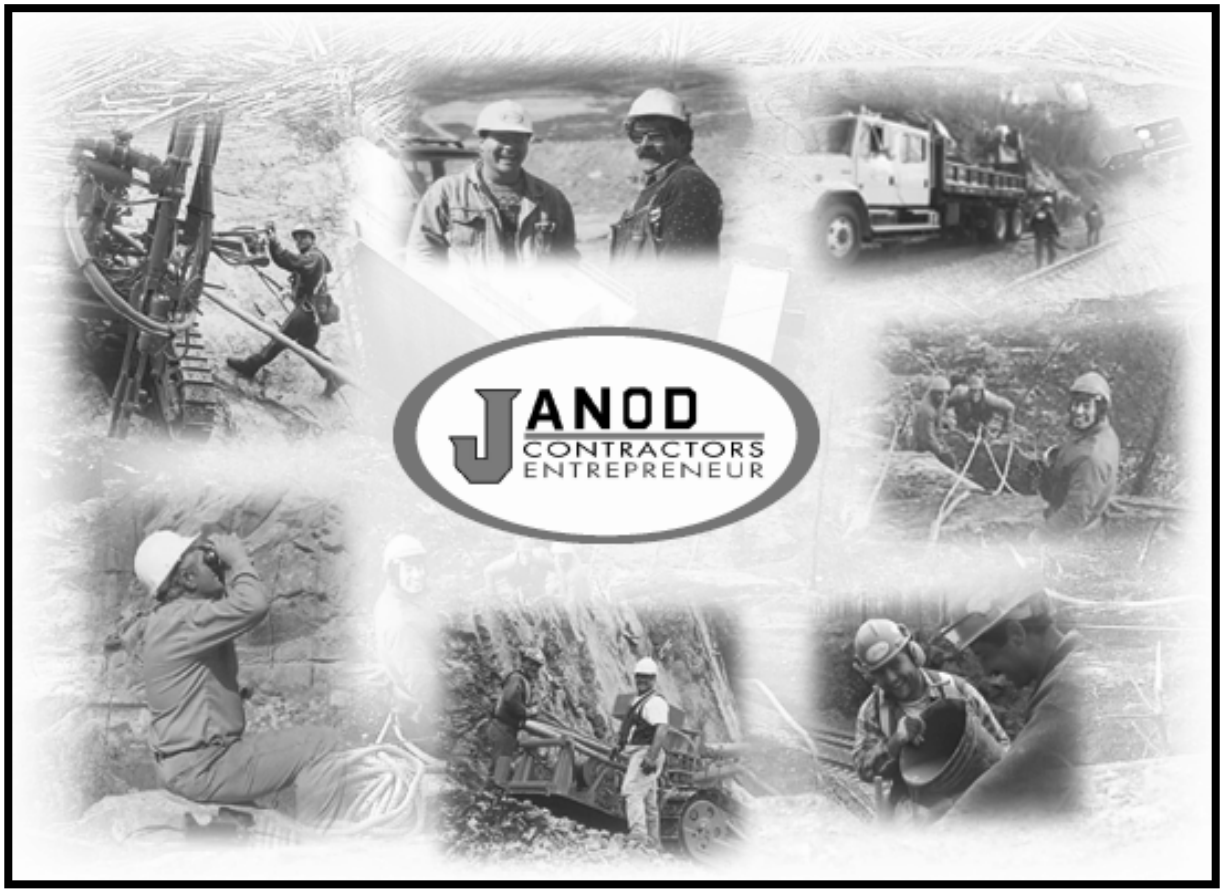
AVALANCHE NEWS

FALL 2002 **Volume 63**



Avalanche News receives new Presenting Partners.

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canadianavalancheassociation

AVALANCHE NEWS

AVALANCHE NEWS RECEIVES NEW PRESENTING PARTNER!

Avalanche News, the published voice of the Canadian avalanche industry, has been given new life, thanks to Janod Contractors and Vertec Contractors. This past spring the British Columbia Ministry of Transportation reluctantly came to let us know that with budgets and staff being cut back, they could no longer support the costs of printing and distributing the CAA's newsletter. These costs are increasing as Avalanche News circulation grows.

We are thrilled to announce that Janod and Vertec, specialists in avalanche barriers and rock stabilization and remediation for transportation and industry have come on board as Presenting Partners for the Avalanche News! 50% of their contribution will ensure the delivery of the Avalanche News to your door, while the other 50% will support those who depend on CAA's Public Avalanche Bulletin to make safe decisions in the backcountry.

The CAA intends to build Avalanche News into an even more informative and dynamic publication, offered in both paper and PDF formats. Industry science, people, events, opinions and editorials will be highlighted on a quarterly basis from now on. Advertising will become a regular feature, so sign up now to reach the select and influential people who work in the avalanche field in Canada and around the world…

Welcome to the family, Janod & Vertec. We appreciate your good service to industry and your generous public safety contribution.

RAMBLINGS FROM THE MANAGING DIRECTOR

It's an incredible July day, blue skies, and the peaks are coming into shape. In past years the Canadian Avalanche Centre (CAC) has been closed over the summer months, but now there is so much going on that we have been obliged to keep our doors open year round in order to meet the demands of our membership and our industry. So, as we grow into the future, we give up some of the "off season". We'll have to make up for it by having more time in the snow this coming winter.

AGM 2002 – Success Again!
Five days of seeing old friends, meeting new friends, and sharing ideas, opinions and the occasional cold ale…. Biking, climbing, golf, cold ale…. Not enough sleep, Tim Horton's for breakfast, meetings after the meetings, cold ale….. It was another great AGM. Buff summed it up best by saying 'This is awesome! There's so much good energy here, what a great group of folks to hang out with!" If you missed out this year, be sure to pencil in May 5 through 9, 2003 for next years' annual gathering of the clan at the Ramada Inn in Penticton.

Kokanee Glacier Summit Award Recipients
Columbia Brewing, those good folks who make Kokanee, started this Awards tradition several years ago. Now, with additional support from Survival On Snow and Marmot, the CAA is proud to be able to recognize people or organizations who have made extraordinary contributions to the goals of the CAA. This year your ballots resulted in the Awards being presented to these following highly deserving recipients:

Colani Bezzola	*Professional*
Monica Nissen	*New Member*
Mike Boissonneault	*Volunteer*
Kicking Horse Resorts	*Benefactor*

Congratulations to all recipients!

Avalanche Education Visioning
Last week your Board of Directors approved an investment of $15,000 to produce a strategic vision for avalanche education in Canada. Robin Siggers, our vice-president and Education Committee liaison, will be overseeing this team effort, with the CAC providing logistical and financial management support. Janice Johnson has been selected to chair this visioning team. She will be assisted by Laura Adams (Education Committee), Garry Walton, Steve Parsons, John Heatherington, Alison Dakin, and Bruce Jamieson.

If you have any thoughts, issues or contacts that may be helpful to the success of this initiative, please pass your ideas along to one of the folks on the team.

Public Avalanche Bulletin Writer's Workshop, ISSW.
Kokanee inspired conversation at this spring's AGM has resulted in the Canadian Avalanche Foundation providing $2000 for the CAA to organize and host a Public Avalanche Bulletin Writer's Workshop on Sunday, September 29th from 8:30 AM to 3:30 PM at the Penticton Convention Centre. The goal of this workshop is to provide an opportunity for folks from around the world who write public avalanche bulletins to share their experiences and challenges, and to develop a list of "best practices" based on the group's collective wisdom. Greg Johnson is organizing this event, so if you have any hot topics that you would like to see addressed, email Greg at gjohnson72@hotmail.com. For more information, or to register for this event please go to "*What's New*" on the CAA's website at www.avalanche.ca

Revised OGRS to be Published
The Technical committee has completed their review and revisions to our Observation Guidelines and Recording Standards. Brent Strand is busy getting the copy ready for printing, and we expect to have the new "bible" ready for distribution by early September. We intend to produce a higher quality publication on water resistant paper, so they will stand up to use out in the field. We will email all members when the new OGRS are printed and ready for distribution.

Avalanche Hazard Mapping Update
The Avalanche Hazard Mapping project is nearing completion, developing two new publications and an Advanced Avalanche Hazard Mapping training course. *Guidelines for Snow Avalanche Risk Determination and Mapping in Canada* and *Land Managers Guide to Snow Avalanche Hazards in Canada* will be published by the CAA and should be available prior to the ISSW.

The first Advanced Avalanche Mapping training course was held this spring in Revelstoke. Course instructors were Peter Schaerer, Dave McClung, Bruce Jamieson, Allan Jones and Chris Stethem. A dozen participants from varying industrial backgrounds took this ten day course, and all were impressed with the technical analyses used to help quantify avalanche risk. This course is a major advance in avalanche education in Canada, and a huge "thanks" is due to Chris Stethem and his entire team who have worked on this project for the past two years.

ADAPT Level 2 Programme Redesign
This project is also nearing completion, with only minor editing and some translation remaining to be completed. Starting this year, Module 1 will become an essential pre-requisite to the "old" Level 2 course that focused on operational decision making. ADAPT concepts were presented at this spring's Continuing Professional Development seminar, and the response was terrific! We expect a high demand to the Module 1 training from "mature dogs" who may have taken their Level 2 several years ago, and now want to get up to speed with the new programme. If you fit this description, please call us at the CAC and let us know when it would be best to schedule a special course for experienced industry professionals.

Avalanche Control Course
This two day course is intended to prepare new blasters to write provincial blasting exams, and to work safely with explosives. The Explosives Committee chaired by Mike Boissonneault and worked with consultant Jerry Silva and BC Workers Compensation Board officers to develop a comprehensive, state of the art course. The CAA intends to make the course instructor's package available to CAA professional members, so they can use these materials to conduct their "in house" explosives training. The CAA is preparing to offer this course through the CAATS programme as well, as we believe there are numerous folks out there who do not have the expertise "in-house" to deliver this course.

Career Move For Jack Bennetto
Last week I was saddened to learn that Jack Bennetto has decided to take a promotion within the BC Ministry of Transportation, and effective early this winter he will no longer head up their Snow Avalanche Programs section. Jack has been a sparkplug for our avalanche community; I can't think of a single major CAA initiative in the past 15 years that Jack has not been a part of…..that's a huge personal commitment to our industry and our association. He has served as CAA President, worked on numerous standing committees and task forces, and has supported the CAA directly by publishing Avalanche News. On behalf of all CAA members and the entire avalanche community in western Canada, I say "Jack, we're gonna miss you!" I'll say a few other things later, over single malt….. I hope you do, too.

Have an adventurous and safe summer everyone!

Clair Israelson

MOUNT TWOMEY

Mountain Named

East Kootenay Environmental Society was thrilled to receive notification that the proposal they helped coordinate to commemorate Art Twomey had been accepted and Mount Twomey has been adopted as an official name in British Columbia, to describe a summit within the Purcell Wilderness Conservancy located in the Dewar Creek drainage, directly west of the Dewar Creek Hot Springs.

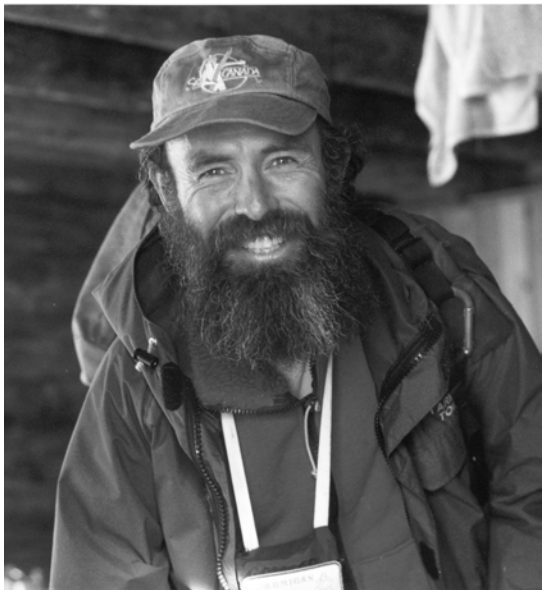
Art Twomey came to Canada in 1968 to realize a 60's dream of living away from the rat race of the urban environment and living in an idyllic log cabin in the mountains. Already an established mountain climber and photographer, he carried on with this profession. But his was not a selfish ideal. Art had vision. He saw the wilderness environment being pressured from numerous extractive resource industries.

His belief was that the wilderness was critically important and there was need for protection for future generations, not just for mankind but also for all living things within the eco-system. In this he was ahead of his time. It was his insistence that brought the intent and purpose of wilderness legislation to British Columbia.

Art had first hand knowledge of the area from years of hiking, skiing, riding, climbing, filming, hunting and fishing in the Purcells. Along with friends he pioneered many first ascents of peaks in the Southern Purcells and most loved to follow in the historical footsteps of the earlier travelers in the Purcells. He was a ranger of the first BC Park Rangers team in the Purcells for four seasons.

Using his skills as a still and motion photographer, he produced a film with which he traveled and lectured on the Purcell Mountains eco-system across the province and into Alberta. Instrumental in writing the original brief for what was eventually to become the Purcell Wilderness Conservancy, he lobbied long and with passion to this end. The PWC was originally established in 1974 with an "order in council" from the Cabinet of the day.

In subsequent years he continued to work to bring legislative protection for the Conservancy. His visions and understanding of the importance of size and connectivity for viability of the eco-system kept him working on enlarging the PWC. In 1996 after the CORE process, he saw his dream come true when the long east and west valleys were added into the boundaries of the PWC to enhance the long-term viability of the wilderness values of the area.



Naming a mountain in the Purcell Wilderness Conservancy is a fitting way to recognize Art's legacy to all British Columbians; hopefully future generations of wilderness enthusiasts will think to enquire about the significance of the name, Mount Twomey.

LEVEL 1 IN JAPAN

CAA Instructors
Randy Stevens (course leader), John Buffery, and Nic Seaton.

Japanese facilitators and interpreters
Azusa Degawa – President of the Japan Avalanche Network and the main facilitator and course coordinator in Japan.
Yukinori Saotome – Interpreter, heliski guide trained in New Zealand
Yasuhiro Arimoto – Interpreter, Japan backcountry ski guide, New Zealand avalanche course.
Dave Enright – Interpreter, professional ski patrol and RAC course provider in Japan, Canadian trained, level 2 certification.
Michihiko Tonouchi – Japan Weather Association, Manager, Weather Forecaster.
Kumiko Scarlet – Part time interpreter.

Classroom Instruction
The classroom instruction presented significant challenge on this course. An interpreter was required for each instructor to deliver the classroom lessons in Japanese.
This was very time consuming and limited the amount of information the instructors could reasonably deliver.
Mr. Michihiko Tonouchi delivered an excellent classroom session on weather. His lecture was one of the highlights of the course and was enjoyed by all that had the pleasure to participate.

Field Instruction
We investigated backcountry areas adjacent to Tsugaike, Happo-One, and Cortina ski areas. All three areas have potential for field trips. During the course we received 1.5 meters of new snow with suspected moderate to strong winds in the alpine. As a result of this we confined our field trips to treeline terrain adjacent to Tsugaike ski area. The field trips were adequate however due to the difficult trail breaking and stability concerns we were limited.

Weather Station
The weather equipment used for this course was provided by the Japan Weather Association as well as some equipment borrowed from Dave Enright. We had to improvise a few items but managed to come up with a suitable weather station.

Student Evaluation
All the students worked very hard throughout the course. The language challenges were equally hard on the students and I compliment them all on what they were able to achieve during the week.

Follow Up Tasks
The situation in Japan is quite unique in the sense that this years participants do not have more experienced avalanche professionals to work with and there are few employment opportunities that will develop their skills. For this reason I suggested to Mr. Degawa that a refresher course run in conjunction with plans for another level 1 next season. This would provide some opportunity for participants from this year to continue to develop the skills gained during the course.

Conclusion
This course was successful despite the language challenges faced by the instructors and students. The success of the course is largely due to the excellent work done by Azusa Degawa and his staff. The translation of course materials and organization at the course location were impressive. The interpreters all did an excellent job and were key to the successful outcome. Dave Enright was a great asset in Japan. His local knowledge of backcountry areas, skill as an interpreter and dedication to avalanche safety and professionalism in Japan is exemplary.

The Japan Avalanche Network has set out three goals to work towards.
1. To increase general avalanche safety knowledge through a program similar to the Canadian RAC program.
2. To offer professional level training for avalanche safety observers and forecasters.
3. To develop a public avalanche bulletin forecasting system in Japan.

JAPANESE AVALANCHE NETWORK

Follow up letter from Azusa Degawa

Here in Japan, everything is back to normal after more than one month of World Cup fever. With the end of the month long "plum rain" season drawing near, real summer days are just around the corner.

This year, spring came unusually early, and we had many warm days in March. Ski areas closed early in the season. Also in the areas with remaining snow, conditions for skiing worsened earlier.

Consequently this season saw fewer accidents than usual. There were seven deaths throughout the season: one climber (while descending), three backcountry skiers, a fisherman in a mountain stream, a worker at a construction site, and a driver caught in deep snow just after exiting a tunnel.

Three of the backcountry skiers might have survived if they had carried beacons. Both accidents were small, and the victims were buried only one meter deep in the snow. However, although the members of the two parties involved in the accidents were experienced skiers, they did not carry necessary equipment.

In March, we started the trial release of Snow Profiling Information Network (SPIN), a Web-based database for maintaining and releasing observation data collected based on the OGRS. If you only fill in the form displayed on your browser with the field book data, the snow profile data sheet will be available on the Web.

Those who have completed Level 1 and above can input data. We designed SPIN as a means not only to transmit information but also to promote awareness. I mean, this database is suitable for getting clear images of various snow conditions at various places. It also aims at understanding the usefulness of the guidelines.

We have made 200 copies of the OGRS. Because the guidelines are highly technical, I expect that the sales will increase only gradually.

Next season

There are needs for the Level 1 course and the refresher course for those who completed the course this year. However, considering JAN's current size and financial ability, it is difficult to keep the course fees reasonable while inviting three instructors. We are now discussing developing cooperation with associated organizations.

I plan to attend the ISSW starting at the end of September. We would like to ask you something specific and discuss further details with you then.

Best regards,

Azusa Degawa

NPO Japan Avalanche Network
Citykopu Takagawa 403,
Setagaya-ku Tamagawa 1-6-8,
Tokyo 158-0094

tel.81-3-3707-1663
fax.81-3-5717-6144
mobile.81-90-8808-8190

OLD FRIENDS, NEW PARTNERSHIP

The future of the CAA's Public Avalanche Bulletin was in serious question this past winter. Government cutbacks to our public safety programs meant the CAA would struggle to produce and distribute the Bulletin twice weekly.

When the good folks at Mountain Equipment Coop announced their decision to increase their financial support 'sighs of relief' echoed across our mountain communities.

Over the course of the next 2 years, MEC has agreed to commit $50,000 towards CAA's public avalanche safety programs. As Clair Israelson, CAA Managing Director, explain, "MEC is one of the original sponsors of this vital public safety service. They've been with us from the start and we're thrilled to strengthen this relationship."

On behalf of all of us who choose to play safely in the backcountry, "THANK YOU, MOUNTAIN EQUIPMENT COOP."

BCA OFFERS TRANSCEIVER EDUCATION SUPPORT

Backcountry Access is pleased to announce the release of its new Avalanche Instructor Training Kit. This set of educational tools is designed to help avalanche instructors and guides enhance their transceiver training programs and better serve their students and guests. The key components of this kit are a life-sized vinyl flux pattern and the Tracker DTS Instruction Guide.

Since the emphasis of the program is on flux line interpretation, and this applies to all transceiver types, the Instruction Guide can be helpful in teaching students transceiver use in general, no matter what model they own. It includes a section on how to use the flux diagram.

The centerpiece of the training kit is the 4' x 4' vinyl flux diagram (see below). A transceiver can be mounted at the core of the flux pattern, creating an electromagnetic field corresponding precisely to the flux lines on the diagram. This can be placed on the ground to illustrate how transceivers follow the transmitted field during the secondary search. It can also be hung vertically to illustrate the origins of nulls, spikes, and other phenomena that are encountered when interpreting the vertical component of the field during the pinpoint search.

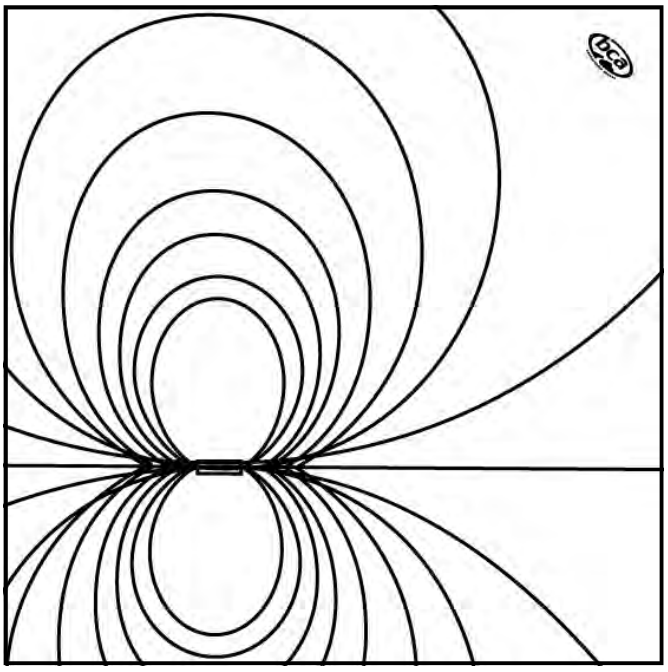
The diagram can be ordered from BCA for $35 (Cdn), including shipping from Vancouver. To order a flux diagram, contact BCA at (800)670-8735 or edge@bcaccess.com.

In addition, BCA is now offering a cross-platform CD with its new PowerPoint presentation, "Modern Transceiver Technology." This 32-slide presentation includes sections on avalanche demographics and statistics, the development of transceivers, the 457 kHz frequency, and flux line interpretation. It can be obtained free of charge by calling or e-mailing BCA. The company has offered its regional technical representatives to help narrate the presentation and to take part in special events.

This season BCA will also continue to offer its Pro Loan program to qualified avalanche professionals. Under this program, pros can borrow transceivers, shovels, probes and packs on a seasonal basis, then return them at the end of the season or purchase them at a discounted pro price. Most BCA products can be shipped from its new warehouse in Vancouver.

For more information, contact Backcountry Access at (800)670-8735 or edge@bcaccess.com.

Bruce Edgerly
Backcountry Access, Inc.
2820 Wilderness Place, Unit H
Boulder, CO 80301
(303)417-1345 ph.
(303)417-1625 fx.
http://www.bcaccess.com



YOUTH SNOW SAFETY EDUCATION NETWORK NEWS

YOUTH SNOW SAFETY EDUCATION NETWORK NEWS
by Monica Nissen

The CAA Spring Meetings revealed that there are a number of avalanche professionals, ski patrollers, search and rescue volunteers and others involved in delivering snow safety education programs to young people at a grassroots level. The SMARTRISK Foundation has also completed the curriculum materials for SnowSmart, a program that is designed to be taught in classrooms at both elementary and high school levels. Lots is happening for kids' avalanche education, and yet it still seems as if these efforts are fragmented. Many of us are doing our own thing and are unaware of what other initiatives are out there. The well-funded SnowSmart program seems to be in need of an implementation strategy to get it out there at a time when overworked teachers are less than likely to take on the extra burden. Avalanche incidents involving young people continue to happen as a result of kids making poor choices. What can we do? To begin with, we've got to network! We need to know what is already happening out there in terms of educational initiatives. That way, we can share information and resources, continue to improve and expand what we do, and bring programs to areas that still need them. A big goal would be to get the SnowSmart program into schools by encouraging teachers we know to take it on, or by going in ourselves to teach a few lessons. One idea is to generate some funding for a "traveling roadshow" promoting the program. Avalanche Awareness Day is getting bigger and bigger, and featuring kids' poster contests and "kid- friendly" learning opportunities. Options are endless. Let's brainstorm! We're hoping for a page on the CAA website. In the meantime, contact Monica Nissen at moni@netidea.com

NEED A BEACON?

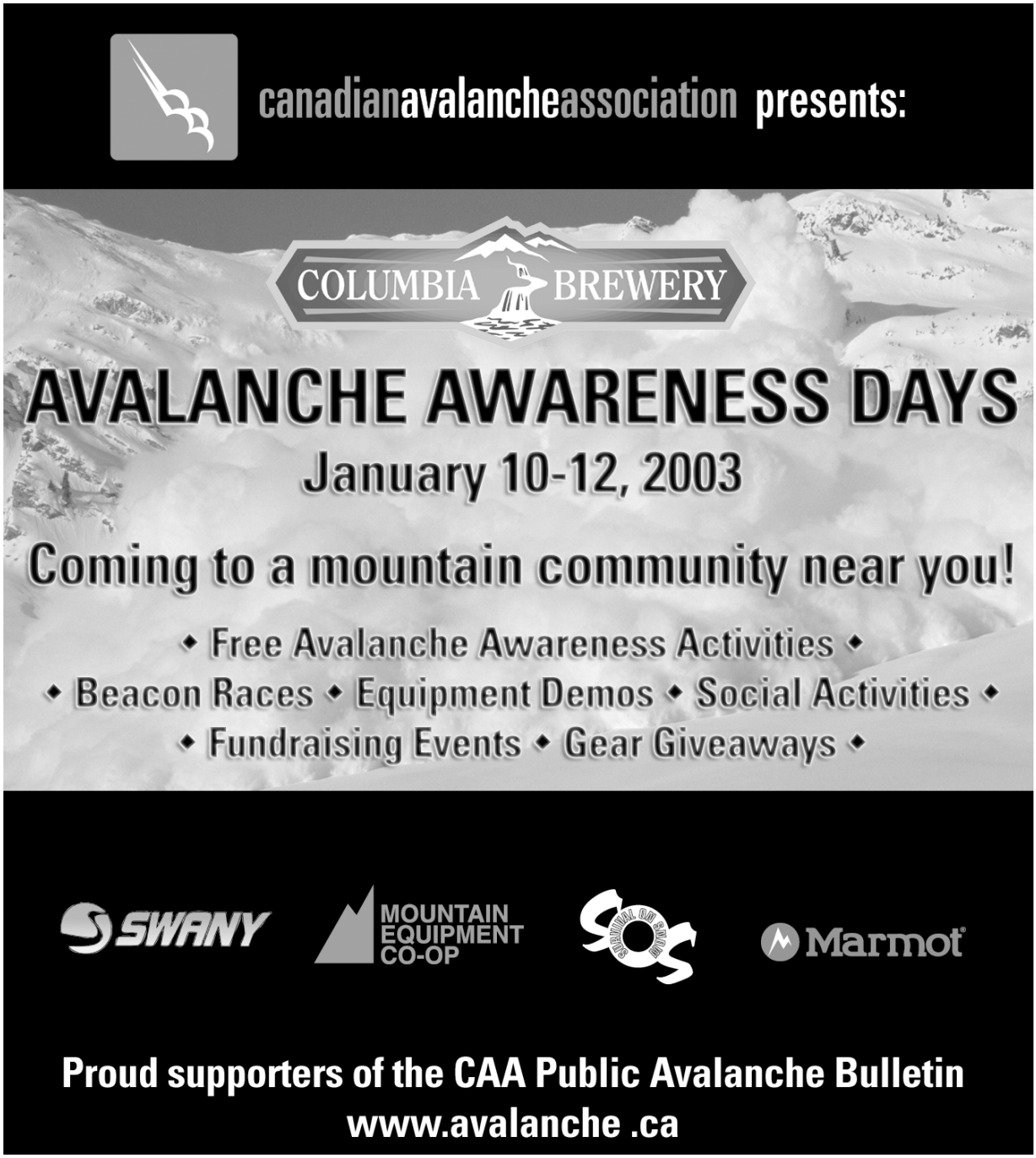
ARVA Avalanche Beacons

NIC-IMPLEX has offered their ARVA beacons to CAA members for EUR $125.00 or approx. CAN $190.00. Anyone interested in picking up one of these units should contact Ian Tomm at (403) 862-0727 or ian@avalanche.ca

AVALANCHE AWARENESS DAYS JANUARY 10-12, 2003

You can prevent avalanche accidents in your community!
Get involved today!

For more information contact
Philip (250) 837-2435/ pjohnston@avalanche.ca



PRESS RELEASE

BC Parks – Kootenay Region

Kokanee Glacier Alpine Campaign
N e w s R e l e a s e

Mary Krupa, Project Director
(250) 861-9474 or Email *info@kokanee-glacier.org*

Wayne Stetski, BC Parks-Kootenay Region
(250) 489-8540

For Immediate Release: June 7, 2002
Alpine Campaign in Memory of Michel Trudeau Surpasses its Goal

NELSON – The national Kokanee Glacier Alpine Campaign, spearheaded by BC Parks with the support of the Friends of West Kootenay Parks and the family of former prime minister Pierre Trudeau, has surpassed its fundraising goal of $900,000.

The campaign was carried out in memory of Michel Trudeau and the many other Canadians who have lost their lives enjoying Canada's backcountry.

"The Kokanee Glacier area is magical to us, and we are particularly pleased that the fund will not only be used to restore the Kokanee Glacier area but will also help educate all those who use the back country," Justin Trudeau said.

"Our family appreciates the help of all those who worked to allow the Kokanee campaign to reach and exceed its goal," said Sacha Trudeau

In total, $974,200 was raised. The first $900,000 will meet the goals of the Kokanee Glacier Alpine Campaign: to restore the historic Slocan Chief Cabin in Kokanee Glacier Provincial Park, where Michel Trudeau spent his last night, as a backcountry interpretive center; to build a new alpine hut to accommodate the increasing demands from backcountry enthusiasts; and to raise national awareness about backcountry safety. In addition, at the request of the Trudeau family, $40,000 has been donated to the Canadian Avalanche Association to help maintain the Public Avalanche Bulletin and ensure it is regularly updated.

"The Canadian Avalanche Association is deeply grateful to the Kokanee Alpine Glacier Campaign for saving the association's Public Avalanche Bulletin program this past winter," said Clair Israelson, managing director of the association.

"Faced with an 11thhour cut in funding for this public service, the association had determined that the bulletin would have to be shut down if alternative support could not be found," Israelson added. "At the height of this crisis, the Kokanee Glacier Alpine Campaign donation of $40,000 was truly a godsend. On behalf of the CAA, and the 400,000 Public Bulletin users who treasure and respect wild places, I extend heartfelt thanks to the organizers for demonstrating a commitment to the safety of all Canadians whose lives are enriched through mountain adventure."

Money was contributed to the campaign from Canadians coast to coast. Most of the donations came from B.C. ($594,000) followed by Ontario ($165,200), Quebec ($120,000) and the Prairies ($95,000).

"It was most fulfilling to be instrumental in raising money for a project that both honored the son of an old friend and did so much to educate the public on avalanches," said Alberta (Sturgeon) Sen. Nicholas Taylor, a driving force in the fundraising team.

For more than a century, the Slocan Chief Cabin at Kokanee Glacier Park has been a refuge for hikers, mountaineers and skiers from across Canada and around the world. In recent years, this alpine destination drew national attention to the need for avalanche awareness and backcountry safety education. The surrounding wilderness echoes the character of backcountry enthusiasts who, in pursuit of adventure, have succumbed to the perils of this awesome landscape.

"Kokanee Glacier Park is thought to be a sacred place, not just by the Trudeau family, but by everyone who has been there," said Justin Trudeau.

"We are truly grateful to all those businesses and people from the Kootenays and across Canada who took this campaign into their hearts and made its success possible," said Mary Krupa, project director for the Kokanee Glacier Alpine Campaign. "It clearly demonstrates that private/public partnerships can work if they have vision and if visionaries from across the country are brought together to achieve important goals."

Wayne Stetski, regional manager for BC Parks, added: "This project brought together Canadians from all walks of life, from national heroes to local humanitarians. Turning the dream of the campaign into reality will benefit future generations who share with all of us a passion for the wilderness."

Construction of the new hut is scheduled to begin this July.

Brian Johnston and Bill Mark chatting it up at the AGM
Nice shirt Bill!

PRESS RELEASE

Sainte-Anne-des-Monts, April 9 2002

THE CENTRE D'AVALANCHE DE LA HAUTE-GASPÉSIE WILL INSTALL
THREE (3) WEATHER STATIONS IN THE CHIC-CHOCS

The Centre d'avalanche de la Haute-Gaspésie, thanks to the financial support from the New initiatives fund of the National Search and Rescue Secretariat and the collaboration of Environment Canada and the Centre d'études nordiques of University Laval and University of Quebec in Rimouski, will install three (3) weather stations in the Chic-Chocs mountain range of the Gaspe peninsula.

This project will promote two (2) high/mid elevation remote stations and one (1) valley bottom manual station with computer hardware and software necessary to download, use, forward and manage weather data.

For the Centre d'avalanche de la Haute-Gaspésie, weather data input is of the highest priority for avalanche forecast expertise development in the Chic-Chocs mountains. In practical terms, the acquisition of that equipment will contribute to :

Provide avalanche professionnal training in Quebec ;
Document and specify local/regional climate at various elevation ;
Monitor climate variation throughout the winter ;
Identify weather conditions favorable to avalanche activity ;
Forecast natural avalanche cycles and possible emergency situations ;
Prepare public avalanche bulletins ;
Support emergency operations.

The project investment of $166 575 is financed at 81% ($135 425) by the National Search and Rescue Secretariat and at 19% ($31 150) by the instigator and contributors. The different stages of this project will go on during the coming summer and fall months to get the weather stations network ready for the beginning of the next snow season.

For more information : Dominic Boucher, coordinator
418.763.7791
quebav@globetrotter.net

Centre d'avalanche
de la Haute-Gaspésie

QCAP UPDATE

"As you may know, the Quebec Collaborative Avalanche Project is in full swing and the first winter season in Quebec has been successfully completed. However it was a dismal snow winter in the most of Quebec this last winter and teaching avalanche safety courses in a seriously shallow snowpack was a challenge for any avalanche professional! But despite the conditions, we were very satisfied with the outcome and the attendance at the courses. Highlights from this winters QCAP activities are listed below:

- A series of Recreational Avalanche courses were delivered in Quebec throughout the period from January 17 to February 19, 2002. The following is the summary:

- 5 RAC courses (59) participants in Gaspesie, Saguenay, Charlevoix and Laurentides (in English)
  2 ARAC courses (33) participants in Gaspesie
  1 Search & Rescue courses (16) participants in Gaspesie.

- CAA instructors included Marc Deschenes (CAA), Val Visotzky (MoTH), Sylvain Hebert (STHS) and Marc Ledwidge (Parks Canada). In Quebec, we were helped by assistant instructors Dominic Boucher, Stephane Gagnon and Andre-Jean Maheu. Courses were attended by recreationalists, outdoor leaders/educators, ski patrollers, adventure tourism students, park administrators/employees, provincial police (SQ), and search and rescue volunteers/professionals.

- A multi-media awareness campaign was also undertaken and included the following: poster/brochure distribution throughout outdoor retailers, clubs, schools, radio interviews, a T.V. interview show (TVA), magazine articles, video coverage of some of the courses by Telebec, presentations to outdoor clubs, youth groups, schools and participation at a ski area telemark festival.

Other QCAP activities completed in 2001/02 included. Centre d'Avalanche de la Haute-Gaspesie (CAHG) forecaster's (Dominic Boucher) internship throughout western canadian avalanche safety operations. Visits were undertaken at Roger's Pass, the CAC, Kootenay Pass, Whitewater Ski Resort and CMH Kootenay. Dominic also audited the CAATS Level 2 course in Golden in February. We would like to thank all of the above operators for their help, support and guidance.

A week of CAHG staff mentoring by Colani Bezzola in Gaspesie, March, 2002.

On-going research project into significant Quebec avalanche accidents and related weather data by a team of researchers from U. de Quebec a Rimouski and Environment Canada

French translation of the video: " Beating the Odds"

Assisting with the development of Snowsmart in Quebec schools.

2 CAHG staff to the CAA's AGM in Penticton in May, 2002. These people will also attend the ISSW in September along with 2 Quebec SAR managers.

Next year's 2002/03 activities plan will again present a full plate with more scheduled RAC, ARAC and SAR courses as well as the first CAATS Level 1 course in french in Gaspesie. QCAP also plans more internship and mentoring programs, sponsorship for Quebec candidates to Level 1-2 courses in western Canada, enhancing the

multi-media awareness campaign, completion of the research project, attendance at SAR Scene 2003, and development of Avalanche Awareness days in Quebec.

I wish to extend my thanks and appreciation to NSSR-NIF, Parks Canada, Susan Hairsine, the CAC and the staff, the CAA instructors, and all the people and organizations in Quebec for their work, help and support and making this project a reality.

We look forward to next year, which shall be QCAP's last, and certainly hope for a winter with a better than average snowpack. If you have any questions, comments or any suggestions regarding next season's QCAP activities, please contact Marc (mdeschenes@telus.net) or Susan (mtnmgmt@monarch.net)

Marc Deschenes
QCAP coordinator

Ryan Johnstone -
who says you need a glass?

The Long and Short of
the Board of Directors!?!
Anton Horvath
and Simon Walker.

KOKANEE GLACIER SUMMIT AWARDS

Mike Boissonneault accepting the Volunteer of the Year Award:
(left to right)
Bill Mark - CAA President
Richard Rotteveel - SOS
Al Safrata - Marmot.
Mike Boissonneault - Professional Member
Absent Paul Smith -Columbia Brewing.

Jeff Haack of Kicking Horse Mountain Resort accepting the Benefactor of the Year Award:
(left to right)
Bill Mark - CAA President
Jeff Haack - Kicking Horse Mountain Resort
Richard Rotteveel - SOS
Al Safrata - Marmot.

- Colani Bezzola received the Professional of the Year Award (absent during presentation).
- Monica Nissen received the New Member of the Year Award (absent during presentation).

Phil Hein receives special recognition award for 7 years service as CAA Training Schools Coordinator:
(left to right)
Bill Mark - CAA President
Phil Hein - Professional Member
Peter Schaerer - Honourary CAA Member.

MINUTES OF THE PUBLIC AND TECHNICAL MEETING

CAA Public and Technical Meeting

Wednesday May 8th - 8:30 am Simon Walker ~ Meeting Chair

ISSW Progress Report ~ Nic Seaton:

Nic is the co-chair of ISSW organizing committee. The ISSW will be held Sept 29 – Oct 4, 2002 in Penticton. Their web site address is: www.issworkshop.org. Paper submissions are closed as they were oversubscribed. Workshop proceedings will be available on CD, and included in the registration package. There are 175 confirmed registrations to date. Nic listed the group of sponsors including Arcteryx (title sponsor), B.C. MoTH, Utilicorp Networks, Austin Powder Ltd, CIL – Orion, Gasman Industries, Sear Search & Rescue, Town Directory System, Unlimited Vision, and ESRI. He added they are constantly looking for more sponsors and members should contact John Tweedy, Buck Corrigan, or Diny Harrison.

Nic outlined the venue for the ISSW. There will be a simulcast from the theatre. He listed the commercial exhibitors that will be on display and Gord Burns is the contact for these. Nic reviewed the ISSW schedule and the committee chairs. He added that they are still looking for more support. He closed by urging people to register and participate in the ISSW. Author's deadline for papers is July 31st to have them on CD, Randy Stevens the contact.

Software Development/Ski Hill Management ~ Brian Cusack:

Brian showed a map of Castle Mountain and ran through his software including the various fields and avalanche atlas they had built. Photos are attached to all atlas entries and can be viewed if desired. Daily weather observations are entered as per field books. Storm profiles can be plotted later. The program is very user friendly, so all staff can enter data and become more familiar with what is happening on the mountain. All scroll down menus are preset and validation rules apply. Control notes can also be entered, complete with photos. Ordinance inventory is automatically updated while the data is entered.

Brian showed the various reports and control notes that can be produced including the daily time line, storm profile, and storm data, etc. Their staff had archived ten years of data on avalanche activity and Brian showed a variety of charts and graphs they can produce with this information. They have also added wind and snowfall data from previous years. The program has filters, and help built in. The public forecast is mainly extrapolated from program data.

He added that this program is for sale and for further information contact Brian Cusack at creekside@telus.net.

Spatial Variations in Stability ~ Chris Landry:

Chris has recently completed his Masters Thesis at the Department of Earth Sciences in Montana. He informed the group of his research carried out since last year for his final report. Chris discussed stability on uniform slopes and the implications for extrapolation.

Chris acknowledged project supporters including the CAA, Parks Canada and a number of field partners. His research hypothesis was the stability at a randomly selected location within a carefully selected study plot will demonstrate a significant probability of predicting the mean stability of the entire slope. He showed the design he used for his sampling, which was systematic rather than random to ensure they are studying the entire slope.

They conducted ten quantified loaded column stability tests within each of the five pits in a plot and he discussed in-pit variation in strength. He added that Bruce Jamieson had published information on coefficient of variation (CV) in strength.

Chris's study reviewed 51 sets. The mean CV on slopes between 25-32° was 17.4% with a range from 6– 37%. He showed graphs of his pit CV's in strength. He reviewed some of the research from last year. Chris explained that some pits had wide variations in the same plot where others would have tighter distribution around the mean. They did 11 trials over the course of the study and had a wide range of plot CV's of strength (10-50%).

Of all the pits with valid results, the overall result was that 30 of the 54 valid pits did predict the mean strength for their plot, but 25 did not. He reviewed results of pit stability and stated that stability seemed to alternately diverge and converge spatially. He would like to pursue the change in variability in stability over time with future studies.

Chris concluded that there are no reliable predictors for the representativeness of a single pit, such as the age of the weak layer, and that one pit cannot be relied upon to predict stability, even on a uniform slope. Extrapolation hypotheses were preempted. Stability tests require experience and expert awareness of their spatio/temporal context to interpret and targeted sampling is indicated.

QCAP Progress Report ~ Marc Deschênes, Coordinator

Marc reported on the Quebec Collaborative Avalanche Project. Marc thanked a number of partners for their support including NSS, NIF program funding, Parks Canada, CAC staff, Gaspésie Avalanche Centre, FQME and the Quebec facilitation team.

CAA members involved in QCAP have included Marc Deschênes, Susan Hairsine (administrator), Val Visotsky, Marc Ledwidge, Sylvain Hebert, and Colani Bezzola (instructors). A meeting was held in Quebec in June 2001, with Marc, Susan, and John Kelly attending on behalf of the CAA with 25 Quebec stakeholders.

With project funding officially approved, stakeholders showed great interest in getting involved and appeared satisfied with the project plan. A Quebec facilitation team was established. Site scoping for winter courses and a two day facilitation team meeting was held in October to work out details of the implementation plan for 2001/02.

Five RAC, two ARAC and one SAR avalanche course were held in January and February 2002 in a variety of locations in Quebec. A total of 108 people took avalanche safety training and these participants included recreationalists, outdoor leaders/educators, ski patrollers, adventure tourism students, park staff, provincial police, and search and rescue personnel. A multi media public awareness campaign was also launched in Quebec including radio, television and print articles as well as presentations to outdoor clubs, youth groups, and schools.

Other QCAP activities included Gaspésie avalanche forecaster internship training in western Canada, staff mentoring by Colani Bezzola in Gaspésie, translation of the video "Beating the Odds", and a research project studying avalanche events and weather data.

Future activities include:
· four Quebec participants attendance at ISSW
· delivery of more avalanche training courses in Quebec including a Level 1 course
· six Quebec candidates attending Level 1 and Level 2 training in Western Canada
· more internship and mentorship opportunities for Gaspésie forecasting centre staff
· completion of the avalanche/weather research project
· delivery of a more public avalanche awareness campaigns
· Avalanche Awareness Days presentations in Quebec

The project will be complete in September 2003.

Gaspésie Avalanche Centre Report ~ Dominic Boucher :

Dominic discussed the Gaspésie Center's achievements in 2001/02. Their main objective is to minimize avalanche impacts on human activities in Quebec, promote public safety and develop avalanche expertise. He reviewed their funding for 1999-2004 and added that the provincial government 40% and local organizations 60% have

contributed money for the next three years of operation.

They augmented their budget with funding from Emergency Preparedness Canada. These funds ($39K) helped with staff training, CAATS Level 1 translation, and web site development. They also received $166K from NSS for two automated and one manual weather station in the Chic Choc Mountains.

Dominic highlighted the avalanche awareness activities they had been involved with including high school presentations, media reports, and QCAP. Information activities included bi-weekly snow bulletins and snowpack stability reports, including 29 bilingual public by-weekly snow bulletins and snowpack stability reports.

Gaspésie staff (Dominic and Stephane Gagnon) assisted on QCAP RAC and ARAC courses in the Chic Chocs. They are also worked to improve signage in the mountains and getting more precise avalanche zoning in the Mt Albert area.

Avalanche Forecaster Training included 110 days of field work (Dec 1, 2002 – April 30, 2002). As well Colani Bezzola provided mentoring in Quebec and Dominic audited a CAATS Level 2 course in Golden. SAR training also occurred.

Plans for the coming year include avalanche awareness days in Quebec, more avalanche awareness in schools and outdoor events, and a new web site at the centre for the fall www.centreavalanche.qc.ca. A bi-weekly snow bulletin will be available from Dec 15 – April 30. Signage will be improved for risk management. Dominic and Stephane will attend Level 2 training this winter as well as the ISSW. They will assist on RAC and ARAC courses held as part of QCAP in Gaspésie as well.

CAA Website Redesign ~ Evan Manners:

Evan advised the membership that a marketing consultant had stated that we needed to update our website. The concept of branding was initiated to achieve a similar and cohesive professional look. Some of the website elements (icons) are also part of the new brochures.

The CAC looked at what is “for sale” and determined the industry section will not have sponsors. However, the public use and recreational components of the website are available for sponsorship.

Evan explained linkages and the navigation bar concept. Users should be able to get to the information they require in a maximum of thirty seconds. He discussed the “Mountain Trip Talk” section. This is an interactive part of the website that can add additional information or sometimes can be the only source of avalanche information in a specific area (i.e. Skeenas etc.) The new web site has a unique registration process for the various courses offered.

The yellow pages concept was explained and discussed. Members were encouraged to take advantage of this, and put their ads in the yellow pages if they are seeking clients. Evan also advised that we were given global rights to the web name of “avalanche.biz” and we will expand this globally if it becomes popular. Evan discussed the “Members Only” section where he is now focusing his efforts. This will be a “Protected” fully functioning webpage, with a discussion forum, etc. for CAA members.

Evan closed by asking members to look at the new CAA brochures as he is interested in getting feedback.

GIS Hazard Mapping: - Ilya Storm

Ilya is a Masters Student at the University of Calgary and he gave an analysis of the Cheops 1 Avalanche Path, in Rogers Pass, BC. He redefined GIS for the group and stated it should be defined as Geographic Information Science and includes an organized collection of computer hardware, software, geographic data, and personnel. GIS is designed to capture, store, update, manipulate, analyze, model and display all forms of geographically referenced information. GIS is integrating database queries with the visualization processes and a dynamic system. Ilya wanted

to implement dynamic and statistical models in a GIS and to determine the extent can we utilize existing TRIM data in GIS model to snow avalanches.

He reviewed the slide history in the Cheops 1 study area. He used B.C. TRIM data at the 1:20,000 scale, and the Rogers Pass avalanche atlas. He added that the beta Avalanche Hazard Mapping course had field surveyed this path.

In his analysis, he created a centre line profile and compared it, and then applied it to a run out ratio model, leading edge model, and PLK (two dynamic and one statistical model). Ilya showed the profile comparisons where reasonable agreement was found. He showed the results between extreme runout, and the leading edge model, and runout ratio. He added that avalanche control changes results, but there was reasonable agreement in the two methods.

He discussed some of the problems he encountered which included linking field, atlas and GIS coordinates, resolution of digital data, cross slope concavity and a run-out convexity, and DEM in forested terrain.

Ilya added that TRIM data did a reasonable job of mapping these things for a preliminary assessment. Existing B.C. TRIM data together with a modern GIS is adequate for implementing a snow avalanche dynamic and statistical model. His future work will include width/depth frequency, Swiss dynamics, volume calculations, and comparisons.

Ilya thanked Bruce Jamieson and Parks Canada as well as project assistants. His email address for further information is: gistrom@ucalgary.ca

Biomechanical Variables and the Rutschblock Test ~ Murray Toft:

Murray is involved in research with the University of Calgary – Faculty of Kinesiology. He discussed the history of the rutschblock test and explained that early work with the rutschblock by Bruce Jamieson looked at score variability as a function of snowpack characteristics vertically and horizontally across a test plot. In this study Murray examined the variability of load as a function of score determination. He looked at a load variance of 22 kgs, as affected by ski type; (alpine touring or telemark gear) and “damping” affect of surface hardness.

He then reviewed formulas and the weight of skis and individuals and the affect on slope angle. The Human Performance Lab in the Faculty of Kinesiology force platforms were used. People were weighed and then hopped with skis (telemark and alpine touring) on force platforms. A data logger recorded results and Murray discussed these. People wearing telemark gear generated more force, and Murray explained that part of the reason is by way the telemark skier flexes.

They field tested this on Mount Fidelity at Rogers Pass. Snow profiles were congruent with others done that day by Parks staff. He showed results of their tests using a person at 65 kg and 87 kg. The heavier subject pulled out at score 5 using alpine touring gear. The score jumped to a variation of 1 using telemark gear.

His conclusions and observations were:
· force increases with mass of the person jumping on the rutschblock
· 20 kg mass difference may affect score up to 2 steps
· increased forces are produced by harder surfaces
· landing affects peak forces (flex vs. lock knees)
· telemark gear produces higher jumps and slightly higher forces due to metatarsal flexion.
He closed by stating that you should use the heavier person on the rutschblock test or factor in a correction.

Avalanche Hazard Mapping Project ~ Chris Stethem:

Chris reported on the AHM project which commenced in the September 2000 and will be completed by June 30, 2002. He acknowledged all who helped in project and provided comments pertaining to the documents. They will

be holding a hazard mapping course in June based on their work. Publications will include "Guidelines for Avalanche Risk Determination and Mapping in Canada" and "Land Managers Guide to Snow Avalanche Hazards in Canada", and these will be available through the CAC by early summer. Chris thanked Dave McClung and Bruce Jamieson for the huge amount of work they had undertaken throughout the project and in preparing these documents.

Chris reviewed project benchmarks including:
· Guidelines for applications – Feb 2001, Vancouver
· Beta Course – June 2001 – Revelstoke
· Stakeholder input – March 2002
· Publications – April 2002
· Translations – May 2002
· Final Course – June 10 – 20, 2002 – Revelstoke

Chris reviewed the course pre-requisites for the final course. He then discussed "Guidelines for Land Use in Canada" which include work sites, transportation routes, ski operations, forest harvest areas, occupied structures, multiple hazards, energy and communication structures.

He summarized risk based guidelines that encompasses return period (frequency) and the consequences. Chris reviewed the guideline forms and applications where they could be utilized. He discussed the zoning diagram and added that zones are color coded and depending on risk, construction of buildings may or may not be permitted.

Canadian Avalanche Foundation ~ Chris Stethem:

Chris indicated that there was a CAF report in the agenda handout for review. However, Chris indicated that the Foundation had contributed $50K to the public avalanche bulletin. Having the charitable vehicle has become quite valuable to the Association. They hope to have more government and personal involvement. Their Board has learned that Canada's avalanche bulletin is the only one without significant government support (only 2.5 % of funding). They will be working on this over the next few months.

Wednesday May 8th - 1:00 p.m. John Kelly ~ Meeting Chair

Winter 2001/2002 Avalanche Incidents ~ Evan Manners:

Evan summarized the winter's avalanche incidents and said it followed normal trends. There were a total of 82 incidents reported with 125 people involved and 14 fatalities. He stated that 38% of the incidents occurred in the Rockies, 40% in the Interior, and 22% on the Coast. There were no incidents reported outside of western Canada. The majority of involvements were backcountry skiing incidents. There were less snowmobile incidents this year (15%); however, Evan added that he was unable to chase incident reports as much as he would have liked to.

Evan strives to improve the reporting rate on non InfoEx related involvements and is looking for suggestions. Website reporting may be instituted, and they will market the value more with the media. He added that there will be a new category on OGRS next year pertaining to burial type.

Avalanche Incident on Golden Level 2 Course ~ Chris Stethem:

Chris reviewed an avalanche incident that had occurred on the Level 2 course held in Golden Feb 11-18, 2002. The course was made up of three groups of six students. His group of six participants was at Kicking Horse Resort, conducting field tests. Backcountry skiing adjacent to Kicking Horse has exploded and this has forced instructors to more challenging terrain. Chris added that there was a complex snowpack this year with some significant layers. Their field tests showed no significant concerns and Chris stated that it was getting towards the end of the day and he was getting impatient when the participants were traveling back to the ski area.

When the avalanche occurred three people were on the ridge and four were on the slope. Some of the participants grabbed trees, but one person missed the trees and was carried to the bottom of the slope. Chris established voice

contact and got down to the person within two minutes. The student was covered in big bruises but could have easily been killed due to his trip through the trees.

Chris reviewed fracture line data; Class 2.5 – 150 m wide by 150 long, 40-70 cm slab on v/sun-temp crust (Jan 03).

He then reviewed the risk factors that had contributed to the accident:
· The Level 2 was late in the season, with widespread ski compaction around ski area and the adjacent backcountry which forced them into more aggressive terrain
· Lack of recent local knowledge.
· A tricky snowpack at the best of times.
· Time pressure to complete teaching tasks and return to the ski area.
· Invulnerability versus safety margins.

Park Warden Fatality - Parkers Ridge, Jasper ~ Steve Blake:

Steve recapped the avalanche that had killed his friend and co-worker, Mike Wynn in Jasper and discussed the "top ten list" of reasons to avoid having a fatality at the workplace. These included:

10. Really expensive. Direct costs were $40K with the long term costs to the organization over $1 million. Human costs are immeasurable.

9. Unwanted fame but no fortune. Dealing with the media is a challenge of its own and he urged participants to be prepared should this ever occur in their operations. They did five TV interviews, 15 news-papers interviews, and 12 radio interviews.

8. You have to prepare the case history. Steve summarized this accident; three park wardens went to Parker Ridge area, did snow profile observation adjacent to a controlled path, and all carried standard safety equipment. All 3 were caught and buried. One was able to free himself and located the second who was partially buried, unconscious/non breathing. He performed AR until spontaneous breathing occurred (2 minutes) and then searched for the third person. He was found 1.5 meters down, unconscious/non-breathing. Performed CPR, an organized rescue team had responded to his radio call for help. The victim was transported to Calgary but pronounced dead after hours of attempts to revive him.

7. Dirty laundry – from other parks, from the CAA investigations, as everyone is search for the facts.

6. Your world gets turned upside down. Fallout includes numerous staff considerations with individuals trying to cope, disruption of operations, operational debriefings with wardens, ambulance staff, RCMP, volunteers, etc.

5. Labor Canada and/or WCB review your operation under a microscope. All documentation regarding the job, plans, training records, procedures, protocols, staff orientation materials are reviewed.

4. You have to justify yourself and your program to your superiors. The Parks Administrative Review included training, certification, equipment, communications, planning, policies for risk operations, employee/survivor support and assistance, etc.

3. Head shrinking – psychological follow up. They were faced with long term employee health, fitness to work. They developed a procedure for future incidents, and educated management.

2. Need to keep the home fire burning – spousal considerations. All compensation issues including pay, benefits, staff housing, future work prospects, etc. must be dealt with

1. Funerals suck.

Snowsmart Progress Report – Dave Smith:

The objective of Snowsmart is a communication/education initiative targeted to youth recreating in mountainous winter terrain. The intent is to help young people aged 12 to 18 years identify risks associated with snow related activities in order to prevent injuries and death (Grades 7 and 10 curriculum). The program looks at snowmobiling, skiing and boarding. Partners are Smartrisk, CSPS, CAA, and Parks Canada, and the project was sponsored by NSS, NIF funding.

Dave discussed the program design, implementation and evaluation. A pilot program was held in some schools and then evaluated by both teachers and students. A number of meetings and conference calls were held and they reviewed video script, curriculum and offered technical advice.

The future of Snowsmart is unknown. The program has been tested, but not fully implemented and participation from schools not assured. Dave showed the Snowsmart video to the membership.

Peter Spear, the educational materials consultant, discussed his work. Since the incident at Fortress a few years ago they have focused on getting the message of avalanche safety to local Calgary youth. They have visited over 18,000 high school kids in Calgary in 4 ½ years.

Peter discussed the Snowsmart curriculum and explained that lesson plans, support materials, and student manual are included in the package. There lesson plans include Grade 7 – PE for skiers and borders, and Grade 7 science, Grade 10 – PE for skiers and boarders, PE for snowmobilers and physics for skiers, boarders and sledders.

To obtain materials contact: Smartrisk, 790 Bay Street, Suite 401, Toronto, ON, M5G 1N8
(416) 977-9350 www.smartrisk.ca

The CAC office will have information links to Smartrisk as well. They are trying to come up with a business plan to make it available at no cost. Peter had the five curriculums available to show interested individuals. He asked that members work in their communities to help introduce the program and get it started. The members discussed if this could be integrated into regular school presentations. It should augment programs currently in place and some suggested focusing the program on kids who are already active in sports. Partnering with ski areas could also be an option. There are programs available in other countries and it was recommended that the CAA get information from Switzerland re: their school programs.

The group discussed the "take a course message" from the video and stated that RAC is more geared to adults. Youth needs to teach youth. Avalanche awareness courses for students at Whitewater were discussed as a successful model currently being practiced.

Applied Snow and Avalanche Research Group (ASARG) ~ Bruce Jamieson:

Bruce had prepared a handout of the ASARG work accomplishments. He thanked a variety of sponsors including University of Calgary, CAA, Intrawest, Canada West Ski Areas Assn, BC MoTH, Parks Canada, BC Helicopter & Snowcat Skiing Operators Assn, and the Research Council of Canada.

Over 300 person days of field work occurred in Rogers Pass, Kicking Horse and Cariboo/Monashees near Blue River. His grad students included Kyle Stewart, Antonia Zeildler and Alec van Herwinjnen as well as a number of research technicians.

They worked on a practical forecasting model including snowpack tests and stability indices, and near crust faceting including formation and conditions favoring persistence.

A summary of their projects includes:

· 5 seminars to 150+ avalanche professionals during November and December 2001
· 6 research papers published plus one accepted since April 2001

· 21 technical/scientific reports and 3 theses now on their web site for downloading
· 4 presentations at the CAA Public & Technical meetings, May 2002
· stability tables on InfoEx
· some research results now part of CAATS Level 2 course
· 5 research staff are now guiding, and 6 are doing other avalanche work
· 6 presentations in preparation for ISSW, Oct 2002

Bruce gave an overview of work being done on facet growth above crusts (wet layers) and he said that the process all starts when it is a wet layer, before it becomes a crust.

Paul Langevin explained work carried out in Blue River on April 23, 2002. Weather had been warm the week before and a crust had been formed from sun mainly, with temperatures at the plot about 3 degrees C. It snowed 15 cm on the weekend and the group started to notice some avalanche activity. They attempted ski cutting but couldn't get releases so they went to a final spot above treeline. They got out of the helicopter, walked over to the lip of the slope and remotely triggered a slide. Paul showed a profile of the slide and a video.

Alec van Herwinjnen discussed cold lab experiments at Rogers Pass. He stated that weakly bonded snow above a crust can form persistent weak layers. They conducted controlled lab experiments to observe dry snow over wet. A box was constructed to re-create nature in the cold lab and Alec explained the process of building layers to grow facets. They recorded crust and air temperatures every 30 minutes.

They could control the thickness of crust, the thickness of dry snow over crust, and the density of snow to some degree. Alec stated that faceting occurred quickly and they started looking at it every two hours. He reviewed the thermistor data and stated that the crust stays at approximately 0° for about 5 hours but after 10 hrs the crust is frozen and temperature drops. The temperature gradient disappears. As the crust gets thicker it takes longer to freeze and the temperature gradient is influenced by the amount of snow that falls on the wet layer.

Alec also has an indication that density affects the faceting rate but he doesn't have a very accurate time series yet. Conclusions were that rapid faceting occurs within a few hours, thick crusts take longer to freeze up, more dry snow above the crust reduces the temperature gradient and the density of the snow seems to affect the faceting rate.

Bruce discussed work at Mount St. Anne (1900 m). He stated that similar conditions exist to the cold lab, and he showed temperature and profile data. He also showed a graph of the two month period after and field operations with snowpack increasing and the corresponding rutschblock scores.

Bruce then showed a Mount Fidelity Graph (1905 m). There are much less favorable conditions for near wet layer faceting, and less temperature gradient because snow falls as wet snow, not rain wetted snow. He showed a profile of this plot and stated these layers could exist for a long period of time.

He concluded that when dry snow falls on a wet layer, facets can develop in hours. The formation of some major layers of facets on crusts can be predicted from a suitably located remote weather station. Areas with wetter wet layers or shallower overlying dry snow are likely to grow larger, more persistent facets.

Usually, a thicker layer of facets grows earlier in the winter, and facets are thinner when formed later in the season.

A future challenge is laminated crusts.

Bruce acknowledged the variety of individuals that helped in the project including Dave McClung, Dave Skjonsberg, and Bruce McMahon.

Avalanche Awareness Poster ~ Monica Nissen:

Monica surprised the participants by having them stand up and be trees to demonstrate her school program aimed at Grade 4-6 students. She is hoping to form a network, and share her ideas with others doing talks to youth. Monica added that she has shared a variety of ideas with Dave Smith. She aims to make the educational kits available to

SAR volunteers to deliver to schools.

Monica had obtained funding from the Columbia Basin Trust. She reviewed some of the work she had undertaken including a poster contest and a variety of initiatives at Avalanche Awareness Day in Nelson. These included backcountry races, transceiver searches, poster judging, etc. and good prizes were available. This was a very successful event.

Monica has a pre-made, package available for Grades 4-6. Please contact Monica at: moni@netidea.com

Meeting adjourned ~ Wednesday May 8 – 5:15 pm.

Thursday May 9th - 8:30 a.m. Rob Whelan ~ Meeting Chair

Recent Avalanche Research Results at UBC ~ Dave McClung:

Dave discussed three topics including his work with interaction with forest cover, avalanche climatology in the Columbia Mountains, and the structure of risk management in ski operations.

He outlined methods they are proposing for decision support in the interaction of avalanches and forest cover. These include risk reduction strategies for reducing environmental damage, recent developments in the Forest Practice code, design of cut blocks and skill sets, and risk based matrices.

Research sponsors include CMH, Forest Renewal B.C., Natural Sciences and Engineering and the Research Council of Canada. He listed the three types of problems and then discussed each of them:

· Type 1 ~ avalanche initiation in cut blocks
· Type 2 ~ avalanches that descend into cut blocks
· Type 3 ~ avalanche penetration into forest cover

Type 1 ~ risk based decision support system
· acceptable risk defined in CAA mapping guidelines document
· magnitude (allowable size) and frequency estimated from UBC data collections
· melt/freeze variables are ranked and brought into decision tree system
· terrain and snow supply must be analyzed
Type 2 ~ solution – probability estimate of the frequency and magnitude for the avalanche path
· based on databases of avalanche penetration from UBC
· estimate down slope and cross slope extent of potential change

Type 3 ~ probability estimate of penetration length and width of penetration based on path scale
· based on databases of avalanche penetration from UBC
· estimate down slope and cross slope extent of potential change
· this will also involve avalanche dynamics calculations

He ranked the frequency and magnitude variables. Frequency variables are used to estimate if there will be a problem but decisions are based on the magnitude (size of the avalanches), and mitigations that can be used to address this (i.e. selective logging, etc.).

Dave discussed the Snow Avalanche Risk Mitigation Decision trees. He then reviewed data from Type 2 and Type 3 paths. In Type 3 data, logarithms were also discussed (the penetration ratio formula and the width of penetration).

His research also looked at a discriminate analysis:
· Discriminating between damage to mature timber and no damage in Type 1 events – 65% classification rate and Type 2 events - 70% classification rate

Dave summarized by stating that all solutions are all risk based and acceptable risk matrices are in the proposed CAA hazard mapping document. Penetration problems will involve both the probabilistic analysis and avalanche dynamics.

Analysis of avalanche activity in the Columbia Mountains ~ Pascal Haegeli:

Pascal could not attend the meeting and Dave McClung presented his work. Pascal is studying avalanche climatology of the Columbia Mountains, and the character of the avalanching in the Columbia Mountains. His work also included the development of a GIS visualization tool for data relevant to avalanche forecasters for large areas.

Dave gave an overview of Pascal's work and discussed the data set (six years of data observations including weather, avalanche activity, ski run usage, etc). He added that without the help of Roger Atkins and Snowbase, this work would have been impossible.

He showed a graph of avalanche activity on weak layers (facets and surface hoar). The character of the snowpack has a huge influence on this.

Surface hoar (SH) layers were generally a large spatial extent, on average 1-3 SH layers per operation per year. There were about 1-3 activity cycles with intermediate avalanche sizes that were often combination of surface hoar and crust. Triggers were 50% natural and 50% skier. Dave showed a visual picture of the avalanche climatology for a variety of years.

Avalanche climatology was broken down to approximately 70% direct action avalanches during storms, and approximately 25% of avalanche activity was on persistent weak layers. There were only about 2-3% of ground avalanches.

The Visualization Tool (CMH InfoEx in pictures) was discussed. This can display weather observations, the run list, avalanche observations, etc. and can zoom into individual operations. It can also track usage of the zones on a particular day.

The InfoEx survey was discussed and Dave hopes they can get more coordinates from other operations, so they can make a visualization tool for a greater area. This would give Pascal the ability to use ten years of InfoEx data for the entire area. He is currently in the process of transforming historical InfoEx data into a database format for research purposes.

Please email Pascal if you would like to add your coordinates to the project pascal@geog.ubc.ca.

Outline of Risk Management in Helicopter Skiing ~ Harpa Grimsdottir and David McClung:

The idea behind this research is to put a structure on risk management, divide it into parts and put together a structure to weight the fact that people make decisions. He discussed formalized decision making methods that eliminate the biases in avalanche forecasting. Avalanche forecasting is practiced at different scales and decisions in heli skiing are made at the micro-scale. He outlined the risk management structure and showed a risk decision matrix for backcountry and helicopter skiing they had developed.

He defined this Risk Assessment process:
· risk analysis application to individual slopes from an approved run list, historical data from accidents applied here (Munter approach), application of acceptable risk (individual slopes), consideration of options and group management

Risk Management is the application of decisions:
· risk assessment applied to a microscale with consideration of options and group management

He summarized by stating that risk management is the final step in a chain of events; risk analysis - risk assessment - risk management. All three components involve terrain and group management.

Advances in Fuse Design ~ Everett Clausen:

This was Everett's third visit to the AGM on behalf of CIL Orion. He discussed the make up of the fuse assembly for commercial operations. The US Military has a zero defect product (M700 (Avalanche MIL-DET) and it will be available to CIL Orion for avalanche practitioners in Canada. Everett showed an overhead of the fuse make up and explained this. They did some test runs on the coating and he stated the flexibility of the product is very good. He showed the detonator and advised that it was the heaviest detonator you can get in the business, and operable to 65 degrees. The price will be the same as their commercial detonator.

He discussed the packaging specifications and shipping. Everett stated they have done a great deal of work since early 2002 when they realized they did have failures. He hoped for everyone's continued support because he believes they now have a great product.

Alan Stanley discussed transportation issues and stated that Bill C-55 will address explosive transportation and storage. He added there is no room for error in the future and if there are problems with explosives the government will enact legislation without input from industry. He stated they propose shipping with the same carrier, and indicated placards will change.

Mike Boissonneault, Explosives Chair, accepted a donation of $6412.30 from CIL Orion. They have committed 3% of their total sales to promote avalanche explosives training. These funds will be utilized for continued avalanche explosives training course initiatives. Rob Whelan thanked CIL Orion for their continued support.

Explosives Regulations – Recent Changes and Proposals ~ Dr. Terry Matts:

Dr. Terry Matts is a Senior Inspector of Explosives, Natural Resources Canada. He discussed new magazine standards, proposals resulting from Bill C-55 and then gave some general reminders concerning storage and transportation of explosives.

New magazine standards came into effect on May 31, 2001. New magazines must be constructed to the new standard. There is a grace period of five years to upgrade existing magazines and three years to upgrade day boxes.

Terry showed photos of a cutting torch attack on a magazine to illustrate the problem.

Walk in magazines must be fitted with the new door design, with frame and locking mechanisms. Only approved welding shops are authorized to make door assemblies. New magazines must have 3" gravel fill in walls. He showed a photo of new magazines with the safety features on the door assembly. He also showed another explosive magazine break in to demonstrate why the doors need improvement.

Day box magazines are subject to a five year review of vulnerability. No tethering will be allowed after May 2004 (day magazines must weigh 200 kg or be bolted down). New padlock specifications are effective in May 2004 and Master 15 locks must be replaced by May 2002. He had a book listing approved locks that are available, and stated that substitutions are not permissible.

Terry showed lock details for day box magazines. A stainless steel staple/hasp is required.

General provisions were explained to the members. If an operation experiences a break in or attempt, they must upgrade their magazine within two months. If it is a type 6 day box, it must be upgraded to a type 4 or 9. All new specifications will have a unique ID number. License holders must file an upgrade plan upon license renewal.

He discussed the proposals for Bill C-55. The Explosives part of this Bill has not been changed at all. However they implemented a consultative process, that included the CAA, and they got a lot of feedback.

Amendments to Explosive Regulations were required in four main areas:
· acquisition and possession

· storage security
· transport security
· import/export and tracking

Changes to explosives acquisition and possession were outlined. Potential fines will increase up to $500K. A handling permit will be required for anyone involved with or having access to explosives. These will be subject to an RCMP background check. The implementation schedule for this was unknown.

He then discussed explosive storage security and magazine surveillance. A weekly inspection will be required with a daily inspection or electronic security for "vulnerable" sites. This will be up to inspector's discretion to determine if the site is "vulnerable". Waivers are being considered for remote areas. In the event of a theft attempt, security at the site must be improved. An inventory count will be required monthly. The maximum quantity allowed for overnight storage in type 6 magazines has been reduced to four cases, with waivers considered.

Terry indicated that few if any of the proposals will affect avalanche control. Most proposals will apply to shipments of >2000kg. Constant radio communication is strongly encouraged, however. High quality locks should be used on truck boxes. A "Response to Attack" should be recorded in Emergency Response Plans. He added that there will be an end to annual import permits and each import shipment will require a separate permit.

The members asked if Natural Resources could produce cost estimates to upgrade the magazines. Terry indicated he will investigate this.

Spatial Variability of Slab Stability in Avalanche Start Zones ~ Kyle Stewart:

Kyle updated his results from last year and gave an overview of objectives, which were to document spatial variability in slab stability. He determined a scale, and causes and to determine if slab stability in areas is repeatable on a yearly basis. Kyle's methods included using a drop hammer device and he explained what they did to cause failure. The experiment recorded drop height, damping snow, HS, fracture depth, and slope angle and they carried out between 40-126 tests per day.

He showed slides of experiments on columns and discussed limitations. Undisturbed avalanche start zones were selected on the basis of aspect, ground cover, thickness, HS and slope angle. If the conditions were hazardous, a nearby representative slope was selected. The location depended on what cause of variability was being measured. A total of 39 arrays were conducted between Jan 2000 ~ April 2002. A total of 2354 drop tests were carried out.

Kyle discussed correlations. Statistical methods have indicated very few zones of instability or stability in most of the spatial arrays. This suggests spatial consistency in weak layers. He showed a comparison of compression test scores versus drop hammer test scores.

He discussed conclusions and applications and stated they can determine some causes of variability.

Interpreting Fracture Character in Stability Tests ~ Bruce Jamieson:

Bruce explained this research that involved data collected over five years. They studied the frequency of skier triggering for 144 dry slabs on avalanche slopes and the compression scores. He showed a graph of this and stated that the steeper the middle line, the better the test assessment is.

Fracture Types were defined as follows: progressive compression (PC), thin planar (TP), sudden compression (SC), non-planar break (B), and no fracture (NF).

Bruce showed a graph of percent of fracture types in compression tests for 4312 compression test results in the Columbia Mountains (1997-2001) and the number of fractures by grain types. He also showed fracture character by grain type.

A depth of fractures in compression tests graph was shown. 75% occurred in less than 30 cm of snow. Bruce discussed the age of weak layers in compression tests fractures, and said there was a wide range of ages for the sudden collapses. He also showed thickness of weak layers test results and compression test scores.

Bruce had a smaller data set for fracture character for skier tested slopes graphed. He stated that the type class isn't distinguishing very much. He showed a graph showing the fracture character for natural avalanches.

He added that this fracture characterization can be used for rutschblock tests, but data is missed because only the front wall is being observed.

Bruce summarized by stating that classification works for most fractures. Sudden compression is mostly associated with thicker FC and DH layers. Other factors should be considered with breaks.

Bruce asked the members if people record breaks in their field notebooks. They indicated that they may record breaks if it is a layer that they are tracking. He added that if it is coming out consistently as a break, it may be worth recording.

Bruce closed by stating that data for 2001/02 will be added to their study and they will do a further analysis at ISSW on fracture character and the score for skier-tested avalanche slopes.

Fracture characterization was discussed. The members asked if this could be included in the OGRS guidelines currently being prepared. Bruce stated he would work towards some useful definitions for terminology and try to incorporate this. The classification system of Q1, Q2 and Q3 used in the United States was also discussed.

Incorporating Stability Indices and Snowpack Properties into a Regional Avalanche Forecasting Model ~ Antonia Zeidler:

Antonia discussed her three year project of computer aided forecasting including data management, data analysis, data visualization and data exchange. She discussed input variables and the integration of stability indices and snowpack properties.

She uses the Cornice model developed in Scotland. Antonia discussed analysis and showed examples of the nearest neighbour model using precipitation and wind speed. She explained how parameters are entered, and what is recorded for creating the forecast.

In her modeling, she used two data sets from Blue River (skier triggered and natural avalanches) and then made a batch forecast from this data. This data from her first verifications was shown. This included extrapolation of weak layer properties, incorporation of stability indices, additional data sets, and adaptation of response variables.

New Cornice model developments and second nearest neighbour model will be used in future work. She thanked her supporters and the field staff that assisted her.

End/sh

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