AVALANCHE news

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Volume 73 *Summer 2005*

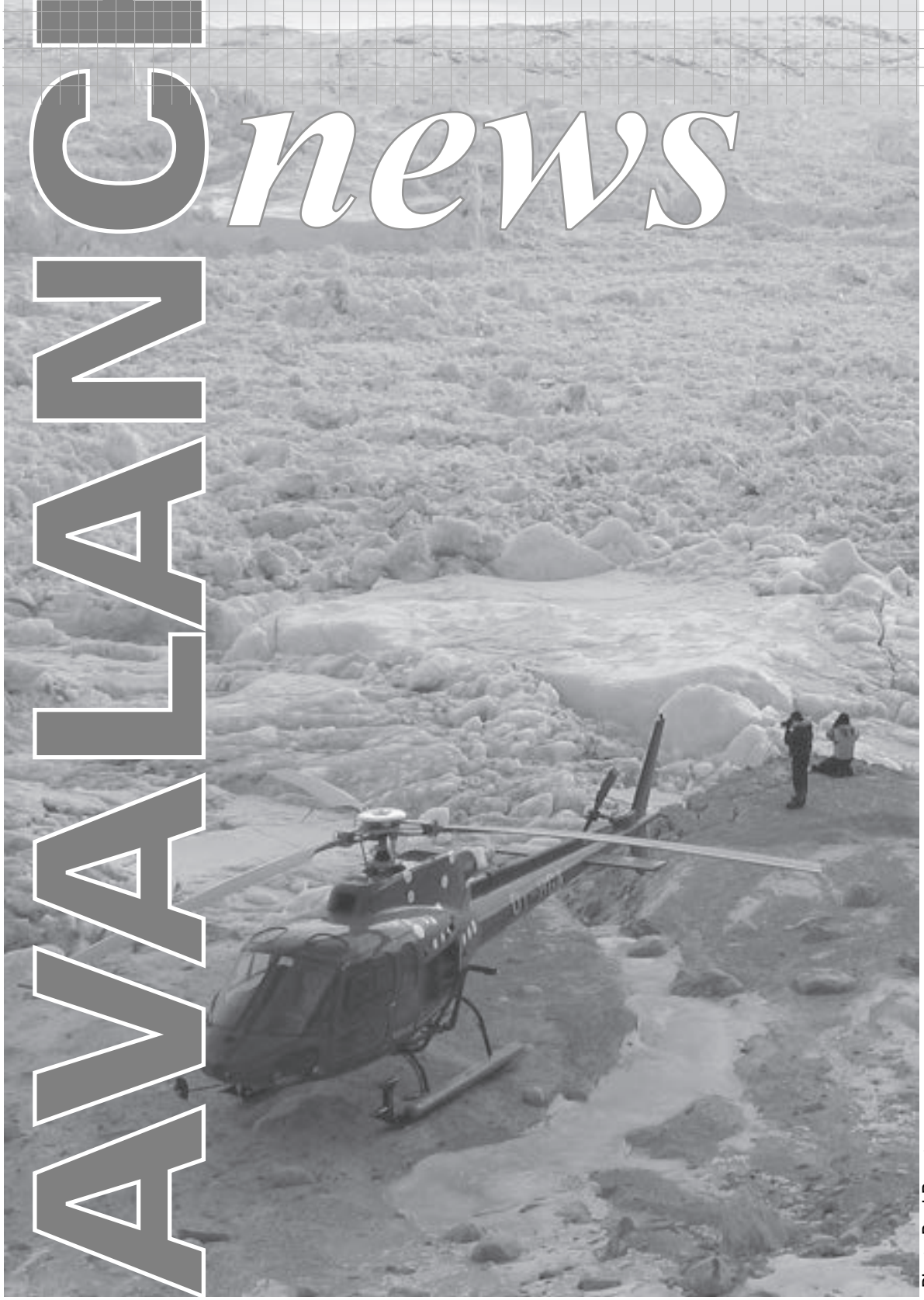

Photo Paul Berntsen

inside

AGM Highlights

Meeting minutes, CPD feedback and more.

Congratulations

Grant Statham receives Public Service Award of Excellence.

Transitions

New BOD members, and Operations Manager Evan Manners says goodbye.

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canadianavalancheassociation **Avalanche News** Volume 73 ❄ Summer 2005

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've got. 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.

Editor's View

BY MARY CLAYTON

As we prepare for the AGM each year, one of the jobs that invariably comes up is compiling statistics. In helping Clair prepare his presentation to the Canadian Avalanche Roundtable, we found that in the past year the CAC forecasters issued a total of 620 avalanche advisories, 430 forecasts, 21 information reports, three special warnings, and gave about 250 media interviews. We also found that this season marks the second year in a row where the number of avalanche fatalities is significantly less than the 10-year average.

Of course, numbers don't tell the whole story. While we can show that we're reaching more people than ever through our website, the public avalanche bulletins and outreach programs, we can't make a direct link between those numbers and the fact that fewer people were killed in avalanches. But even though much of our work is difficult to quantify, we do know that we're making a difference. As Albert Einstein was fond of saying, not everything that counts can be counted.

One number that means a lot to us after the AGM is 170. That's how many of you attended the CPD session this year – more than ever before. Entitled "Professionalism at a Crossroads," this year's CPD was not only the best attended ever, it was also the most provocative. Quantifying its impact will be impossible but, by all accounts, what went on in that room is going to effect change.

CPD organizer Ian Tomm shared an interesting observation about the day. He described what he saw from the podium immediately after he closed the meeting and said goodbye to the audience. "Nobody got up. Everyone just turned in their seats and began talking to their neighbours." It was an amazing sight, he said, as he recalled his own overwhelming sense of relief the day was over, mingled with jubilation that the session had sparked such a response. We have some of the CPD speakers' notes for you on page 51, and on page 42 you'll find some of the feedback we've received so far.

There were some important "firsts" at this year's AGM – the first annual general meeting of the CAC, and the first meeting of the Canadian Avalanche Roundtable. The roundtable is where the CAC is held accountable. Stakeholders in public avalanche safety assess the year past and assign priorities for the year coming. It's an integral part of the CAC's mandate, and if that first meeting is any indication, our annual Roundtable sessions should prove to be as valuable as they are vital. The report from that meeting can be found on page 14, and the minutes from the CAC's AGM start on page 15.

And while we're on the subject of "firsts," check out Canada's first reported avalanche accident on page 50. It's a remarkable piece of history from the eighteenth century. Who knew our tradition of recording avalanche fatalities was such a long-standing one? While, happily, our reporting style has evolved over the years, this record of a tragic accident makes a compelling read.

We've also got a report by Marc Ledwidge of the first CAATS course in Iceland. Marc and Randy Stevens brought some Canadian avalanche training to the land of the Vikings this winter and you can find that account on page 45. This trip marks yet another point on the globe where CAATS has been invited. It's an impressive list for an impressive program. CAATS director Ian Tomm lists the recent accomplishments in his report on page 47.

And from first to last. This year's AGM was the last one for Evan Manners as a CAA employee. You can find out more about where Evan is going on page 60, where he's written not so much a "good-bye" as a "hello" to his new life. While he may no longer be our Operations Manager, it's not the last we'll see of Mr. Manners, and we're all happy about that.

We've got a couple of new sections for you in this issue of *Avalanche News*. "Sponsor Profiles" is where you can learn a bit more about our sponsors – what they do when they're not supporting avalanche safety in Canada. Our first subject is Elk Valley Coal, a relatively new addition to our sponsor list but a company with long-standing ties to the avalanche industry. You can find that profile on page 12 and I hope you enjoy finding out more about the company, its industry and some of the people who work there.

In our final pages we've expanded our humour section to include something we're calling "Field Notes." It's a bit of a grab bag for oddball bits of information and history. This issue we have everything you ever wanted to know about where the Stevenson Screen came from and who invented it (no it wasn't Adlai Stevenson). If you have a good tale to tell, why don't you share it? Field Notes is a perfect place for those stories that get dredged up over beers and I'll be sure to change the names to protect the guilty.

One final number: one. That's how many years I've been doing this job. Last year was my first AGM in almost 15 years. I had just been hired and, though I was trying to hide it, I was feeling pretty overwhelmed. I hardly remember driving to Penticton in 2004, my thoughts were in such a jumble. This year, I'm happy to say, I felt quite a bit more comfortable in my role and was able to concentrate more on the amazing array of ideas, research, and experiences available. If the number of pages of scribbled notes I brought home is any measure, I got a lot out of that week. I hope you did too.

Have a great summer.

Mary Clayton
editor@avalanche.ca

Executive Director's Report

BY CLAIR ISRAELSON

In the avalanche community, spring is when we take stock of our past winter season, assess changing circumstances, and adjust our programs to meet future needs. Just like most other organizations, the Canadian Avalanche Association (CAA) and the Canadian Avalanche Centre (CAC; a newly created not-for-profit organization to deliver public avalanche safety services in all avalanche-prone areas of Canada) are reviewing and evolving their structures and programs to ensure all of our programs and services are the best they can be.

This year the CAA's Board of Directors changed significantly, and the first-ever CAC board was elected. I'd like to share some insight into the highly principled deliberations and selfless decisions that went on behind the scenes in the run up to those elections.

During Bill Mark's term as president, the CAA's Board of Directors was transformed into an effective policy governance board, establishing policy and strategic direction (and an operating style) that empowered the CAA to prosper. He achieved this by seeking outside expertise. He engaged consultants specializing in non-profit governance to conduct board training so that old and new board members (and the CAA management team) all have a common understanding of their roles and responsibilities for governing the business and affairs of the CAA.

"John's (Hetherington) actions as a member of our Board serve as a parable for one of the CAA's core values."

As executive director, I saw immediate improvements. Job descriptions were developed for each board position so that responsibilities and accountabilities were clearly understood. As this happened, I observed a changing attitude towards board service. I began to hear board members discussing their performance, asking questions like "am I doing my job?" or "am I the best person for this job?" Our board members take their responsibilities to the CAA and its membership extremely seriously, and they conduct their board duties in a highly principled and professional manner.

At the 2004 AGM, John Hetherington was elected as president. A charter member of the CAA, John's long history in avalanche work and experience on other boards and municipal councils proved invaluable as he led the organization through a demanding year that required board decisions on many critical issues. Under John's leadership, key decisions such as creation of the Canadian Avalanche Centre, establishment of a comprehensive financial policy document, a field trip policy for RAC, a revised CAA constitution and bylaws, data management and numerous other items were addressed. During this year with John as president, the CAA's chartered accountant repeatedly commented on John's exceptional capacity for understanding not only what our financial reports and statements said, but also what those numbers truly meant for the health and future viability of the CAA and the CAC.

In preparation for the 2005 AGM the CAA's board members discussed their performance over the past year, the board members who were stepping down, the slate of candidates being proposed, and the evolving skills desired for the CAA's board. During these discussions it became apparent that of all existing or proposed board members, John was clearly the best qualified to oversee the financial affairs of the CAA and meet the expectations for due diligence that comes with growing public accountability for CAC operations.

To no one's surprise, John demonstrated exemplary professionalism and commitment to the CAA, the board and the membership. After soliciting advice from some long-time CAA members, John announced that if he could best serve the CAA by bringing his financial management skills to the board, he would be prepared to step down from the position of president and stand for election as secretary treasurer. In keeping with this strategy, at the AGM Steve Blake was elected to the position of president, and John Hetherington was elected as secretary treasurer for the CAA and CAC.

John's actions as a member of our board serve as a parable for one of the CAA's core values. Perhaps it hasn't been put into these exact words before, but the concept has been part of our culture and values for as long as I can remember, and it goes something like this: Do the right thing for the good of the association; our personal interests or goals come second. John, here in this public forum I wish to thank you for your service as president and salute you for your willingness to take on board accountability for the financial affairs of the CAA and CAC. Over the past year when you were president, it was my privilege to have you as my boss. In all of my dealings with you, you have been principled, honest and fair. You have consistently put the work and the best interests of the CAA and the CAC foremost. On behalf of the entire membership, I say: "Thank You!" I look forward your continuing service in your new role on the board.

Just like their boards of directors, an organization's staff also needs to evolve to meet new challenges and expectations. When I came to work for the CAA five years ago I said I would take the job for up to five years. I believe it is important that the executive director does not become a "fixture" that limits the organization's prospects. In keeping with that commitment I tendered my resignation to the board at the AGM this spring. The board responded with an offer of three years of continued employment as your executive director, and I accepted that offer. I thank the board and membership for your vote of confidence. For the next three years I will continue to serve you to the best of my ability.

On July 1st, after nine years of dedicated and diligent service, Evan Manners will be leaving the position of CAA Operations Manager to take employment with a Canadian company providing avalanche and other products to the international market. We're truly going to miss Evan. He's been the CAA's "go to guy" for almost a decade, and has shepherded the development of the CAA's infrastructure from small rented office with three seasonal staff to where we are today. When I started work for the

CAA Evan tutored me in all aspects of the CAA's operations, offering essential insight and historical context. Evan managed the development our office systems, delivery of many CAA and CAC programs and services, and under his guidance has built the CAA's AGMs into the exceptional events we have come to look forward to each May.

On a personal level, one of Evan's key contributions has been his service as advisor to the board, to me and the rest of our staff, and our entire membership. His exceptional capacity to analyze and present complex issues in "Saskatchewan farm-boy" terms has kept us entertained, and on track. Evan has become a trusted friend, counsellor and co-worker to me, and to the entire staff at the CAA / CAC. We'll miss him, and he will never be replaced. Evan, we wish you all the best as you move on to your new employment, and we're thrilled that your talents are being recognized. We look forward to seeing you every year at our AGM's.

"Evan has become a trusted friend, counselor and co-worker. We'll miss him, and he will never be replaced."

As preparation for Evan's departure, the CAA's management team has just completed a comprehensive review and update to the CAA / CAC strategic plan, a program needs, task and staffing analysis, and budget review. As a result of this work, a restructuring plan has been developed that will see two operations managers hired; one for the CAA and one for the CAC. These operations manager positions will be supported by a common executive director, comptroller and communications director. A competition for the two operations manager positions is underway, with short lists established for both positions. I believe that final selection will take place before August 1, to allow planning and programming for the upcoming winter season to be done in late summer.

As composition of our boards, committees and staff continues to evolve in response to changing circumstances, it is important for our members and our clients to continue to communicate your needs, hopes and fears. We need to know your thoughts so we can grow CAA and CAC programs and services in the right way. The process of listening, changing, trying it out, and then tweaking things in response to your feedback never ends. We can't get it right without your help and cooperation, and so we look forward to working closely with our boards, committees, staff, memberships, stakeholders and clients as we move forward into the future.

Enjoy your summer,

Clair Israelson
Executive Director,
Canadian Avalanche Association, and
Canadian Avalanche Centre

President's Report

BY STEVE BLAKE

Working on this letter watching the crashing of Pacific waves rolling up a white sand beach is only remotely reminiscent of the world of avalanches. But like a Christmas album that must be recorded in July for a December release, the gears behind the scene of the avalanche business continue to grind. There has been a lot of change in the past year, including a shuffling of the board of directors. I hope to be able to carry on with the solid foundations passed on by John Hetherington and Bill Mark before him. Thanks to departing board members Alison Dakin and John Birrell; your contributions have been appreciated and you will be missed.

As most people are aware by now, the CAC and CAA have "split" creating two corporate entities. There are a few reasons for this, one being simply the cost efficiencies in running these two organizations close together under one ED to ensure that the common interests of the Canadian avalanche neighborhood are met and furthered.

The new boards of directors will be meeting in June to get to know each other a little better and to put together the plans for the coming year. Communications will be the key theme. We learned a lot last year about getting our messages across to the membership and we will be putting the results of these lessons to practice.

The AGM in Penticton saw some controversy, which is a good sign! Important issues get moved much further ahead when there is lively debate rather than when there is complacency. Let's welcome this dialogue and encourage participation by all interested members.

The audit committee, which consists of past presidents, has been activated to tackle the updating of the by-laws. We can only expect a definitive contribution from these folks and we thank them up front for getting involved.

It was nice to see elections rather than acclamations for the first time (ever?). The creation of the CAC sparked a great deal of interest in public avalanche safety and the membership made their decisions choosing great candidates from a strong pool of nominees. Hopefully we will see several nominations for each position on each board at next spring's AGM.

Clair and the BOD have reached an agreement, and Clair will be around for a few more years to provide the continuity needed to keep CAA and CAC initiatives moving forward. A special thank you to Evan Manners. His nine-year commitment has been the glue holding the operations at the centre together in Revelstoke. His efforts have helped establish public avalanche bulletins and InfoEx as the gold standards.

In the immortal words of Professional Member John Luttrell, "Summer is Fun!" so back into the water I go.

Play Safe!

AGM Tradeshow a Success

Once again our annual tradeshow attracted members to a variety of booths and products. Every year our sponsors and partners are invited to attend the AGM and take the opportunity to connect with the membership and promote new products. This year the tradeshow was bigger than ever and we are already planning for 2006.

Kelley Sports International and Swiss North Marketing

CIL / Orion

Arc'teryx

Ortovox

Backcountry Access

Photos CAA Staff

Recreation Outfitters Inc.

Genuine Guide Gear

Ferno Canada

A Proud Tradition

Once again CIL Orion has donated a portion of their annual profits to the CAA Explosives Committee. Here president Everett Clauson presents a cheque for $3100.00 to committee chair Bernie Protsch.

Photo CAA Staff

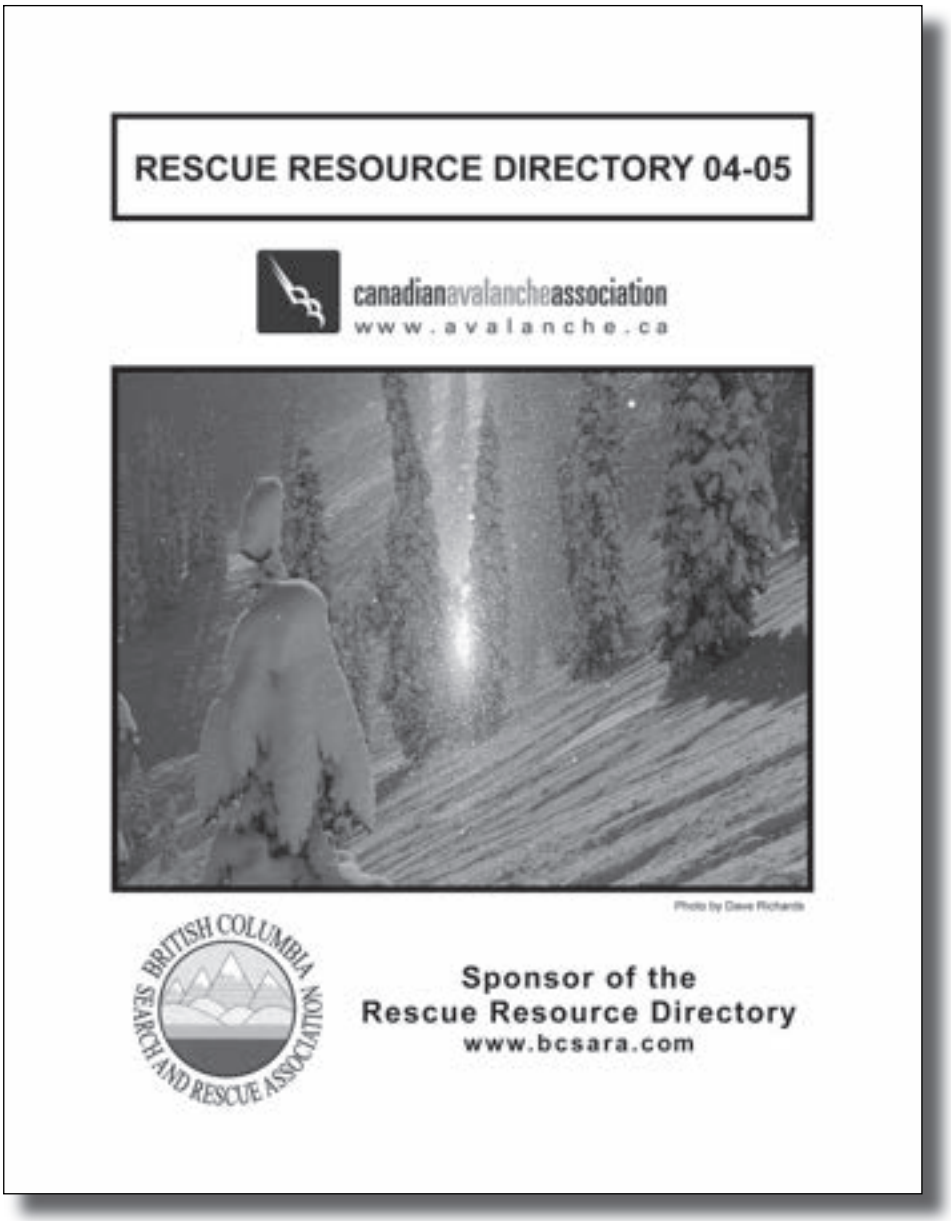
Correction

FROM THE LAST EDITION OF *AVALANCHE NEWS*, VOLUME 72, SPRING 2005, PG. 11

New Sponsor for Rescue Resource Directory

In our last issue, we made a mistake in identifying the current sponsor of the Rescue Resource Directory. The organization providing the funds to publish and distribute the directory for this year is the British Columbia Search and Rescue Association (BCSARA), not the BC Provincial Emergency Program as was written. As editor, I apologize for the error. We are grateful for the generous support of the BCSARSA and look forward to the opportunity to work with them again in the future.

Mary Clayton



Sponsor's Corner: Elk Valley Coal

Elk Valley Coal has been a Supporting Sponsor for two years. This company is the world's second largest producer of metallurgical coal, which is coal that is used in the steel-making process. Globally, the demand for steel is growing rapidly, especially in China and India, and this has caused the price of coal to double in the past year alone. Elk Valley Coal will produce some 27 million tonnes of coal in 2005, supplying markets all over the world and generating annual revenues in excess of $1.5 billion.

Elk Valley Coal is Canadian-owned and employs more than 2600 people. The company used to be called Fording Coal until three years ago when it merged with Teck Cominco, creating Elk Valley Coal. Communications Director Cindy Gallinger says the merger has been a good one. "It created a good synergy," she explains. "We're now looking at expanding existing mines, buying more equipment, hiring more people, and expanding plant capacity."

Elk Valley Coal operates six mines– five in BC's Elk Valley, and one in south-central Alberta, near Jasper. Avalanche safety is a concern at all of the BC mines, as many of the hauling roads as well as the some of the actual pits are exposed to avalanche danger. Brian Jones is the fire and rescue coordinator for the Fording River mine, and responsible for avalanche safety at that site. Brian has also been a contributing observer for the public avalanche bulletin for many years. "I post the CAC public bulletin on a regular basis, trying to heighten the level of avalanche awareness in the area," he says. "I also post my own bulletin on our Fording River network."

The CAC is pleased to be working with Elk Valley Coal and we look forward to a long and productive relationship.

Did you know:

- The term "coal" is used to describe the different varieties of fossilized plant matter characterized by several physical and chemical properties.
- There are four main types of coal: lignite, sub-bituminous, bituminous and anthracite. These are ranked in ascending order of energy content, with the lower rank containing less carbon and more moisture than the higher rank coals.
- Coals have specific characteristics based on their rank that make them more or less suitable for a given application. In general, coal is classified as either "metallurgical" or "thermal."
- Thermal coal is the world's most abundant fossil fuel and is found in many parts of the world. It is primarily used by power producers and industrial facilities to produce energy.
- Metallurgical coal is less abundant. High-quality deposits are found primarily in Western Canada, the Eastern United States and Australia.

Source: www.elkvalleycoal.ca

Canadian Avalanche Centre – National Activities

BY JOHN KELLY, CAC FORECASTER

The CAC has a mandate to provide public avalanche safety services that are truly national in scope and in both official languages. In a country as vast and varied as Canada, fulfilling this mandate is a challenge indeed. The difficulties we face in bringing avalanche awareness to our Western audience are magnified several times when we look to the East and North.

Working towards the national goals of the CAC over the course of the season took a lot of effort, but resulted in some huge gains. Of course the biggest success has to be the inclusion of the province of Alberta as a major funding partner. But other key milestones were reached in offering bilingual services and reaching out to Eastern Canada.

Alberta signs on

Since conception our model of the CAC has been based on the cooperation of private partners and public partners at both the federal and provincial levels of government. Federal funding is contingent on programs being national in scope and offering bilingual services. Provincial funding depends on activities and products that will benefit local residents and visitors. We heartily agree with this approach and a lot of this year's work was spent on presenting this model to provinces that had yet to sign on.

In February our efforts bore fruit. The province of Alberta agreed to become a supporter of the CAC by announcing a contribution of $100, 000 for the fiscal year 2005-06. This amount will allow the CAC to provide expanded services and products to target Albertans at risk of avalanche accidents. Our efforts will look different in Alberta than they do in BC since there are important differences in the way Albertans come into contact with avalanche dangers.

Our statistics tell us that a significant percentage of fatal avalanche accidents involving Albertans occur outside of that province. As an example, almost a quarter of BC's avalanche fatalities are Alberta residents. This tells us that we need to build more awareness in that province and work harder at reaching people outside of BC.

While we don't yet have the statistical data, anecdotal evidence indicates that a large percentage of Albertans venturing into avalanche terrain are on snowmobiles. Reaching this community will be an important part of our outreach in Alberta. Through the efforts of Lori Zacaruk and others, we have made some inroads but much work remains. A large portion of the money contributed from Alberta is earmarked for this purpose and that will be a priority this summer.

Bonjour Quebec

Our efforts in Quebec continue to build, but at the same time hurdles remain in fulfilling our vision of an Eastern Service Centre. Some critical deadlines are fast approaching. We are engaged with the Centre d'Avalanche de la Haute-Gaspésie (CAHG) to form an eastern branch of the CAC with shared goals and operating principles, but remaining autonomous.

What a long way we have come since 1999 when we were approached by a few people from Quebec with a vision. Today the CAHG is staffed by CAA professional members, produces avalanche forecasts, puts on awareness courses in various regions of Quebec and participates in Avalanche Awareness Days.

This range of activities surpasses reasonable expectations of program development and is a testament to the dedication and enthusiasm of those involved. However, funding for the CAHG remains tenuous, requiring ingenuity and a lot of legwork to nail down the next few dollars that will keep the doors open for a few months more. Unfortunately most of the interim sources of funding have been exhausted and without some new dollars the future of the CAHG may be in jeopardy.

Currently we are working with the CAHG to convince the government of Quebec and the federal government that an avalanche centre in Quebec is essential. We are also stressing the point that we will not easily duplicate the circumstances or the people that built the program we have today if we allow the centre to fail this time. There is some encouraging preliminary news, but the deadlines are tight as next season's plans are being laid right now.

The direct involvement of the CAC in providing national and bilingual services extends beyond our relationship with the CAHG. A great deal of effort went into the creation of a structure that will allow different provinces and territories to plug in as avalanche safety needs evolve. We are aware that avalanche accidents are occurring in the Yukon, Newfoundland and Nunavut, and we are certain that we have valuable services to offer in these places in the future. We have a lot to look forward to as we develop into the avalanche facility that more Canadians are demanding, and deserve.

Avalanche Awareness Days in Gaspésie, Quebec

Photo John Kelly

Canadian Avalanche Roundtable Report

BY MARY CLAYTON

The first annual meeting of the Canadian Avalanche Roundtable meeting was held on Tuesday of the AGM this year. At the table (which was actually a rectangle) were the stakeholders of the CAC – representatives from a wide variety of agencies with an interest in avalanche safety across Canada. The roundtable structure represents the open and cooperative dialogue guiding the CAC's operating principles. The stakeholders represent the public's interest and this annual meeting is where they hear about the year's activities and give direction for the future.

Canadian Avalanche Roundtable meets in Penticton
Photo Miike Mortimer

The meeting began with an annual report from Executive Director Clair Israelson. He began by comparing avalanche fatality statistics between the world's major alpine countries. In this analysis, Canada and the US stand out in a way we should not be proud of. Every other alpine nation has either remained static or shown a decrease in the number of avalanche fatalities over the past two decades. In North America, we show a substantial increase.

Now that Canada, like most European countries, has government funding for public avalanche programs, we can start work on changing that trend. Creating an avalanche centre that is built to last is the first step towards that goal. Clair outlined the vast amount of work that has taken the CAC from concept to reality in little over a year. From designing its financial structure to its governance and organizational framework, a huge amount of effort has gone into getting the CAC up and running.

Clair then went through the organization's six-point mandate and gave details on how each has been fulfilled. The stakeholders were very supportive of the work done in the past year and gave Clair and his staff a round of applause. After a few questions and clarifications were made about the annual report, the discussion turned to future priorities for the CAC. The table was informed that the centre d'avalanche de la Haute-Gaspésie (CAHG) is in dire straits. The centre's director, Dominic Boucher, informed the group that the office will be forced to close its doors as early as this September if a solution to the funding problems isn't found.

This, of course, was shocking news. Fortunately among the attendees at the meeting were a number of fund-raising veterans, as well as some seasoned federal government employees. In the discussion that followed, some good, strategic recommendations were given on how to word the next request for financial support from Ottawa. (That advice has already been acted on and has yielded some hopeful results.) Chris Stethem, president of the Canadian Avalanche Foundation, also pledged the CAF's support for this cause and promised to organize a fundraiser in Quebec for this fall.

Quebec was not the only priority to come out of the roundtable meeting. Considerable attention was also given to the province of Alberta, which earlier this year agreed to help support the CAC. It was felt that the approach for this province should entail a safety message tailored towards snowmobilers. Reaching this user group will be a top priority for the CAC this coming year.

Reaching youth and school groups will also be a main concern for the coming year. Achieving this goal will entail further cooperation between the CAC and groups such as Snowsmart, CSPS and PEP's Adventure Smart program. All of these projects have made some good progress in this area. The CAC will continue to focus on coordinating these efforts, and identifying opportunities for new initiatives.

Two other subjects were identified by the stakeholders as areas they would like the CAC to spend some effort on. One was RAC promotion and support, the other was the international danger scale. Both of these are longer-term projects, entailing a lot of coordination and consultation between a wide variety of interest groups. Watch upcoming issues of *Avalanche News* for progress reports on all of these matters.

The newly-minted CAC has a big job on its hands. But with an operating model based on transparency, collaboration and innovation, we can and *will* make a difference.

Canadian Avalanche Centre Annual General Meeting

MINUTES BY SUSAN HAIRSINE

May 5, 2005 – 10:30 am

John Hetherington distributed the current CAC membership list. All honourary members of the CAA were to be appointed as members of the CAC. Anyone on the membership list was eligible to vote for the BOD.

With the consent of the meeting, John Hetherington acted as chair of the meeting and Susan Hairsine acted as secretary of the meeting.

Constitution of the Meeting

A quorum of the members of the corporation being present in person or represented by proxy, and notice calling the meeting being properly given in the manner required by law, the chair declared the meeting to be duly constituted for the transaction of business. The chair directed that a copy of the notice calling the meeting be attached to the minutes of the meeting. The chair then called for a motion to dispense with the reading of the notice.

On motion made by Steve Blake, seconded and duly carried, the following resolution was passed: Resolved that the reading of the notice of the meeting be and is hereby dispensed with.

John Hetherington declared that as notice of the meeting had been given in accordance with the by-laws of the corporation, and as a quorum of the members are present in person or represented by proxy, the meeting was duly constituted for the transaction of business.

By-Law No.1

John Hetherington stated that it was now in order to pass a resolution confirming By-Law No. 1, which had been passed at a meeting of the board of directors, held on March 1, 2005. Some discussion ensued, then a motion was brought to the floor.

A motion was duly made by Robin Siggers, seconded by Janice Johnson and duly carried, the following resolution was passed: Resolved that By-Law No. 1, being a by-law relating generally to the conduct of the business and affairs of the corporation, be and is hereby confirmed. This ratifies and confirms the past acts of the directors and officers.

John Hetherington stated that it was now in order to pass a resolution confirming all the bylaws of the corporation. He added that these bylaws were worked on by legal consultants and congruent with other national corporations. They can be amended over time if required. Some discussion ensued, then a motion was brought to the floor.

A motion was duly made by Bruce Allen, seconded by Jim Bay and duly carried, the following special resolution was passed: Resolved that the bylaws of the CAC as presented are confirmed.

Special Resolution Regarding the Number of Directors

The chair stated that it was now in order to pass a special resolution fixing the number of directors within the minimum and maximum number of directors set out in By-Law No. 1 dated March 1, 2005. The chair confirmed that the special resolution had been passed by the directors at a meeting held on March 1, 2005.

After some discussion, and on motion made by Janice Johnson, seconded by Albi Sole and duly carried, the following special resolution was passed:

RESOLVED AS A SPECIAL RESOLUTION THAT, until changed by special resolution, the number of directors of the corporation be and is hereby fixed at eight directors. The eight directors are comprised of five from the Canadian Avalanche Association Board of Directors (President, Vice-President, Secretary Treasurer, Membership and one Member at Large), one director from the Canadian Avalanche Foundation, one Friend of the CAC, and one Supporter of the CAC.

Election of Directors

The Chair stated that it was now in order to pass a resolution electing the directors of the corporation. After some discussion, and on motion duly made by Janice Johnson, seconded and duly carried, the following resolution was passed:

- John Hetherington ~ President
- Anton Horvath ~ Vice-President
- Steve Blake ~ Secretary Treasurer

*(**Editor's note** – During the CAA AGM later the same day, the board of directors changed. Please see the minutes from that meeting on page 31 for an updated version of the Board of Directors)*

Gord Ritchie reviewed the election procedures and the slate of possible candidates. The following persons are also hereby elected as directors of the corporation, to hold office for the term of office set forth opposite their respective names or until their successors are duly elected or appointed, namely:

- CAF Director ~ Jack Bennetto
- Friends of the CAC ~ Lori Zacaruk
- Supporters of the CAC ~ Dan Markham

After some discussion, and on motion made by Chris Stethem, seconded by Walter Bruns and duly carried, the following motion was passed:

RESOLVED THAT the BOD of CAC reconsider the BOD structure in two areas:
1. Is a preordained majority of CAA BOD members in the interest of an independent CAC.
2. Does the CAC board structure reflect a national structure

The BOD was tasked to evaluate this over the course of the next year.

Appointment of Auditors

The chair stated that it was now in order to pass a resolution appointing the auditors for the first financial year of the corporation. After some discussion, and on motion duly made by Albi Sole, seconded by Gord Ritchie and duly carried, the following resolution was passed:

RESOLVED THAT BDO Dunwoody be appointed as the auditor for the CAC.

Proposed Membership Dues

The CAA BOD proposed a dues structure for the friends and supporters of the CAC. Membership to the CAC are open to the public, and available for free for any members in good standing in the CAA if they ticked the box on their membership application.

Membership Class - FRIEND: Persons who are either professional or affiliate members (in good standing) of the Canadian Avalanche Association – no charge. The annual membership fee for all other persons in this membership category will be $100.

Membership Class - SUPPORTER: An associate member of the Canadian Avalanche Association in good standing – no charge. The annual membership fee for all other groups, clubs, businesses, agencies, corporations or associations will be $200.

CAC Director for Supporters, Dan Markham

Photo CAA Staff

John was asked for a rationale as to why dues are not paid to both organizations by the membership, since they are totally separate. John explained that the CAA members in the past have been greatly involved in public avalanche services, and this was an appropriate way to repay some of this in kind support. Access to CAA membership benefits would not apply to the CAC.

Following this discussion and on motion duly made by Albi Soles, seconded by Mike Boissenault and duly carried, the following resolution was passed:

RESOLVED THAT the membership dues as presented here are confirmed.

CAC Director for Friends, Lori Zacaruk

Photo courtesy Lori Zacaruk

New Business

Canadian Avalanche Centre ~ Executive Director's Report 2004/05

Clair gave a brief presentation of the origin, structure and bylaws of the corporation. The CAC is now a not-for-profit organization, nationally registered. He was appointed as executive director by the CAC board of directors, and an inherent conflict of interest been declared.

Clair showed the ICAR statistics on longterm trends of avalanche fatalities. Both Canada and the USA show an increase in fatality numbers, whereas numbers in European countries are declining. He reviewed the genesis of the CAC.

The role of the Canadian Avalanche Centre is defined as follows:

To 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; and,
- Encouraging avalanche research.

The goal for the CAC: "To deliver programs truly national in scope, in both official languages."

Clair reviewed the process for CAC establishment including funding agreements, governance and legal issues, stakeholder interests, etc. The CAC was registered as a federal not-for-profit corporation, October 2004. The proposed operating concept includes a Western centre in Revelstoke, and future inclusion of an Eastern centre at Gaspesie.

Clair outlined the operating concept and how the structure of the CAC was designed. One time start up costs of $89K were incurred, which was split over the three-year funding agreement.

The organizational structure of the CAC is comprised of an eight-member board of directors, and three membership categories (Friends, Supporters and Honourary Members). Public accountability is through reporting at the Canadian Avalanche Roundtable. At present the executive director is a shared position, split 50% between the CAA and the CAC. However, the CAC has staff dedicated to public safety programs and some CAA staff support the CAA through contracts and agreements so as to not duplicate services.

CAC accomplishments in 2004 included a number of initiatives regarding national public safety programs. Some of these included Eastern Canada CAC scoping, negotiating Alberta participation, opening dialogue with the Yukon government, youth avalanche program delivery, and other joint projects and collaboration with a variety of organizations.

The public avalanche bulletin program included 620 icon advisories, 430 public forecasts, 21 avalanche reports and three special warnings. A northwest forecast region was added and the new website provided storefront for partner avalanche bulletins. Clair estimated 250 media contacts were made and added that an estimated 615,000 persons were reached with avalanche safety messages.

Clair discussed information layers and the four target audiences for avalanche information. He thanked the 75+ avalanche operations across western Canada who provide daily weather, snow and avalanche data used to produce the public bulletins. The value of this data has been estimated to exceed two million dollars annually.

Other CAC initiatives in 2004 included backcountry avalanche workshops in Calgary and Vancouver, avalanche awareness days in 30 communities across Canada, work with a variety of stakeholder groups, and CAA/CAC website redesign with huge support from Canadian Pacific Railway.

The CAC encouraged avalanche research in Canada and helped to lobby for the establishment of an NSERC Chair in Avalanche Risk Management at the University of Calgary. A number of research articles were published in *Avalanche News*. The CAC also helped with the development of databases and the "CAAML" standard for data transfer.

Clair showed a variety of graphs and charts depicting funding levels. Current funding for the CAC includes federal funding for the nxt three years (Parks Canada $100K and MSC $75K). The BC and Alberta governments will provide $125K and $100K respectively each year. In addition, the Canadian Avalanche Foundation has budgeted $50K to support the CAC, and other funding includes $80K in sponsorships and $28K in public donations.

Challenges for 2005/06 include development of programs for Alberta (specifically for sledders), pursuing the Eastern Canada CAC vision, growing the CAC membership, staffing strategies, and marketing, communications and outreach programs. Opportunities include engaging new partners in tourism promotion (in conjunction with 2010 Olympics), NSS-NIF project results from the Avalanche Decision Framework for Amateur Recreationists, and Online Learning, Eastern Canada program development and more use of mainstream media to promote avalanche awareness in Canada.

Clair closed by thanking all the government organizations that have providing funding to the CAC and others who have provided financial support.

Financial Affairs of the CAC

Until April 2005, the CAA and the CAC finances were under the same financial reports. John explained how these cost centres were broken out and how things were allocated to provide clarity. As of April we will have separate financial reports for the CAA and CAC although some allocations (i.e. payroll, etc.) will still occur.

John added that the government funding agencies wanted the CAA and CAC to be separate so they were not seen funding industry services. John added that a copy of the financial statement prepared by the firm of BDO Dunwoody is available, and has been distributed to our funding partners.

There being no further business to come before the meeting, on motion duly made by Steve Blake, seconded by John Tweedy and duly carried, the meeting then terminated at 12:25 pm.

Update from the Avalanche Decision Framework for Amateur Recreationists (ADFAR) Project

BY PASCAL HÄGELI AND SUSAN HAIRSINE

The project's goal is to develop a practical, science-based decision framework for amateur recreationists when planning for, or traveling in mountainous terrain in the winter. Using this framework, amateur recreationists will be better equipped to recognize and evaluate avalanche risk and make appropriate safety decisions. The primary target groups include backcountry skiers/boarders, snowmobile riders and out-of-bounds skiers and snowboarders.

This past year was the first of this three-year project (Fig. 1). There were two primary objectives during the initial phase of the project. The first goal was to raise the general awareness of the public with respect to avalanches, and the second was to collect the necessary scientific research in order to build a solid foundation for the development of a decision framework.

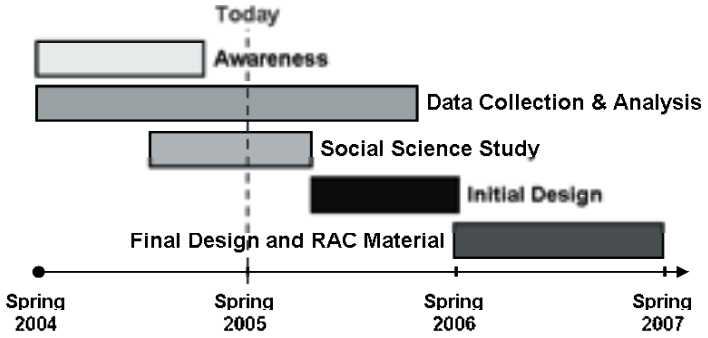


Fig. 1: Time lines of ADFAR project

In order to raise the general public's avalanche awareness, a new brochure was developed in collaboration with Parks Canada, the Canadian Ski Patrol System and the BC Provincial Emergency Program. A group of avalanche experts and communicators worked to design a pamphlet in the summer of 2004 and these brochures were launched at avalanche awareness events in the fall and winter. Two designs were developed, one targeting skiers and snowboarders and the other aimed at sledders. Each was produced in both official languages. The brochures also showcased the new iconic symbols being used in the public avalanche bulletins and in the media. Approximately 100,000 brochures were produced and were made available nationwide to the media, park information centres, clubs, organizations, ski areas and sports stores.

Numerous scientific studies were launched last fall to create the background knowledge needed for the design of a Canadian decision support scheme. Existing European decision-making frameworks were analyzed in collaboration with Dr. Ian McCammon. The results of this study were presented at ISSW 2004 and are available on the CAA website.

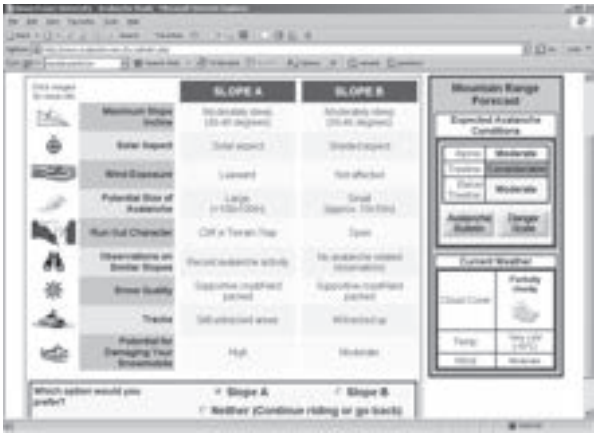
With input from Dr. Bruce Jamieson, a new format for our avalanche accident database was designed, which allows much more information to be collected regarding decision making and the potential influence of human factors. This format was then applied to the CAA's existing avalanche accident database and completed, as much as possible, based on the information available within the paper reports. That dataset is currently being examined to determine dominant patterns in recreational avalanche incidents in Canada.

In addition, a study was launched to examine the predictive merit of snow profiles and snowpack tests for amateur decision making. This study is being conducted by Dr. Bruce Jamieson. This year the study focused on the Columbia Mountains and the field work was done by his graduate students. Next winter, the study will be extended to the Rockies and Coast Mountains.

The lack of data on backcountry use is viewed as one of the major stumbling blocks in assessing the true risk associated with different behaviors in backcountry travel. Several different methods for accessing this type of information were tried over the last winter. They included the design of a use monitoring protocol and a backcountry use survey that was distributed to avalanche professionals. However, both approaches have produced very limited results so far.

In order to improve our knowledge of the different target groups, a social science study was conducted in the Golden and Rogers Pass areas last winter. In the first phase, recreationists were asked to answer some questions about decision making and avalanche awareness after a day of playing in the backcountry. Out-of-bounds skiers and boarders were surveyed at Kicking Horse Resort, snowmobilers were surveyed at Quartz Creek, and ski tourers were surveyed at Rogers Pass.

In the second phase, interviewees were asked to participate in a follow-up survey on the internet, where they are put into situations where they have to choose a course of action based on the information provided. This study will provide us with more detailed information



Snapshot of the online survey.

about how recreationists make decisions and how they perceive avalanche risk. This study is conducted in collaboration with Dr. Wolfgang Haider (Simon Fraser University), Parks Canada and Kicking Horse Mountain Resort.

The next step of the project is the design of the decision framework. An expert panel will meet this summer to assess research finding of the different studies and develop an initial prototype of the decision framework. This prototype will be extensively tested by professionals and recreationists over the next winter. Based on feedback, the framework will be revised the following summer. Other recreational avalanche course materials will be developed in conjunction with this product.

There have been a number of public appearances and presentations in conjunction with the ADFAR project. These have included avalanche awareness events in Calgary, Vancouver, Lake Louise and Golden. There have also been discussions and presentations to avalanche professionals at the ISSW and the CAA AGM.

This has been a very exiting and busy year for the management team of the project. In many aspects, the different research projects of the ADFAR project are truly ground breaking and address aspects of avalanche safety that have not been studied before. We believe the results of this project will significantly affect how recreationists manage avalanche risk in Canada and beyond

This new brochure was developed in collaboration with Parks Canada, CSPS and BC PEP. Two designs were produced, one targeting skiers and boarders, the other aimed at snowmobilers.

RACPAG Update

BY MATTHEW ATTON, RACPAG CHAIR

The RACPAG (Recreational Avalanche Course Programs Advisory Group) is comprised of CAA professional and affiliate members who have volunteered to represent the interests and issues of all RAC/ARAC providers. This group will assist the CAC in the development of structures, processes and procedures to foster delivery of RAC/ARAC training in a manner that respects the needs and aspirations of the CAC, the RAC providers and the public.

The RACPAG met at the AGM in Penticton to pick up the pieces of 2004/2005 and build a new and devoted team of individuals with a keen interest in making some well-needed changes to the RAC/ARAC program. The first step was opening communications to ensure individuals are free to communicate directly with me and the RACPAG via e-mail with any concerns related to the RAC/ARAC Programs.

Due to the recent changes within the CAA, we now deliver RAC under the new Canadian Avalanche Centre. We anticipate there will be some growing pains within the structure of the RACPAG as we determine where we fit in with this change. However, communication is still open and we are listening to your needs. We will be relaying these needs to the RACPAG and the CAC. Expect to see a list of initiatives in the Fall 2005 issue of *Avalanche News*.

Please feel free to contact me or any RACPAG member with any comments related to RAC/ARAC. I can be reached at m_atton@yahoo.co.uk.

RACPAG members for the 2005/2006 term:

- Matthew Atton (Chair)
- Dave Stark
- Lori Zacaruk
- Finbar O'Sullivan
- Albi Sole
- Michael Wilson
- Michelle Gagnon

Representatives from other committees/organizations associated with RACPAG:

Alan Jones	Coordinator, Public Avalanche Warning Services CAC
Sylvia Forest	CAA Education Committee representative
Laurie Edwards	MEC representative

"The Online Learning Curve"
An Update on the NSS Online Learning Project

BY IAN TOMM, PROJECT MANAGER

Many members are no doubt curious and interested in the status of the NSS Online Learning Project. This project, spurred by a recommendation from the 2003 Avalanche Education Visioning Project, was intended to allow the CAA a closer look at the value and possibilities that online or distributed learning courses could bring to our association. The project was originally intended to be a service to industry, primarily in training volunteers and frontline workers in the essentials of organized avalanche rescue. NSS requested a project modification in order to approve funding that saw the focus of the project move more towards backcountry recreation and the general public.

Online learning is definitely a buzz word right now in educational circles. My wife, currently completing her M.Ed. in Educational Technology at the University of Calgary, is studying closely both the pros and cons of this new form of education and finding interesting results. It is not the holy grail of modern education as once was promised, nor is it resulting in better retention, comprehension or academic performance by students. What it is doing is providing educational institutions, primarily post-secondary education, with a wider student body to draw from as they are now no longer limited by geographical boundaries . This concept is a valuable one for the CAA to understand, in my opinion, as geographical boundaries are a regular challenge to the avalanche community.

There are many organizations vying for a piece of the online learning market internationally. The infrastructure of online learning programs is remarkably complex, especially to a community of avalanche professionals that has had, for the most part, little exposure to this medium of education. The Justice Institute of BC (JIBC) was part of the project proposal development along with the RCMP, Ministry of Transportation and numerous other organizations. The JIBC has a dedicated online learning division providing online training to police officers, social workers, EMS students and firefighters across the province through a platform called WebCT. As the JIBC was involved in the project proposal and already offers online training, they were a natural choice to take on the programming for this project. The project officially started in May 2004 and has made much progress in the past 12 months.

WebCT is an online learning platform (i.e. software) that provides a framework for course development and delivery. There are numerous options available for online learning delivery including:

- WebCT: used by the University of British Columbia
- BlackBoard: used by the University of Calgary
- eCollege: used by Devry University
- Moodle, NovaNET and numerous others. Just Google "online learning software" to find out more.

WebCT was originally chosen for a couple of good reasons. It is what the JIBC uses for its courses already and, as the original intent of the project was industry based, tracking student enrolment and performance was thought to be necessary. With the revisions to the original proposal requested by NSS, WebCT became a limiting factor in the project. The ultimate goal is to provide an online based training course for "avalanche first response" – in other words, avalanche rescue – that would be available to virtually everyone. Barriers to entry obviously had to be minimized at every opportunity and using a platform like WebCT posed a significant barrier for users to gain access to the content.

WebCT was designed as an online course delivery platform for use by post-secondary institutions, with numerous features built in that prevent easy, open access to the content. Users have to register before being granted access to the course and the courses

are designed so that user time can be tracked for each specific page of content. Also, WebCT is a "one size fits all" platform. Any course can be modified to fit it, but it provides a rigid and static user interface that simply doesn't promote wide use by the general population, let along the 16-year-old snowboarder surfing the web trying to find out how to be safer in avalanche country.

In late November 2004, the decision was made to move from the WebCT environment to an open webpage, Flash-based environment. This was an important and difficult decision to make, as it required a fundamental shift in development efforts with the programmers at the JIBC. Now that we've made the shift we are back on track, although a little behind schedule. Project carry-over and extensions have all been submitted to the RCMP (project sponsor) and the NSS and approved in all cases. We're still within budget but due to the shift in direction, translation costs will be significantly higher than expected. We will wait to see what the final product looks like before structuring the translation project further, which may include the need for additional funding.

For the actual writing of the course, a series of Subject Matter Experts (SME's) were used. These SME's came from a variety of sectors in the avalanche community including guides, highways avalanche techs, police officers, educational consultants and ski patrollers. The only missing group, unfortunately, was the snowmobiling community. However, snowmobiling has been fully integrated into the content as much as possible despite this deficiency in the SME group. Technical curriculum writers at the JIBC took various avalanche educational materials and compiled a course using direction and feedback from the SME group. In hindsight I think it would have been more productive for the CAA to have worked with its own training expertise and written the course ourselves, then transferring it to the JIBC for web programming. The curriculum development and editing took almost twice as long as was planned for, although still within budget thankfully.

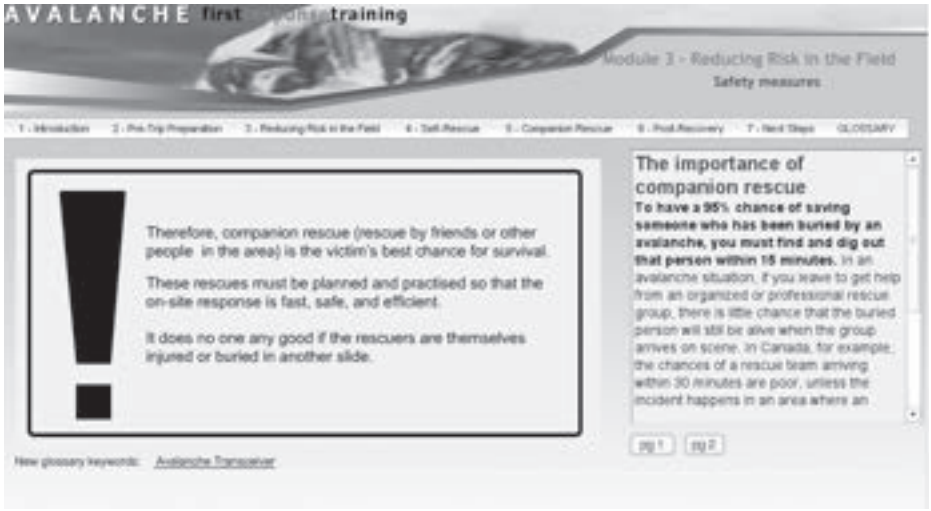
While the original intent of the project was meant to be rescue based, the SME group identified early on in the project that talking about avalanche rescue without talking about avalanche safety in this setting was potentially misleading and could even be counterproductive to promoting safety in the backcountry. Due to the public focus of the project, a well-rounded, interactive and dynamic avalanche awareness course has been developed that focuses on avalanche rescue response. Most will find it very similar to the current Introductory Recreational Avalanche Course (IRAC) content, although there is little discussion of mountain snowpack properties. The potential value to this course for RAC providers and the CAA's Professional Training and Certification Programs is considerable. However, it will be the general public, including the totally uninformed, that will gain the most by finding out more about what avalanche safety really looks like.

So what does it look like? We are still in the throes of site development and Flash programming and that is a story in itself. You can see a bit of what's been developed so far in the screen shots illustrating this article. We hope to have the site ready for final review in late August with official roll out (hopefully) by October 1, 2005. Stay tuned for more information in the Fall issue of *Avalanche News* and members' emails this coming season.

While many of the barriers to entry and access to this information have been removed by switching to the Flash environment, one still exists. Due to the heavy use of animation, streaming video, sound and graphics, the site is primarily designed for broadband users. The recently completed Ipsos-Reid survey of CAA website users showed that an overwhelming majority of users were on

broadband, so we were comfortable in making this decision. It would seem the only users still on dialup are CAA members. While the site is currently on a development server not intended for internet service, one SME commented on the 45 minutes he had to wait for the home page to load! (Broadband takes about two seconds). This is an extreme example of the differences between dialup and broadband that will be somewhat lessened when the site is moved to a dedicated internet server after the project is completed, but dialup users should still be prepared to wait a little bit.

If you have questions or comments on the NSS Online Learning Project please do not hesitate to contact me at ian@avalanche.ca.



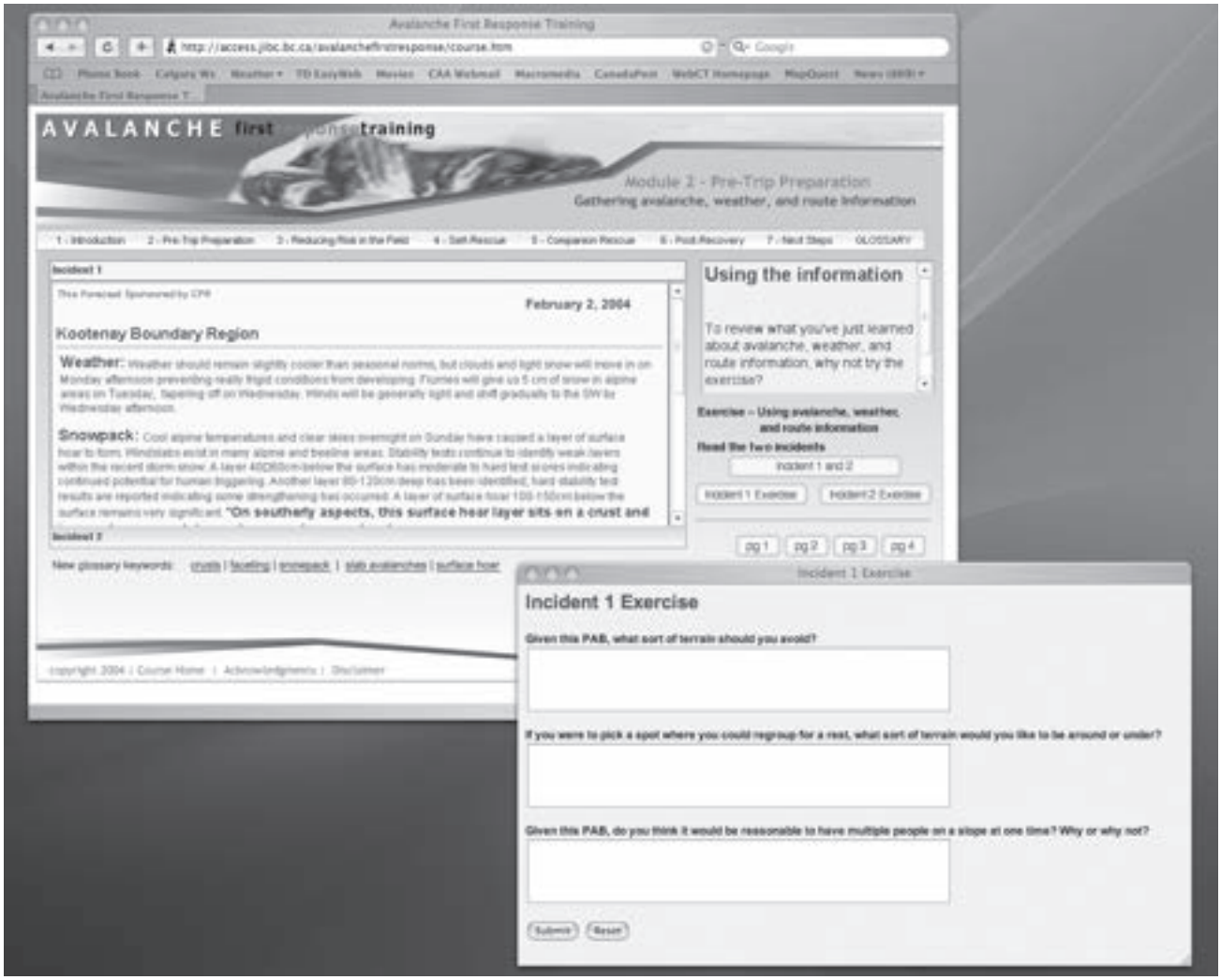


Photo: Canadian Pacific Railway Archives

Making tracks in the backcountry since 1884.

Since coming to Western Canada over 100 years ago, Canadian Pacific Railway has been a pioneer of backcountry exploration and safety. By finding the first route through Rogers Pass and opening the West. By building Mount Macdonald Tunnel, the longest railway tunnel in the western hemisphere, to avoid the avalanches and dangers of the Pass. By hiring Swiss guides to help ensure tourists stayed safe while mountaineering and exploring the backcountry. That tradition continues today through CPR's partnership with the Canadian Avalanche Association to make the backcountry a safer place for people to work and play.

To find out how you can support the Canadian Avalanche Association, please call **1-250-837-2435.**

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Blast Shields and Remote Firing Modifications of Avalaunchers on Whistler Mountain

BY ANTON HORVATH, SNOW SAFETY SUPERVISOR, WHISTLER MTN.

On February 6, 2005, an avalauncher round detonated prematurely in-flight at Fernie, BC during a routine avalanche control mission. This incident was soon to have a far-reaching impact on avalauncher use in Canada. Fortunately there were no injuries, but as a result of this incident most avalauncher users in Canada immediately undertook a voluntary cease-fire. This was soon followed on Feb. 11 by a cease and desist order from the Workers Compensation Board of BC, pending the results of their investigation.

The use of avalauncher guns is an integral part of the avalanche control plan for many ski areas in Western Canada and the US, as well as some highway and cat-skiing operations. The targeted terrain in some of these operations is such that it prohibits the use of other traditional means of avalanche hazard reduction. Many of these areas rely solely on either avalauncher guns or helicopter control for avalanche hazard mitigation in these areas that are difficult to safely access. Obviously helicopter control is weather dependant and not a tool that can always be relied upon. Other areas continue to use avalaunchers simply because it is a quick and efficient tool that can free up a number of control members for other tasks, greatly expediting the completion of avalanche control missions, as well as being cost effective.

Fortunately for all us there was not much in the way of snowfall this winter during the period avalauncher use was suspended. If we could ever pick a winter for this to happen, this was it!! While the investigation was on-gong we kicked around a few ideas with WCB representative Paul Orr regarding blast shields and remote firing.

Photo Anton Horvath

Fortunately for us at Whistler Mountain, all three of our gun platforms are of the same basic two-level design, utilizing old lift towers and water mains from the mountain's "bone yard" for each gun's four main structural supports. This design would enable us to easily set up a blast shield on the uphill side of the gun, behind which we could fire the guns remotely.

I hopped on a sled out to our old tray-loader with a piece of fill-hose. I disconnected the safety and fire valves from the manifold, attached the hose to the manifold, and then reattached the safety and fire valves to the end of the hose. When I pressurized the gun and tried to fire it, the gas escaped too slowly to create the required negative pressure in order to draw the piston back enabling the gun to dry-fire. It just slowly escaped from the hose. Back to the drawing board!

Obviously the gas wasn't able to escape fast enough to enable the gun to fire, so I went into our vehicle maintenance shop and had a 3-metre piece of ½-inch I.D. hydraulic hose made up and attached ¾-inch ball valves for the fire and safety valves. I went out and attached this to the manifold on the gun, pressurized the vessel, and pulled the safety and firing valves open. The gun dry-fired, crisply and cleanly, numerous times. A plan was finally beginning to take shape!

On March 2nd we talked to Paul Orr on the phone and received verbal acceptance of our proposed modifications. The orders were placed that afternoon for the ¼-inch plate steel for the blast shields, and ½-inch lexan that we would need for the viewing windows in each shield, as well as the additional fittings and ball valves required for the remote firing mechanisms for our other two guns. I went out to each gun and made detailed drawings so that the sheets of plate steel could be welded together and totally prefabricated in the shop, including cutting the holes for the lexan windows. One of the benefits of working for a large corporation such as Whistler Blackcomb is having such an immense infrastructure at my disposal: blade carriers for the cats to haul the plate steel up the mountain, a complete machine shop and welding bay in the alpine to prefabricate everything, a portable arc welder, and even a snow-cat mounted Hyab to transport and install the shields in place.

Photo Anton Horvath

While the shields were being prefabbed in the shop, we applied for a written derogation from Paul Orr at WCB. We received the derogation on March 24, and on the afternoon of March 25 we were field-welding the first blast shield in place. At the same time, the first storm cycle in weeks was starting to wind up. It was puking snow and the wind was howling, but by nightfall we were back in business on Gun I. This gun is the one that we rely on the most. The terrain is difficult to safely access after a storm cycle and must be controlled prior to allowing public access beyond our mid-mountain elevations. By March 31st the other two installations were completed on our breach-loaders, just in time for the April Fool's storm cycle!

The material and labour cost for the modifications (not including my labour and additional grey hairs) came to $ 5,394.99. When we first kicked around the idea of remote firing, almost everyone involved was not very happy about it. Everyone figured it would be a major pain, and slow. I timed climbing up and down the trap doors in our gun decks at a leisurely pace and calculated an additional 30 seconds for each shot out of the barrel. Based on that, a 12-shot mission would require an additional six minutes per shoot.

Every minute counts on Gun I in being able to give clearance to load the public past mid-mountain. I figured I could shave at least six minutes off each shoot by pre-writing each page in the log books at each of the guns. Each shot placement, pressure and coordinate was prewritten. All the gunners have to do now, is write a comment beside each of the targets that they shot and draw a line through the comment section of each target that they don't shoot. Simple stupid, eh? It's always been such a pain writing in the field in miserable weather anyway.

In conclusion, my hunch is, that if after the investigation is complete and it is decided that we can return to business as usual, most gunners will prefer the additional piece of mind these modifications offer.

Anton Horvath has been the Avalanche Forecaster at Whistler Mountain since 1991. He is the CAA's vice-president and the past president of CARDA. As well as being an operational dog handler, Anton is also on CARDA's validation team, which trains, evaluates and certifies avalanche rescue dogs and their handlers. He lives in Tapley's Farm, Whistler with his wife Maureen, sons Jonas and Evan, and two SAR dogs, Tahoe and Macklin.

InfoEx Subscribers Meeting

BY EVAN MANNERS

It was heartening to see a large majority of the current InfoEx subscribers represented by employees at the May 2nd InfoEx Subscribers meeting in Penticton. The half-day meeting drew the largest crowd in the 15 year history of the InfoEx exchange, and everyone attending took part vigorously.

The meeting got off to a great start with a general discussion from the floor on which improvements and enhancements would be the most useful to subscribers in the future. From this discussion emerged a list of 20 suggestions that the CAA should consider investing program funds for the coming years.

Following this, the discussion moved to data ownership of the combined 15-year data set that now exists. Although everyone agreed that individual companies of course own the data that they contribute, a lengthy and at times lively discussion ensued over the ownership of the combined dataset. Although many opinions were put forth, no firm conclusion could be reached. As a result, the InfoEx Advisory Group, through a motion from the floor, was tasked with consulting with the majority of InfoEx subscribers and then drafting a policy on data ownership of the combined data set for the CAA Board of Directors. The InfoEx Advisory Group consists of the CAA Operations Manager, a Parks representative who is yet to be decided upon, Bruce Allen for Highways, Steve Kuijt for Mechanized Backcountry (cat skiing), Anton Horvath for Ski Resorts, Colani Bezzola for Mechanized Backcountry (heli skiing), Brad Harrison for Backcountry Lodges, and Chris Stethem for Industry and Consulting.

The meeting concluded with an excellent presentation by consultants Pascal Hägeli and Roger Atkins on the developments to the InfoEx system so far. They showed in detail how the new software works, how the server functions, how the CAAML standard has been used to adapt existing user interfaces at Canadian Mountain Holidays and BC Ministry of Transport to interact with the InfoEx server, and what plans are in place for development over the summer.

Although it would have been better to have accomplished some firm decisions about data ownership during the meeting, overall the day was very successful. The number of companies supporting representatives attending the meeting was very encouraging, and they indicated that the overall direction the program is taking is working well. Stay tuned.

The InfoEx via Satellite Phone

BY IAIN STEWART-PATTERSON

Thompson Rivers University Adventure Programs Department has been experimenting with participation in the InfoEx for the past two seasons. The greatest challenge has been centred on getting the technology to work for a range of program formats that do not have regular cell phone or landline connections. We have been experimenting with connecting a satellite phone to both a PDA (PalmPilot) and a laptop.

Equipment:

We have been successful using the Globalstar GSP 1600 phone connected to either a Palm IIIc or to a Panasonic Toughbook CF48. Globalstar makes a data kit which includes a cable and software. It costs $120.

The laptop–sat phone connection generally works well, with some limitations. The laptop needs a serial port. The most significant concern is the safe operating temperature range of the laptop. The range on the Panasonic is +5 to +40 degrees. It is a challenge in a tent-based scenario to warm the laptop up to +5 degrees at 6 am.

The PDA–sat phone connection is much more problematic. Globalstar only produces a cable with a serial connector. We have been unable to get this cable to work with a current generation PDA. We tried using a Palm M130 and a Tungsten T3 with no success. We did not try a Windows CE based PDA or a Linux based PDA. Globalstar has not kept up with PDA technology. Their solution for making the connection work is based on old technology. We were finally successful when we connected an old Palm IIIc to the sat phone. A special connector similar to a null modem connection was hand built to connect the serial cable from the Palm to the serial cable from the sat phone.

Software

The Globalstar data connection provides direct access to the internet (dial #777). The transmission rate is not fast at 9.6 kbps. We set up a new e-mail address with Yahoo and dedicated it to InfoEx use only. With the laptop we used web-based e-mail, which was a bit slow. It took six to eight minutes to download the InfoEx and the weather at $1.60 per minute. It would be far more efficient to use a text-based program such as Eudora. This is what we did with the PDA and that took 60-90 seconds to upload and download.

Battery Power

In the cold, the batteries in the phone, PDA and laptop do not last for an entire week of use. Booster packs or Power packs made by Canadian Tire are an excellent source of additional battery power. They range in price from $40–$140 and can include a power inverter. They all have a cigarette lighter plug. They are too heavy to carry on a tour, but work fine for a fly-in base camp scenario.

The Possibilities

Hut-based operations that already have a sat phone and a computer only need to purchase the data kit. Fly-in tent camps could use a laptop, but keeping it warm is more problematic. We found that a $100 power pack will provide more than enough juice for the week. A fully human-powered tour could get by with a sat phone and a spare battery ($140), a PDA and either a solar panel or an external PDA battery. This set-up will come in at under 1kilogram.

Iain at work in his nylon office.

Photo courtesy Iain Stewart-Patterson

Iain Stewart-Patterson is an instructor in the Adventure Programs Department at Thompson Rivers University in Kamloops, BC. He is an internationally certified Mountain Guide (IFMGA) and has a Master's degree in Curriculum and Instruction. He also instructs for both the Association of Canadian Mountain Guides and the Canadian Avalanche Association.

Editor's Note: *The article below is reprinted with permission from the May/June issue of* Kootenay Business *magazine. The writer, Lou Rogers, warns how recent cases are setting new precedents for attitudes towards employee liability. While the examples used are far from the snow and avalanche safety industry, the implications are clear.*

Employees Beware

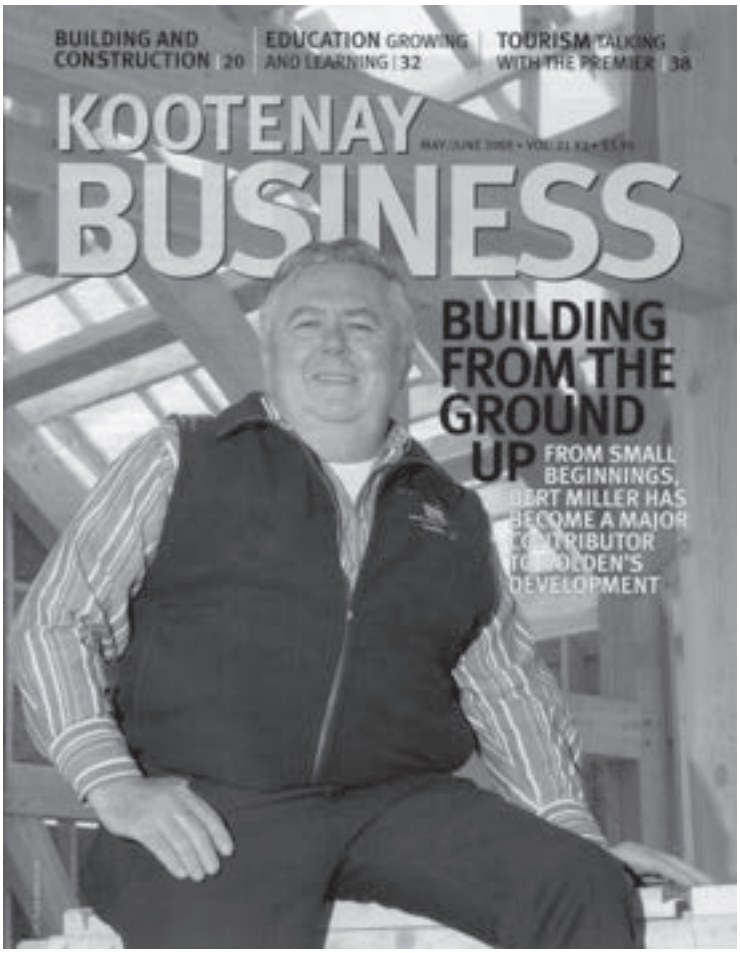
BY LOU ROGERS, CHAIR OF KOOCANUSA PUBLICATIONS INC.

Would the concept that an employee can be personally liable to an employer or even to third parties for being negligent in carrying out their employment duties surprise you? A recent *CA Magazine* article entitled "Private Industry Hazards," that was written by lawyer David B. Wende, said this is not only possible, but it appears that recently – from the flavour of a number of legal cases – it may become probable.

I am going to quote two expressions from the article to explain this possibility: "The traditional view was that an employee who causes a breach of contract between his or her employer and a third person cannot be liable in tort at the suit of that third party"; "More recent cases suggest the traditional view has been abandoned." Mr. Justice Iacobucci explained why a Supreme Court decision allowed a third party to sue two employees of a firm this way: "There is no general rule in Canada to the effect that an employee acting in the course of his or her employment in performing the very essence of his or her employer's contractual obligations with a customer, does not owe a duty of care to the employer's customer. It is now well established that the question of whether a duty of care arises will depend on the circumstances of each particular case, not on predetermined categories and blanket rules as to who is, and who is not, under a duty to exercise reasonable care."

Not only have third parties been successful in cases against employees of a corporation they have dealt with, but there are also cases where employers have been successful in suing their own employee for not using their education, skill and experience to meet a standard of care expected of a reasonable person in their position. Most believe this possibility would have to involve deceit, fraud or breach of authority, but apparently not so. Some cases in which employees have been or are in the process of being sued by their employers include: failure to give necessary notice to terminate a rental property, using inappropriate forms in constructing concrete sidewalks, as well as penalties and interest on GST, employees withholding taxes and income tax installments.

It has always been clearly established that professionals like designated accountants, lawyers and surveyors that consult and do business with the public cannot hide behind the corporate veil to distance themselves from personal liability. The fact that all employees of corporations can have a degree of personal liability, however, is not nearly as clearly established.



I'm not sure this is good news for anyone but the third party suing. Most entrepreneurs are employees of their own companies and if third parties can sue employees, they could be vulnerable as employees beyond what the company is worth. Plus, in high-risk situations employees that would have major responsibility may be harder to find. The benefit of having limited liability by operating a small business through a corporation could be watered down.

It is refreshing to see the courts place some responsibility on employees because with government agencies like Workers Compensation and the Employment Standards Act it seems that employers have responsibility toward employees with no recourse if they don't act responsibly. It could be opening a can of worms – no one really wants involving much more litigation and it could discourage people from taking responsibility where risk is involved.

CAA Professional Training & Certification Programs
CONTINUING PROFESSIONAL DEVELOPMENT

Avalanche Control Blasting

Revelstoke: October 29-30, 2005
Lake Louise March 26-27, 2006

This WCB (BC) approved curriculum has seen further refinement to now include more content on shot placement. On-site magazine inspections, interactive blasting exercises and instructors well-versed in the use of explosives for a variety of avalanche specific settings making this course an ideal CPD option for members and a valuable addition the resumes of recent Avalanche Operations Level 1 graduates.

Avalanche Operations Level 1 Refresher

Whistler: December 16-18, 2005
Fernie: Jan 15-17, 2006
Golden: March 5-7, 2006

A three-day refresher focusing on the recent upgrades to the Avalanche Operations Level 1 program including Fracture Character, Profile Indexing, Fracture Mechanics, Terrain Classification and Human Factors in Decision Making.

Weather Skills for Avalanche Professionals

Revelstoke: October 20-21, 2005 (Intro)
October 22-23, 2005 (Advanced)

This program, first offered in the fall of 2004, will see further refinement over the summer of 2005. Due to recommendations from student feedback we will be paring down the curriculum and splitting it up into an introductory and advanced course, both two days in length. Students are welcome to take both courses back to back. This program continues to evolve through feedback and input from students and CAA membership. If you have ideas and/or suggestions for weather training please let us know.

Module 1: Avalanche Operations Level 2

Revelstoke: October 25-28, 2005
Revelstoke: November 15-18, 2005

This four-day theory-based course provides students with essential knowledge and information on modern risk management for the avalanche industry in Canada. Advanced snow science research, decision making and operations risk management are the three primary areas of focus in this innovative training program. Open to all CAA Professional Members as CPD, regular Level 2 stream students and other interested parties on a case-by-case basis. We've had heli-ski pilots, program managers, owner/operators, avalanche research graduate students, RAC instructors and snowmobile operators all participate in the program alongside CAA professional members and Level 2 students with high degrees of success.

Spring CPD Seminar

May 2006

The CAA is currently soliciting feedback and input from membership regarding the 2005 seminar "Professionalism at a Crossroads" and ideas for the spring 2006 seminar. If you have an idea for a theme for the 2006 seminar please forward it to Marc Deschêne, Chair of the Education Committee or Ian Tomm, Manager PTCP. Current suggestions include a look at how technology is changing the avalanche industry and more work on decision making specific to avalanche operations.

Interested? Please contact Ian Tomm at ian@avalanche.ca for more information.

Canadian Avalanche Danger Scale Revision

BY ALAN JONES, CAC FORECASTER

The first consensus public avalanche hazard rating system was introduced to Canada in 1978, consisting of a four-level warning system with basic descriptors accompanying each level. This scale (and versions of it) was used until 1996, when the International Avalanche Danger Scale was introduced to Canada, which remains in use today. The Danger Scale presents five levels of warning, and offers qualitative support for avalanche probability, avalanche trigger and recommended backcountry action.

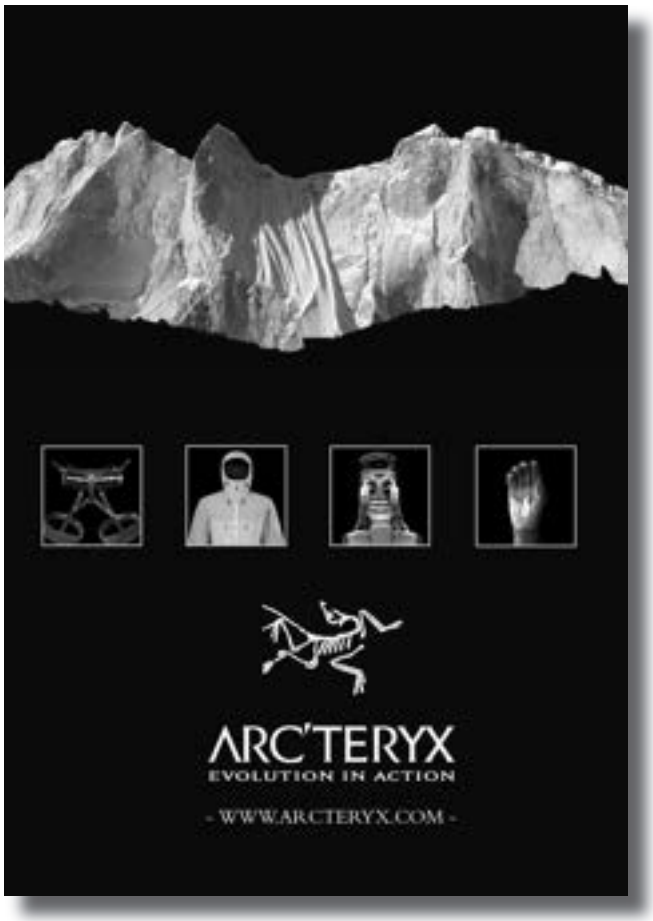
In the 27 years since the first warning system was introduced, backcountry use has changed dramatically. The danger scale, however, has not kept pace with these developments. Changes in demographics, equipment and risk tolerance have led to an entirely different warning climate for avalanche forecasters, who strive to communicate a difficult message. Changes to the way we understand risk, and to the way we communicate risk, lead us to believe that a significant revision to the Avalanche Danger Scale is overdue.

Public avalanche information systems have evolved significantly in recent years, and there has been much discussion among avalanche professionals of the need for a modernized danger scale. It seems all that is required is a forum for these ideas to be brought forward, for outside opinion to be sought, and for consensus to be reached. The mandate of the Canadian Avalanche Centre is to bring together the avalanche community to address common issues relating to avalanche risk in the public domain, and revision of the danger scale is a logical fit to this duty.

At the first annual meeting of the Canadian Avalanche Roundtable on May 3, 2005, the Roundtable members agreed that revision of the danger scale should be one of the priorities for the 2005-06 season. Based on conversations with our colleagues at the US National Avalanche Center (Doug Abromeit, Director and Karl Birkeland, Avalanche Scientist), they wish to work on a collaborative project to revise both the US and Canadian avalanche danger scales and create a common North American system. Although the scope of such work is daunting, we believe we have the support of the avalanche community and public in creating an improved danger scale.

The Canadian Avalanche Centre would like to solicit input from the avalanche community to bring together the best ideas for changes. As a rough timetable, initial input will be solicited this summer. A fall meeting with our US counterparts will hopefully result in some draft ideas that can be circulated and discussed during the winter. The proposed completion date is September 2006, in time for ISSW in Telluride and launch for the winter of 2006-07. If you would like to pass on your ideas, feel free to contact Alan Jones at the CAC (alan@avalanche.ca or 250-837-2435) or Grant Statham at Parks Canada (Grant.Statham@pc.gc.ca or 403-762-1568). We welcome all input, and will provide a progress update in future issues of *Avalanche News*.

Danger level (& Colour)	**Avalanche probability and avalanche trigger**	**Recommended action in the backcountry**
-WHAT-	**-WHY-**	**-WHAT TO DO-**
LOW (green)	Natural slab avalanches highly unlikely. Human triggered avalanches unlikely.	Travel is generally safe. Normal caution advised.
MODERATE (yellow)	Natural slab avalanches unlikely. Human triggered avalanches possible.	Use caution in steeper terrain on certain aspects.
CONSIDERABLE (orange)	Natural avalanches possible. Human triggered avalanches probable.	Be increasingly cautious in steeper terrain.
HIGH (red)	Natural and human triggered avalanches likely.	Travel in avalanche terrain is not recommended.
EXTREME (red with black border)	Widespread natural or human triggered avalanches certain.	Travel in avalanche terrain should be avoided and travel confined to low angle terrain well away from avalanche path runouts.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Canadian Avalanche Association Annual General Meeting Minutes

MINUTES BY SUSAN HAIRSINE

May 5, 2005 – 1:15 pm, J. Hetherington, Chair

John Hetherington called the meeting to order and advised that it was a "members only meeting." There were 56 professional members in good standing in attendance; enough for a quorum.

President's Report ~ John Hetherington

It was John's first term as president of CAA and he provided a summary of the year. The Canadian Avalanche Centre (CAC) was nationally incorporated in October, 2004. This has meant a significant change in operations and now all public safety services, including the public avalanche bulletin are provided from the CAC. The CAA provides member services, CAATS and industry services.

John explained the benefits of the separation of the CAA and CAC. The CAC can receive government funding, and its finances are separate from the CAA. There has been a strong mandate from the membership that CAA dollars should not subsidize services for the public. All RAC activities will be provided by the CAC. John added that in the event the government withdrew their funding, it would be easier to close down a separated CAC. The CAA will concentrate on member and industry services as well as CAATS.

John reviewed the CAC funding contributions and the priorities identified from the CAC roundtable. These include: youth programs, sledder programs and making the CAC truly national, in conjunction with the Gaspésie Avalanche Centre.

John reviewed the ISSW 2004 and stated there was an interesting mix of topics and presenters. It was good to see a large Canadian contingent. A special CAA meeting was held and new bylaws were presented and discussed, as were members' dues. ISSW 2008 will be held in Whistler.

John attended both backcountry avalanche workshops in Calgary and Vancouver and was very impressed. Affiliate members should be encouraged to attend these as part of their CPD because of the high level of presentations. He hopes these are marketed better in future as they were very worthwhile.

The winter was "challenging" with weird weather. There have been six avalanche fatalities this year. How much is due to good programs and how much is due to poor skiing and generally good stability is difficult to quantify.

An area of disappointment included the loss of confidence by the BC Coroners Service in CAA members for avalanche accident investigations. The Coroner has expressed two areas of concern including variability in the performance of the investigation by members and a perception that commercial avalanche accidents have not been investigated with the same rigor as recreational accidents. John added that in fairness to members conducting investigations, there has been no training available, and the investigations themselves may have been more complex and time consuming than expected.

John added that the BCCS has appointed Frank Baumann, P. Eng, to investigate the two commercial incidents from 2005.

On May 2nd a four-hour special meeting was held with InfoEx subscribers. The group discussed the InfoEx database and who owns and should have access to this data.

The finances have been a special area of concern for John given his strong accounting background. He added that the CAA/CAC finances have been separated into five cost centres. The financial reports indicate that CAA finances are not robust and that association and industry service sectors are under funded. Potential solutions include increasing member dues and/or decreasing member services. The total revenue for CAA/CAC is projected to be $1.47 million dollars. There was a strong recommendation by the accountant that the BOD secretary treasurer position should be filled with someone with accounting skills.

John recognized the great efforts of CAA/CAC staff, the various committee members, and Board of Directors. He stated that the CAA is a complex organization with an amazing array of activities. A lot of people contribute towards making the CAA the great organization that it is.

Issues on the horizon include the relationship with CAA and BCSS, InfoEx, the future of CAC programs in Eastern Canada and the Yukon, fallout from two heli-ski avalanche fatalities in 2005, and continuing fallout from avalanche incidents in 2003, new BOD members, the changing nature of CAATS operations, a new chartered accountant for CAA, financial challenges, development of CAC programs that correspond to stakeholder requirements, and the PAB and perceived impact on commercial operations.

John closed by thanking the membership for their support over the past year.

The Year in Review ~ Clair Israelson

Clair began by thanking the BOD for their hard work. He also acknowledged the hard work of the members serving on various committees as well as the CAA/CAC staff.

Clair showed an organizational chart and added that there are approximately 12-person years of total employment including CAATS instructors.

Special NIF projects include the Avalanche Decision Framework for Amateur Recreationists and the Online Learning project. There are now 750 members in the CAA. Clair showed program expenditures for 2004/05 and added that financial statements are available.

Accomplishments this year include a partnership with CAA and the Chamber of Commerce to upgrade the office. The CAA received $50K funding for front office renovations in exchange for summer storefront services. There was a financial systems upgrade, data management systems upgrade (thanks to Parks Canada), and CAA/CAC website redesign (thanks to Canadian Pacific Railway). *Avalanche News* continues to improve. A lot of time and effort was spent on the creation of the CAC as a separate and distinct organization. An Ipsos-Reid survey was carried out to learn more about our website users and these findings has been very informative.

Challenges include the expectations for CAA member services and expectations for the role of the CAA regarding services for employers, representation and advocacy, and avalanche community point of contact for government agencies. There are also financial constraints regarding services to employers, credibility and professional reputation, CAA BOD governance, and workplace safety issues.

Opportunities for the CAA include the promise of 2010 (Vancouver Olympics), expanding the scope of CAATS programs, public relations and outreach, and a focus on "CAA core business."

Clair closed by thanking the sponsors and people who help support the CAA.

Financial Report ~ Steve Blake

Steve briefly discussed the financial report and stated that a detailed financial report is available to any member. The five cost centres are comprised of industry services, training schools, association services, public avalanche bulletin and national public safety services.

There was a budget deficit of $44.8K which represents 3.5% of the $1.47 million projected revenue. Capacity building was the main reason for this over-expenditure, and some of the extra costs included CAC start up, work on the CAAML standard, CAATS projects, infrastructure (new server), and more advanced accounting software (Great Plains).

As John stated, the CAA and CAC have become autonomous organizations. The CAA will only contain Industry, CAATS and Association cost centres. IPRF funds are still included in the annual budget to ensure project renewal.

Bruce Allen made a motion to accept the 2004 financial report. Grant Statham seconded the motion. The motion was carried.

Technical Committee Report ~ Rob Whalen

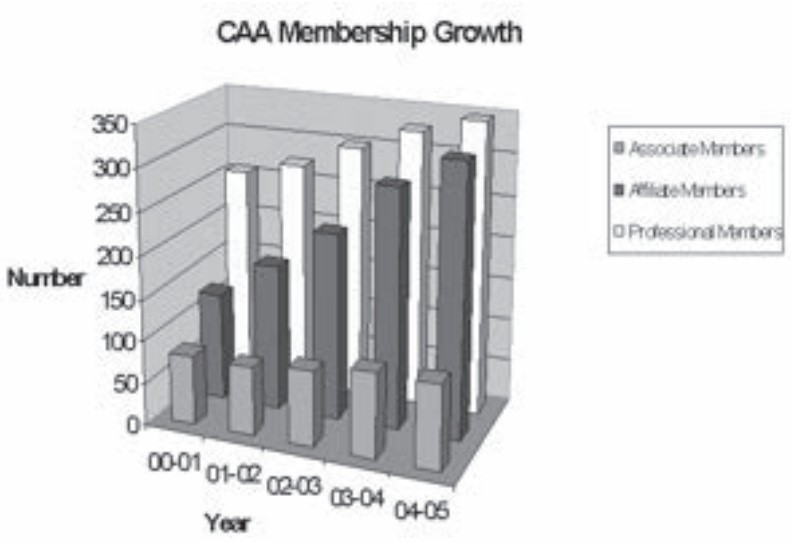
The Technical Committee is comprised of Rob Whalen (chair), Cam Campbell, Dr. Bruce Jamieson, Dr. Dave McClung, Simon Walker and Bob Sayer. Alan Jones retired from this committee and was thanked for his work.

The projects this year included work with the Avalanche Terrain Evaluation Scale in conjunction with Parks Canada, the backcountry avalanche advisory, and fracture character/shear quality observation guidelines. Upcoming initiatives include continued work on fracture character, rutschblock release, providing advice to the Education Committee/CAATS on revisions to the Level 1 content, and possibly avalanche danger scale review. Rob asked the members to contact the Technical Committee if they had questions or issues to discuss. The committee's e-mail address is: techcom@avalanche.ca.

Membership Committee Report ~ Alison Dakin

Alison showed a table summarizing the CAA membership numbers. As of March 31, 2005 there are 346 professional members, 220 affiliate members and 100 associate members. There are also five honourary members bringing the membership total to 766.

The professional membership trend shows slow but steady growth. Affiliate memberships continue to show more rapid growth, though this has slowed slightly in the past two years. Alison added that we anticipate the affiliate members will be the largest group by 2006. Associate members have seen minimal growth in the past few years.



Alison discussed membership fee increases and added there has been no increase in fees for many years. She listed the benefits of CAA membership including the work the CAA does on members' behalf interfacing with government, industry and the public. Members are updated on research, guidelines and other issues. Dues also support *Avalanche News*, members' resource lists, handbook, the webpage, the annual general meeting, etc.

Alison presented some strategies for a healthy happy membership. These strategies include retaining present members, recruiting new ones, and continuing to provide and improve services for members.

The CAA spends increasing resources, time and expertise on industry's behalf interfacing with government, WCB, the Coroner, RCMP, the media, and the public. Alison encouraged all industry players not currently holding Associate memberships including some InfoEx subscribers to join this Associate member category.

The 10 random CPD audits went out late and a number of individuals have responded with points. One person is resigning from professional membership. Alison closed by urging members to continue filling out their CPD forms, as 10 random audits occur on an annual basis. Alison will be resigning her position as the Membership Director on the BOD but hopes to continue to work on the membership committee.

Associate Director's Report ~ John Birrell

John stated that associate membership is flat and there are currently 100 members. These members are made up of various categories including not-for-profit organizations, suppliers, employers, etc. The CAA offers great amount of support to associates in a number of areas including a free trade show. Professional members and affiliates can help this sector grow by supporting those companies that are members, and by encouraging others to become associate members. The BOD suggests all operators purchasing InfoEx subscriptions should be associate members. They will look into a suggested partnership idea between RAC providers and retailers.

John added that he is stepping down as the associate director and BOD representative due to a shift in workload over the year but has enjoyed his time in this role. Mike McKnight (Chatter Creek Snowcat Skiing) was elected as the new associate director.

Affiliate Director's Report ~ Lori Zacaruk

Lori began by stating that she has decided to run as a director for the CAC and resign her BOD position with the CAA given the separation of the CAA/CAC and her strong desire to continue her involvement in public safety initiatives, especially with the snowmobile community. Pascal Hägeli was elected as the affiliate director to the CAA and Lori stated she was very happy to have someone in that role who was attempting to move between an affiliate and a professional member.

Lori also stated that the snowmobile tour operators had met as a group to begin discussing standard operating procedures. She hopes to see continued liaison between this group and professional members. Lori closed by thanking the membership for the opportunity to be their representative.

Explosives Committee Update ~ Bernie Protsch

The Explosives Committee is comprised of Colani Bezzola, Dave Isles, Brian Johnson and Scott Aiken.

Everett Clausen's generous donation from CIL/Orion brings their total contribution to $8K. The explosives committee plans to produce a new video showing cornice control, hand charging, heli-bombing and the Avalauncher.

New federal explosive regulations must be met by May 2006. Chris Watson, Chief Inspector from Natural Resources Canada, has sent a letter to the explosives committee regarding the development of a code of practice. The committee will discuss the various initiatives undertaken that meet this criteria with Mr. Watson. These include work with WCB, procedures for deployment and handling of explosives, and the CAA Explosives Course.

An online discussion forum regarding the avalauncher will be set up on the CAA webpage. Members are encouraged to provide input.

There is also a letter being drafted by Natural Resources discussing the revision of the distance table between explosives magazines. They are willing to have a dialogue with us regarding these revisions and have stated that mining and logging applications will be handled differently than skiing operations.

Bernie thanked Clair, Evan and the rest of the CAA staff who have helped them out over the past year.

Professional and Ethics Committee ~ Steve Parsons

This was Steve's second year with the P&E Committee. The members include Peter Amann, Rupert Wedgwood and Ilya Storm, with Steve Blake acting as the BOD representative.

The P&E committee spent the past year working on updating the code of ethics. The last amendment was done in 1998 and a major revision was required. The BOD has made a few recommendations and this code of ethics will be voted on by the membership in the near future.

Information Technologies Committee ~ Jeff Goodrich

The IT Committee is comprised of Jan Bergstrom, Donna Delparte, Simon Walker and Jeff Goodrich as chair.

Jeff stated their main activity was dealing with tasking received from the BOD to develop a data policy to assist with all the electronic data sets, in conjunction with the P&E committee. This policy would give guidance to CAA staff in dealing with the data

requests in a consistent and transparent manner. The IT Committee will be working with Pascal and Roger re. minor revisions to CAAML standard (CAA's standard XML format for transferring electronic avalanche data). The backcountry avalanche advisory is also being transferred to CAAML.

Jeff added that The CAAML is starting to be used in more areas (CMH, BC MoT, etc.). The next CAAML initiative will be to have a standardized snow profile format. This will allow users to share snow profile data. The IT Committee is also looking at how to document the existing databases in the CAA using metadata.

Education Committee Report ~ Marc Deschênes

Marc Deschênes listed the current members on the education committee. They include him as chair, Sylvia Forest, Helene Steiner, and Ian Tomm. John Birrell was the BOD representative. Dave Smith and Phil Hein decided to step down this year and both were thanked for their dedication and hard work in avalanche education initiatives over the years. Marc added that they are looking for new members to sit on the Education Committee, especially those with some CAATS program experience.

The main focus of the Education Committee included CAATS, RAC, and other avalanche and youth education initiatives. CAATS enhancements in the Level 1 program have occurred (fracture character, snow profiles) and some new changes will be incorporated. These changes underwent beta testing last year and received positive feedback.

Randy Stevens did a TRI course review that will be completed for the summer. Cam Campbell is working on career development guidelines. These will assist Level 1 graduates in determining skill sets and qualifications required in the avalanche industry. A questionnaire has been sent out to employers and some workers and they hope to have responses in late spring.

Constitution and Bylaws

Bill Mark provided some background to the proposed bylaw changes. Bill stated that the bylaws had not seen major revision since 1981, although there have been some minor amendments over time. Due to this series of small changes, the bylaws are now somewhat contradictory. Professionals involved in not-for-profit constitutions reviewed our bylaws for consistency and recommended various changes.

Bill added that the BOD is now involved with strategic policy and direction and not in day to day operations, and these new bylaws reflect that. The members of the Board of Directors are the leaders of the CAA and they are elected and can be fired.

The members began by discussing in particular Part 3, section 20 subsection 2 of the existing bylaws, which states that "…. notice will be sent by mail …. 20 days before the date of the meeting…" and debating whether e-mail fulfilled that obligation. Members were made aware of the Board's initiative to propose revisions to the constitution and bylaws at last year's AGM, at a special meeting at the ISSW meeting in October 2004, etc. The Federal Privacy Act was also cited in the right to use e-mail addresses as a valid address for members.

Robin Siggers made a motion that we accept the notification as valid and legal. Ian Tomm seconded the motion. The motion was carried with four members opposed.

Chris Stethem questioned the removal of Item 50 of the old bylaws, which gives the membership authority to elect standing committees and set their terms of reference. This has been omitted in the new bylaws. Chris stated the removal of this clause could be detrimental to the association.

Bill Mark stated this was removed from the proposed bylaws on advice from the governance experts, who stated that this clause was inappropriate with a Board that was a strategic board and not a working board. Bill added that if the membership is unhappy with the BOD actions, they can fire the BOD. John Kelly outlined the current structure in place pertaining to reporting structures with Committees and the Board.

The membership also debated the change to the definition of professional member in the new bylaws.

Bill stated that the BOD had spent a great deal of time working on the bylaw revisions and these minor changes could be amended next year.

Robin Siggers made a motion to accept the bylaws as written and amend by special resolution next year. George Field seconded the motion.

The motion had 46 in favor and 18 opposed, with five abstaining.

The motion failed because 75% of the professional members did not vote in favour, as required in a special resolution.

Chris Stethem moved that the Audit Committee review the proposed bylaws and forward to the BOD before taking it to the general membership. Bruce Allen seconded the motion. The motion was carried.

Membership Dues

Cost of member services now exceeds revenues generated by membership dues. There has not been an increase in dues since 1994. The BOD has recommended the following dues increases for January 2006:

Member Category	Current Dues	Proposed Dues
Affiliate Members	$50.00	$100.00
Professional Members	$100.00	$150.00 (amended to $200.00 at AGM by professional members)
Associate Members	$100.00	$200.00 @ < 10 employees *
		$350.00 @ 10 – 20 employees *
		$500.00 @ > 20 employees *

* Employees are defined as persons with full-time seasonal (five months) employment directly involved in avalanche work.

Some members stated that increasing the associate dues by sliding scale could see some companies opting out of maintaining membership. John Hetherington stated that these employers are getting a great deal of service from the CAA. The CAA serves as a point of contact in emergency situations (avalanche incidents) and this ability to interact with the media often goes unrecognized. There is also a major workload pertaining to issues benefiting employers such as liaison with other stakeholders, government, WCB, etc. Industry would have to approach these organizations individually which would be time consuming and therefore costly.

Albi Sole made a motion to accept the BOD recommendation for dues increases whereby affiliate members pay $100.00, professional members pay $150.00 and associate members pay by sliding scale as stated. Bruce Allen seconded the motion.

Some professional members stated they felt the professional fees were too low and should be amended to $200.00. Membership dues in other professional organizations such as the ACMG were cited, which are much higher than the CAA.

Phil Hein amended the motion.

Albi Sole accepted the suggested amendment.

Phil Hein made a motion to amend the BOD recommendation for dues increases whereby Affiliate members pay $100.00, professional members pay $200.00 and Associate members pay by sliding scale as stated. Bruce Allen seconded the motion.

The motion was carried.

Board of Director Elections ~ CAA

Bill Mark announced an important change to the board of directors stemming from a recommendation made by the CAA's accountant, Ken Davidson. Ken advised that an association with an operating budget the size of the CAA's should have a secretary treasurer who is well versed in financial matters. As a result, John Hetherington has graciously accepted the proposal to switch positions with Steve Blake.

The CAA Board of Directors was nominated and elected as follows:
President – Steve Blake
Vice-President - Anton Horvath
Secretary Treasurer – John Hetherington
Membership – Steve Parsons
Member at Large – Rob Rohn
Member at Large – Alan Jones
Affiliate Director – Pascal Hägeli
Associate Director – Mike McKnight

Grant Statham and Marc Klassen agreed to stand as the Alberta Auditors. The Membership Committee was elected as Alison Dakin, Helene Steiner plus Steve Parsons (BOD Representative).

New Business

Bruce Allen made a motion that the BOD send out a special resolution next year to make Jack Bennetto an honorary member of the society. Phil Hein seconded the motion. The motion was carried.

Bill Mark made a motion to adjourn. The motion was carried and the meeting adjourned at 4:46 pm.

Ignition at the AGM

BY MARY CLAYTON

Once again, the CAA's annual general meeting has marked the end of another winter season. This yearly get-together serves as a forum for a wide variety of ideas to be heard and discussed, and a great reason to do some socializing. It's also an excellent opportunity to make connections with others in the field. As an observer, rather than a practitioner, I was struck this year by the power of these encounters – the spark that ignites when a group of like-minded individuals get together to talk about their work, their research and their passion.

As an example, I was chatting with Chris Borstad, a 27-year-old master's student with Dr. McClung at UBC, when Peter Schaerer approached him. Chris had just that morning presented his research into the dynamic modeling of extreme avalanche runout, which is what Peter wanted to discuss. I caught up with Chris later to find out how the conversation went. His face told the story. Flushed with excitement and grinning broadly, he told me how the encounter had gone.

"My research is based on the groundwork laid by Peter Schaerer back in the mid-70s," he explained. "I was actually pretty worried that he was going to ask me a hard question at the end of my presentation." Instead, Peter took the time to talk with him one on one, a gesture that wouldn't surprise anyone who knows Peter, but an important moment for a young avalanche researcher. "It meant a lot to me that he expressed interest," said Chris. "I mean, he's Peter Schaerer!"

I found a similar example in Stephanie Lemieux. She is also a master's student, but at the University of Sherbrooke in Quebec. Her project is avalanche terrain mapping in the Chic Choc Mountains. As she presented her research, her enthusiasm for the subject was palpable. Equally plain was the magnitude of the undertaking and Stephanie's need for some input. "If anyone has any ideas, feel free to contact me," she said, more than once during her talk.

The next morning I watched Stephanie's face as she listened to someone with the expertise and knowledge that could contribute significantly to her project. Donna Delparte is a PhD student at the University of Calgary. Her presentation concentrated on an aspect of her research involving high resolution Digital Elevation Modelling (DEM) for avalanche terrain, which allows the user a three-dimensional bird's-eye view of the landscape. I could see Stephanie was having an "Aha!" moment as Donna demonstrated her computer-generated fly-over of Rogers Pass. "I got so much out of Donna's presentation," Stephanie told me after. "Now I need to talk to her before she goes!"

Later, I connected with Donna and asked her about the similarities between the two projects and the possibility of her role as a mentor. Donna said she enjoyed Stephanie's presentation, "but my impression is that she is just getting started, and needs feedback and ideas." Donna knew her own presentation made an impression on Stephanie. "I noticed her scribbling notes while I was talking," she said. "I could help her out and I'm looking forward to talking with her."

Sharing expertise is just one reason this annual meeting can be so exciting and rewarding. Good old-fashioned networking can also create its own sparks, as Stephane Gagnon knows. I spoke with the assistant director of the Centre d'avalanche de la Haute-Gaspésie (CAHG) and he told me how much

the week in Penticton had done for his hopes for the centre's future. "We came here with the news that the CAHG will have to close in September if we don't get funding," he explained. "But we got some good support at the round table, it was great to see. It will be a big help to convince our province."

Another incendiary example is the response Mike Boissonneault received when he stood up during the meetings and announced that BC Highways was looking for someone to fill the position of senior avalanche officer. Mike hadn't come to the AGM planning to speak to the group, but he's glad he did. "It was a great place for me to speak to room full of people who are almost all good candidates," he said. "It really worked well and resulted in a significant number of well-qualified applications." It will be interesting to see if the successful applicant is one of those who applied after hearing Mike's spontaneous "help wanted ad" in Penticton.

"There were undoubtedly hundreds of sparks lit throughout the week."

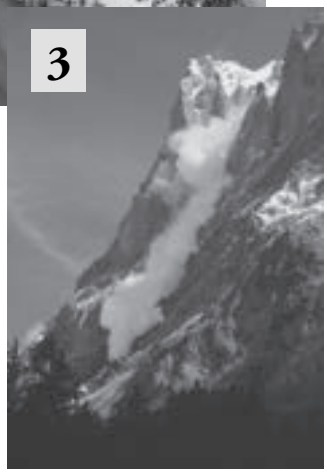
There were undoubtedly hundreds of sparks lit throughout the week. Speaking personally, I came home with a bunch of ideas for future projects, and almost every one of them came from informal conversations. A lot of work goes into organizing the AGM each year, arranging the speakers, choosing the CPD themes and a myriad of other details. That effort alone makes the AGM well worth attending. But it's the serendipitous meetings, the chance conversations and unexpected opportunities that really light the fires in an already hot week.

Photo by CAA Staff

2nd Annual Photo Contest Winners

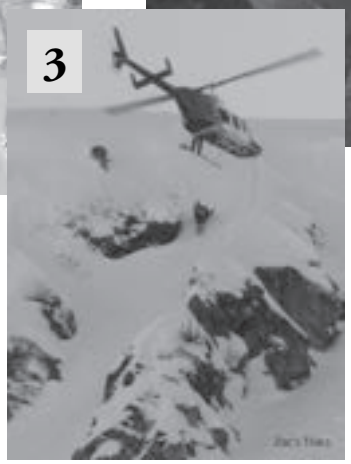
Avalanches
1st: Garth Lemke - Polar Circus on a bad day
2nd: Jason Remple - Unnamed
3rd: David Bryan - Grindlewald Switzerland

"In Memory of Sylvan Aubin, submitted with permission from Laurent Bolduc"

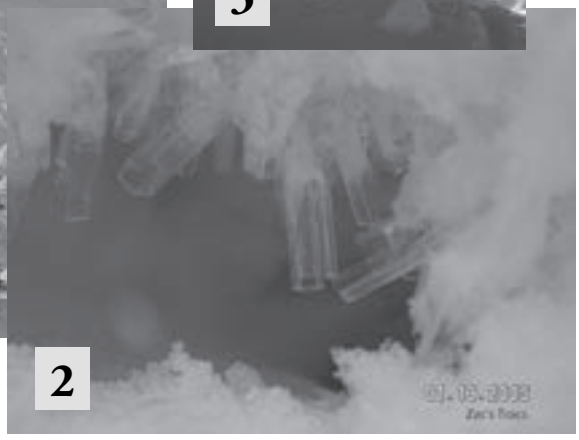


Members at Work
1st: Julian Itagaki - Work day
2nd: Paul Langevin - Dawn patrol at Diamond Head
3rd: Steve Parsons - Unnamed

Events & Occasions
1st: Mark Klassen - Larry and Buff in Japan
2nd: Terry Duncan - Ghost of Urs
3rd: Lori Zacaruk - BigIron shootout



People's Choice
1st: Sue Boyd - Rain event
2nd: Lori Zacaruk - Champagne flutes
3rd: Paul Langevin - After the storm



CPD Seminar Feedback

Here is a sampling of some of the e-mails sent to CPD organizer Ian Tomm in response to the CPD seminar "Professionalism at a Crossroads."

"Just wanted to say congratulations on putting together a real winner of a CPD day. Controversial, yes, but the times are controversial. I heard from several people that this CPD was the most worth while one they've attended. I would have to agree. Eye opening. Anyhow, I look at you and Grant as the catalysts for change that this industry desperately needs. Keep it up!!"

"Well I'd say you must be up for a MVP award around the CAA these days! Good work with all the organizing. That CPD session was enlightening. Ross certainly dropped the bomb. Not sure if things are quite that bad, but we certainly have some major issues to tackle. And there is no turning back now...."

"As for CPD. There will be a variety of opinions on the topics and the presenters. I believe we need to maintain a positive open attitude to those discussed subjects. The world continues to change and we need to always be aware to change or adapt as best to those changes. If not we become obsolete in short or long order. I found the topics informative and thought provoking."

"It was a mighty powerful presentation all in all!!!"

"I think the presentations were really well matched and built up nicely throughout the day."

"I think our industry has a very good opportunity for some meaningful change."

Norm Leibel and Bob Stair of the BC Coroners Service (BCCS) took some hard questions from the audience. They spoke on the controversial decision by the BCCS to no longer hire CAA professional members for commercial avalanche accident investigations.

Photo CAA Staff

Audience members showing their interest by participating during Ian McCammon's talk.

Photo CAA Staff

Events Schedule

October 5-8, 2005

SAR*SCENE* 2005

The 14th annual Search and Rescue Workshop is organized by the National Search and Rescue Secretariat and the PEI Emergency Measures Organization. Don't miss the games, workshops, tradeshow and search and rescue demonstrations. Early registration deadline is August 31, 2005.
Where: Charlottetown, Prince Edward Island
Info: www.nss.gc.ca
Contact: Call 1 (800) 727-9414 or e-mail: sarscene2005@nss.gc.ca

October 28-30, 2005

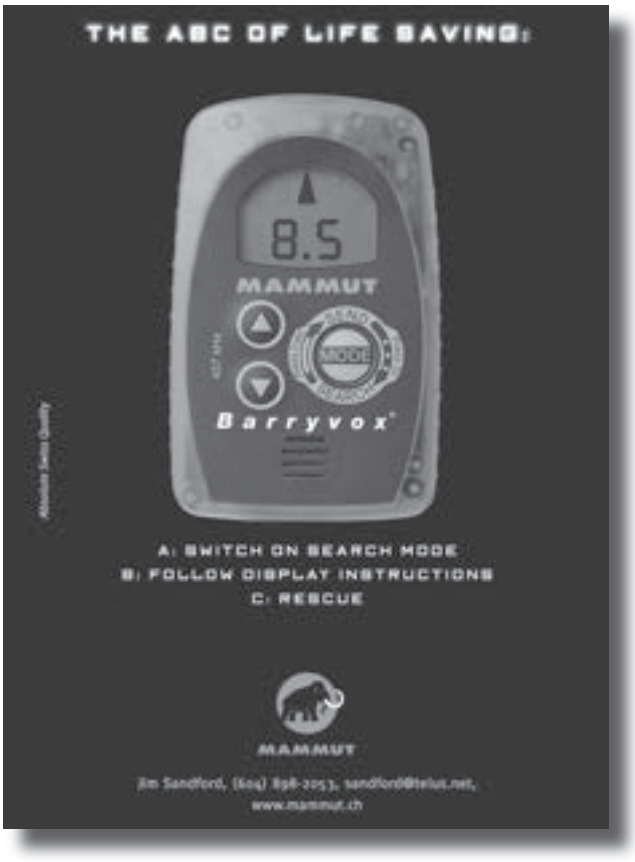
12th Annual Wilderness Risk Management Conference

Held annually in the fall, the WRMC strives to educate wilderness practitioners on risk management and practical safety skills. We share field and administrative techniques in risk management, and work together to influence risk management standards in the wilderness adventure and education industry.
Where: Salt Lake City, Utah
Info: http://wrmc.nols.edu
Contact: Call Cheryl Jones (307) 335-2210 or e-mail: wild.risk@nols.edu

November 19-20, 2005

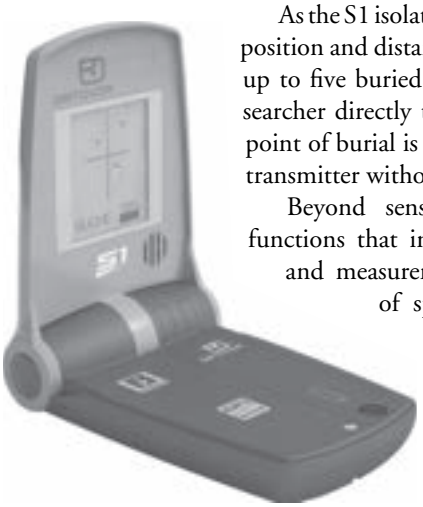
3rd Annual CAC Backcountry Avalanche Workshops

Held consecutively in Vancouver and Calgary, this full-day workshop is designed for backcountry enthusiasts of all levels. The day is highlighted by an international roster of speakers, sharing the latest research and newest ideas about avalanche safety and risk management.
Where: Nov. 19 - Vancouver; Nov. 20 - Calgary
Info: www.avalanche.ca
Contact: Call Ilya Storm (250) 837-2435 or e-mail: ilya@avalanche.ca



The Ortovox S-1: First Sensor-Controlled Avalanche Transceiver

More than 25 years ago, Ortovox introduced the first dual frequency avalanche beacon. Now the company has another first with the introduction of the S1 – the world's first sensor-controlled avalanche transceiver. Ortovox calls the S1 "an entirely new concept in avalanche safety." Sensor-controlled signal analysis allows the unit to scan the avalanche area and visually indicate how many transmitters are buried, their relative position, and the accurate distance from the searcher.



As the S1 isolates the various signals in an avalanche area, a large illuminated display shows each transceiver's position and distance. The depth of each burial is also indicated. The S1 is capable of simultaneously locating up to five buried transceivers within a radius of 60 metres. The oversized "cross-hair" display points the searcher directly to the closest positioned transmitter and shows a continuously updated course until the point of burial is reached. In multiple burial situations, the searcher can then head immediately to the next transmitter without having to analyse confusing signals.

Beyond sensor-controlled search capability, the S1 offers additional functions that include an electronic compass, temperature information and measurement of inclination, all made possible as a result of specialized safety circuitry that meets the EU standard. The S1 also has a motion-controlled automatic safety "switch-back" in which the device automatically switches back from every operating mode to transmit mode in case of a second avalanche.

The S1 also features an infrared interface for easy program updates and the user can also confirm the functions and create a technical report after use. As with every Ortovox avalanche transceiver, the new S1 is compatible with the world-wide standardized frequency of 457 kHz and works with all other avalanche transceivers available on the market.

For more information, please contact:
ORTOVOX CANADA Ltd.,
4610 Bowness Rd. N.W.
Calgary, AB. T3B 0B3
403-283-8944 info@ortovox.ca
www.ortovox.com

THE CAA IN ICELAND

BY MARC LEDWIDGE

In the fall of 2004, at the ISSW in Jackson Hole, Wyoming, Leifur Svavarsson of the Icelandic Meteorological Office approached CAA Executive Director Clair Israelson about running a CAATS Level 1 course in Iceland for the coming winter. After two months of negotiating arrangements with Ian Tomm, Manager of the CAA's Professional Training and Certification Programs, a course was scheduled for March 6 – 12, 2005 in Dalvik on the north coast of Iceland.

Randy Stevens (Course Leader) and I were chosen by Ian to run this course for the CAATS. Prior to going, I contacted Bruce Jamieson for advice, as I knew that he had spent some time working in Iceland. As usual, his advice was on the mark, including his reminder "not to forget our passports." I am sure there is a story there!

The course sponsor was the Icelandic Association for Search and Rescue. Iceland has an impressive nationwide volunteer search and rescue organization. Most areas have a rescue team, and the strong support in the country for fundraising ensures the teams are equipped at a standard that would be envied by professional teams in some countries. More than 50% of the funding comes from selling fireworks. Apparently, New Year's Eve is quite a sight!

Leifur Svavarsson, avalanche forecaster for the Icelandic Meteorological Office, with course leader Randy Stevens.

Photo Marc Ledwidge

Leifur works as an avalanche forecaster for the Icelandic Meteorological Office. He is also an accomplished mountain guide with experience worldwide. He has guided numerous traverses of Greenland that last up to a few weeks. In fact, after only a few hours with him, I found out that he had guided one of my next-door neighbours from Banff in Greenland only two years ago.

Prior to leaving Canada, we were aware that during the month of February, following significant storm cycles in January, Iceland was experiencing a very warm dry period, with temperatures up to 14 degrees (what global warming?). The usually snowy Dalvik was warm and dry and I was wearing my Birkenstocks while setting up the weather station. The ski area in Dalvik was struggling to keep open with many of the slopes dry. It became obvious our biggest challenge would be finding suitable field locations where snowpack observations could be taken.

Following the major warming and several melt-freeze cycles, ice and crusts dominated the mountain snowpack. Randy and I became concerned when we noticed that Leifur

Handknit wool sweaters are still the garment of choice in Iceland.

Photo Marc Ledwidge

was packing his ice axe and crampons for our first day in the field. Many of the mountainous valleys around Dalvik provide excellent terrain for a Level 1 curriculum. Access is quite easy, particularly since Icelanders are the masters of over-snow travel, using Land Rovers and other 4-wheel-drive vehicles with tire pressures reduced to as low as 3 psi.

The course was run in English with Leifur providing translation on occasion. Most Icelanders are fluent in English but Icelandic is the first language. It is one of the few languages in the world that has changed little over centuries. Unlike many other cultures, Icelanders are able to read their ancient language and can therefore read the old Viking sagas.

In spite of the difficult snow conditions, the Level 1 curriculum was completed. There were eight participants, including SAR team members, mountain guides, snow observers, and an avalanche researcher who had worked in Canada. Following the course, Leifur, Randy and I had discussions on future collaborative training between Iceland and the CAA. We came up with suggestions to address issues such as training materials in Icelandic and modifying the Level 1 course to reflect the requirements of the Icelandic avalanche industry.

The Icelandic avalanche situation is extremely interesting. The forecast centre in Reykjavik deals with numerous coastal communities threatened with avalanches. In order to do this, they use an extensive system of automated remote weather stations and snow observers in selected areas. Strong winds are a significant element in avalanche hazard. Working out of the meteorological office is a natural fit since the direct action storm events from the North Atlantic usually create the problems that threaten the coastal communities and mountainous valleys.

Residential avalanche hazard gained huge media and government attention following 34 residential fatalities in the catastrophic year of 1995. Residential avalanche hazard is now managed mostly with large static defences and staged evacuation plans that are put into action with the prediction of significant avalanche events. Currently, risk reduction for transportation, power lines and recreation is not present, but local experts speculate this aspect of Iceland's avalanche industry will develop inevitably.

Icelanders know that tire pressure is the key to negotiating snow and ice.

Photo Marc Ledwidge

Course participants stand on the foundation of a house destroyed by an avalanche the previous year. The farmer who was in the house at the time was killed.

Photo Marc Ledwidge

Marc Ledwidge is a professional member of the Canadian Avalanche Association and an internationally certified Mountain Guide. He has worked in the avalanche and mountain safety industry for the past 25 years including a number of trips to the Arctic. He has been involved in the CAA's Professional Training & Certification Programs for the past 15 years.

Modernizing Tradition

BY IAN TOMM, MANAGER, PROFESSIONAL TRAINING & CERTIFICATION PROGRAMS, CAA

For the better part of 25 years, the CAA's training and certification programs have been regarded as some of the best professional-level avalanche training available internationally. The CAA and its training programs has a long, documented history of requests for curriculum, expertise, materials and support in developing and running similar programs around the world. In the past three years alone, organizations from Japan, Iceland, Turkey, Greenland, Chile, Argentine, New Zealand and the United States have requested this help from the CAA. Recently, François Sivardiere from ANENA (a similar organization to the CAA in France) visited Canada and participated in guide training, recreational training and professional-level courses and commented on the high standard of professionalism within the Canadian avalanche community. With all this in mind it is easy to be proud of the avalanche industry in Canada. Its continued involvement with the CAA contributes to producing some of the highest quality avalanche-related programs and services available anywhere. That's a fairly significant success story I'd say.

Photo courtesy of CAA

One recent success of the CAA's training programs was the redevelopment of the Operations Level 2 program. As many know, the Level 2 program expanded from an eight-day certification course to a 14-day multi-modular training program three years ago. Specifically, the four-day Module 1 course has been a significant success with many professionals attending it as continuing professional development (CPD) in addition to Level 2 stream students. The Module 1 program has been developed with nimbleness as a core strength. Instructors are encouraged to develop and enhance the curriculum on every course. What has been created is a program that sees regular course-to-course updating and the ability to adapt and to be enhanced continually. This doesn't come easily however, and the Module 1 instructor team is solely responsible for this process. The program has proven very useful in providing increasingly enhanced and streamlined lectures for students, as the past three years have shown us.

Curriculum development and program enhancement is a difficult and continual process involving many people. Today, with the information communication capabilities of computers and the internet, this becomes a slightly easier process. Following the process of development and enhancement of the Module 1 program, the CAA's core program – Avalanche Operations Level 1 – will see a redevelopment project this summer that includes, among many things, a fluid and dynamic curriculum base that will grow and develop annually. Management of this process involves many members of the CAA. The Education Committee, Technical Committee, Board of Directors and CAA Instructor Group will all be called upon to help facilitate this process to create a new Level 1 program for the winter of 2005-06.

Core curriculum goals and objectives (known as a DACUM in Education Speak) will remain essentially unchanged because it is tried and true. The curriculum, specifically lesson plans and technical content, will take on a more dynamic nature much like the Module 1 curriculum. Massive program changes are not going to happen immediately but the foundations of affordable and repeatable program development will be laid for subsequent years. If you are wondering what specific changes being made this year, here is an abbreviated list of enhancement projects currently underway:

- Terrain: Including recent classification scheme developments, research, perspective and professional philosophies about avalanche terrain.
- Mountain Snowpack: Focusing on our current understanding of snow, snow pack processes and avalanche dynamics.
- Human Factors: Trickle-down from the Module 1 program to include innovative and progressive developments in decision making and risk management processes specific to avalanche work.
- Philosophies from the Level 2 program: these will be distilled and introduced where possible at various points in the new Avalanche Operations Level 1 program.
- Technology: Content to include an introduction to the use of technology in the avalanche workplace including automated weather stations, internet resources and data management and analysis tools.

Standards of knowledge and evaluation will remain consistent with the goals and objectives of the program, and will be updated to reflect current industry best practices, skills sets and base knowledge requirements. An analysis of marks on past Level 1 courses have shown we don't need to raise the bar higher, we just need to use a more modern bar that more adequately reflects current knowledge, understanding and best practices in the avalanche workplace in Canada.

New content to the Level 1 program will no doubt be of interest to many CAA members and the greater avalanche and backcountry community. A Level 1 refresher course is tentatively planned and will only run if demand is there for the service. This is a beta program and the CAA will only develop this course further if interest from past students and membership warrant.

Photo courtesy of CAA

Much of the content revisions include modern research and developments in the Canadian avalanche community which may have been difficult for some to keep up to date with. For this reason, Level 2 graduates may also find some of the curriculum of interest, as much of the curriculum is not currently covered in the Level 2 program. Some of the content however, will be of a much lower standard than the Level 2. This creates an opportunity for information exchange and collaboration between Level 1 and 2 students, much like the interaction between Level 2 and CPD students on the Module 1. The refresher course environment for the Level 2 graduate will be noticeably different than the Level 1 graduate, especially on field trips where collaborative group work would see experienced students intentionally paired with the less experienced students, again mirroring the Module 1 program.

From the findings of the CAA Avalanche Education Visioning Project that finished three years ago, it is apparent that, in general, CAA membership is very pleased with the standard and quality of the Level 1 and 2 programs. A strong recommendation from that survey was the need to develop and enhance the CAA programs further and to ensure they remained a valuable and respected training program. Moving to a philosophy of continued program enhancement for all programs meets this recommendation and strengthens an already well-respected, valued and high-quality program that much more.

By combining traditional roots and expertise from the well-established avalanche industry in Canada with new findings in snow avalanche research and philosophies, the CAA, its membership and the Canadian avalanche community can remain a leader in professional training and certification programs internationally. Interested? Keep checking the CAA's website after July 1 to see program changes and find out more about the new Level 1 program and the many courses offered by the Professional Training & Certification Programs of the Canadian Avalanche Association.

Photo courtesy of CAA

Editor's Note: *I was chatting with Bruce Allan and Rob Hemming at the AGM and the subject of the following article came up. Both Bruce and Rob remembered vividly a presentation on risk management made by Colonel Engstad, the first Canadian to become a "top gun" fighter pilot On their suggestion, and with Evan's help, I located Colonel Engstad's report in the CAA archives. For those of you who were there, this may bring back some memories. For those of us who weren't, it's a pretty interesting read.*

Decisions and Things: Something to Think About

BY COLONEL PHIL ENGSTAD (RET'D) MSM. CD2, (REPRINTED FROM *AVALANCHE NEWS*, SUMMER 1999)

1. Core Values. Think seriously about what you personally want from life and establish your core values. Once established, take control of your life and protect these values uncompromisingly through responsible, disciplined decision making where you and you alone "pull your own strings."
2. Knowledge and Experience. Expand and develop your knowledge and experience memory bank from the "broadest spectrum of sources possible." This will expand your decision making scope, expand your operating envelope and increase your comfort level within that envelope.
3. Personal Factors. Revisit and review regularly your priorities, situation, experience, limits, comfort level and the chemistry of the group with whom you associate and make changes as necessary.
4. Decision Making. Think about the three types of decisions I outlined and discussed during my presentation (No Time Decisions, Lots of Time Decisions, and Clock Ticking Decisions) and how you might apply or incorporate this methodology into your own "modus operandi" or that of others.

Col. Engstad flying a CF-104 Starfighter aircraft in the French Alps. The photo was taken in 1966 by Phil's wingman, who had a 70mm Vinton camera mounted under his aircraft.

Photo courtesy Phil Engstad

5. Decision Making Cues. Think about how to apply your "clock ticking" decision making cues such as keeping the big picture, maintaining situational awareness, assessing your comfort level, checking your personal warning signs, go/no go assessment, indication of "press on-itis," complacency, anticipation of events and the big one – "Gut Feel." Monitoring these will provide you with a "how goes it crosscheck" that will enable you to make "fine tune decisions" for normal type deviations from plan. Importantly, this will also enable you to make those difficult "big ones" with the confidence and timing necessary to rectify a serious situation that if not handled, could develop into an unmanageable overload and a downward spiral that could very well become life threatening in short order. You normally just get one shot at the "big ones!"
6. Mission/Trip Planning. Mission or trip planning can make or break a mission. A complacent "short cut" attitude will guarantee major downstream problems that could lead to injury or loss of life. Conversely, uncompromised professional mission planning will pave the way for a comfortable and rewarding trip where you are prepared for a broad spectrum of contingencies if they occur.

7. Responsibility and Self Discipline. Core values must be protected by responsible, disciplined decisions. Failure to do so will result in a loss of control of situations and those things in your life you can make decisions about.
8. Professionalism. Strive to be a professional. Professionalism is an attitude where you constantly strive for the best, do your best, encourage others to do their best and build a team of the best. Within a professional organization there exists a common bond – that look in the eye when you meet or pass. That confirms in an instant that your collective goals, initiatives, standards, strengths and friendship are exactly where you want them.
9. Leadership. The world is full of followers. Be a leader and an up-front advocate for your organization. Take your ideas to the front. Share your vision and make it happen. This will keep you focused and enable you to influence people, goals and events in a positive and timely action-oriented way throughout your profession. As a mountain professional, you could save lives!
10. The Basics (Your Foundation). Last but not least, this is what you have built on. From time to time, revisit this important area and:
    a. Focus on the basics;
    b. Practice the basics;
    c. Remember the basics;
    d. Build on the basics; and,
    e. Respect the basics.

Enjoy the mountains!

Canada's First Reported Avalanche Accident

Editor's Note: *This piece of history comes to us courtesy of the Geological Survey of Newfoundland and Labrador. Over several years of research, David Liverman, Martin Batterson and David Taylor compiled a historical record of geological disasters in that province. Working from a wide range of sources, they noted a number of natural hazards, including earthquakes, tsunamis, landslides, rockfalls, flooding and avalanches. This particular account is not only the worst avalanche accident on record, it is also the oldest entry in their history. For more on this fascinating archive, go to http://www.nr.gov.nl.ca/mines&en/geosurvey/disasters/default.stm*

Wallace J.McLean, a keen historian and Labradorian in the course of his researches came across an account of a dreadful tragedy in the Nain area in the late 18th century. Mr. McLean was studying the Moravian Mission papers from Labrador and found, in a postscript to a 1782 letter signed "your sincear well wishers, the Missionarys at Nain and in their names" the following:

"A Lamentable Circumstance has happened this last winter [i.e. 1781-82] about twelve miles from us [i.e., at Nain], upon the edge of a hill under which was an Esquimaux winter hauss where 31 Esquimaux lived, there gather'd a monstrous body of snow which shot all at once down and pressed the winter hauss even with the ground, with all the people in it excepting one man who was buried in the snow without. Out of 31 only 9 got out alive."

This avalanche is thus the earliest recorded avalanche in Canada - possibly in North America, the worst avalanche disaster in the history of the province, and the worst avalanche disaster in Canada to affect people in their houses. It is also the worst avalanche disaster in Eastern Canada. The coastline around Nain contains numerous steep slopes and the exact location of this incident is unlikely to be discovered. It is likely that many other Inuit people have died, unrecorded, over the years along the Labrador coast, where heavy snowfall, and steep slopes form a deadly combination.

Editor's Note: *The theme of this year's Continuing Professional Development session was "Professionalism at a Crossroads." Below are the presentation outlines from three of the speakers; we hope to have some of the others in our next issue. For those of you who weren't able to attend, this may give you an idea about some of the concepts being tossed around that day.*

Risk and Risk Management: Lessons from Other Industries

BY ROBERT C. LEE
DIRECTOR, CALGARY HEALTH TECHNOLOGY IMPLEMENTATION UNIT

Risk is a function of probability and adverse consequences, and risk management involves reduction in risk. In most cases, risk management is constrained by resources (i.e. it costs something to reduce risk). A systems approach to risk analysis and risk management accounts for factors such as:

- The structure of the system (e.g. the interaction of people with a "risky" environment)
- The stakeholders involved
- The values and objectives of the stakeholders
- The available information, and the uncertainties
- The degree of risks, perception of the risks, and the degree of risk aversion
- Resource limitations

In my talk, I described the challenges associated with a systematic approach to risk and risk management in health care delivery. Risks in health care delivery may be associated with human error, organizational constraints, equipment failures, inappropriate or inadequate communication, and the like. Some of the challenges include:

- A history of "expert" (i.e. doctor) driven decisions, as opposed to evidence-based decisions and involvement of the patient
- Tendency to seek blame, and to compensate through malpractice, as opposed to fixing the health care delivery system
- Typical lack of incident tracking and learning systems and priority-setting frameworks
- Increasing complexity of equipment, procedures, services
- Pressures on the health care delivery system via increased patient population demand
- Arbitrary political or regulatory influences on delivery of care
- Constrained resources

I described a research project that we are implementing in a cancer treatment facility, in which we have characterized the system, are estimating risks, and are implementing an incident tracking and learning system. This integrated model will facilitate quality control resource allocation and organizational change.

Some of the lessons that have been learned in health care and other industries as related to risk management include the importance of:

- Objective, evidence-based decision-making
- Stakeholder involvement
- Assessing the values and objectives of stakeholders
- A "blame-free" and "just" culture in which the organization learns from incidents and encourages improvement at all levels
- Not necessarily relying on technological "fixes." Sometimes, the "fix" simply introduces more or different risks
- Collecting information, free access to information, and sharing of information
- Avoiding regulatory or legal intervention through responsible "internal" risk management
- Considering what can be done most effectively and efficiently within resource constraints

The avalanche industry can potentially learn much from health care and other industries in terms of how to provide the greatest net benefit to all stakeholders in a "risky system."

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Accidents, Heuristic Traps and Decision Making

BY IAN MCCAMMON

Traditional views of accidents often imply a deliberative process of risk taking, where individuals proceed from motivations and perceptions to consciously chosen acts. Such views incorporate two assumptions about decision makers: 1) that all aspects of their behaviour are under their conscious control, and 2) that they have conscious access to the needed information. In this presentation, I examined these two assumptions in light of recent findings regarding automaticity and inattention blindness, and I argued that the causes of many accidents might lie deeper than deliberative models would suggest.

I also presented an empirically-based strategy for accident prevention, drawn mostly from the business, aviation and behavioral science literature. The strategy relies on paired analogical analyses of retrospective accidents; basically, looking for patterns in past personal or organization accidents or close calls, and identifying reliable and non-reliable cues as well as analogical lessons. I described how these cues and lessons might be encoded in decision making tools to promote more accurate responses to uncertain circumstances.

Further reading:

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A Canadian Avalanche Decision Framework for Amateur Winter Recreationists …and How it Relates to Professionals

BY PASCAL HÄGELI

The exceptional large number of avalanche fatalities during the winter of 2002/03 prompted many people in and outside the Canadian avalanche community to question the effectiveness of current avalanche education. One of the many recommendations resulting from the subsequent reviews and reports was that a rule-based decision support tool might significantly help to reduce avalanche fatalities in Canada.

In the past five to ten years, several rule-based decision methods were developed in the European alpine countries. Examples are the Reduction Method by Werner Munter or the SnowCard of Martin Engler. While these methods were generally well-received by general recreationists, they have been a highly debated topic among more advanced recreationists and professionals right from the day of their introduction. Some of the key criticisms and questions that seem to persistently come up are:

- These systems are making the issue too simple.
- They discourage recreationists from learning more about avalanches.
- Professionals might get forced into using such a simplified system.

The goal of this presentation is to show that rule-based decision methods can be valuable aids for backcountry travelers that go beyond accident prevention by simply restricting travel options.

I will use 'The Five Steps From Novice to Expert' (Dreyfus and Dreyfus, 1986) to illustrate how people process information and make decisions (Klein, 1998) at different levels of expertise. Relevant experience is generally accepted as the key aspect for progressing from one level to the next. So the crucial question is: What type of tools/ methods can be provided so that "students" (in our case primarily self-guided) can gain relevant and useful experience?

Studies have shown that simple rules are among the most effective methods to provide students at the lower levels of expertise with guidelines to "go out there and gain real experience." I will use the SnowCard as an example to illustrate how existing rule-based methods work. Using the results of an evaluation study of the existing methods (McCammon and Hägeli, 2005) I will show there are clear benefits to these methods under certain conditions, even for professionals. Instead of viewing rule- and knowledge-based decision approaches as competing methods, they should be seen as complementary tools in the toolbox of all backcountry travelers.

Avalanche professionals are truly experts in the field of assessing snow and avalanche conditions and they are able to make decisions at a much more sophisticated level than a simple rule-based decision tool. However, when you look at a day of helicopter ski guiding, you will notice numerous operational procedures in place with strong similarities to rule-based decision making. An example is the discussion of run lists during morning meetings. While these procedures are generally well accepted operational structures in the industry, I would like to make the point that recreationists will benefit from similar guidelines.

In the past few years, numerous studies in the avalanche field have shown that human aspects play a crucial role in the decision-making process (McClung, 2002; McCammon 2004; Adams, 2005). While avalanche professionals are generally experts in the field of snow study, they might be more at the novice or advanced beginner level with respect to these aspects. Rule-based decision methods might provide valuable tools for raising the general awareness and incident prevention with respect to this relatively new area for the avalanche community.

Photos CAA Staff

Editors Note: *This article is reprinted with the kind permission from our coleagues at* The Avalanche Review. *This research appears in the April 2005 issue and the CAA has a special connection to the one of the authors of this article. Peter Carter is a CAA professional member and was instrumental in establishing Eaglecrest ski area as the first American subscriber to InfoEx.*

EVALUATING THE STUFFBLOCK AND TILT BOARD SNOWPACK STABILITY TESTS AS SNOW AVALANCHE FORECASTING TOOLS

Peter Carter*[1,2], Matt Heavner[1], and Eran Hood[1]
Environmental Science Program, University of Alaska Southeast, Juneau, Alaska
[2] Eaglecrest ski patrol, Juneau, Alaska

ABSTRACT: Snow avalanche forecasting relies on, among other factors, an assessment of snowpack stability derived from careful observation of snow cover stratigraphy. Snowpack profiles and stability tests provide quantifiable information about the location and strength of weak layers in the snowpack. This study found:

1) good comparative results between the stuffblock and compression tests and,
2) a relationship between tilt board test results in level study sites and skier triggered avalanches.

KEYWORDS: snowpack stability tests, tilt board, stuffblock

1. INTRODUCTION:

The best way to get direct information about snowpack stability is by observing avalanches and by making snow stability measurements in the field. Collecting consistent snow stability measurements to assess snowpack stability is difficult due to avalanche hazard, rapidly changing conditions, spatial variability, methodology problems, and the challenges of performing laboratory experiments in adverse weather.

Avalanche forecasters use a variety of tests to assess stability. This study, conducted at Eaglecrest ski area over the winter of 2003-2004, assessed the operational utility of the stuffblock and tilt board tests evaluated against the compression test, the shear frame test and triggered avalanches. Professional ski patrollers mitigating hazard triggered the avalanches observed in this study.

The shear frame test, developed by the Swiss André Roch, has been used extensively to index the shear strength of weak snowpack layers (Föhn 1987). The test uses a frame placed just above a weak layer and pulled with a gauge that records the maximum force. The shear strength is calculated by dividing the maximum force by the area of the frame.

The tilt board test is a simple method for avalanche forecasters to observe the stability of the surface 40cm of the snowpack. This test was first outlined in the Canadian Avalanche Association (CAA) Observation Guidelines and Recording Standards (OGRS) as part of the process to identify weak layers to be tested using a shear frame. The test puts a block of snow extracted from the snowpack on an angle (and tapping it if necessary) to identify the shears within it. The test has recently been promulgated as a stand alone stability test by the American Avalanche Association (AAA) and USDA Forest Service National Avalanche Center.[1]

The compression test was developed by Canadian park wardens in the 1970s. This test identifies weak layers within 1.2 meters of the snow surface using increasing dynamic force applied to a shovel blade resting on an isolated test column of snow (Jamieson, 1999).

The stuffblock test, developed in Montana in 1993 (Birkeland, 1996, 1999), is also performed on an isolated test column of snow using a nylon stuff sack filled with snow and dropped on the column until a shear failure occurs.

2. SITE DESCRIPTION AND METHODS

2.1 Study Site

The 300 ha ski area located five kilometers west of Juneau, Alaska, is on Douglas Island at the headwaters of Fish Creek, a northwest facing drainage. Eaglecrest rises in elevation from 400 to 820 meters above sea level. Snowpack observations made at treeline snow study plots located at 720m and 790m were in accordance with OGRS as required by Eaglecrest's subscription to the CAA InfoEx data exchange.

2.2 Snowpack Observations

Thirty-four snowpack profiles were observed between November 22nd and March 28th. The profiles recorded weather, snowpack stratigraphy, temperature, density, and snow water equivalent (SWE). Profiles also include the stability tests outlined below, as well as other observations not part of this study.

2.2.1 Shear Frame Test

Shear strength of weak layers is best measured with the shear frame (Schweizer, 2003, Figure 1). The baseline data for this study came from 40 shear frame tests conducted in the level snow study plots. Shear frame tests were also conducted in test profiles in avalanche start zones and along avalanche fracture lines.

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[1] Snow, Weather, and Avalanches: Observational Guidelines for Avalanche Programs in the United States, 2004.

Figure 1 – Shear Frame Test

Conducting shear frame tests requires discipline, particularly in adverse weather conditions. While providing quantifiable shear strength data, the test is time consuming and difficult (Perla and Beck, 1982). Each shear frame test was conducted at least five times to ensure shear results were accurately reproducible. The equipment used for the shear frame test included a 100cm² shear frame, 2kg and 5kg Imada pull gauges, digital and mechanical weigh scales, two sampling tubes and a large putty knife.

Shear frame test results are used to calculate a unitless stability ratio to formulate stability indices for the triggering of avalanches (naturally or artificially). Snow stability is a ratio of strength to stress on a weak layer or interface. The shear frame measures the strength of a snow layer, while snowpack weight determines the stress on the layer. Stability ratio is calculated as shear strength divided by the weight of snow per unit area thus an increase in the stability ratio is indicative of an increase in snowpack strength.[2]

2.2.2 Stuffblock Test

The stuffblock test is a variation of the compression test. A 4.5kg weight is progressively dropped higher in 10cm increments onto a 30cm by 30cm isolated column. The tests were conducted in profiles on 35º to 40º slopes with generally north aspects representing avalanche start zones (Figure 2).

Figure 2 – Conducting a Stuffblock Test at Eaglecrest

2.2.3 Tilt Board Test

The tilt board test was primarily conducted at the 790m treeline weather plot. Tests were conducted at the 720m study site when severe weather conditions affected the results obtained at the higher study site. The test isolates a 30cm by 30 cm column, tilting the extracted column to 15° angle and gently tapping until a shear is identified. In this study, very easy shears are defined as failure on tilt, easy shears with failure after one gentle tap, moderate shears with failure after the second gentle tap, and hard shears with failure after three or more taps.[2] The equipment used for the tilt board tests included tilt boards located at both treeline study plots, each equipped with a 30cm by 30cm metal cutting plate and a crosscut saw used for extracting the test snow sample from the snowpack. Irrespective of the depth of new or storm snow, the maximum test depth was 40cm from the surface of the snowpack. When the snow tested exceeded 200kg/m3 the test depth was less than 40cm.

3. RESULTS AND DISCUSSION

From December 11th 2003 to April 3rd 2004, 658.1 cm of snowfall (with 113.2cm SWE) was recorded at the 790m snow study site. During the winter there were eight major avalanche cycles with each cycle producing numerous natural avalanches outside the ski area. On 40 days, 416 avalanches were triggered within the ski area ranging from destructive size 0.5 to 2.0.[3] Of those avalanches, 227 were triggered using explosives and 189 were skier triggered. The triggered avalanche activity reflected new snow or surface instabilities. A destructive size 2.5 natural avalanche occurred within the ski area. There was an avalanche involvement just outside the ski area boundary on March 5th with a snowboarder carried 200m without injury.

3.1 Shear Frame Test – Stability ratio

A comparison of skier triggered avalanches with the stability ratio calculated from the shear frame measurements shows that high stability ratios tend to be associated with lower numbers of triggered avalanches (Figure 3). This study supports previous research showing that stability indices measured in level study plots are effective predictors of snow stability on proximate slopes (Jamieson, 1995).

Avalanche forecasters develop stability ratio indices specific to their operation. Comparing shear frame test stability ratios and skier triggered avalanches at Eaglecrest is a start to the development of an index specific to the Juneau area.

The outlier in Figure 3 occurred January 8th. On that day the shear tested was 11cm from the surface at the interface between a moist slab (described as “sticky”) and dry old snow. Although the stability ratio was calculated at 8.5, one natural, 18 explosive triggered, and 12 skier triggered avalanches were recorded. There were variably wind distributed near-surface facets observed in the study plot. These findings suggest that the shear strength interface between moist new and dry (faceted) old snow needs further study.

[2] CAA OGRS, 2002, AAA, 2004
[3] CAA OGRS, 2002, AAA, 2004

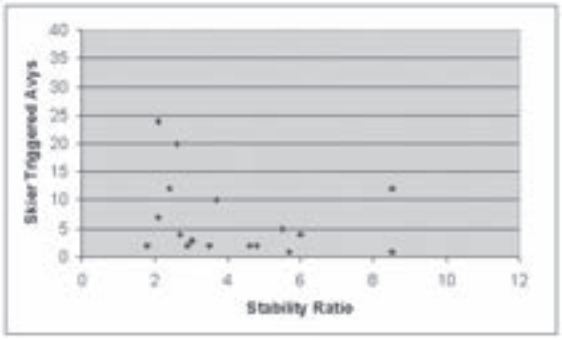

Figure 3 – Stability Ratio and Skier Triggered Avalanches

Our tests also revealed that although the shear frame, stuffblock and compression tests all introduce rapid loading, often an easy shear was observed with the stuffblock and compression tests yet the pull gauge would reach its maximum limit of 50 newtons force without shear failure. This suggests a difference between the dynamic shock of the dropped stuffblock (or tapping of the compression test) and the increasing static force applied with the pull gauge (or shovel shear test[4]).

3.2 Stuffblock Test

Thirty-five stuffblock shears were compared against the compression test where a strong relationship was found (Figure 4). The stuffblock test results were better replicated between observers than the compression test because of the consistency of the force applied (4.5 kg weight and increments of 10cm drop heights).

Comparison of these tests also revealed:

1) that stuffblock tests of less sensitive, or hard, shears appeared to reproduce more consistently than the compression test and,
2) that stuffblock tests of more sensitive, or easy, shears appear to suggest the stuffblock test may be a less sensitive test than the compression test. Part of the reason may be because easy shears are recorded only when the failure occurs with the static load of the stuffblock sitting on the isolated column tested (SB0) or with a drop height of 10cm (SB10) or 20cm (SB20).[5] Very easy shears, that is, failure while isolating the column, are recorded as SBV.

A SB10 was often recorded where the pull gauge would reach its maximum limit of 50 newtons force without shear failure. We were unable to test any SB20 or greater with the shear frame. Again this suggests a difference between the dynamic shock applied with the stuffblock and compression tests and the increasing static force applied with the pull gauge.

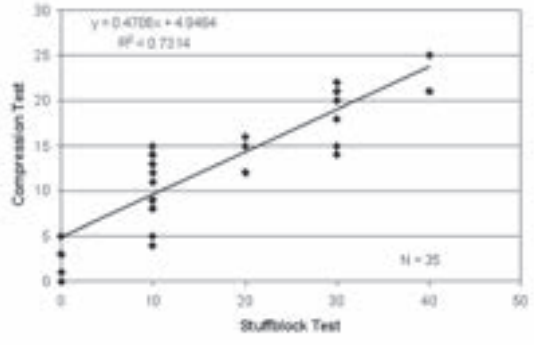

Figure 4 – Stuffblock Test results measuring height of dropped weight compared with the number of taps of the Compression Test

3.3 Tilt Board Test

Tilt board tests were conducted on 107 days. This was the second season using this stability test at Eaglecrest. The tilt board test was compared with 189 skier-triggered avalanches (Figure 5). We found this test to be a quick and easy method to obtain pertinent information about new snow slab and shear characteristics.

The tilt board test gives the avalanche forecaster an opportunity to quickly and safely test the top 40cm of the snowpack. While the test primarily identifies shear location, it also provides information about the bond between new and old snow, the weak layer shear quality (Birkeland, 2003, Herwijnen, 2003) and the slab thickness and hardness. For example, a thick, hard moist slab over a moderate to hard rough shear has operational consequences quite different than those for a thin dry soft slab over an easy smooth shear.

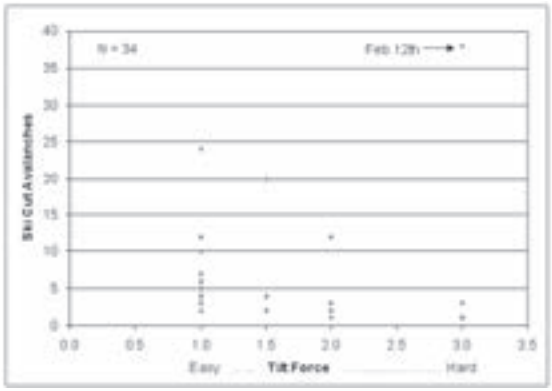

Figure 5 – Tilt Board Test and Skier Triggered Avalanches (0.0 = failure on isolation, 0.5 = failure on tilt, 1.0 = failure with one tap, 1.5 = failure on second tap, 2.0 = failure on third tap, 2.5 = failure on fourth tap, 3.0 = no failure with gentle taps)

[4] CAA OGRS, 2002, AAA, 2004

[5] The stuffblock test is designed with three subsets of shears recorded as easy; the compression test has 10 subsets of shears recorded as easy.

The tilt board test worked well with dry snow. Data scatter occurred with moist and wet snow. The outlier in Figure 5 occurred February 12th where a hard tilt was recorded along with 38 skier triggered point release avalanches. On that day there was 20cm of 260kg/m3 moist new snow on a melt-freeze crust. Similar tilt results occurred under similarly wet conditions on other days suggesting the need for further study of shears involving moist new snow and wet old snow.

4. CONCLUSIONS

While natural avalanches are the best indicator of instability, this study used the shear frame test to provide quantitative baseline data and focused on the shear strength of a weak layer relative to applied stress (mechanical instability).

Against shear frame data and observed triggered avalanches, this study compared stuffblock test results with compression test results and evaluated the suitability of the tilt board test as a simple method for avalanche forecasters to identify the properties of new snow and near surface instabilities.

This study showed the stuffblock test compared well with the compression test and has good replication between observers. The tilt board test readily identifies shears with good replication between observers. However, the forces applied for the delineation of easy, moderate and hard shears needs further study.

The issue of stability tests using dynamic vs. static loads also needs further study. Differences were observed in the stresses or forces applied to the weak layer between the static force of shear frame test and the dynamic force of the stuffblock test and tilt board tests. In summary, this study showed the value of both the stuffblock and the tilt board tests for avalanche forecasters.

ACKNOWLEDGEMENTS

Funding for this project came from the University of Alaska Southeast Chancellor's Special Project Fund and the Eaglecrest ski area. We thank Bruce Jamieson for the shear frame specifications and Sarah Carter, Kanaan Bausler, Brian Davies and Brooke Munro for data collection and administrative support. The Canadian and American Avalanche Associations allowed Eaglecrest ski area to become the first American subscriber to the daily CAA InfoEx data exchange. The Juneau Ski Patrol paid the InfoEx fee.

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Editor's Note: *This profile of Dr. Bruce Jamieson appeared in the March/April issue of* Canadian Consulting Engineer*, a magazine for professional engineers working as consultants in the construction field. Published since 1957, this magazine covers all disciplines of engineering across Canada, and focuses on innovative and high-profile engineering projects.*

Snow Man: Civil Engineer Bruce Jamieson Studies the Threat of Avalanches

Bruce Jamieson, P.Eng. was spending a rare day in the office when I called in January. The avalanche expert and University of Calgary associate professor in the Department of Civil Engineering is mostly in the mountains at this time of year.

He begins talking about the winter's wacky weather. It is "beyond my experience in the last 15 years. We have not seen rain at those elevations in the Columbia Mountains in January."

Jamieson, who also consults for Calgary engineering companies, has spent over two decades trying to improve avalanche forecasting. From study sites in Blue River and Rogers Pass in B.C.'s Columbia Mountain range, he works with graduate students, backcountry ski operators and Ministry of Transport forecasters to come up with improved snow-testing techniques for avalanche prevention.

Jamieson's passion for the mountains goes back to the 1970s when he wanted some outdoor work after graduating from the University of Waterloo in Ontario. He climbed in the mountains of Peru and Bolivia before returning to Canada and joining an avalanche forecasting team in Fernie, B.C. Five years later, he headed to the University of Calgary to complete his master's and doctorate degrees.

Why did avalanches appeal to him? "Because they were outdoors and there were lots of things we didn't understand about them," he says. "There is a misconception about avalanches: that they are rare and large. In fact, they are common and some are very small -- they run around your ankles," he explains.

An astounding 1.5 million avalanches occur each year in western Canada, in mostly uninhabited areas. Ninety per cent of the avalanches that result in deaths are triggered by people, and Jamieson and his research team have been working on the best predictors for this type of snow slide. Knowing the weather conditions for the day unfortunately does not help. "The weather on the day of human-triggered avalanches is very much the same as the weather on the day that human-triggered avalanches don't occur," he says.

Slab avalanches present the greatest threat to backcountry skiers. They are generated by descending skiers cracking weak snow layers below the top and causing the overlying slab to slide. Predicting whether or not an avalanche will progress, and how far, are key questions for the researchers. Snow pack levels are the best predictors, but they still leave lots of room for improvement.

"The tests that avalanche professionals and researchers have been using for the snow pack in recent years are useful for telling us if fractures are likely to initiate over short distances, like 50 centimetres. But they are not very good predictors of whether that small fracture is likely to advance far enough to release an avalanche," Jamieson says. He is hoping to have a practical field test for snow slides available for use in the backcountry within the next three years.

He is also studying the effect of warming on snow stability, which varies dramatically depending on which way a mountain slope faces the mid-winter sun. Jamieson is developing a measurement that would show critical areas of warming that forecasters and guides could use in their morning meetings when making decisions on a day's excursions.

Human errors in judgment remain the major challenge in preventing avalanche accidents, says Jamieson. "When we are in the mountains we are not as rational as we should be: there is the thrill of powder skiing that is very strong and can sway our decisions. And under a blue sky, we don't feel as vulnerable as in fact we are travelling in avalanche terrain."

Heather Kent is a freelance writer and a professional member of the Periodical Writers Association of Canada. She has written hundreds of articles covering a wide range of subjects, including health, medicine, science, biotechnology, wildlife/environment and engineering. Her work has appeared in several national publications including *Canadian Geographic, Canadian Living*, the *Canadian Medical Association Journal* and others. She has traveled extensively and now lives with her family in West Vancouver.

LATE BREAKING NEWS: GRANT STATHAM WINS PUBLIC SERVICE AWARD OF EXCELLENCE

Just as this issue was heading out the door to the printer, we received word that Grant Statham, Public Avalanche Risk Specialist for the mountain national parks, has won a prestigious award from the federal government. On June 20, Grant was given the 2005 Public Service Award of Excellence in the Citizen-focused Service Delivery category.

In the press release, Alan Latourelle, Chief Executive Officer for Parks Canada, was quoted as saying, "Mr. Statham has been a catalyst for remarkable advances in public avalanche awareness, education and safety in Canada. His initiatives transcend Parks Canada and have attracted an international audience that is recognizing Canada as a world leader in the field of public avalanche risk awareness."

The award was one of 28 granted that day, in a ceremony held at the Hilton Lac-Leamy in Gatineau, Quebec, just across the river from Ottawa. More than 500 people were in attendance to watch as individuals and groups were recognized for their contribution to public service. "I was very honoured," said Grant. "And it was very cool to hear the stories of what all the other people did. Nice to hear nothing but good things about the government for a change!"

Grant's work on the icon-based Backcountry Avalanche Advisory was cited, as well as the new Avalanche Terrain Evaluation Scale. Also mentioned were the improved regulations for custodial groups in avalanche terrain, expanded education and awareness programs and the new trailhead avalanche information signs. The release also mentioned that Grant had received the CAA Professional Member of the Year award earlier this year.

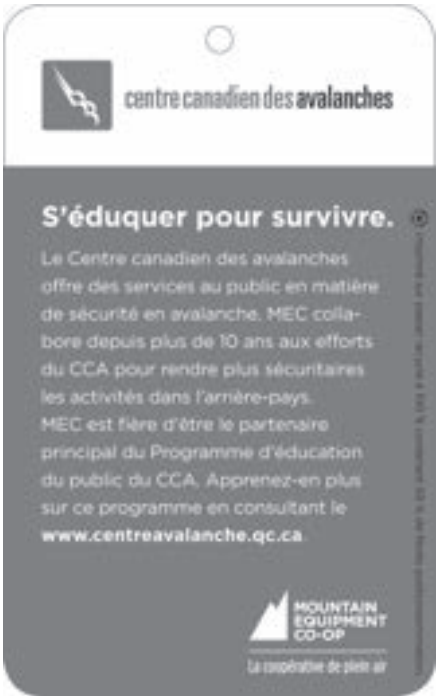
"Mr. Statham's passion, talent, energy and dedication are exemplary of the work Parks Canada employees do every day in every corner of the country," Mr. Latourelle added. "All Parks Canada employees take pride in Mr. Statham's achievements and join in congratulating him." We at the CAA are proud of him too. Good work, Grant.

Grant and Alan Latourelle, CEO of Parks Canada.
Photo courtesy Grant Statham

New initiative with MEC

MEC has found a new way to take the CAC to a wider audience. Starting early this winter, MEC will be attaching a new hangtag to all of its larger backpacks. These hangtags promote avalanche safety and encourage their members to visit the CAC website for avalanche information.

This bilingual card is another example of how we are working with our partners to spread avalanche awareness and safety messages to more Canadians. Look for the hangtag in November in all MEC stores across the country.



CAA Professional Training & Certification Programs
NEW COURSE ANNOUNCEMENTS

Introduction to Avalanche Mapping

Nelson: October 3-8, 2005

The CAA's Professional Training & Certification Programs have recently taken over the Introductory Avalanche Mapping program. There have been numerous requests from the CAA's membership and others to offer this program again, so we are pleased to be able to do so. Members and potential students interested in the course are encouraged to contact Ian Tomm, PTCP Manager at ian@avalanche.ca as soon as possible to enroll. We require a minimum of 12 students (maximum of 18) to run this program. The only prerequisite is an Avalanche Operations Level 1 course or equivalent experience.

The CAA plans to run the Advanced Avalanche Mapping course in the fall of 2006 if there is interest in the program.

Avalanche Operations Level 1 Refresher

Whistler: December 16-18, 2005
Fernie: Jan 15-17, 2006
Golden: March 5-7, 2006

This three-day course will focus on the new content of the updated Avalanche Operations Level 1 course to be implemented during the 05-06 winter. Modern research including Fracture Character, Profile Indexing and Fracture Mechanics will be combined with developments in terrain classification, human factors and current best practices to produce a value packed refresher course of interest to all members. The focus of the refresher is to provide CAA Members and all Avalanche Operations level 1 graduates an opportunity to increase their knowledge and understanding of the avalanche phenomenon using the new tools brought to us through recent developments in industry and research. Please check the CAA's website periodically throughout the summer for updates and curriculum specifics on this new program. Each course requires a minimum of eight students to run. Enrolment opens September 1, 2005. Tuition TBA. For more information please contact Ian Tomm, Manager PTCP at ian@avalanche.ca

Avalanche Management for Resource & Transportation Industries

Nelson: Dec 5-9, 2005

This newly redesigned five-day course provides the essentials for personnel involved in avalanche management operations in resource and transportation sectors. Frontline personnel and supervisors will find this course a valuable addition to workplace safety through its in-depth look at how snow avalanche hazard is managed in these industries. Field trips include visits to local ski areas, forestry operations and the highway avalanche management program at Kootenay Pass. Registration opens September 1, 2005. For more information please contact the CAA at 1-250-837-2435.

Photo Dave Smith

Mike McKnight: Director, Associate Members

Age: 58

Lives in: Golden, BC

Employer: Retired after 30-plus years with Parks Canada Warden Service

CAA member since: 2003 as an Associate member representing Chatter Creek Mountain Lodges - Snowcat Skiing

Years Involved in Snow safety: Off and on throughout my working career

Preferred method of snow travel: Skis

Number of days on snow per year: Not nearly enough in the past few years with Chatter Creek, but hopefully increasing

Previous Jobs:

In the late 70's and 80's I was the Assistant Chief Park Warden in charge of the Lake Louise Area in Banff National Park. Clair Israelson worked for me as Public Safety Supervisor. During this time the Avalanche Control Program at the Lake Louise Ski Area underwent a major expansion with the construction of the Summit T-bar, which provided access to significant avalanche terrain in the back bowls at Louise. Toward the end of my time at Lake Louise, Clair and I worked through the process of handing over responsibility for the ski area avalanche program from the Park Warden Service to the ski area operator. Both the rapid growth of the program and its transition to the private sector provided us with some interesting challenges.

In the late 80's and early 90's I worked as the Environmental Coordinator for the CP Rail Tunnel Project in Rogers Pass. In addition to environmental monitoring, I worked closely with Fred and Walter Schleiss to co-ordinate the movement of construction staff and materials within the highway avalanche control program. I completed my working career with Parks Canada as the Ski Area Coordinator for the Mountain National Parks. In this role I acted as the contact person for the ski area operators and senior Parks Canada management staff.

In the late 90's my son Dale and partners started the development of Chatter Creek Cat Skiing. I have worked with these fellows for the past few years helping to establish Chatter Creek in the Snowcat Skiing business. Chatter Creek joined the CAA as an associate member and I have taken on the role of representing Chatter Creek. At this spring's meeting I was asked to take on the position as CAA director representing the associate members. While I am not a practising avalanche control professional, I hope that I can bring to the Board many years of experience working with the avalanche community.

Challenges:

A smooth integration with the CAC, increasing the level of communication between the associate members and the professional members.

Expectations:

Increase the membership and participation of the associate group, assist the CAA board in future policy direction.

Steve Parsons: Director, Membership Committee

Age: 33

Lives in: Golden, BC

Employer: Kicking Horse Mountain Resort

CAA Member since: 2000

Years involved in snow safety: 12 years

Number of day on snow per year: 140

Previous Jobs:

Ski patrolled since 1993 in Lake Louise; joined the Avalanche Control team there in 1996. I spent two winters forecasting at Craggieburn Valley on the south island of New Zealand. I've been with Kicking Horse for five years now, four of which have been as the Avalanche Forecaster/Mountain Safety Supervisor. I've also been an instructor for the CAATS Level 1 and Level 2 programs for four years.

Challenges:

Becoming conformable yet remaining unified in focus.

Expectations:

Interesting issues/challenges/busy times.

Plans:

Listen to membership, get them involved and solicit their feedback. Strengthening CPD program and start a membership drive.

Vision:

A stronger and more cohesive association to face the future challenges as a whole. How? Through a larger, more effective and involved membership team, the support of leadership and removal of personal agendas.

Evan's Goodbye

BY EVAN MANNERS

People have been asking me: "Why would you quit the CAA after all these years?" Good question actually, and something many of you may be wondering. I came to the CAA back in 1996, hired by Alan Dennis, the executive director at the time, to work in the then still relatively new Canadian Avalanche Association offices. There were four of us working for the CAA in those days and times were tough but the job was ultra rewarding, as it still is in a much different way nearly 10 years later.

As my experience with the CAA increased over the years, the opportunity to take on more responsibility presented itself as well, and all this was continually set against a backdrop of growth and change. Now, in 2005, the CAA has 12 staff working out of its offices in the winter, budgets total a million and a half dollars annually, and I've still got a job that I find rewarding and fulfilling. So, why did I resign?

For simple but important reasons, actually. Although I was fortunate enough to be able to set aside some savings earlier in my life from a couple of lucky decisions in real estate, I've realized I need to save a bit more money if I am going to help my three children afford to attend the university training they appear to be heading towards. The oldest will graduate high school in six years. That's not much time really, and although my salary is quite reasonable at the CAA, I could see I wasn't going to meet that goal.

Perhaps more importantly, I think that a North American crisis looms in the near future, when the baby boomers, who have held onto their management jobs for decades, begin to retire practically all at once. Looking ahead for the CAA, I'd like to see a young, well-educated guy or gal get the job, struggle and work their tails off for the first few years as the operations manager of the CAA. Hopefully they will ultimately become someone who is even more effective than I hope I have been, and still be climbing the ladder of success in the CAA as others in our industry begin to retire. This should put the CAA well ahead of the game, with competent, experienced but relatively young managers in place at a time when its member companies need stability to weather their own management crisis.

And finally, to put it totally truthfully, I'm interested in a new challenge. I recall this winter looking through some old files in the basement and accidentally coming across Alan Dennis' notes from my reference checks back when he hired me. It's kind of weird reading about yourself like that. Alan had scratched at the bottom of the page of notes from the Jasper Warden Service, my employer before the CAA, "Honest, confident, capable, suffers from wanderlust." I'm flattered by the first three, and still afflicted with the latter.

I've had a few suggest to me that perhaps working conditions at the CAA prompted my resignation. This is very far from the truth. I still love my job here. The CAA truly is a great place to work. I've learned more with the CAA than in any other job I've held. In particular, I've learned a great deal from the last five years as Clair Israelson's right-hand man. Clair is an interesting study. A good listener, always moving ahead, expecting greatness from all around him, continually displaying an astounding capacity for vision and I suspect, if he were a prayin' man, occasionally scolding God for having invented night and therefore interfering with production at the CAA/CAC.

But Clair (and Audrey Defant) has me worried. I'm proud to say that I've got the cup, having worked at the CAA for nine years, longer even than Alan Dennis. Audrey is on eight and a half years, so she will soon become the reigning champion, I'm certain. And Clair, with a fresh new contract after his first five-year one has just been completed, has me fretting that I may be bumped down to third place before I know it. Time will tell, but with stints like that from the various employees, it's obvious the CAA is a near perfect workplace.

I'm leaving the CAA as an employee, but I'm not really leaving. I've accepted a management position with Canadian Mountain Management Inc., sister company to former CAA sponsors Vertec Contractors Inc. and Janod Ltd. My new employer, Mountain Management specializes in the AvalHex avalanche triggering systems, X-Cross (and other) Static systems for avalanche start zones, and a host of other new technology coming down the pipe. I'd love to talk about that here, but for now I've signed a confidentially non-disclosure contract until they are ready to go public with the information.

So, I'm going to have the time of my life at this new job, get involved in perfecting some brand new technology as it happens, scratch the wanderlust itch, and hopefully achieve the financial goal I'm seeking. Best of all, my new job allows me to keep in touch with all of you folks in the avalanche patch. That's the main reason I've had so much fun working at the CAA anyway. Looking forward to talking to you again soon!

He thought the picture was just for the memories. Gotcha!
Photo Brent Strand

June 20, 2005

Clair Israelson, Executive Director
Canadian Avalanche Association
PO Box 2759
Revelstoke, BC
V0E 2S0

Dear Clair,

It was with a mix of sadness and appreciation that I received notice of Evan Manners' resignation from his employment with Canadian Avalanche Association. I understand that Evan will be leaving his daily duties effective the end of June, and I wanted to take this opportunity to thank Evan before he left.

I have had the pleasure of working regularly with Evan for most of his term at the CAA – first as a fellow avalanche forecaster producing public avalanche bulletins, and more recently working together to further the partnership between Parks Canada and the CAA.

Evan's positive outlook and frequent chuckle was always a welcome addition to my day. He is an extremely skilled problem solver who focuses on solutions, and not on the problem itself. Evan's client focused approach, and his efforts to meet the needs of Parks Canada have not gone unnoticed – he was a confidence inspiring person to work with.

Along with the evolution of the CAA, Evan's involvement in the day to day details of forecasting avalanches became much reduced. But, despite his other priorities Evan always made the time to discuss conditions in the mountains – an obvious consequence of his involvement with Infoex. I was always impressed with Evan's skills as an avalanche forecaster and his ability to see the big picture - particularly in light of his minimal time in the field. Evan was truly the first "data" avalanche forecaster that I ever worked with, and remains today one of the best in my opinion.

Personally - and on behalf of Parks Canada - I would like to thank Evan for his service to the CAA and wish him and his family the best of success with their new endeavors.

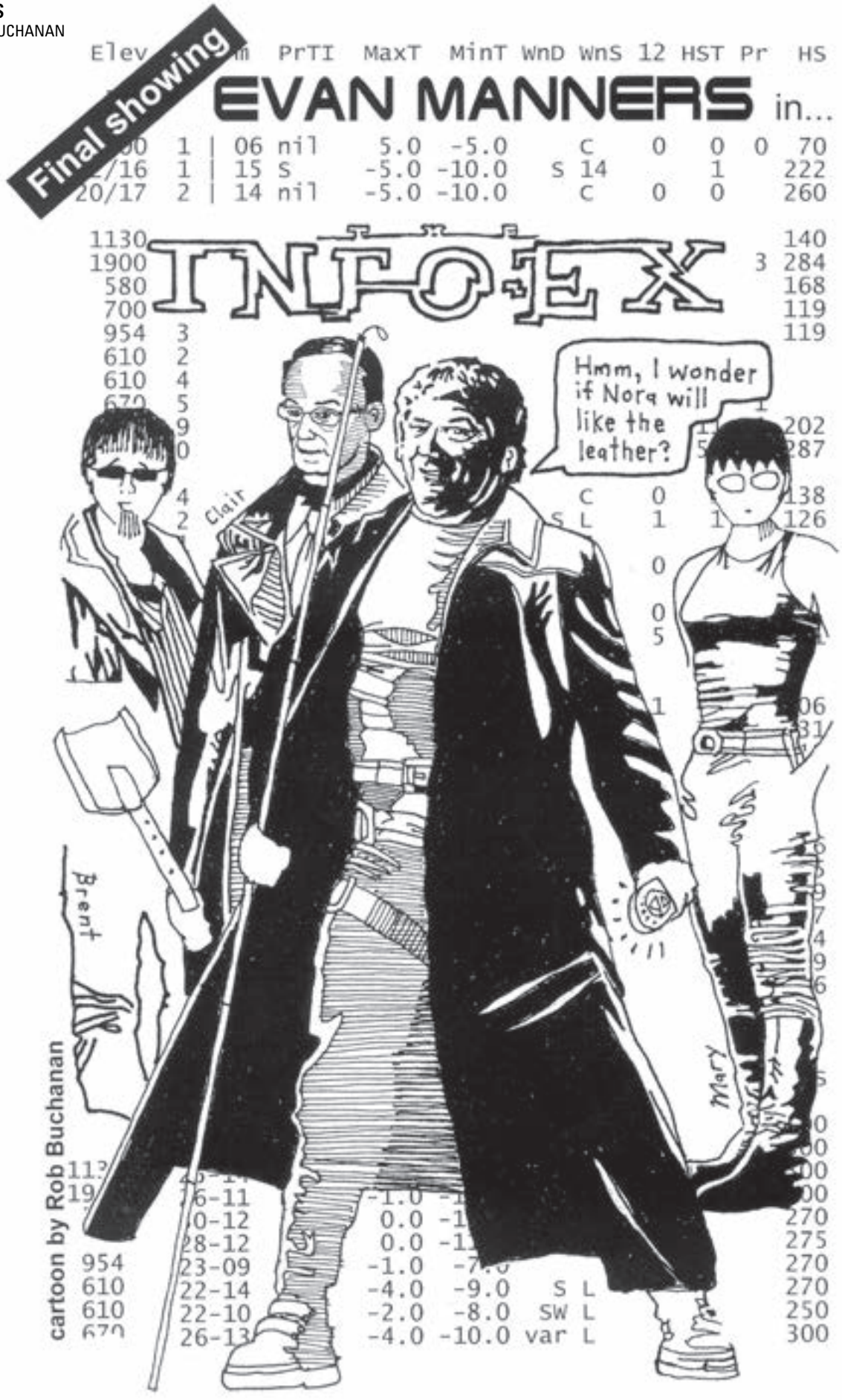
Sincerely,

Grant Statham
Avalanche Risk Specialist
Parks Canada

Cc:
Steve Blake, President, CAA
Evan Manners

Flakes

BY ROB BUCHANAN



The Origin of the Stevenson Screen

BY ALAN JONES, CAC FORECASTER

Whether you've spent one week doing a CAATS Level 1 course or spent a career poking your head into snow, most of us have opened the door to a Stevenson screen and peered inside to observe what we already know: "Brrr, it's cold outside," or "damn, it's wet and can the humidity really be 105%?" But have you ever stopped and wondered about the origin of the Stevenson screen and how have we come to be blessed with such a wonderful tool? Well, wonder no more, for the origins of the Stevenson screen will now be revealed!

The Stevenson screen, sometimes called a thermometer screen, is a standard shelter for meteorological instruments, particularly dry and wet bulb thermometers used to measure air temperature and humidity. Its primary duty is to keep things like rain, snow and high winds off our precious instruments, but it also helps keep leaves and hungry or curious animals away. They're used by avalanche programs and meteorology programs throughout the world, with design standards set by the World Meteorological Organization, a United Nations Specialized Agency.

But who invented the Stevenson screen? You might think that perhaps Aristotle mentioned Stevenson Screens in his 340 BC book on natural philosophy entitled "Meteorologic," argued by some to be the origins of the term "meteorology." Guess again. Was it the Romans? No, they were too busy building aqueducts and having elaborate orgies. Perhaps Galileo Galilei needed a shelter for his own thermometer, an instrument which he apparently invented sometime around 1593. He likely knew nothing of thermometer shelters. Certainly Gabriel Daniel Fahrenheit had need for a Stevenson screen in 1714 when he constructed the first mercury thermometer with a reliable scale for measuring temperatures. Close, but no cigar. If you guessed Sir Thomas Stevenson, then you are certainly the master of esoteric and useless knowledge.

Sir Thomas Stevenson was a British engineer and meteorologist, born in Scotland, who lived from 1818 to 1887. He designed the Stevenson screen in 1864 for housing thermometers and made several other contributions to the field of meteorology. He was also the father of author Robert Louis Stevenson, who penned such classics as "The Strange Case of Dr. Jekyll and Mr. Hyde" and "Treasure Island." Apparently Robert was a great disappointment to his father as he showed no interest in engineering. Sir Stevenson (the science guy, not the writer) went on to design the Ben Nevis Observatory in 1877 which was to be used to study Arctic conditions for polar exploration. Of course, instruments on the summit of Ben Nevis were housed in a Stevenson screen as we currently know them. The often windy, snowy and cold conditions on the summit of Ben Nevis combine to make suitably appalling conditions for testing meteorological instruments and sending Scottish mountaineers back to the pub. By the way, here are a few quotes taken from the Ben Nevis meteorological observer's log around the turn of the last century:

"Thermometer screen found torn off its hinges lying in the snow."

"Rain gauge not found, probably blown over the North Cliff."

"As soon as Mr. Ormond went outside the door of the new porch, he was lifted off his feet and blown backwards against Mr. Rankin who was knocked over. No observations for two hours."

"Notebook for observations torn in two and blown away."

"All around the observatory stones (thin packing stones) were blown out of the wall and several were found on the kitchen roof."

"Solid blocks of ice flying around."

(Main source of information: Glasgow Digital Library http://gdl.cdlr.strath.ac.uk/)

Alan Dennis at Kootenay Pass, 1992
Photo CAA Archives

Photo Al Safrata

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