

Avalanche News

Number 50



Fall 1996

Schaerer Honored by AAAP

Peter Schaerer, who is well known in Canada for pioneering avalanche research, safety, and education in Canada, was recently granted honorary membership in the American Association of Avalanche Professionals. Following is the citation which accompanied presentation of the award.

Peter Schaerer, you have contributed a long and distinguished service to the advancement of snow avalanche safety and education in North America and the world in general.

Since 1957 when you came from Switzerland to Canada to contribute to the design and function of the Rogers Pass avalanche control project, through your service as Senior Research Officer of the National Research Council, and as an educator through the following years, you have served with the wisdom, cooperation, diplomacy, and good nature that led ultimately to the founding of the highly successful Canadian Avalanche Association, together with its guidelines for avalanche safety education. Therefore, in recognition of these and countless other accomplishments in our field, *The American Association of Avalanche Professionals* is privileged to present to you its highest honour, The Honorary Membership.

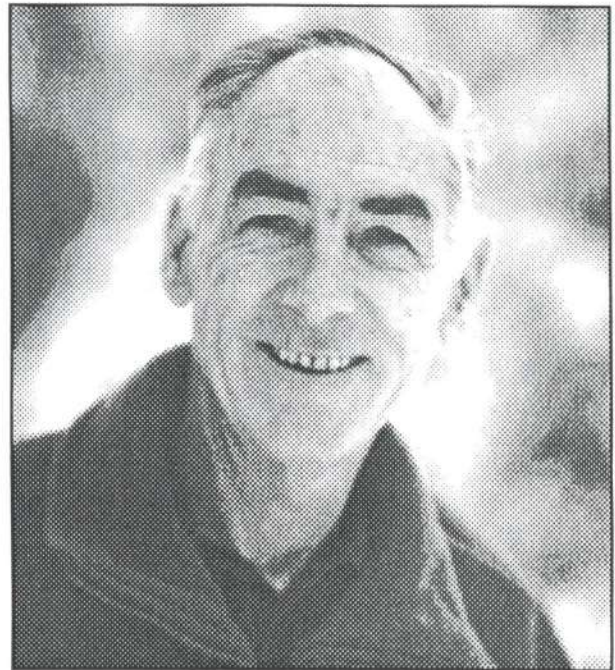


Photo: Don Harvie

Peter Schaerer.

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Canadian Avalanche Centre

Summer/Fall 1996

by Alan Dennis

Needless to say it has been a full summer, fall and early winter at the Canadian Avalanche Centre. The following summary describes the completion of a number of projects and introduces new people working at the Centre.

Some of the new staff were introduced in the last issue. I would like to introduce Evan Manners and Lynn Freeland who are running the INFOEX. Evan came from Jasper Park where he did warden duties and developed an interest messing around with computers. These are good pre-requisites for managing the Information Exchange. He has a tough act to follow after the fine work that Torsten Geldsetzer and Chris Whalley did for six years on never missing a day of output. Evan has already put in some long sessions until 2230h and 0200h troubleshooting various problems as subscribers get on line. So he has the required qualities to make INFOEX work for everyone. Welcome to Evan, Nora and their two girls to Revelstoke.

Lynn Freeland is assisting Evan with INFOEX and in the afternoon working on preparation of course material with Laurie Donato who helped set up the weather course which recently ran in various locations.

Phil Hein has been invaluable at the Centre not only on school issues with his course coordinator hat on but also other issues of the CAC with his CAA VP hat on. The growth of the schools continues to surprise us all. There is tremendous increase in our courses and many courses were full soon after the brochure came out.

Sally Thomson has taken on the task of finding new partners in the public safety project. As the distribution of the Bulletin has grown so much it is now a valuable advertising opportunity for any company with an interest and responsibility in mountain activities. As well as the Bulletin there are other promotional benefits and return on the support dollars from our sponsors. She has brought new ideas and inspiration to our partners and the Centre.

The project 'Avalanche Safety Training Materials' has been completed and Janice Johnson, Jim Bay and Karl Klassen deserve great credit with a strong supporting cast for completing the project. No sooner was it in print than we had many inquiries for copies of the material, especially at the ISSW.

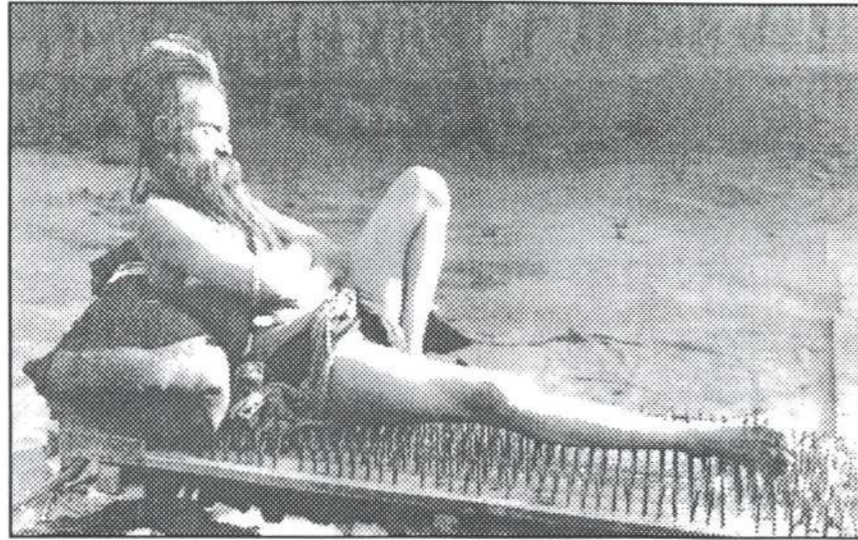


Photo Courtesy of Royal Geographic Society

Evan Manners at the CAC contemplating a recent INFOEX computer meltdown.

The value of this material is well known. The possible misuse of this material is of serious concern. There are now courses that claim to be 'equivalent' of the level 1. Readers of this newsletter are often hiring personnel that may require a level 1 course. "Beware of cheap imitations and false advertising" is a Madison Avenue line but is certainly appropriate for this situation. The material is copyright to the CAA and may be used as reference material but other courses using this material for a course outline are plagiarizing this material. If you have a prospective employee stating they have done a level 1 "AVY" course, be sure that they have a CAA certificate and our data base has a good record of everyone who has done a course since 1990.

Then the Erik Blehm article came out in Transworld SnowBoard magazine. The phones don't seem to have stopped ringing since. Not all these people need a level 1 course but we spend a lot of time doing career counseling for these enthusiastic folks. The article is the best piece of journalism written about our courses and no doubt contributed to an increased interest in all levels of avalanche training.

BEATING THE ODDS, the video was selected as a finalist at the Banff Film Festival and for the Best of Banff tour. We already know of a number of towns where it has been shown. After the showing in Revelstoke I had a mother in tears implore us to get it into the school system as required viewing. Karl Klassen's distribution efforts have secured a showing on CTV in Edmonton. Copies are available from the Centre.

Observation Guidelines and Recording Standards for Weather, Snowpack and Avalanches now has an incarna-

tion with Errata. Thanks to the efforts of the OGRS and technical committees, chairman Dave McClung, and the persistent efforts of Torsten, the Errata are now complete. Unless there are some extraordinary advances in the techniques for observing weather and making decisions about snow stability it will be reviewed at the turn of the century. Any suggestions may be sent to the Centre for the turn of the century file. Please note Dave McClung's comments.

Another avalanche safety workshop was held, this year in Vancouver. The Justice Institute of BC coordinated the event under the able Jon Heshka and Linda West. Scott Flavell organized the eminent speakers who addressed the topic "Learning from our Mistakes". Jim Haberl took us all to K2 and explained his mountain philosophy. A good day and raised money for the public safety work of the CAC.

New Members

The CAA welcomes the following new members:

- American Association of Avalanche Professionals
- Denis Ross
- Selkirk College
- Ian Tegart
- Dean Walton
- John Forest

Recreational Avalanche Courses

The Canadian Avalanche Association is working with the Canadian Ski Patrol System (CSPS) to develop suggested standards and course materials for Recreational Avalanche Courses. Randy Stevens of the CAA and Gordon Ritchie of the CSPS are working together to coordinate this project. A National Search and Rescue Secretariat grant has been applied for to assist with funding for this project.

It is intended that this material will be available to individuals or groups interested in conducting recreational avalanche courses provided they agree to some conditions to ensure standards are maintained. Some areas that come to mind when approaching this project include:

- Course content
- Course duration

STOP PRESS STOP PRESS

The book "Avalanche Accidents in Canada - Volume 4" has been written by Bruce Jamieson and Torsten Geldsetzer. It is now available from the CAC office for \$ 14.95

The book covers the years 1984-96 and shows the change in types and frequency of avalanche accidents in Canada. Read in a humble mood.

And finally, while the snowpack on Mt Fidelity in mid-December is more than one metre less than the same time last year other areas are way above average like Waterton/Westcastle and the south Columbia but no doubt all that will have changed by the time you read this. And if you think the greenhouse effect or El Nino is going to effect your snow season consider that size 4 avalanches were released with explosives on the Milford Road in New Zealand on 4 December.

Notable Occurrence

On November 3, 1996 CAA member Tim Auger was awarded the Bill March Summit Award of Excellence. This award, sponsored by One Step Beyond of Canmore, is presented annually at the Banff Festival of Mountain Films to a person who has made a significant contribution to the mountain community.

Tim, well known as a rescue warden in Banff National Park, has a long history of avalanche work—most significantly in rescue.

The CAA congratulates Tim on this well-deserved achievement.

- Suggested instructor qualifications
- Should the course be a prerequisite to the CAA Level 1 Ski Operation courses

A survey has been prepared and sent to selected user groups to help identify their needs. In addition to this survey, the organizers would appreciate input from individuals or groups who have an interest in this project. If you wish to be on the list to receive the survey or have other comments or ideas regarding this project, please contact us:

Attention: Recreational Avalanche Course Committee
fax: 250-837-4624
email: canav@mindlink.bc.ca

SARScene 96 - Halifax, NS

by Phil Hein

On October 17-19, 1996 the **National Search and Rescue Secretariat** (NSS) sponsored the fifth Search and Rescue (SAR) Workshop held across Canada. Although this year's focus was primarily on Atlantic Canada Search and Rescue concerns, the theme of the Workshop was 'Partners in SAR'. The Canadian Avalanche Centre was invited to make a presentation on its work, programs, and operation, as well as potential assistance regarding avalanche safety programs for Atlantic Canada.

Alan Dennis, manager of the Centre asked Phil Hein a director of the CAA, to attend the Workshop and make a presentation on behalf of the CAA non profit society, which represents a unique organization amid those involved in Search and Rescue operations. It is evident that a majority of organizations involved with SAR activities are beginning to put increasing effort into Education and Prevention strategies, of which the CAA and CAC can demonstrate a strong history of emphasis.

This was a great opportunity to describe to the national audience, the CAC's humble beginnings. The devotion of a small but dedicated professional organization (CAA) towards industry and public avalanche safety programs, and the NSS Federal support funding which was instrumental in establishing the Centre during the first 3 years. It was outlined that the Training School program (CAATS) is the foundation of all other efforts and operates at break even. It provides the skills and standards of technical proficiency required in all facets of avalanche safety programs. INFOEX an industry driven program is run out of the Centre, and has always been financially maintained by the users directly involved. Ultimately the Centre provides

services and assistance to the public. From providing general information on avalanche safety, courses, and sources of specific information, to the twice weekly Avalanche Bulletin posted extensively for the Southwestern corner of Canada.

The Centre along with assistance from many contributing individuals and organizations, the initial NSS support funding, NSS through Heritage Canada's continued sponsorship of new project initiatives such as the recently completed CAA avalanche safety video 'Beating The Odds', is well up and running, and finds itself in an increasingly busy role.

The emerging challenges are numerous, with Atlantic Canada Avalanche concerns on the list, Information recently provided by the Newfoundland Geological Survey Office highlights that over thirty (30) fatalities have occurred in Newfoundland since the mid 1800s! In fact, some of the many avalanche incidents and resulting fatalities have occurred in St. Johns itself. Five people were killed in a 1959 slide when their home was buried in the Battery district of the capital city. Parks Canada personnel from Gros Morne National Park report *serious snowmachine adventure* activities throughout the region with fortunately no serious accidents to date, and there is a Snowcat Skiing operation which has run for several years now.

Representatives from Quebec admitted to problems as well with avalanche incidents and it is obvious that Labrador and Baffin Island share considerable exposure to avalanches, although with a very small population. **Indeed, Canada's Avalanche concerns are coast to coast.**

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Submission Guidelines:

- Double spaced, typewritten
- Major PC wordprocessor format
- Photos, slides, or illustrations
- PC TIF, WMF, CGM format
- **Always send hardcopy**

ISSW 96

by Bruce Jamieson

In October 1996, the International Snow Science Workshop returned to Banff, twenty years after the 1976 Avalanche Workshop. Although it was the second of three international conferences on snow and avalanches in three months, ISSW 96 attracted over 475 people from 14 countries between October 6th and 11th. The theme of this and previous ISSW's was "A Merging of Theory and Practice". The strong mix of avalanche practitioners and researchers ensured the exchange of ideas between the various groups that work with avalanches.

Peter Schaerer gave a wonderful opening presentation on Sunday evening: *Avalanche Theory and Practice in Canada*. His review of avalanche work in Canada featured examples from the early days of planning avalanche defences in Canada to more recent anecdotes from avalanche courses.

To highlight the 30 poster presentations, this ISSW featured a half-day poster session on Monday afternoon. Poster presenters gave three minute introductions in the main theatre followed by a dedicated poster session in the foyer of the Eric Harvie Theatre. During this session, small groups clustered around the various posters to exchange ideas. For many people, this session exemplified the ISSW objectives.

In 40 oral presentations grouped into seven half-day sessions, speakers made excellent use of the audio-visual equipment at the Banff Centre's Eric Harvie Theatre. Each of these half-day sessions of oral presentations were followed by an open discussion of ideas and practices related to the presentations and to the session's topic.

Three-hundred and thirty people attended the banquet. After dinner and some not-so-serious presentations, Canadian climber and writer, Jim Haberl, narrated a slide and video presentation from a recent ascent of K2.

On the field trip, forty people travelled to Revelstoke to visit the Canadian Avalanche Centre and to Rogers Pass where Peter Schaerer led a tour of the defence structures. Dave Skj6nsberg and his staff reviewed the avalanche forecasting program and the Canadian Infantry demon-

strated the howitzer as it is used for avalanche control at Rogers Pass. In spite of wet weather, Peter, Dave, and the Artillery managed to exceed people's expectations.

Many important activities happened outside the Eric Harvie Theatre. In the foyer, over meals, at the nearby pubs, and while walking up Tunnel Mountain, people exchanged ideas and made contacts that may last a career.

The papers committee including Colin Johnston, J6rg Schweizer, Adrian Wilson, George Field, Clair Israelson, and Chris Stethem worked many hours behind the scenes. They reviewed the abstracts, corresponded with authors, organized the poster session, and prepared the papers for publication.

Tony Daffern and his staff at Rocky Mountain Books produced the workshop booklet and are presently publishing the proceedings. (Additional copies of the proceedings will be available from the Canadian Avalanche Centre.)

The workshop ran quite smoothly thanks to 55 ISSW volunteers and the Banff Centre Staff. Volunteers from the Canadian Ski Patrol System met people at the airport and helped them get to Banff; some volunteers from Canmore and Banff ran a recreation program; others sold ISSW shirts, ushered people in and out of the theatre and ran the slide projector.

However, it is the people who attend ISSW's that make these workshops special. Over 475 of people showed up in Banff, set the informal tone and participated. Their participation shows the vigour and vitality of international snow and avalanche work.

Lastly, we are grateful to the BC Helicopter and Snowcat Skiing Operators for sponsoring the workshop and to the Canadian Avalanche Association for seed money to get the whole thing started.

ISSW 96 Organizing Committee:

Bruce Jamieson, Chris Stethem, Colin Johnston, Mike Boissoneault, Torsten Geldsetzer, Marc Ledwidge, Tanya Price, Tom Riley, Gordon Ritchie, Debbie Ritchie, J6rg Schweizer and Adrian Wilson.

Beating the Odds Wins at Crested Butte

This news just in:

Beating the Odds has won the *Instruction and Technique* category at the *International Ski Film and Video Festival* in Crested Butte Colorado. This, the 22nd annual festival has run for the past 6 years in Crested Butte and is attended

by many ski industry leaders and journalists. It boasts entries from "...the world's best ski filmmakers."

Beating the Odds continues to draw critical acclaim and positive reviews and will be entered in more festivals in the future including world-renown Trento, Italy and Telluride, Colorado in the spring of 97.

Thinking About Purchasing A New Avalanche Rescue Beacon?

By: Nic Seaton
Snow Avalanche Technician
Ministry of Transportation and Highways

In 1992, the Ministry of Transportation and Highways needed to make the transition from the 2.275 kHz to the 457 kHz frequency. Tests were conducted on three European transceivers available at that time. They included the Option 8000, Pieps 457 and the Ortovox FI+. One of the main selling factors for the new frequency was the increase in range performance. Of the three transceivers tested the Option 8000 proved to have the greatest maximum range. The main problem with the testing procedure was that it was performed over a short period of time and not over a full season of intensive use. If a more extensive testing process had been possible, several obvious problems would have been detected with all three of the units.

Since the original tests done in 1992, all three of the companies have made several modifications which have helped to improve the performance of their transceivers. While at the same time, a new Canadian transceiver called Survival On Snow (FI-ND) has been introduced into the market. As with the original transceivers tested, the FI-ND has experienced similar growing pains. Although the FI-ND has not been subjected to the four years of day to day use the other transceivers encountered, it has undergone recent modifications and improvements, and now appears ready to compete in the market.

In the spring of 1996 after several modifications had been made to the existing transceivers and the introduction of the new transceiver, another series of tests were performed. This time four transceivers were tested, the Ortovox FI Focus, the Pieps 457 (with Opti-Finder), the Survival on Snow (FI-ND) and the Arva 8000 (which was originally called the Option 8000). Testing was performed by 14 individuals who work with rescue transceivers on a regular basis. Participants included avalanche technicians from the Ministry of Transportation and Highways, ski patrolers from both Blackcomb and Whistler Mountain and a representative from the heli ski industry.

Main Areas Examined Were

- Maximum usable range.
- Cost and warranties.
- Exchange programs.
- Performance with both Induction and Grid methods.
- Quality and volume of sound emitted from the speaker.

RANGE PERFORMANCE

Beacon Tested	Light Failure	Signal Weak	Signal Failure
Survival On Snow FI-ND	55 m	55 m	60 m
Ortovox F1 Focus	70 m	65 m	75 m
Pieps 457 with Opti-finder	50 m	70 m	80 m
Arva 8000 (New Option 8000)	**25 m	85 m	90 m

** The light on the Arva 8000 is designed for pinpointing and not long range searching. The other transceivers have the capabilities of doing both.

Criteria For Range Performance Test:

- Two beacons of the same make were placed on the same plane pointing in the same direction.
- All beacons had new batteries.
- All tests were done 3 times with each beacon at 5 metre increments.
- All tests were performed using speakers only (ear phones will help to detect a weaker signal).

COST AND WARRANTIES

Beacon Tested	Cost	Warranty	Warranty Specifics
Ortovox F1 Focus	\$330	5 years	Limited warranty on material and workmanship flaws.
Pieps 457 Opti-finder	\$290	5 years	Limited warranty on material and workmanship flaws.
Arva 8000	\$325	2 years	Limited warranty on material and workmanship flaws.
Survival On Snow FI-ND	\$285	5 years	Limited warranty on material and workmanship flaws.

Exchange Programs

Pieps 457 OF: After the warranty has expired an exchange program is in place. For \$60.00 the broken transceiver will be replaced with a factory rebuilt.

Survival on Snow (FI-ND): After the warranty has expired an exchange program is in place. For \$95.00 the broken transceiver will be replaced with a factory rebuilt.

Arva 8000: After the warranty has expired, for the next 3 years, an exchange program is in place. For \$150.00 the broken transceiver will be replaced with a factory rebuilt.

No Option 8000 transceivers will be repaired or exchanged.

Ortovox FI Focus: After the warranty has expired, an exchange program is in place. For \$100.00 the broken transceiver will be replaced with a factory rebuilt.

Criteria for Induction Performance Test

- Participants rated the induction performance by the ease of use when using both the lights and speaker in conjunction with each other.

Criteria for Final Grid Performance Test

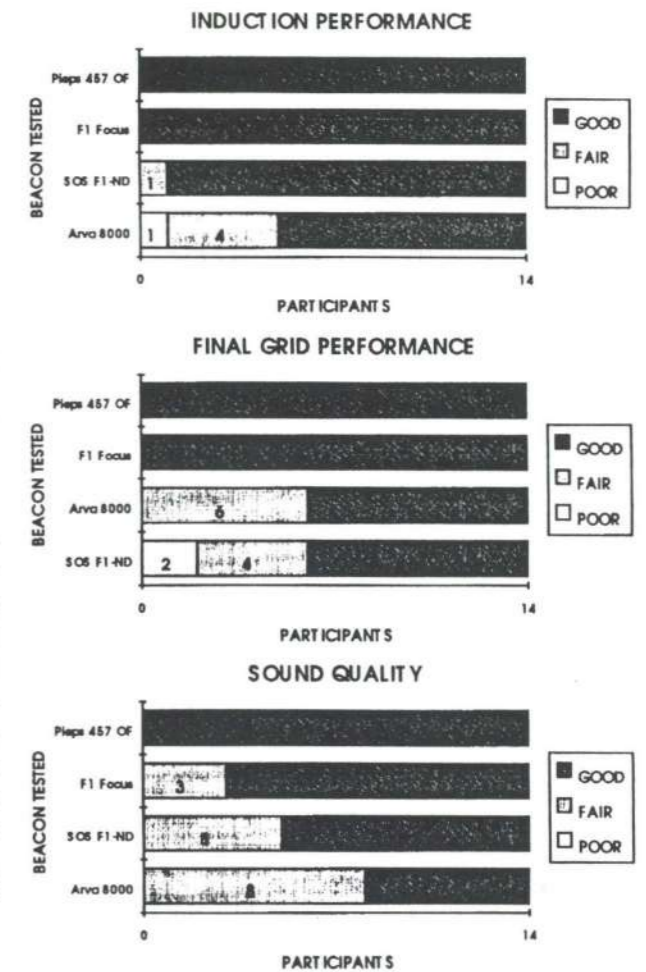
- Participants rated the induction performance by the ease of use when using both the lights and speaker in conjunction with each other.

Questions asked when performing the Sound Quality Test

- Did the transceiver provide ample volume that could be heard during adverse weather conditions?
- Was there any background static or interference present?

In Summary

When performing the tests it became apparent familiarity with a specific transceiver lead to a slightly biased result by the participant. This proved to those of us doing the testing that rescue transceivers are not life jackets and need to be practised with regularly. For the more experienced user all four transceivers worked well. However, for the less experienced user, transceiver performance varied. With this in mind, it is hard to choose a specific brand, as some of the transceivers are more user friendly than others. My suggestion would be to use the information in this report only as a guideline and attempt to test each transceiver for yourself, even if it's only in the parking lot behind your local sports store.



"Beating the Odds" Screens At The Banff Festival Of Mountain Films

Two years ago the Canadian Avalanche Association, the National Search and Rescue Secretariat, and Parks Canada saw the need for an avalanche film that would raise avalanche danger awareness and teach rescue techniques to an exponentially increasing numbers of winter mountain users. The result was "Beating the Odds" an educational drama that taps the emotions and intensity of an avalanche accident and it's effect at a human level as well as illustrating techniques for trip preparation, travel in avalanche terrain, and avalanche rescue.

In June of 1996 "Beating the Odds", a 48 minute video, was completed. Over the summer of 1996 a 30 minute version was created for television, festival, and competition use. This 30 minute version premiered on November 1 at the Banff Festival of Mountain films, one of the most prestigious film festivals of it's kind in the world. "Beating the Odds" competed against productions from around the world and, while it did not win a prize, it received favourable reviews from festival organizers and patrons as well as

other film-makers and production companies. In addition, "Beating the Odds" has been chosen as part of the "Best of the Festival" tour which takes the best films from the festival to venues around the world.

Many viewers were compelled to give personal feedback to Karl Klassen, of YAK Alpine Enterprises, Calgary, Alberta, a local Mountain Guide and independent producer, who produced the film for the Canadian Avalanche Association and Alan Bibby, the director/editor. Klassen and Bibby were in Banff to present the film in person. The comments received were, without exception, positive and often surprisingly emotional. Coming from a critical audience, many of whom are professional skiers and climbers, accomplished outdoors-people, and educators this is considered high praise.

The goal of "Beating the Odds" was to move people and get them to think about avalanches and avalanche rescue before they leave home. It is apparent the production has the power to accomplish those goals.

Beating the Odds



Beating the Odds is an educational drama that illustrates trip preparation, safe travel techniques, self rescue, and organized rescue. It tells the story of snowmobilers, skiers, and snowboarders who venture into the backcountry. Some of them are knowledgeable, prepare well, and carry the right gear; when they have an incident they are able to effectively self-rescue. Others play a little more recklessly and when they call for help, professional rescuers are called to the scene with a predictable outcome.

Beating the Odds was produced by YAK Alpine Enterprises for the Canadian Avalanche Association. Funding was provided by the National Search and Rescue Secretariat. Major sponsors include Canadian Mountain Holidays, Yellowhead Helicopters, and Parks Canada.

This 48 minute video is an excellent tool for raising the awareness of back-country users, informing the public of avalanche hazards, and training a recreationists and SAR personnel in preparation, safety, and rescue.

Beating the Odds was a finalist in the 1996 Banff Festival of Mountain Films and is on the "Best of the Fest" world tour.

All proceeds from sales support the the Canadian Avalanche Centre which provides public avalanche information for western Canada.

IKAR: 18-22 Sept. 1996 - Poland

Avalanche sub-commission

by: Alan Dennis

The meeting of the avalanche group was chaired by Francois Valla. Francois is the senior research engineer with Cemagref, the French agency responsible for avalanche research.

The statistics summary of avalanche accidents from the member countries was presented. While all the European countries show little change in the number of fatalities over the past ten years, there has been a 120% increase in the number of fatalities in the USA. The trend is very disturbing in America and Dale Atkins discussed the problem of many young people going into the mountains with no knowledge or experience. In the discussion about significant accidents in member countries, the other alarming trend is the increase in summer accidents and some case histories were presented.

Roland Meister said that a possible reason for the avalanche fatalities in Switzerland staying nearly constant despite much increase in use was an improved education network for recreational activities and faster response times for rescue. In Switzerland it is possible, weather permitting, to get to any site within fifteen minutes of notification of an accident. Climate changes resulting in shallower and warmer snowpack and ski compaction in heavy use touring areas were also discussed as reasons why the number of fatalities per year is not increasing in the same ratio as the amount of use.

There was much discussion about the role of prevention in the work of the avalanche committee. Francois Valla cited a number of examples of prevention work that had been done so far. These include the introduction of the unified avalanche danger scale, the transition to a single 457kHz frequency avalanche transceiver and numerous avalanche safety videos. The great variety of avalanche research which has gone on in the past fifty years, although not directly carried out by IKAR, has gone a long way to assisting the network of recreational training programs and contributing to fewer avalanche accidents.

In the avalanche group there are representatives from some countries who think efforts spent on prevention are compromising the effort that should go into rescue developments. However the majority felt prevention is worth spending a lot of effort and resources on. In general discussion about rescue there were comments about possible future developments in finding persons buried in the snow.

It was felt that the transceiver has not evolved to the limit of its potential and the concept of a device with much increased range and an LED that shows distance and direction to the victim would be much faster and is the way of the future. Perhaps this is an opportunity for Canada to contribute again to the international avalanche community, by investigating the possibilities in the development of such a device.

Due to the number of avalanche accidents in the summer, it was recommended that avalanche transceivers be used. September has become a high incident month for avalanche involvements. This is partly due to demographics but also a subjective observation was made that some icefalls are more active. It was also recommended that all people travelling in the mountains should wear bright colours. This helps in rescue and brings to mind a recent avalanche accident in Canada that occurred in the dark. The bright light of the buried person could be seen under the snow and the buried person was quickly dug out.

In the joint session of the IKAR, Francis Vale presented the avalanche report. Martin Store, President IKAR made some important observations. The first goal of IKAR is to optimize rescue. The second goal is prevention, which must be done through education and information. There is much work to be done for all organizations to reach the public. Mr. Schori is a strong and respected leader of IKAR and his suggestions were considered by the various committees and individuals. He asked that at the next IKAR meeting each country must show the work they are doing in prevention. Canada has been doing much work in this area and in some cases the results of this work has been adopted by other countries.

The IKAR meeting in Poland was opened by the Prime Minister with appropriate pomp and circumstance. In his opening speech he commented on the importance of the rescue services and the prevention of accidents being an important moral and economic consideration. His speech was translated into three languages (German, French and English) and in response to a gift he received from Mr. Schori, he replied spontaneously in eloquent English.

The Canadian delegation, who had a representative on each committee, were also honoured to have William Slaughter from the National Search and Rescue Secretariat, the national representative, in attendance.

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Total = \$ _____	Total = \$ _____
Please enclose <input type="checkbox"/> Cheque or <input type="checkbox"/> Postal Money Order, payable to: Canadian Avalanche Association and send to: Canadian Avlanche Association Box 2759 Revelstoke, BC, Canada Phone: 250-837-2435, Fax: 604-837-4624 canav@mindlink.bc.ca	

Observation Guidelines and Recording Standards for Weather, Snowpack and Avalanches Errata - October 31, 1996

Following are errata and corrections to the *Observation Guidelines and Recording Standards for Weather, Snowpack and Avalanches* manual published by the Canadian Avalanche Association in 1995. They represent corrections found by experience using the new system as well as suggestions by representatives of the industry through meetings and the membership of the Technical Committee of the CAA. The CAA will continue to collect experiences and suggestions for future revision of the Observation Guidelines but no revised version is anticipated until 2001. The fact that the errata are so few is a testimony to the fine work of the Data Standards Committee and the leadership of its Chair: Peter Weir. Suggestions for revisions should be forwarded to the CAA Technical Committee in Revelstoke.

Page Section Correction

- 3 1.4.3 Add data code VF for valley fog
- 7/8 1.4.10/11 Add "Note: Similar measurements can be made off other boards."
- 10 1.4.16 After **Wet Grains** in table add (**not a crust**)
- 11 1.4.17 Change data code for Extreme wind from **E** to **X**
- 17 2.1.5 note Change "allow a precision of 0.1 °C" to "are graduated in 0.1°C"
- 19 2.1.5 Grain Form table: add (**not a crust**) after **Wet Grains**
- 24 2.1.6 **SE, R6 and CE** should be **STE, RB6 and CTE**
- 24 2.1.7 Change **0.1** in formula to **0.01**
- 26/27 Glue these two pages together - poor examples
- 36 2.5.5 Under Applying Shear Test: b) change **own** to **down**
- 36 2.5.6 b) end of sentence: (measured in **cm²**)
- 38 2.6.3 Change data codes to **RB1, RB2...**
- 42 2.7.3 Change data codes to **STV, STE...**
- 42 2.7.3 note Substitute with the following:
"The shovel test is used to identify weak layers within the snow pack and qualitatively rate their strength. Although the shovel test is not a stability test, the strength ratings can contribute to an assessment of stability. The strength rating depends on factors including the operator's assessment of the force involved, the shape and dimensions of the shovel handle and blade, the length of the back cut (which should not exceed 70 cm) and the stiffness of the slab."
- 45 2.8.3 Change data codes to **CTV, CTE...**
- 48 3.3.2 Second sentence - change **observation** to **occurrence**
- 53 3.3.9 note Second sentence - change (*typically > 50m*) to (*typically > 5m*)
- 68/71 ... People Change **Caught** to **Caught only**
- 94 Appendix H Use new stability rating system (below)

Data Code	Term	Definition
VG	Very good	Very large triggers, such as cornice falls or explosives produce only sluffing. Stability tests generally produce little or no result.
G	Good	Natural avalanches not expected. Avalanches may be triggered by heavy loads in isolated terrain features. Stability tests generally produce moderate to hard results.
F	Fair	Natural avalanches can be expected in isolated terrain features. Avalanches may be triggered by light loads in areas with specific terrain features or certain snowpack characteristics. Stability tests generally produce easy to moderate results.
P	Poor	Natural avalanches can be expected in areas with specific terrain features or certain snowpack characteristics. Stability tests generally produce easy results.
VP	Very Poor	Natural avalanches can be expected on a widespread basis. Stability tests generally produce very easy to easy results
U	Unknown	Unknown.

International Conference on Avalanches and Related Subjects

Kirovsk, Russia

by Alan Dennis

In September I had the grand opportunity to attend the International Conference on Avalanches and Related Subjects in Kirovsk, Russia. The conference was organized by the Anti-Avalanche Service of the Apatit Mining Joint

Stock Company. The regional avalanche centre in Kirovsk has been active doing avalanche work for sixty years and this was an appropriate occasion to observe terrain in the Kibini Mountains and get some understanding about the scale and scope of avalanche operations in that region. We were also shown presentations from four other regional avalanche centres in Russia as well as the current state of science in avalanche research.

Many delegates arrived in Murmansk, some by bus from Norway and some by flights from Moscow or Helsinki. We were taken by bus about two hundred kilometres south through sparsely treed low rolling arctic terrain. Soon after leaving Murmansk the first of many mining operations was passed. The size of these operations made Trail, Faro, and Timmins look like playing in a sand box. Some of these mines were started by Inco and Falconbridge in the 1930s when Stalin brought in Canadian mining expertise to start these operations. Once the bus entered the Kibini Mountains, which are about 1300m high with relief similar to the Cairngorms, it was obvious that with snow this is an interesting avalanche problem.

Here the most easterly component of the Gulf Stream meets undiluted Siberian air making for a snowy relationship. The videos and presentations, particularly old film, clearly showed very deep snowpacks and large avalanches. One film shows a howitzer being used to bring down large avalanches. The soundtrack required no translation as the success of the mission was endorsed by all the crew. All Russian avalanche safety operations are devoted to keeping the mines, roads, and industry operations safe and open. Outside the avalanche centre office, about 500 metres away, is a kilometre long avalanche defence struc-

ture to protect apartment buildings at the bottom of the slope; so the problems are quite immediate. Large open pit mines, one of them the largest in Europe, have their own avalanche problems inside the pit.

In Russia the presentations from four other regional centre were fascinating. The anti-avalanche programs of the Baikal, Sakhalin, Kamchatka, and Caucasus areas were little known by their distant colleagues in Russia, let alone the European and other visiting delegates. Comparing seems a poor way to describe the terrain but if you combine Rogers Pass and Bear Pass it would not be an exaggeration. Recent construction of the southern trans-Siberian railroad around Lake Baikal was through terrain like the Selkirks. In Kamchatka- and Sakhalin the avalanche problems are mostly on roads and affect communities on each of those peninsulas.

In Kamchatka, volcanic activity is a part of the avalanche problem.

Presentations of other avalanche work were delivered along with pure and applied science papers by delegates from Norway, Japan, China, India, and most of the other European avalanche countries. These will be fully reported in the Proceedings. We got some idea of the difficulty of avalanche research in Russia at this time. However the presence of an international group with similar concerns does convey a strong message to the politicians and senior land managers who can appreciate the economic benefits of secure avalanche programs. The photograph taken in the office of Yury Zuzin, the Apatit Anti-Avalanche Centre Manager, shows him and Musabi Beituganov, a colleague from the Caucasus and member of the Academy of Sciences. I played chess with Professor Beituganov, who has played grand master chess against Gary Kasparov and lost in about five moves and 45 seconds. He also gave me a very nice bottle of vodka. Yury was one of the top ten Russian ski jumpers in the 1970s. Their sentiments about the current national flag and regime are well shown.



Yury Zuzin, Manager of the Apatit Anti-Avalanche Centre, and Musabi Beituganov

I would like to comment on some other activities during the conference. Those people that Stalin sent to mine in the arctic took with them a rich artistic, cultural, and intellectual spirit which lives on two generations later. We were honoured with a concert, displays of art work, icons, and a botanical and geological museum which was a very special experience for all the delegates. Great credit is due to the Organizing Committee "Apatit" JSC and Pavel Chernousov for making the conference possible. Finally, although there

may be no guideline for final conference banquets there is no question that the final affair of this conference set a high standard. The champagne, vodka, dancing (all of excellent quality), and exchanges of toasts kept the Russian and French delegates busy until the 16 hour bus tour left early in the morning. The tour visited a small fishing village and included a trip in a fishing boat. Everyone made it back to Kirovsk for the departure home.

AVALANCHE RESOURCE AGENCIES

Revised December 1996

Information in this resource list is updated annually.

New or revised Information must be received at the Canadian Avalanche Centre by September 15, 1997.

CANADIAN AVALANCHE ASSOCIATION

The Canadian Avalanche Association supplies avalanche information, runs the training school and operates an Industry Information Exchange. They are not equipped for search and rescue work.

Name	Address	Phone	Fax
Main Office	Canadian Avalanche Centre Box 2759 Revelstoke, BC V0E 2S0 canav@mindlink.bc.ca	250-837-2435	250-837-4624
Alan Dennis, Manager		250-837-2435	250-837-4624
Aileen White, Course Administrator		250-837-2435	250-837-4624
Evan Manners, INFOEX Manager		250-837-4425	250-837-4624
Phil Hein, Course Co-ordinator	philhein@rockies.net	250-344-6322	250-344-7922
Public Avalanche Information	Calgary and area	403-243-7253 + 7669	
	Vancouver and area	604-290-9333	
	Canada, toll-free	800-667-1105	
	Computer Bulletin Board	250-837-4893	
	www.avalanche.ca/snow		

AVALANCHE FILMS AND VIDEOS

The following videos may be purchased from:

Canadian Avalanche Centre
Box 2759
Revelstoke, BC, V0E 2S0
250-837-2435

- Beating The Odds (30 or 48 Minutes) \$30.00
- Avalanche Terrain (9 Minutes) \$50.00
- Control (15 Minutes) \$50.00
- Snow War (25 Minutes) \$50.00
- Avalanche (12 Minutes) \$50.00
- Metamorphism (16 Minutes) \$50.00
- Snow Profile Observation (8 Minutes) \$50.00

The following videos are available from :

University of Washington
Box 50096
Seattle, WA, 98145

- Avalanche Dynamics (Order# 719176) ... \$90.00 US
- Snow Metamorphism (Order# 719907) ... \$90.00 US

The following operations maintain observations of the snow stability and avalanche danger in their areas.
They may also be equipped for search and rescue work.

GOVERNMENT AGENCIES

National Parks

Region	Location	Address	Emergency (24hrs)	Office	Fax	Recorded Information
Jasper Nat. Park	Warden Office	PO Box 10 Jasper, AB TOE 1E0	403-852-6161	403-852-6155	403-852-4775	403-852-6177
	Sunwapta Warden Office			403-852-5383		
	Marmot Basin Avalanche Office			403-852-2356		
Mt. Revelstoke/ Glacier Nat. Park		PO Box 350 Revelstoke, BC V0E 2S0	250-837-6274	250-837-7500	250-837-7536	250-837-6867
Waterton Lakes Nat. Park	Superintendent	Waterton Park AB, T0K 2M0	403-859-2636	403-859-5140	403-859-2279	403-859-5105
Kluane Nat. Park		PO Box 5495 Haines Junction YK, Y0B 1L0	403-634-2338	403-634-2251		
Banff Nat. Park	Chief Warden's Office	PO Box 900 Banff, AB T0L 0C0	403-762-4506	403-762-1470	403-762-3240	

Alberta Environmental Protection - Kananaskis Country

Region	Address	Emergency (24hrs)	Office	Fax
Peter Lougheed Prov. Park		403-591-7444	403-591-6300	403-591-7379
Bow Valley Prov Park			403-673-3663	403-673-2018
Ribbon Creek Emergency Centre		403-591-7767		
Elbow District		403-591-7767	403-949-3754	403-591-7123

British Columbia Ministry of Transportation and Highways

Name	Address	Phone	Fax
Main Office	Snow Avalanche Program 4C 940 Blanshard Street Victoria, BC, V8W 3E6		
Jack Bennetto, Manager		250-387-7523	
Gordon Bonwick, Avalanche Officer		250-387-7516	
Mike Boissoneault, Senior Avalanche Office		250-387-7514	

GOVERNMENT AGENCIES - CONTINUED

British Columbia Ministry of Transportation and Highways Field Offices

Name	Address	Phone	Fax
Scott Aitken	Box 206 Pemberton, BC, V0N 2L0	604-894-5495	
Ed Campbell/Bill Golley	45474 Luckakuckway Sardis, BC, V2R 3S9	604-869-7328 250-378-9359	604-869-2961
John Tweedy	Comp 1 Lakeside Dr Group Box Nelson, BC, V1L 6B9	250-354-1351	250-354-1298
Bruce Allen	Box 710 Revelstoke, BC, V0E 2S0	250-837-7685	250-837-9407
Tony Moore	Box 127 Stewart, BC, V0T 1W0	250-636-2625	250-636-2333
Nic Seaton	Howe Sound District 1690 Main Street North Vancouver, BC, V7J 1E3	604-990-5217 604-329-9526	604-660-1200
Dave Smith	Kootenay Region 310 Ward Street Nelson, BC, V1L 5S4	250-354-6455	250-354-6723
Al Evenchick	North West Region 4825 Keith Ave Terrace, BC, V8G 1K7	250-638-3334	250-638-3587

British Columbia Ministry of Environment, Lands and Parks

Name	Address	Phone	Fax
East Kootenay District	Box 118 Wasa, BC, V0B 2K0	250-422-3212	250-422-3326
West Kootenay District	4750 Hwy. 3A/ RR#3 S8 C5 Nelson, BC, V1L 5P6	250-825-3500	250-825-9509
Garibaldi/Sunshine Coast	Box 220 Brackendale, BC, V0H 1H0	604-898-3678	604-898-4171
Mt. Robson	Box 579 Valemount, BC, V0E 2Z0	250-566-4325	250-566-9777
Strathcona	1812 Miracle Beach Drive Black Creek, BC, V9J 1K1	250-337-5121	250-337-5695

British Columbia Ministry of Attorney General

The Ministry of the Attorney General operates the BC Provincial Emergency Program (PEP). PEP co-ordinates most local search and rescue groups in the Province.

In Case of Emergency Call:
Provincial Emergency Program Emergency Co-ordination
24 hour toll free call: 800-663-3456
Fax: 250-387-2957

Office/ Contact	Address	Phone	Fax
Coordinator, SAR Volunteers Dave Brewer	Provincial Emergency Program 1257 Lucking Place North Vancouver, BC, V7J 3L5	604-984-4915	604-984-1745
SAR Co-ordinator Murray Inkster	Provincial Emergency Program 455 Boleskine Road Victoria, BC, V8Z 1E7	250-387-5956	250-952-4888
SAR Training Program Coordinator Jon Heshka	Provincial Emergency Program 715 McBride Blvd. New Westminster, BC, V3L 5T4	604-528-5799	604-528-5798

COMMERCIAL OPERATIONS

Ski Areas

Name	Address	Phone	Fax
Apex Mtn. Resort	Box 1060, Penticton, BC, V2A 7N7	250-492-2880 250-492-8111	250-292-8622
Big White Ski Resort Ltd.	Box 2039 Kelowna, BC, V1X 4K5	250-765-3101 250-491-1117	250-765-8200
Blackcomb Mountain	4545 Blackcomb WAY Whistler, BC, V0N 1B4	604-932-7251	604-938-7532
Fernie Snow Valley Ski Ltd.	SKI AREA ROAD FERNIE, BC, V0B 1M1	250-423-4655	250-423-6644
Fortress Mountain Skiing Inc.	307- 1111 11TH AVE SW Calgary AB, T2R 0G5	403-264-5825	403-591-7133
Mt. Washington Ski Resort Ltd.	P O Box 3069 COURTNEY, BC, V9N 5N3	250-338-1386	250-338-7295
Banff, Mt. Norquay	Box 219, Suite 7000 Banff, AB, T0L 0C0	403-762-4421	403-762-8133
Marmot Basin Ski Lifts Ltd.	Box 1300 Jasper, AB, T0E 1E0	403-852-3816	403-852-3533
Nakiska	Box 1988 Kananaskis, AB, T0L 2H0	403-591-7777	403-591-7780
Red Mountain Ski Area	Box 670 Rossland, BC, V0G 1Y0	250-362-7384	250-362-5833
Silver Star Mtn. Resorts Ltd.	Box 3002 Silver Star Mtn., BC, V1B 3M1	250-542-0224	250-542-1236
Skiing Louise	Box 5 Lake Louise, AB, T0L 1E0	403-522-3555	403-522-2095
Sunshine Village Corp.	Box 1510 Banff, AB, T0L 0C0	403-762-6513 403-762-9199	
Whistler Mountain Ski Corp.	Box 67 Whistler, BC, V0N 1B0	604-932-3434 604-932-3210	604-932-6374
Whitewater Ski Resort Ltd.	Box 60 Nelson, BC	250-354-4944	250-354-4988

Mining Companies

Name	Address	Phone	Fax
Elkview Coal Brian Spreadbury	RR 1, Hwy. 3 Sparwood, BC, V0B 2G0	250-425-8746	250-425-8700
Fording Coal - Greenhills Ken Clark	Box 5000 Elkford, BC, V0B 1H0	250-865-3097	250-865-3250
Line Creek Resources Line Creek Mine (Upper Elk Valley)	Box 2003 2 Sparwood, BC, V0G 2B0	250-425-3145	250-425-7144

COMMERCIAL OPERATORS - CONTINUED

Helicopter, Snowcat and Wilderness Operators

Name	Address	Phone	Fax
Amiskwi Lodge	Box 1747 Canmore, AB, T0L 0M0	403-678-4039	403-678-5437
ABC Wilderness Adventures	Box 1829 Golden, BC, V0A 1H0	250-344-2639	250-344-5520
Cat Powder Skiing Inc.	Box 1479 Revelstoke, BC	250-837-5151	250-837-5111
Canadian Mountain Holidays Inc.	Box 1660 Banff, AB, T0L 0C0	403-462-7100	403-762-5879
CMH Snow Safety Co-ordinator		250-348-2370	250-348-2551
CMH Adamants		250-837-4245	250-837-4245
CMH Bobbie Burns		250-348-2226	250-348-2226
CMH Bugaboos		250-346-3391	250-346-3391
CMH Cariboos		250-566-9888	250-566-9888
CMH Galena		250-369-2235	250-369-2235
CMH Gothics		250-837-4204	250-837-3363
CMH Monashees		250-834-7223	250-834-7330
CMH Revelstoke		250-837-9344	250-837-3644
CMH Valemount		250-566-4487	250-566-4111
CMH McBride		250-569-2730	250-569-3276
Crescent Spur Heliskiing	General Delivery Crescent Spur, BC, V0J 3E0	250-553-2300	250-553-2301
Golden Alpine Holidays	Box 1050 Golden, BC, V0A 1H0	250-344-7273	250-344-7273
Great Canadian Heliskiing Ltd.	Box 175 Golden, BC, V0A 1H0	250-344-2326	250-344-2316
Great Northern Snow-Cat Skiing Ltd.	Box 14, Site 13, RR4 Calgary, AB, T2M 4L4	403-287-2267 250-369-2227	
Height Of The Rockies	Box 94 Wardner, BC, V0B 2J0	250-429-3958	250-429-3958
Island Lake Mountain Tours	Cedar Valley Road Fernie, BC, V0B 1M1	250-423-3700	250-423-4055
Kootenay Helicopter Skiing	Box 717 Nakusp, BC, V0G 1R0	250-265-3121	250-265-4447
Mike Wiegele Helicopter Skiing	Box 159 Blue River, BC, V0A 1H0	250-673-8381	250-673-8464
Mistaya Alpine Tours	Box 809 Golden, BC, V0A 1H0	250-344-6689	250-344-2229
Mount Assiniboine Lodge	Canmore AB, T0L 0M0	403-678-2883	
Mountain Heli-Sports Inc.	Box 250 Whistler, BC, V0N 1B8	604-932-2070	604-938-1706
Mountain Light Tours	Box 1789 Revelstoke, BC, V0E 2S0	250-837-6655	250-837-6655
North Rockies Ski Tours	1960 Garden Dr. Prince George, BC, V2M 2V8	250-564-7814	
Purcell Helicopter Skiing	Box 1530 Golden, BC, V0A 1H0	250-344-5410	250-344-6076
Retallack Alpine Adventures	Box 147 New Denver, BC, V0G 1S0	800-330-1433 250-358-2777	250-358-2777
R-K Heliski Panorama BC	PO Box 695 Invermere, BC, V0A 1K0	800-661-6060 250-342-6434	250-342-3466
Robson Helimagic Inc.	Box 18 Valemount, BC	250-566-4401	250-566-4333
Selkirk Mountain Experience	Box 2998 Revelstoke, BC, V0E 2S0	250-837-2381	250-837-4685
Selkirk Tangiers Heliskiing	Box 59 Revelstoke, BC, V0E 2S0	250-837-5378 250-344-5016	250-837-5460 250-344-7102
Selkirk Wilderness Skiing	Meadow Creek, BC, V0G 1N0	800-799-3499 250-366-4424	250-366-4419
Sno-Much-Fun Catskiing Inc.	63 Wattsville Rd. Cranbrook, BC, V1C 2A1	250-426-5303	250-426-5567
Tyax Heliski	Box 849 Whistler, BC	604-932-7007	604-932-2500
Tyax Lodge Heliskiing	Box 118 Vernon, BC, V1T 6N4	250-558-5379	250-558-5389
Whistler Heliski	Box 368 Whistler, BC, V0N 1B0	604-932-4105	604-938-1225

AVALANCHE RESCUE DOGS

Canadian Avalanche Rescue Dog Association (CARDA)

For information contact: Jan Tindle 604-932-5196

Validated Dog/Handler Teams (SARDT= Senior Avalanche Rescue Dog Team) (ARDT= Avalanche Rescue Dog Team)

Region	Name	Home	Work	Pager
Whistler	Bruce Brink (SARDT)	604-938-0838		604-979-4050
	Ian Bunbury (ARDT)	604-932-4127	604-905-2324	
	Dary Hemmon (SARDT)	604-932-5311	604-938-7602	604-975-9046
	Anton Horvath (SARDT)	604-932-1110	604-905-2324	604-979-7994
	Rene Long (SARDT)	604-932-4406		604-977-7239
	Craig Ros (SARDT)	604-932-9118	604-938-7602	604-975-9047
	Yvonne Thornton (SARDT)	604-932-5196	604-905-2324	604-979-7995
	Jan Tindle (SARDT)	604-932-5196	604-905-2324	604-975-9045
	Bruce Watt (SARDT)	604-932-2300		604-979-8352
	Dave West (ARDT)	604-894-5290	604-938-7602	
Blue River	Richard Wyne (ARDT)	604-938-1795	604-938-7602	604-975-9048
	Tim Quinn (ARDT)	250-673-8273		
Fernie	Robin Siggers (SARDT)	250-423-4892		250-979-9935
	Sue Boyd (SARDT)	250-429-3958		250-979-9982
Kamloops	Doug Fenton (SARDT)	250-376-6073		250-079-6628
	Wayne Bertrand (ARDT)	250-765-2359		250-975-9043
Kelowna	Richard Rotteveel (ARDT)	250-545-8859	250-862-0022	250-862-0022
	Kristina Johnston (ARDT)	250-352-9551		
Vernon	Zuzana Isert (SARDT)	250-837-9247		250-837-1498 250-837-3279
Nelson	Pat Coulter (SARDT)	250-725-3232		
	Jay Pugh (ARDT)	403-591-7523		
Revelstoke	Duncan Daniels (SARDT)	403-327-0967	403-381-5148	
	Bruce McCall (ARDT)		250-369-2227	
Tofino	R.j. Kingston (SARDT)	403-852-5371	403-852-3816	403-671-9125
	Kristie Simpson (SARDT)	403-633-2199	403-667-3862	403-633-7200
Calgary/Kananaskis	Russ Hendry	250-347-6575	250-342-4200	250-979-9015
Lethbridge				
Trout Lake				
Jasper				
Whitehorse				
Invermere				

Parks Canada Dog Teams

Park Region	Name	Home	Work	Fax
Jasper National Park	Warden Office		403-852-6155	403-852-4775
Glacier National Park	Gordon Peyto	250-344-5041	250-837-6274	250-837-6274
Banff National Park	Scott Ward	403-678-5554	403-762-4506	403-762-3240

Royal Canadian Mounted Police Dog Teams

Detachment Name	Address	Phone -Work Phone-Home	Fax	Pager
Nelson Subdivision Cpl. T. M. BARTER	1010 Second Street Nelson, BC, V1L 6P6	250-352-2156 (24 hr.)	250-352-9677	
Port Albernie Det. Cpl. B. McLellan	4110 6TH Ave. Port Albernie, BC	250-723-2424 250-723-5654	250-724-8986	604-979-7224
Terrace Detachment Cpl. L. Bretfeld	3205 Eby Street Terrace, BC, V8G 2X7	250-638-0333	250-638-7448	
Vernon Detachment Cpl. R.T. Boal	3402 30TH Street Vernon, BC, V1T 5E5	250-260-7126 250-542-1864	250-260-7190	
Calgary subdivision Cpl. B. Hamilton	920 16TH Ave. NE Calgary, AB, T2K 1K9	403-291-6236		
Kamloops Subdivision Cpl. Al Sonneff	1280 Trans Canada Hwy. N Kamloops, BC, V2C 5Y5	250-828-3130	250-828-3210	
Chilliwack Subdivision Cpl. Bud Mercer	46326 Airport Road Chilliwack, BC, V29 1A2	604-702-4000 604-824-1020		604-645-0165

SNOWMOBILE ORGANIZATIONS

Name	Address	Phone	Fax
Alberta Snowmobile Association	Percy Page Centre 11759 Groat Rd. Edmonton, AB, T5M 3K6	403-453-8668	403-453-8553
British Columbia Snowmobile Federation Debbie Paynton, President	Group 2, Comp11, RR1 Winlaw, BC, V0G 2J0	250-566-4627	250-226-7141

EDUCATION

Academic Courses

Organization	Address	Phone	Fax
University of British Columbia (Dave McClung)	Department of Geography & Civil Engineering 2324 Main Mall Vancouver, BC, V6T 1Z4	604-822-2674	604-822-6150

- Geography 408 - Snow & Ice Processes
- Civil Engineering 450 - Natural Hazards Engineering

Technical Courses

Organization	Address	Phone	Fax
Canadian Avalanche Association Training Schools	Box 2759 Revelstoke, BC, V0E 2S0	250-837-2435	250-837-4624

- Courses for Professional Personnel

Recreational Courses

Company	Address	Phone	Fax
Federation Of Mountain Clubs Of British Columbia	336 1367 W. Broadway Vancouver, BC, V6H 4A9	604-739-7175	604-737-3053
Canadian Ski Patrol System	8 Vartown Place NW Calgary, AB, T3A 0B5	403-938-2101	403-938-6020
Island Sauvage	31 Beech Street Campbell River, BC, V9W 5G4	604-286-0205 800-667-4354	604-287-8840
Bear Enterprises	Box 4222 Smithers, BC, V0J 2N0	604-847-2854	604-847-4533
Ptarmigan Tours	Box 11 Kimberley, BC, V1A 2Y5	604-422-3270	604-422-3566
Columbia Mountain Recreation	Box 990 Golden, BC, V0A 1H0	250-344-6322	250-344-7922
Weathertech Services	Box 992 Terrace, BC, V8G 4V1	604-638-6640	604-638-8577
Snow Safe	Box 2891 Canmore, AB, T0L 0M0	403-678-6830	
Snowline Technical Services	7943- 48th Ave NW Calgary, AB, T3B 2A7 snowline@compuserve.com	403-288-7541	
Mountain Light Tours	Box 1789 Revelstoke, BC, V0E 2s0	250-837-6655	250-837-6655
Kevin Christakos	Box 1224 Jasper, AB, T0E 1E0	403-852-4073	
Yamnuska Inc.	Box 1920 1316 Railway Avenue Canmore, AB, T0L 0M0	403-678-4164	403-678-4450
Ascent	#3, 1061 Evergreen Circle Canmore AB, T1W 2R2 742227.337@compuserve.com	403-678-2815 403-288-3072	403-678-2815 403-288-3072
Kootenay Snow Safety	Box 449 Rossland, BC, V0G 1Y0		
Stellar Consulting Services Ltd.	Box 450 Rossland, BC, V0G 1Y0	604-362-5314	604-342-5314

WEATHER PRODUCTS

Environment Canada Offices

Office/Region/Contact	Address	Phone	Fax
Regional Director General Pacific & Yukon Region Art Martell	Environment Canada 700-1200 West 73rd Avenue Vancouver, BC, V6P 6H9	604-664-9145	604-664-9190
Environmental Services Branch Pacific & Yukon Region G. E. Wells, Director	Environment Canada 200-1200 West 73rd Avenue Vancouver, BC, V6P 6H9	604-664-9090	604-664-9004
Mountain Weather Services Brad Snyder	Environment Canada 3140 College Way Kelowna, BC, V1V 1V9	250-491-1505	250-491-1506
Environmental Services Centre, Southern Alberta S. Blackwell, Manager	Environment Canada Box 540, Shell Aerocentre 1441 Aviation Park NE Calgary, AB, T2E 8M7	403-299-7802	
Environmental Services Centre, Northern Alberta S. Ricketts, Manager	Environment Canada Room 200, 4999-98 Ave. Edmonton, AB, T6B 2X3	403-951-8788	

Environment Canada Weather Offices: British Columbia

Location	Direct Consultation	24hr Recording	Fax
Fort Nelson	250-774-2302	250-774-6461	250-774-3742
Kelowna	250-491-1510	250-491-1500	250-491-1506
Dease Lake	250-771-4351		250-771-4352
Vancouver	604-664-9032	604-664-9010	604-664-9005
Victoria	250-363-6632		250-383-6674
Port Hardy	250-949-6559	250-949-7174	250-949-5933
Prince George	250-561-6910	250-561-6912	250-561-6915
Terrace	250-635-3224	250-635-4192	250-635-1729

Environment Canada Weather Offices: Alberta and Yukon

Location	Phone number
Calgary	900-565-555
Edmonton	900-565-555
Banff	403-762-2088
Jasper	403-852-3188
Whitehorse	403-668-6061

Private Weather Services

Company	Address	Phone	Fax
The Weather Network		514-597-1700	
World Weather Watch	401 Bentley Street - Unit 4 Markham, Ont. L3R 9T2	905-477-4120	905-477-0824

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Avalanche Safety Workshop in Calgary

National Search & Rescue Secretariat

Dunvegan Snowmobile Club

Wintering Hills Snowmobile Club

Anonymous



Winter avalanche information is available from December to April from the Canadian Avalanche Association.

BY PHONE:

- In Alberta and BC: 800-667-1105
- In Calgary: Calgary Herald Talkies: 403-243-7253 then dial SNOW (7669)
- In Vancouver : 604-290-9333

ELECTRONICALLY:

- Canadian Avalanche Association BBS: 604-837-4893 (8N1 to 9600baud)
- Internet: www.avalanche.ca/snow

BY FAX:

- Call for information: 604-837-2435