down to earth. No matter how busy she was, she always took time to care for each person who worked for her. She'd check in and see how you were doing. Even with looming deadlines, she would make sure you were taking time for yourself, and would even order people to take vacations. And when the pressure would build, she'd help people try to let the stress go. She treated us as family.

Sue checking out the ash-snow layer near Mt St Helens.

Photo: Roland Emetaz

But being human, Sue also had her quirks. She could organize vast groups of people, but she'd have a hard time finding things on her desk. She had a dozen people working for her, but she insisted that she was no-one's boss. And despite all her success, she never thought of herself as a particularly good scientist, just someone who happened to have good people working with her. She was soft-spoken but iron-willed and that could sometimes be a pain in the ass. She always had a story to tell, even though it was sometimes an inappropriate one.

I'll miss interacting with her and learning from her each day. But most of all, today I miss her smile – that radiant smile that could cut through even the darkest Seattle day.

Ode to (Snowpit and AirFIRE) Sue

[with heartfelt thanks and love,
your friend Mark Moore]

A remarkable woman,
And a great friend too-
Sue's been a part of my life,
Since she went to the U.

Fresh out of school,
Her vision was grand-
And she spread her good works,
Throughout the land.

Sue's courage was awesome,
A smile like sunny weather-
And her laughter contagious,
As she brought people together.

From Alaska to Utah,
Japan to the Swiss-
She was one of our friends,
That we will always miss.

She was a shaker and a mover,
And through wisdom she acquired-
She helped us be better,
As she led and inspired.

While no one wants,
To be told what to do.
It was somehow easier
If the hint came from Sue.

Her ability to listen,
Was second to none-
And with voice softly spoken,
She got things done.

In Fire and in Snow,
She loved every day-
And I think her gift to us,
Is to live that way.

Sue checking out the ash-snow layer near Mt St Helens.

Photo: Roland Emetaz

Sue and Cindy Marriott collaborating on how to spice up an early issue of the Avalanche Review.

Photo: Roland Emetaz

Mark Moore is currently director, mountain meteorologist and avalanche forecaster with the Northwest Weather and Avalanche Center. His lifelong interest in snow and avalanches began as a professional ski patroller in California's Sierra Nevada in the early 1970s, where he migrated after a B.S. in aerospace engineering from UC San Diego and a short but interesting stint as a nuclear engineer. He has a Master's Degree in Atmospheric Sciences from the University of Washington and over the past almost 30 years in the avalanche field, Mark has authored, co-authored and presented a variety of papers and scientific reports on weather, snowpack, avalanches, instrumentation and related topics. He has been an instructor for weather and avalanche schools from Alaska to Colorado, and is a consultant for snow, fire-weather, instrumentation and avalanche interests during the "off-season."

Boulder/Frisby Project

BY MARY CLAYTON

With this project, we're hoping to kill two birds with one stone. We want to create some common ground and build a relationship with the snowmobiling community in our area, and we want to make money. Acting on a suggestion from local photographer, Parks Canada employee (and brilliant editorial cartoonist) Rob Buchanan, we decided to create a photographic poster of two of Revelstoke's most popular sledding destinations – Boulder Mountain and Frisby Ridge.

These posters are modeled after ones made last year by the Friends of Mt. Revelstoke and Glacier Park. In that project, panoramic photos were taken of two of the most popular ski-touring areas of Rogers Pass – the Asulkan Valley and Connaught Creek. Run names were added and the photos printed in a large, horizontal format. They've been very popular and a good money-maker for the Friends.

Rob Buchanan was the photographer on that project, and he suggested we do the same thing for the sledders. Our next step was to approach the Snowmobile Revelstoke Society, as we needed help in identifying the runs and areas and we wanted a partner in the venture. The society gave us the thumbs-up and we began putting the other elements in place.

Arrow Helicopters donated 30 minutes of A-Star time for the photography and photos were taken on the first blue-sky day that came along. We're focusing on the Boulder Mountain photo first and, at the time of writing, that poster is in the final draft stage. We were hoping to have it ready for the Big Iron Shootout weekend but the stars weren't aligned for that goal. However, it should be at the printer by late March, so it will be ready for the end of the riding season.

Local riders Roland Poitras, Bill Hughes and Tom Dickson help photographer Rob Buchanan (centre) identify some of the popular areas on Boulder Mountain.

Photo: Brent Strand

Big Iron Shootout

It's the biggest event you never heard of. The Big Iron Shootout is an unsanctioned annual event for sledders, held on Boulder Mountain just outside of Revelstoke. It's become phenomenally successful just through word-of-mouth, this year attracting close to 4000 riders, according to the RCMP's estimate. That's a lot of machinery in one place, not to mention an excellent opportunity for the CAC to do some outreach.

Lori Zacaruk, an avid snowmobile rider who chairs the RAC committee, attended the event for us, along with her husband Randy Zacaruk, CAC forecaster Alan Jones and volunteers Peter Buchholz and Matthew Atton. Our aim for the weekend was twofold. We wanted to raise some awareness about the CAC, our avalanche bulletins and recreational avalanche courses, and we also wanted to collect some information from this group, which will hopefully help us tailor our products to their needs.

Our survey was modified from the ADFAR intercept survey used last season. The CAC team managed to conduct almost 100 surveys among the participants at the event, and the information gathered will be a valuable addition to our database. The team also set up a beacon search site, at the area known as Super Bowl, which is where the hill-climbing competition was held. Participation at the beacon site was limited as, according to Alan Jones, "the hill climb pretty much stole the show."

The CAC received a tremendous support in order to attend this event. Elmer Rorstad of Free Spirit Sports in Revelstoke and Tim La Boucane of Glacier National Park both arranged snowmobiles for us to use for the weekend. CMH donated the use of their "Easy Search 3," an electronic device for transceiver practice sites. And the Snowmobile Revelstoke Society gave us a hand by distributing our brochures for us down at the parking lot. Thanks to everyone involved.

Interested sledders answer questions from CAC volunteer Peter Buchholz.

Photo: Alan Jones

Just a fraction of the almost 4000 sledders who attended the weekend.

Photo: Alan Jones

Not all sleds made it down under their own power.

Photo: Peter Buchholz

Flakes

BY ROB BUCHNAN

Field Notes:
Broken Records

Vancouver International Airport (records kept from 1937)
Broke the record for the most amount of precipitation recorded in January —
The previous record was 281.8 mm of precipitation.
This year (2006) there was 283.6 mm of rain.
The normal amount of rain for January is 153.6 mm.

Broke the record for the most number of days of rain in any month —
Previous record was 27 days with rain in Jan 1953, Nov 1953, Jan 1964, Dec 1966, and Dec 1979.
This year (2006) there was measurable rain on 29 days. It didn't rain on Jan 15 or Jan 24.

Broke the record for the mildest mean monthly minimum temperature for January (average overnight low temperature) —
Previous record was 3.8 C in 1994.
This year (2006) the average minimum temperature was 4.0 C.
Normal monthly minimum temperature is 0.5 C.

Tied the record for the mildest monthly mean temperature in January (average temperature for the month) —
Previous record was 6.3 C (2003, 1994, 1983).
This year (2006) the mean monthly temperature was also 6.3 C.
Normal monthly mean temperature is 3.3 C.

Abbotsford International Airport (records kept from 1953)
Broke the record for the most amount of rain in January —
Previous record was 426.0 mm of rain in 1953.
This year (2006) there was 438.1 mm of rain.
Normal amount of rain in January is 173.8 mm.

Came in second place for the most amount of precipitation in January —
The most precipitation in January is 441.7 mm, set in 1953.
This year (2006) there was 438.1 mm of precipitation.
Normal amount of precipitation in January is 198.1 mm.

Broke the record for the most number of days of rain in any month —
Previous record was 28 days in January 1953 and November 1998.
This year (2006) there was 30 days with measurable rain. It didn't rain on Jan 24.

Broke the record for the mildest mean monthly minimum temperature for January (average overnight low temperature) —
Previous record was 3.3 C set in 1994.
This year (2006) we averaged 3.9 C.
Normal monthly minimum temperature is -0.6 C.

Victoria International Airport (records kept from 1953)
Broke the record for the mildest mean monthly minimum temperature for January (average overnight low temperature) —
Previous record was 3.5 C reached in 1983 and again in 2003.
This year (2006) the average was 3.6 C.
Normal monthly minimum temperature is 0.7 C.

Nanaimo set a new monthly total precipitation record with 364.0 mm of precipitation, breaking the old record of 339.3 mm set in 1953.

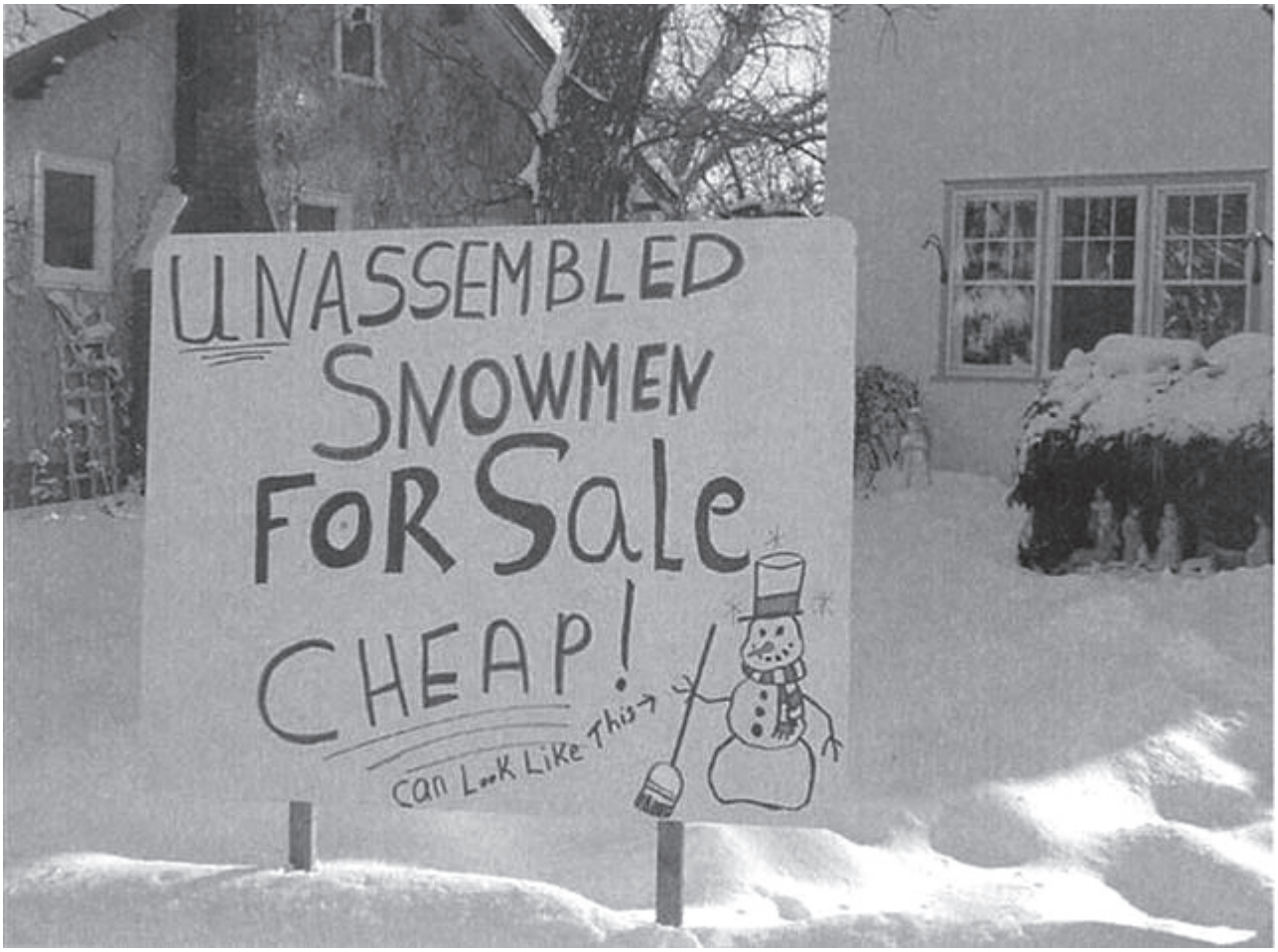
Penticton broke the record for the most amount of rain in January.
Previous record was 45.4 mm in 1995.
This year (2006) there was 47.1 mm of rain.
Normal amount of rain in January is 10.6 mm.

Kelowna broke the record for the mildest mean monthly temperature.
The previous record was 1.4 C set in 1954.
This year (2006) it was 1.6 C overall for the month of January.

Penticton broke the record for the mildest mean monthly temperature.
Previous record was 2.7 C set in 1953.
This year (2006) it averaged 3.6 C in January.

Vernon broke their record for the mildest mean monthly temperature.
Previous record was 1.1 C set in 1994.
This year (2006) it averaged 2.0 C in January.

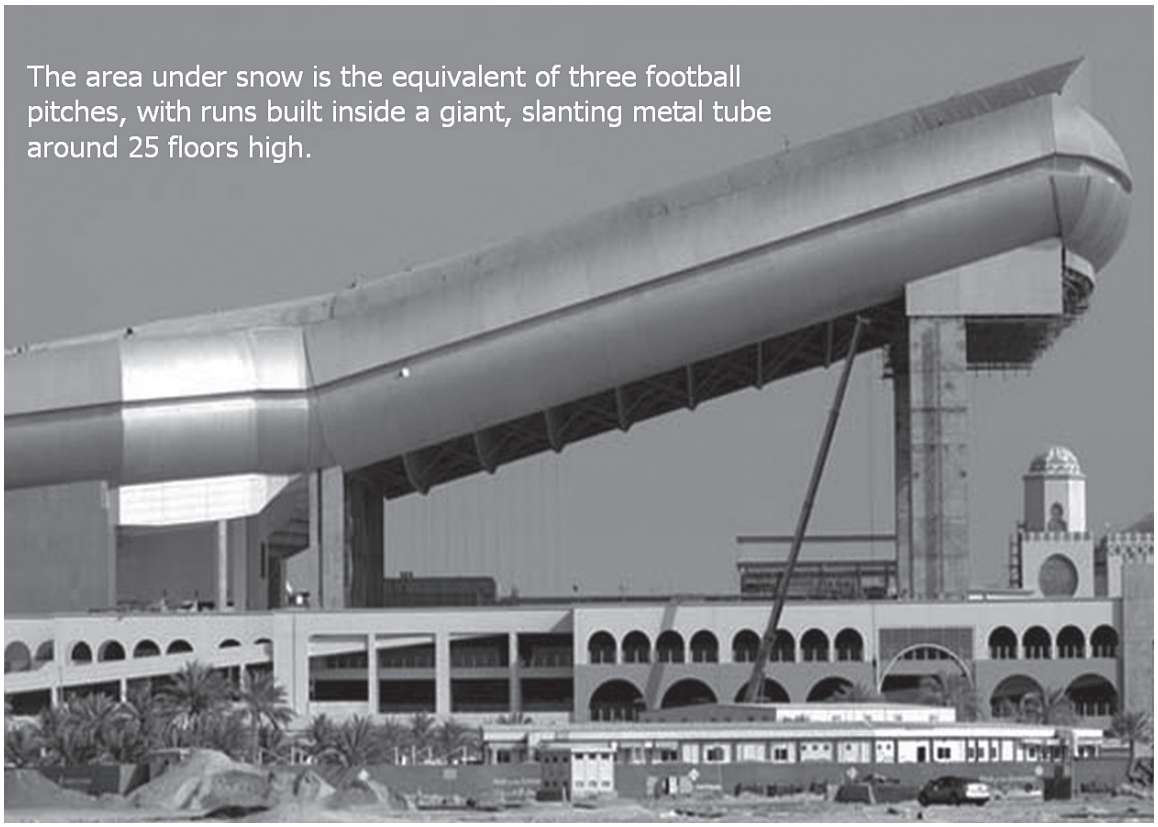
From the photo files...



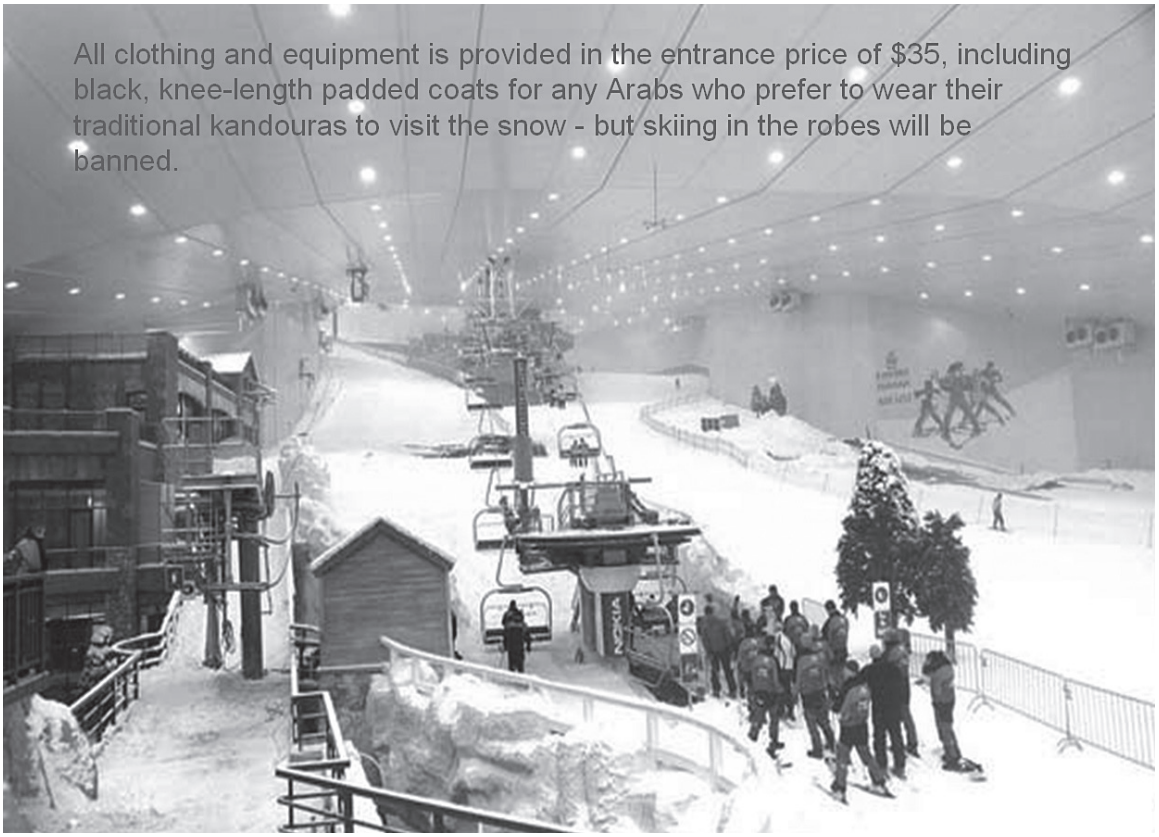
Submitted by Susan Hairsine

World's Largest Snowdome

In December, 2005, the largest indoor ski area in the world opened up in the Gulf emirate of Dubai.



The area under snow is the equivalent of three football pitches, with runs built inside a giant, slanting metal tube around 25 floors high.



All clothing and equipment is provided in the entrance price of $35, including black, knee-length padded coats for any Arabs who prefer to wear their traditional kandouras to visit the snow - but skiing in the robes will be banned.

Cam Campbell was in the office for a week this February, setting up the forecasters with a new computer modeling system from the University of Calgary called SAWLEM - Slab and Weak Layers Evolution Model.

Photo: Mary Clayton

Final Focus

Photo: Michael Wilson

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