AVALANCHE NEWS NO. 9

JUNE 1982

EDITORIAL NOTE

The intention of AVALANCHE NEWS is to assist communication between persons and organizations engaged in snow avalanche work in Canada. Short articles cover reports of accidents, upcoming and past events, new techniques and equipment, publications, personal news, activities of organizations concerned with avalanche safety, education and research. Contributions are expected from the readers.

Avalanche News is issued three times per year, usually in January, June, and October. There is no subscription fee. Requests for copies and notifications of changes of address should be sent to the publisher.

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AVALANCHE NEWS

JUNE 1982, No. 9

AVALANCHE INVOLVEMENTS IN CANADA

WINTER 1981-1982

In the winter of 1981-1982 the amount of snowfall in Western Canada ranged from average in the Rocky Mountains to about 40% above average along the Pacific Coast and on Vancouver Island. It was generally 10% to 20% above average in the Interior Mountains of British Columbia. The temperature was above average, and prolonged cold periods were absent.

The combination of deep snow and high temperatures produced snowpacks that contained only short-lived deep instabilities or none at all. Although avalanches were frequent during the heavy snowfalls, they were moderate in size. Few avalanches of size 4 were observed. It is noteworthy that many of the observed large avalanches were triggered either by explosives or by skiers, for example the one that caused the fatality on 22 February, and that there were fewer natural, large avalanches than in other years.

The stable snowpack resulted in moderate avalanche activity during the snow melt period. In many areas the usual large spring thaw avalanches did not occur.

The avalanche centre of the National Research Council received reports of 45 incidents when persons or equipment were involved in avalanches, but presumably more persons than reported were caught and partially buried in avalanches. The sample of submitted reports, however, provides a good picture of the nature of the avalanche encounters.

Number of Incidents

11 incidents involved skiers in or near a ski area,
4 incidents involved back country skiers,
1 incident involved a mountain climber on foot,
10 incidents concerned maintenance personnel and equipment on highways, on railways, or in ski areas,
18 incidents involved public traffic on roads,
1 incident involved a group of tobogganers.

45 total

Of these incidents, 12 occurred in the Rocky Mountains, 14 in the Columbia Mountains, 17 in the Coast Mountains, and 2 on Vancouver Island.

Persons Involved

28 persons were in vehicles caught by avalanches,
22 persons were caught but remained on the surface of the avalanche,
13 persons were partially buried,
10 persons were completely buried and rescued alive,
4 persons were completely buried and found dead,
3 persons were injured (included in the numbers above).

Of the persons who were completely buried and rescued alive:

3 were found by rescue transceiver,
1 was found through contact by FM radio,
3 were found by shovelling by surviving companions,
2 were in a car that was completely buried and dug out by a front end loader,
1 dug himself out.

The rescue by means of an FM radio involved a ski patroller who was buried at a tree and directed his rescuers to his location by talking over his portable radio; he carried a rescue transceiver as well.

Of the persons who were recovered dead:

2 were found by rescue transceivers,
1 was found by a trained avalanche dog,
1 was found by shovelling.

Vehicles

2 vehicles were trapped,
6 vehicles were partially buried,
3 vehicles were buried,
1 train was derailed when plowing into deposited avalanche snow,
5 vehicles were damaged (included in the numbers above).

Structures

An avalanche damaged railway tracks, and another one a telephone line. No damage to buildings, powerlines, ski lifts, or other structures was reported.

Fatal Accidents

Four persons lost their lives in avalanches. On 12 January, 1982, railway workers were caught in an avalanche at the railway line between Terrace and Prince Rupert while they were removing deposits of previous avalanches. One of the men was swept under a pick-up truck that was parked beside the railway line. He suffocated from the snow packed around him and the weight of the vehicle above him. He was found after 40 minutes by probing and shovelling.

On 18 January, 1982, a group of ten skiers was caught in an avalanche in the Purcell Mountains. A snow slab had fractured over a very wide area above the group and the resulting large avalanche covered terrain spots that were expected to be safe. Two skiers were completely buried and uncovered 13 to 20 minutes later after being located by transceivers. One of the victims had died from head injuries and the other one from suffocation.

On 22 February, 1982, five skiers released an avalanche of size 4 outside the boundary of Marmot Basin ski area at Jasper. Three members of the party escaped, one was carried down and partially buried with his leg broken, and the fifth skier was completely buried. He died from multiple injuries and was found by an avalanche dog 3 hours and 40 minutes after the avalanche occurrence. The avalanche deposit had a length of about 1 km and broke numerous trees.

Accident While Tobogganing

The following unusual incident was reported in the Cariboo Observer and brought to our attention by Herb Bleuer (thank you Herb).

Tobogganing on the tailings of an old mine near Wells in the Cariboo Mountains nearly cost the lives of three teenagers on 9 January, 1982. It was a combination of luck and fast thinking by friends and neighbours that saved them from suffocating in the snow. The three were caught in an avalanche just before they made their way to the top of the 50-foot hill. One boy was lucky. His hand popped out of the surface and a friend, a person not involved in the avalanche, dug down and uncovered his face.

After the buried boy was out, he saw a foot sticking out under where he had been, about one metre deep in the snow. The second person was directly underneath. As soon as they had uncovered her face, the rescuers started searching for the third missing person by digging a series of trenches in a grid system. From the location of trees the searchers had some idea where to start digging.

The last victim was conscious when found, but she had been out for some time before. She had started to push the snow away from her face and managed to dig an air space. She was buried for about half an hour.

Many thanks to all those who have contributed to these statistics by submitting one or several reports.

Paul Anhorn

AVALANCHE SAFETY MEETING

It has become a tradition for the personnel of avalanche safety programs in Canada to meet in the month of May for a review of the winter activities and a discussion of mutual problems. The 1982 meeting was held on 5 May at Revelstoke, B.C. It was preceded by specialty meetings and by the annual general meeting of the Canadian Avalanche Association. On 4 May the instructors of the professional avalanche courses reviewed the training courses and the heads of operations met for a discussion of problems specifically related to avalanche control.

The general safety meeting, chaired by Willi Pfisterer (Parks Canada, Jasper), was attended by 70 persons engaged in the operation of ski areas and highways, ski and mountain guiding, helicopter skiing, consulting, research, volunteer ski patrols, and weather forecasting. The significant discussions are summarized below.

Data Storge and Exchange

Peter Fuhrmann (Parks Canada, Banff) reported the conclusions of the committee on data storage and retrieval and the daily exchange of avalanche information (see Avalanche News No. 7). The committee recommends that the Guidelines for Weather, Snowpack, and Avalanche Observations, published by the National Research Council, be used in all operations and that the format for recording data listed in the Guidelines be followed. The committee came to the conclusion that it would not be advisable now to have the data stored in a central computer or to have the data banks linked. The committee recommends that each operational group, for example Parks Canada, British Columbia Highways, maintains its own data bank.

Jeff Boyd (CMH Heli-skiing) described the daily exchange of weather and avalanche information between the different areas of CMH during the past winter. The exchange consisted of a scheduled report in the evenings over the special radio frequency assigned for safety between the helicopter skiing operations in British Columbia. Each one of the seven operators reported observations of the weather, the condition of the snowpack, and avalanche occurrences. The individual operators found the information about the conditions in other areas useful for confirmation of their own hazard evaluation and prediction. The exchange will be continued in the coming winter but will be confined to high quality information. It is hoped that other helicopter skiing operators, ski areas, and highway operations will join, but problems of timing and manpower will have to be solved first. The present system requires transmitting and receiving the information regularly at a fixed time. It was pointed out at the meeting that it would be more convenient to have access to the system at a flexible time.

Snow Metamorphism

A talk by Ron Perla (National Hydrology Research Institute, Environment Canada, Canmore, Alberta) about his laboratory studies of snow metamorphism was enthusiastically received. With the aid of microphotographs and pictures of thin sections of snow samples, Ron described the influence of snow density on the type and size of snow crystals and sintering under a strong temperature gradient.

Mountain Weather Forecast

The content and timing of the mountain weather forecast issued by the Pacific Weather Centre at Vancouver were discussed on 4 and 5 May, with the following conclusions:

a) The synopsis should contain more details and be in a quality appropriate to the professional user.
b) The information about freezing levels is accurate.
c) The information about wind speed and direction is good, although one must realize that the local wind is much influenced by the terrain. Many operators found the upper level wind observations taken at Vernon and Prince George most useful.
d) The predictions of the amounts of snowfall frequently are wrong, but on the average are satisfactory.
e) More briefers should be assigned to weather offices, specifically at Cranbrook and Revelstoke.
f) The morning forecast should be available at 0630 Mountain Standard Time (0530 PST).
g) Updates of the forecast between the times of the regular forecast are most important. The Weather Centre is encouraged to issue up-dated forecasts and is requested to transmit them to the users as quickly as possible either through the briefers or by telex.

It was pointed out that a closer interaction between users and forecasters/briefers would improve the quality of the weather forecast. A problem for the Pacific Weather Centre is to obtain in real time the observations from the mountain observers.

The avalanche hazard analysts at Banff reported good results from the frequent exchange of information with the weather office at Banff.

Rescue Transceivers

Several participants reported a high number of failures of older Pieps and Skadi transceivers. In most cases the problems can be traced to moisture and wear of switches. Moisture probably enters the equipment in the form of vapour which condenses and causes corrosion and circuit shortages. Some transceivers were found to work when they were tested inside a dry building, but failed when they were in contact with wet snow.

From the reported problems one may conclude that rescue transceivers wear out and should be replaced after several years of use.

Brian Weightman (Canadian Ski Patrol System, Calgary) demonstrated the ORTOVOX transceiver which contains several improvements. Information may be obtained and the ORTOVOX ordered from Brian Weightman, 2108 Home Road N.W., Calgary, Alberta, T3B 1H7, telephone (403) 286-7245.

Avalanche Dogs

Margie Jamieson (Ptarmigan Tours, Kimberley) described the guidelines that were developed for private dog handlers (see separate section in this issue of Avalanche News). Sgt. Doug Wiebe (R.C.M.P. Innisfail, Alberta) outlined new standards for avalanche dog teams of the Royal Canadian Mounted Police. Training and certification for avalanche work concentrates on the handler because the police dogs are already well trained.

Safety and Rescue Equipment

Peter Fuhrmann (Parks Canada, Banff) reported that the tests in avalanches with the Hohenester balloon were successful. The dummies with balloons attached stayed on the surface and in the upper part of the avalanche deposit. The balloon, which can be activated by a ripcord, goes into production soon and will be available at the meeting of the International Committee of Alpine Rescue at Banff in October 1982.

Willi Pfisterer suggested development of the technique for inserting oxygen through a hollow probe to a buried person.

Public Avalanche Forecast

Clair Israelson (Parks Canada, Lake Louise) drew attention to the daily public avalanche hazard forecast for back country travellers in Banff National Park. The forecast may be transmitted by telex to organizations interested in it. Requests should be addressed to the Chief Warden of Banff National Park.

Explosives Application

On 3 and 4 May, users of explosives in avalanche control discussed the regulations of the Workers' Compensation Boards of British Columbia and Alberta, and of Labour Canada. The regulations require operations to submit a safety plan for approval. It was decided that guidelines should be exchanged for drafting safety plans but that each operation should submit its own plan.

Avalauncher

The heads of avalanche control operations decided at a meeting of 4 May to pool orders for projectiles, explosives, and detonators. The 1 kg charge was accepted as a standard charge. A committee was formed with the task of collecting orders and approaching suppliers. The committee members are:

Clair Israelson, Parks Canada, Lake Louise, Alberta

Brian Leighton, Whistler Ski Corporation, Whistler, B.C.

Bill Moffat, B.C. Ministry of Transportation and Highways, Victoria, B.C.

Peter Schaerer

CANADIAN AVALANCHE ASSOCIATION

The first annual general meeting of the Canadian Avalanche Association was held on 5 May, 1982 in Revelstoke, B.C. As pointed out by the President, the meeting was an historic occasion bringing together many avalanche professionals from throughout Canada.

The Directors of the Association were elected:

Peter Schaerer - President
Willi Pfisterer - Vice President
Geoff Freer - Secretary-Treasurer
Walter Schleiss - Chairman - Membership Committee
Herbert Bleuer
Chris Stethem
Brian Weightman - Associate Members' representative

The membership committee was elected:

Walter Schleiss - Chairman
Willi Pfisterer
Herbert Bleuer

There are presently 59 members of the Association; 50 active members and 9 associate members. Membership requirements were outlined in detail in Avalanche News No. 8.

Various subjects were discussed during the Annual Meeting. These included:

Election of auditors
Incorporation in the Province of Alberta
Avalanche dog handlers
Association logo
Avalanche education
Annual membership fees
Avalanche course standards
Assistance to other agencies

Details can be obtained from Association members.

The 1983 annual general meeting will be held in Vancouver during the first week of May.

G. L. Freer

B.C.I.T./N.R.C.

On 4 May, 1982, in Revelstoke, a meeting was held with the course co-ordinator and the instructors, to review the past winter's courses and to discuss the coming winter schedule.

Tentative dates, locations, and course levels were discussed. Locations will be Creston, Whistler, and Jasper. The dates of the various courses are still in the planning stage but they will be designed to accommodate the professional. Once again, Levels I and II for ski areas/ski guiding and for industry and transportation will be offered. A strong interest was evident for a seminar type course that will go beyond the Level II course material. Consideration is being given to this type of course format and possibly this will be offered to qualified individuals in the 1983-1984 course schedule.

Other items discussed at the meeting were:

1. A tougher grading system on the exams will be introduced this coming winter.
2. All Level II participants should provide their own basic snow profile equipment.
3. Canada Manpower's involvement in sponsoring participants is the responsibility of the organization sending the individual. The individual is asked to check with the local Canada Manpower Office, not B.C.I.T.

At the general avalanche safety meeting on 5 May, it was requested that a course on avalanche control be organized. A list of training needs for such a course is being drafted and the course will be offered in January 1983.

Brochures with course dates, locations and equipment lists should be available by September. For more information contact:

Mr. Garry Walton, Course Co-ordinator
Industrial Services Division
British Columbia Institute of Technology
3700 Willingdon Avenue
BURNABY, B.C.
V5G 3H2

Since pre-course information is mailed prior to the start of the courses, it is important that registration take place as quickly as possible to ensure that all course participants receive their course materials on time.

John Tweedy

NUMBER OF PARTICIPANTS IN AVALANCHE COURSES WINTER 1981-1982

LEVEL I			NUMBER OF PARTICIPANTS	
			Registered	Passed
30 Nov. - 4 Dec.	Creston	Transportation and Industry	20	20
12-18 Dec.	Whistler	Ski Area/Ski Guiding	26	23
11-17 Jan.	Creston	Ski Area/Ski Guiding	27	26
18-24 Jan.	Jasper	Ski Area/Ski Guiding	25	24
15-22 Feb.	Creston	Ski Area/Ski Guiding	17	17
8-12 Feb.	Creston	Transportation and Industry	34	34
		Total Level I	149	144
LEVEL 2				
11-18 Dec.	Creston	Ski Guiding	16	14
22-27 Feb.	Wapta Lodge	Parks Canada	12	12
REFRESHER LEVEL 2				
8-10 Dec.	Creston	Ski Area/Ski Guiding	6	6
TERRAIN				
23-26 March	Revelstoke		19	19

PRIVATE AVALANCHE DOG HANDLERS

A meeting and training seminar was held recently by private dog handlers interested in avalanche rescue work. The following objectives were outlined:

1. To expand the coverage of trained avalanche rescue dogs in mountain regions.
2. To screen and train dog teams to a prescribed standard.
3. To maintain standards and communication among dog handlers.

The R.C.M.P. has extended its full support for a certification program.

The prerequisites for prospective handlers and dogs were defined as follows:

Handler:

1. Avalanche training: B.C.I.T. Level I ski guiding
2. Ski mountaineering ability
3. First aid: C.P.R. and St. John's Standard First Aid

Dog:

1. Working breed: good winter dog
2. Obedience: companion dog
3. Agility
4. Shots: rabies, parvo, lepto, distemper
5. Hips: no displacia
6. Age: not older than 2 years with no previous snow experience

Anyone interested in this program is invited to contact Rod Pendlebury, Chairman for the Avalanche Dog Group, Box 364, Fernie, B.C., V0B 1M0, telephone (604) 423-7932.

The seminar was held on 16-20 April, at the facilities of Ptarmigan Tours, west of Kimberley, B.C. The sequence of events was:

Friday evening:

Talk by Sgt. Doug Wiebe giving suggestions and support by the R.C.M.P.;

Outline of avalanche rescue work by Cpl. Gordon Burns (R.C.M.P.);

Discussion of objectives and election of officers.

Saturday:

Skiing ten miles to the lodge; practice of dog control; placing articles for "hides" for return trip;

Evening discussion with the objective of developing a certification program.

Sunday:

Individual dog work on avalanche debris with a live burial and objects;

Obedience work on retrieval;

Evening discussion.

Monday:

Obedience work with each dog separately and then as a group;

Live burials and objects on avalanche debris, working dogs simultaneously;

Evening discussion.

Tuesday:

Skiing to trailhead;

Each dog located articles buried on Saturday;

Final discussion.

Margie Jamieson
Secretary for Canadian
Private Avalanche Dog Handlers

Two ladies discussed their vacation plans. "I am always visiting a beach", said one of them. "When I am drowning I might be rescued by a young, good-looking lifeguard, but in the mountains, when I am buried in an avalanche who will come to the rescue? A dog!"

*****

AVALANCHE RESEARCH AT UNIVERSITIES

Rhoda McFarlane at the University of Waterloo, Ontario, has compiled a list of avalanche research activities at Canadian universities:

Present Avalanche and Related Research:

1. W.P. Adams, Trent University, Peterborough, Ontario
   Research Topic: Assessment of the Effectiveness of Snow Gauges
2. James. S. Gardner, Rhoda C. McFarlane, University of Waterloo, Waterloo, Ontario, and Harold J. McPherson, University of Alberta, Edmonton, Alberta
   Research Topic: An Evaluation of Snow Avalanches in Kananaskis Country, Southwest Alberta
3. Rhoda C. McFarlane, University of Waterloo, Waterloo, Ontario
   Research Topic: Resource Management in Mountain Environments: A Consideration of Snow Avalanches
4. P. Simpson-Housley, Bishop's University, Lennoxville, Quebec
   Research Topic: Snow Avalanches, A Review with Special Reference to New Zealand

On-going Interests in Snow Avalanches as Natural Hazards:

1. M.J. Bovis, University of B.C., Vancouver, B.C.
2. W.J. Brown, University of Manitoba, Winnipeg, Manitoba
3. Kenneth Hewitt, Wilfred Laurier University, Waterloo, Ontario
4. Edgar L. Jackson, University of Alberta, Edmonton, Alberta

Since one of the objectives of Avalanche News is to report new developments, researchers are invited to submit short notes about their activities.

INTERNATIONAL SNOW SCIENCE WORKSHOP

The workshop will be held 21-23 October, 1982 at Montana State University at Bozeman, Montana, U.S.A.

The workshop will provide an opportunity for the mutual exchange of new ideas between those engaged in the study of theoretical, professional, and recreational aspects of snow. It will consist of two days discussion, a banquet on Friday evening, and a Saturday field session at Bridger Bowl Ski Area.

The workshop will be concerned with the following topics:

1. Snow Metamorphism and Classification
2. Avalanche Control and Prediction
   - *Weather
   - *Public Information
   - *Education
   - *Explosives and Shock Waves
3. Wind Blown Snow, Creep and Glide
4. Avalanche Zoning
5. Grooming, Packing, and Snow Making (Alpine and Cross-Country)
6. Safety and Rescue
7. Safety Procedures for Back Country Travel
8. Other Relevant Topics

John Montagne, Chairman of the organization committee, promises an exciting program and wishes to announce that:

1. About 200 preliminary registrations have been received (as of mid-May 1982).
2. Forty-five presentations have been proposed covering topics that range from studies of snow metamorphism to safety in back country skiing. Additional oral presentations or topics for the poster session are still welcome and may be accommodated.
3. Anybody is welcome to attend the workshop. Registrations will be received until the last minute, but in order to guarantee adequate accommodation at the conference, to expedite the registration process, and to guarantee participation at the banquet, it is recommended that registrations be submitted by 1 October, 1982.

The brochure describing the program in greater detail with registration forms may be obtained from the Department of Earth Sciences, Montana State University, Bozeman, Montana, 59717, U.S.A.

7TH ANNUAL BANFF FESTIVAL OF MOUNTAIN FILMS

The 7th Annual Banff Festival of Mountain Films will take place over the weekend of 6-7 November, 1982, at the Banff Centre, Banff, Alberta. As previously, all films will be evaluated by a national panel of judges, selected for their wide experience in mountaineering and in all aspects of the film industry. Awards are available in several categories, of which the one on mountain safety is of special interest.

At the 1981 Annual Banff Festival of Mountain Films, the award winning film on Mountain Safety was "The Snow War", a 16 mm color film produced by Glacier and Mount Revelstoke National Parks, Parks Canada, Revelstoke, B.C. "The Snow War" depicts the modern struggle between man and snow avalanches in Rogers Pass, Glacier National Park, British Columbia. It explains how avalanches are formed and the methods of controlling them in this important Canadian transportation route. An actual rescue takes place and is captured on film.

For further information about the Festival of Mountain Films, please contact:

Patsy Murphy, Co-ordinator
Banff Festival of Mountain Films
The Banff Centre
P.O. Box 1020
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