AVALANCHE NEWS NO. 25

OCTOBER 1987

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.

The editor welcomes and expects contributions; all reasonable comments and discussions will be printed. The articles in AVALANCHE NEWS reflect the views of the authors, and only when it is specifically stated do they represent the opinion of the Canadian Avalanche Association.

No paid advertisements are carried. Suppliers who wish to draw attention to their products should send information to the editor who will publish a note when the equipment has value in avalanche work and safety.

AVALANCHE NEWS is issued three times per year, usually in February, 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
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AVALANCHE INVOLVEMENTS IN CANADA
1986-1987

by Paul Anhorn
National Research Council
P.O. Box 2759, Revelstoke, B.C., V0E 2S0

The Avalanche Centre of the National Research Council has received additional reports of incidents involving persons in avalanches. Statistics of avalanche incidents are compiled on a yearly basis, the avalanche season starting on October 1st and ending September 30th. In addition to the 28 incidents reported in AVALANCHE NEWS NO. 24 we have received 5 avalanche involvement reports:

- 4 incidents involved backcountry skiers
- 1 incident involved a vehicle

Persons Involved:

3 persons were caught but remained on the surface
2 persons were partially buried and not injured
2 persons were completely buried and died
2 persons remained on surface and died

We wish to thank the reporters of the incidents, specifically the wardens of Banff and Jasper National Parks.

Fatal Accidents

On May 29, 1987 two skiers decided to ski the slopes above the old fire lookout at Bow Summit, Banff National Park. Hiking up the north ridge, they climbed too high, past the safe slopes. They decided to ski down a convex shaped 40 degree gully. The victim began to ski the gully, while his partner stood on rocks taking photos. The isothermal snow failed six meters wide, carrying the skier 100 meters before launching him over cliffbands. His body came to rest against some small trees midslope on the scree.

On June 14, 1987 four members of the British Armed Forces tried to ascend the 3500 m peak of Mt. Bryce. Mt. Bryce is just inside the British Columbia boundary, directly south of Mt. Columbia in Jasper National Park. As they were climbing in hour glass-shaped terrain the two roped-up teams noticed cornices breaking off. Not recognizing nature's warning they continued to climb. At 2030 hours a cornice falling from the peak released an avalanche. The leading soldier of the first team was the only person untouched. He was standing on a bordering rib and belaying his partner with 2 ice axes. The force of the avalanche broke the rope. All three victims were carried 150 m downhill. The avalanche had removed all the snow to the glacier ice. The survivor was scared to go downhill. Instead he went over the ridge and down the other side, trudging for 14 hours until he met a logging crew where he reported the accident. National park wardens with avalanche dogs found the three victims: two were completely buried and one was on the surface. An autopsy found that all three had died of suffocation.

AVALANCHE COURSES

by Peter Schaerer

Avalanche training courses for professionals who work in operations concerned with avalanche safety will again be organized for this coming winter. The courses are well known for their quality of instruction and content. The Canadian Avalanche Association is responsible for the standards and training objectives, the National Research Council of Canada for developing the content, and the British Columbia Institute of Technology for the administration of the courses.

The following courses are planned for the 1987 - 1988 winter:

Avalanche Safety for Transportation and Industry - Level 1

November 23 - 27 at Creston, B.C.
November 30 - December 4 at Creston, B.C.

Avalanche Safety for Ski Operations - Level 1

November 29 - December 5 at Whistler, B.C.
January 10 - 17 at Assiniboine Lodge
January 17 - 24 at Assiniboine Lodge
January 16 - 23 at Boulder Lodge near Kimberley, B.C.

Avalanche Safety for Ski Operations - Level 2

January 4 - 11 at Whistler, B.C.

In addition, a Level 1 course for Ski Operations may be held at Panorama Ski Area if there is enough local interest. Avalanche control and terrain courses are not planned owing to a low level of interest in such courses. The Association of Canadian Mountain Guides intends to organize a course in terrain evaluation and route finding for candidates of guiding courses.

Registrations

The British Columbia Institute of Technology has assigned CANTRAIN Services Ltd. the task of answering inquiries, receiving registrations, and providing direct services for the courses.

Address: Cantrain Services Ltd.
2818 Bayview Street
Surrey, B.C.
V4A 2Z4
Telephone: (604) 531-4300

The preferred time for calls is in the evening.

In addition, information about the content and pre-requisites of the courses may be obtained during business hours from the Avalanche Research Centre of the National Research Council, telephone (604) 666-6741.

Registrants for the courses are advised that while interest for some of the courses is strong, meeting room size and the effectiveness of field work will limit the class sizes. For these reasons payment must accompany registration in order to guarantee a seat. No reservations without money!

Cost

Unfortunately the course fees have had to be increased because the courses are no longer subsidized by the B.C. Ministry of Education. The National Research Council of Canada and the British Columbia Institute of Technology still contribute considerable free time to the development and administration of the courses, and other agencies including Parks Canada, the British Columbia Ministry of Transportation and Highways, Whistler and Blackcomb Ski Areas make available the time of instructors and provide free services.

The fees for the 1987 - 1988 courses are:

$350 for Transportation and Industry - Level 1 courses;

$500 for Ski Operations - Level 1 courses;

$700 for Ski Operations - Level 2 course.

Although this may appear high, the costs on a daily basis are in line with other industrial courses and professional avalanche courses in the U.S.A. A high ratio of instructors to students (required for field work) and the need to hold the courses at remote locations are the principal reasons for the high costs.

Pre-requisite for the Level 2 Course

Level 2 course participants will be assessed, both on their skills and knowledge in data collection, and on their potential for independent judgement in hazardous situations. The course cannot be used as a remedial tool for students whose Level 1 competence is in doubt. Nor is it intended as a substitute for the skill and knowledge development which Level 1 graduates are expected to acquire through work experience. The need for independent study and on-the-job learning between the completion of the Level 1 course and entry to the Level 2 course cannot be stressed too highly.

Applicants for the Level 2 course must submit a statement that they:

a) have successfully completed a Level 1 course, or training equivalent to a Level 1 course; and

b) are familiar with the Canadian Guidelines for Weather, Snowpack, and Avalanche Observations; and

c) after completion of the Level 1 course have either worked full time for the duration of at least one winter in an avalanche safety operation, or have travelled in terrain subject to avalanches for an equal length of time applying all Level 1 skills. The total length of time considered adequate is about 100 days in the field.

The training and experience claimed above must be confirmed in writing by a practicing graduate of a Level 2 avalanche course.

The knowledge and skills of the participants of the Level 2 course will be tested on the first day of the course with a written exam, snowprofile observations, and weather observations.

1986 - 1987 Courses

The professional avalanche courses held in 1986 - 1987 had the following numbers of participants:

Type of Course	Participants	
	Attended	Passed
Transportation and Industry - Level 1 24 - 28 November 1986 at Creston	21	21
Transportation and Industry - Level 1 1 - 5 December 1986 at Creston	27	27
Ski Operations - Level 1 29 November - 5 December 1986 at Whistler	30	30
Ski Operations - Level 2 5 - 12 January 1987 at Whistler	12	12
Ski Operations - Level 1 11 - 18 January 1987 at Assiniboine Lodge	21	21
Ski Operations - Level 1 18 - 25 January 1987 at Assiniboine Lodge	18	15
Ski Operations - Level 1 25 January - 1 February 1987 at Assinboine Lodge	17	17
Ski Operations - Level 1 1 - 7 February 1987 at Lake Louise	21	21
Ski Operations - Level 1 2 - 8 March 1987 at Whistler	13	13
Total 9 courses	180	177

INTERNATIONAL SNOW SCIENCE WORKSHOP

by Organizing Committee ISSW 1988

The bi-annual meeting of practical and theoretical snow and avalanche workers, following the tradition of the workshops in Banff, Vancouver, Bozeman, Aspen, and Tahoe, will take place:

OCTOBER 12 - 15, 1988 at WHISTLER, BRITISH COLUMBIA

The theme of the workshop is A Merging of Theory and Practice. It will address the following topics:

1. Snow stability evaluation and avalanche hazard forecasting;
2. Avalanche control techniques;
3. Avalanche protection and liability (engineering and design, zoning, public education, public warning systems);
4. Avalanche dynamics and run out;
5. Physical and chemical properties of snow;
6. Snow formation and mountain meteorology (including snowmaking);
7. The effect of wind on snow deposition, distribution and structure;
8. Snow and weather monitoring systems (sensors, telemetry, software, methods);
9. Snow management (compaction, snow removal, methods of transport);
10. Avalanche and winter search and rescue; and
11. Other relevant topics.

The workshop will include oral presentations to the full audience, poster sessions, commercial exhibits, and a field session at the Whistler Mountain and Blackcomb Mountain ski areas.

The Organizing Committee encourages practitioners, in particular, to present descriptive narratives and/or case histories of successful field methods. All persons interested in giving an oral presentation or poster session on any of the listed topics are requested to submit an abstract. The abstracts must contain not more than 250 words. A camera-ready copy of the written paper will be required at the Workshop for inclusion in the proceedings.

Proposals for Presentations and abstracts should be submitted by February 1, 1988 to:

Dr. David McClung
National Research Council Canada
3650 Wesbrook Mall
Vancouver, B.C. Canada
V6S 2L2
(604) 666-8046

Registration Fee

Before March 1, 1988 - $70 Can. or $55 U.S.
After March 1, 1988 - $80 Can. or $65 U.S.

Payments should be made out to ISSW 88.

Address

For the brochure with registration form, further information, registrations and payments:

ISSW 88 Committee
P. O. Box 67
Whistler, B.C. Canada
VON 1B0

MOUNTAIN WEATHER SEMINAR

by Peter Schaerer

In Avalanche News No. 24 we announced the intention to hold an advanced workshop/seminar on Mountain Weather Forecasting. The objective was to assist the users in the application of the mountain weather forecast. A committee was charged with the responsibility of defining the topics, time, and location of the seminar. The committee members - Vello Puss (AES, Pacific Weather Centre), Janice Johnson (B.C. Highways), Kel Fenwick (Whistler Ski Corporation), John Hetherington (Whistler), and Peter Schaerer (NRCC) - met on 27 July 1987.

The Committee proposes "Accuracy and Limitations of Weather Forecasts" as the general theme of the seminar and suggested several speakers who would represent forecasters, weather services, university researchers, and users. The following discussion topics were identified:

Flow patterns;
Development of frontal systems;
Influence of mountains on weather;
Examples of local weather;
Preparation of forecasts;
Confidence of forecasts;
Communication systems available for forecasts in Canada;
User requirements and applications.

The discussion concerning the date of the seminar revealed that the time for organizing it this year is short and the staff of the Pacific Weather Centre would not be available in October and November 1987 owing to a heavy engagement in the Ocean Storms project. For these reasons the seminar is planned for October or November 1988, perhaps in association with the Snow Science Workshop. The seminar will be held at one central location, not at Vancouver and another place in eastern British Columbia, as were the weather courses over the past four years. The Committee invites comments and suggestions from the users of the mountain weather forecast concerning discussion topics, time and location.

MOUNTAIN WEATHER FORECASTS - 1987-1988

Users of the mountain weather forecast are advised that the forecast will again be issued regularly starting in November 1987. The format and timing will be the same as in the past winter. We wish to encourage avalanche operations to critically evaluate the quality of the forecast and to comment during and at the end of the winter. The forecast is made for you! The Pacific Weather Centre is anxious to receive reactions and comments about the value of its product.

The users are reminded that the mountain weather forecast, issued by the Pacific Weather Centre of Environment Canada, gives only an estimate of the expected weather (wind, temperatures, precipitation), and cannot predict exactly the weather for each area. The users must call their local weather office for a discussion of the weather in their own area of operations.

AVALANCHE RESOURCE AGENCIES

The list of resource agencies distributed with Avalanche News No. 23 (February 1987), and included in the course manual for participants of the avalanche courses, will be updated. The revised list will be published with the February 1988 issue of Avalanche News.

Avalanche resource agencies are those which offer services in the following fields:

a) Daily information regarding snow stability and avalanche hazards: National and Provincial Parks, highway operations, ski areas including helicopter ski operations. These organizations usually are also equipped for search and rescue.

b) Search and rescue: avalanche dogs, emergency programs, ski patrols, mountain rescue groups.

c) Education: organizations administering avalanche courses, sources for audio-visual material.

d) Weather information.

The Canadian Avalanche Association has ruled that consultants should not be listed.

All avalanche workers and agencies in Canada are requested to check the list and notify the office of Geoff Freer (see address and telephone number on the front page of Avalanche News) concerning changes, additions and deletions. They should also consider whether other persons or agencies presently not listed should be listed.

Consultants and individuals who wish to organize and teach avalanche courses for the general public should submit their names to the Avalanche Centre of the National Research Council. The names of those offering their services will be kept on file there and issued when inquiries are received.

PUBLICATIONS

Snow Property Measurement Workshop, National Research Council Canada, Associate Committee on Geotechnical Research, Technical Memorandum No. 140; Publication NRCC 27594; April 1987, 524p.

Available from Publication Sales, National Research Council of Canada, Ottawa K1A OR6; price $25.00.

The publication contains the papers that were presented at the workshop held on April 1 - 3, 1985 at Lake Louise, Alberta. The workshop was organized to promote interactions between researchers on snow in Canada. The theme "Snow Property Measurements" was chosen because suitable instrumentation and problems with measuring methods frequently impede research. The 24 contributions in the publication cover the measurement of snow structure and physical properties, methods and instrumentation for observations of snow cover distribution, snow water equivalent, precipitation and blowing snow.

Wang Yanlong and Huang Maoduan

An Outline of Avalanches in China, Cold Regions Science and Technology, Vol. 13, No. 1, p. 11-18; October 1986.

The distriubtion and features of avalanches in China are introduced, and the climates of the avalanche areas are described.

M. Martinelli Jr.

A Test of the Avalanche Runout Equations Developed by the Norwegian Geotechnical Institute, Cold Regions Science and Technology, Vol. 13, No. 1, p. 19 - 23; October 1986.

The runout distances of maximum avalanches in avalanche paths in the U.S.A. and Switzerland were compared with runout distances calculated with equations developed in Norway. The calculated distances generally were underestimated. A new equation was developed from the test data.

Arthur Judson, Rudy M. King, and Glen E. Brink

Multi-basin Avalanche Simulation: A Model, Cold Regions Science and Technology, Vol. 13, No. 1, p. 35 - 47; 1986.

A process-oriented avalanche prediction model for wide-area use was developed and successfully tested on data from Colorado. This research model is driven by temperature, precipitation, wind, and radiation. It simulated snow transport and deposition in starting zones and the development of a layered snow cover in forest sheltered clearings. Probabilities of avalanche occurrences are estimated according to recent loading and simulated regional snowpack stratigraphy.

D. M. McClung and K. Lied

Statistical and Geometrical Definition of Snow Avalanche Runout, Cold Regions Science and Technology, Vol. 13, No. 2, p. 107 - 119; 1987.

Reprint available from Publication Sales, National Research Council of Canada, Ottawa, K1A OR6; Publication NRCC 27715, (price $3.50).

Two mathematical models for calculating the extreme avalanche runout distance using a fixed reference point on the path are presented. The models are: (1) estimates of confidence limits based on regression analysis of average inclines of avalanche paths, and (2) prediction of extreme-value statistics based on distance variables.

The Avalanche Review

The Avalanche Review, the newspaper (6 issues per year) which provides information on all aspects of avalanche safety and avalanche work in the U.S.A., has changed. The Avalanche Review is no longer its own corporation; it is now a publication of the American Association of Avalanche Professionals. Changes have been made to the editing and printing process.

In future one cannot buy a subscription, but must be a member of the American Association of Avalanche Professionals to receive The Avalanche Review. The membership categories are Full Member ($20.00 U.S.), Subscribing Member ($18.00 U.S.), Student Member ($15.00 U.S.), Sustaining Member ($100.00 U.S.), and Life Member ($400.00 U.S.). For membership applications contact Rod Newcomb, Membership Committee AAAP, Box 308A, Wilson, Wyoming 83014, U.S.A.

Information can also be obtained from the editor of Avalanche News.

EDITORIAL

Avalanche News enters its ninth year of publication. About one thousand copies are mailed and distributed with every issue. The majority of readers is in Canada, a significant number in the U.S.A. and many others spread around the world from South America to Western Europe, New Zealand, India and Japan. Public, corporate and agency libraries carry Avalanche News on their shelves.

Avalanche News contributes to meeting the objective of exchanging technical information of the Canadian Avalanche Association, the responsibility for technology transfer of the National Research Council of Canada, and the commitment to avalanche safety of the British Columbia Ministry of Transportation and Highways.

The editor finds it refreshing to receive comments and compliments from the readers. Negative reactions have been few in number but strongly worded. Positive and negative criticism is needed to keep editors in line and to encourage the continuation of the publication and the maintenance of its quality.

Despite its world-wide distribution, Avalanche News is the vehicle of communication between persons interested in avalanche work and safety in Canada. Readers seem to appreciate news about what is happening in the avalanche business in Canada, including changes in personnel and responsibilities, and avalanche control and safety programs that have been introduced. I wish to encourage those in charge of avalanche programs to take time between snow storms, when all the snow profiles and avalanche occurrences are recorded, to write a few words about their operation. The managements of ski areas, government departments, and other agencies may also appreciate it when news about their well organized avalanche safety programs are published.

Peter Schaerer