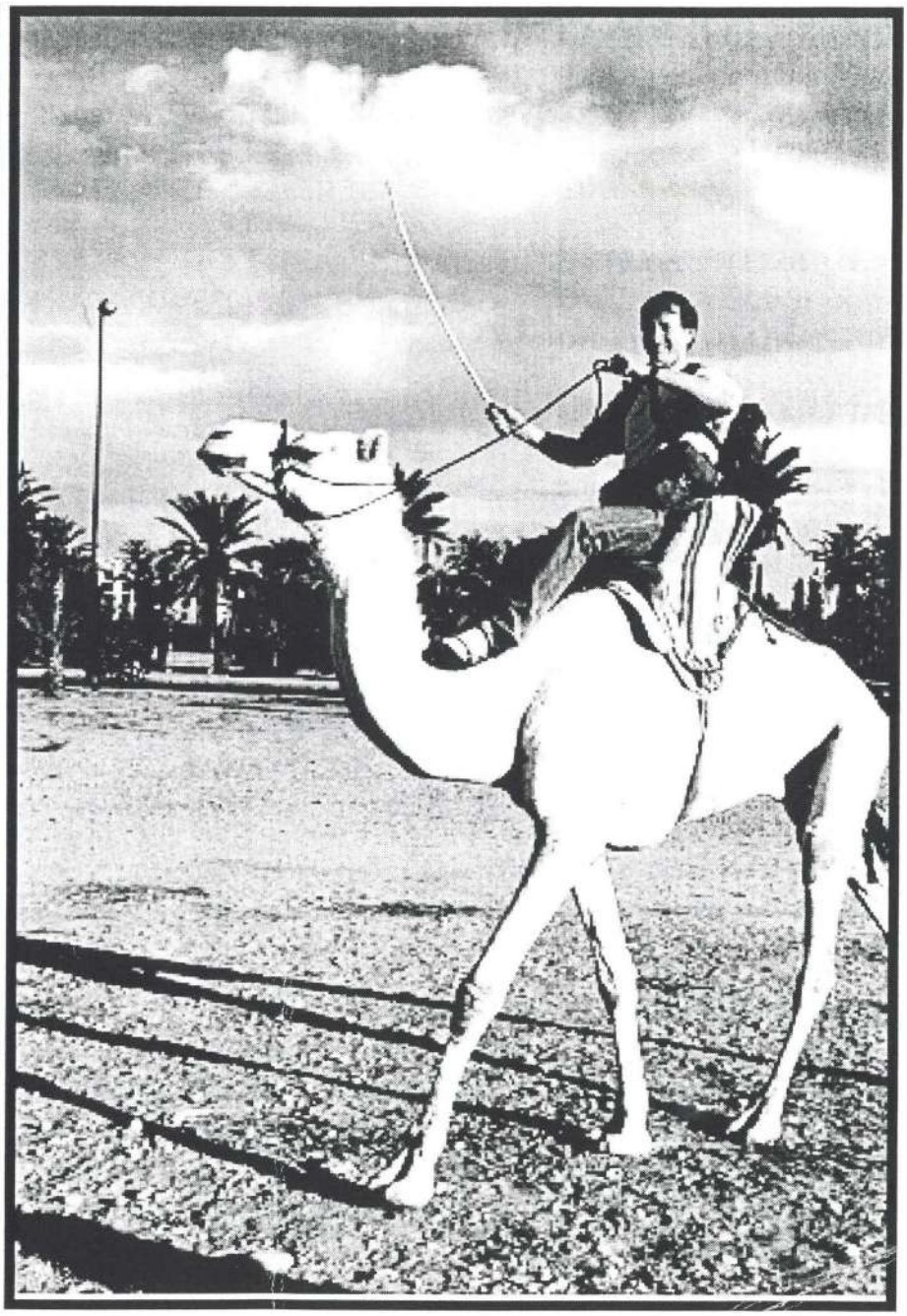
CANADIAN AVALANCHE ASSOCIATION

AVALANCHE NEWS

FALL 1998 VOLUME 56



AVALANCHE NEWS

FALL ISSUE VOLUME 56

Front Cover:

What our instructors do in the off season!
Phil Hein, CAA Training Schools Program Coordinator, is shown perfecting his camel riding skills prior to heading off with 11 other CAATS Instructors in Morocco, while working for the Discovery Channel Eco Challenge. Working under the supervision of Scott Flavelle, the mountain guides were set up at a 3700 meter check point to ensure the safety and security of the 216 competitors while traveling through the high Atlas Mountains, during the first two weeks of October.

Photo courtesy of Roger Laurilla

MESSAGE FROM THE PRESIDENT

Synopsis: A positive forecast for the winter of 98/99 has been issued for the Canadian Avalanche Association.

At the office:
At the Canadian Avalanche Centre, flurries of activity and teamwork have created stable layers in the pack. 'Up and Running' modern systems are producing prolonged periods of efficiency and productivity. Financial management products and communications from the Business Manager are creating a low-pressure center for the Board. In Marketing and Partnerships, promising winds are blowing in favorable directions. Early in the season, but already moderate and steady sales of CAA publications & materials are generating the energy we depend on. Wide spread interest in avalanche safety is hitting the CAC with storm force winds, the ship is holding.

At the schools:
A class 3 avalanche of RAC interest is sweeping down on a large and well-prepared instructor base. The Canadian Avalanche Association Training Schools are receiving early and heavy loading in the starting zones. Selkirk College was site of the inaugural CAA Introduction to Snow Avalanche Hazard Mapping for Professionals. A waiting list is developing in the wake of the passing class.

In the Association:
The first 'BC Coroner Service/Canadian Avalanche Association Professionals' investigation protocol agreement (for 98/99) was signed off today under clear skies. Expect ratification this December.

At the projects:
SAR Scene blew through Calgary this fall allowing Parks Canada Heritage and the CAA to update and exchange on NSS related business and products. The Eastern Canada Avalanche Project (ECAP) is well under way, with Clair Israelson managing the project. Early ECAP

(Continued on page 4)

(Continued from page 3)

products, ARAC & *Sledding in Avalanche Terrain* (Jamieson & Svederus) will add more volume to the RAC outflow winds. The first layer of approval was reached with the NSS 'Snowsmart' proposal with activity driven by Robert Conn, Gord Ritchie, and many new partners. 'Snowsmart' an Alberta schools curriculum pilot is well consolidated and bonding with the Education ministry as we speak. Results are expected next season.

In the Industry:
The hard work and massive contribution of the Explosives Committee and Robert Kennedy, have bridged recent, but persistent weaknesses in our fuse assembly purchase position. The extended forecast includes continued periods of high pressure to improve our purchase outlook.

Research & Seminars:
500 delegates attended the International Snow Science Workshop 98, in Sun River Oregon. The quality and variety of the papers was high. McClung dazzled them with his risk propensity & human factors in avalanche forecasting paper, while Jamieson reported on the unburied secrets of buried surface hoar. Randy Stevens sat on an avalanche education panel and was granted the opportunity to showcase our various products and programs in a glowing International light.

With the Board of Directors:
Heavy precipitation in the form of E-mails, conference calls and business volume is been driven by an intense front of progress and over all success.

Long range forecast:
The over all conditions are building a strong outlook for the future of the CAA and its' Members.

Have a safe and happy season in the snow,

Niko Weis
President, Canadian Avalanche Association

CANADIAN AVALANCHE ASSOCIATION

FROM THE EDITOR'S DESK

I hope that everyone had a great summer and is now gearing up for the winter season.
I know that things are in full swing around the centre. Courses are filling up, the phones are ringing and the energy level is high.

I am pleased to introduce to you our new *Business Manager*, Richard Rotteveel. Richard comes to us from Vernon B.C. and may be known to some, from his Canadian Avalanche Rescue Dog Association days. The new role of Business Manager was formed as Evan and Richard will be working as a team, and sharing duties to bring the best possible service to our members.

This will be the last history article on significant avalanches that we will be running in the newsletter, as we are now going to be profiling the founders of the industry. Our last avalanche story is on the Granduc Mine disaster.

The first article was written by a public historian, Murray Lundberg. Murray lives in White-horse Yukon, specializing in mining and transportation history. He first got the bug as a child, as a result of his dad's interest in the Caribou gold rush. It was during his stint working at the Granduc Mine were he realized that he belonged in the North. Murray is currently working on his third book, on the Alaska Highway, to be released April 1999.

The second article was written by Mike Boissonneault. Mike works for the B.C. Ministry of Transportation and Highways, is a professional member of the CAA, and the chair of the explosives committee. Mike is an ex-Snowbird from 79-85.

Remember, we are always looking for great photos and interesting articles for the newsletter. The deadline for the spring issue will be January 15th, 1999.

Happy Holidays from the staff at the CACentre.

Heather Buerge
Editor, Avalanche News

Don't forget to check out whats new on our web site:
www.avalanche.ca

The Canadian Avalanche Centre and Administrative Business Management

by Phil Hein – CAA Training Schools Program Coordinator

The fall and start of winter 1998 finds the Canadian Avalanche Centre (CAC) welcoming a new management member to the team. The CAC has hired a business manager to assist with the increasing number of programs, services and activities the Centre handles and manages.

Richard Rotteveel came on board this September, and brings to the Centre a strong background in day to day business administration and a positive flow of enthusiastic energy. His participation in the Level 1 Ski Operations course, with Scott Flavelle and Herb Bleuer in 1993, led to his further interest in avalanche safety skills development as a CARDA rescue dog handler, and ongoing personal winter backcountry recreation activities and pursuits.

The position for a business manager was identified in the process of working to fill the Managing Director post of the CAA. A recruiting and selection committee process, along with a CAA board of directors review of program needs conducted since last spring and finalized in September, resulted in selecting the skills and experience identified as critical administrative requirements for the ongoing demands placed on the Canadian Avalanche Centre operations.

Richard is already working closely with the Centre's operations manager Evan Manners and the staff at the CAC, and is currently focused on the Public Safety Services initiatives while concurrently working to further develop and organize the overall administrative elements that the Centre requires to function both smoothly and effectively. As the CAC continues to provide services to both CAA Membership Programs and in the role as a National Public Avalanche Safety Resource across Canada, the combined interests require well developed systems to keep up with the increasing growth and demands which continue to develop throughout the country.

The CAA and CAC staff welcome the addition of Richards experience and recent management involvement in helping to meet the challenges faced in providing many of the organizations essential services. We encourage you to call Richard Rotteveel as the Business Manager of the CAC or Evan Manners as Centre Operations Manager, and bring forward any of your avalanche safety related activities or operational concerns to their attention. We hope everyone will continue to look towards the Canadian Avalanche Centre for the avalanche safety information resources it was established to provide. As this is written, another snowy winter season has finally set in. The CAC looks towards providing assistance and services wherever possible and as resources allow.

Special Acknowledgment

The CAA would like to take the opportunity to thank Carol Magee at the Ministry of Transportation and Highways for all her behind the scenes work.

Carol is a wonderful help when it comes time for the newsletter to be printed and distributed!

Thank you!!

Industry Looses Long Time Member

by Phil Hein

On October 24th, 1998 George Evanoff was attacked and killed by a Grizzly Bear in the Northern Rocky Mountains of BC. George was returning from a trip into his Northern Rockies Lodge and encountered the Grizzly bear which had made a recent moose kill. George was on his own at the time and likely both he and the bear, in that relatively remote setting, were taken by surprise by the encounter.

George was a long time member and supporter of the Canadian Avalanche Association, signing on with his Northern Rockies Ski Tours operation in 1986 as an early associate member of the organization. George built a Ski Lodge in the Dezaiko Range of the Northern Rocky Mountains 100 kilometers NE of Prince George.

George had worked for several years, before starting this ski touring operation, as an avalanche safety and control operations contractor for BC Rail on the Tumbler Ridge coal mine branch line. Primary duties included observing and collecting weather, snowpack, and avalanche activity data, running training sessions with railway employees and conducting avalanche explosive control when required.

During all of George's very active operational years, he also provided many avalanche awareness and safety courses to public recreationists through both his own business and for the Federation of Mountain Clubs of BC.

In 1995 George became an active (professional) member of the CAA, after many years of working in the industry and running his very successful Northern Rockies Ski Touring business.

Those of us that were fortunate to know, meet up and spend time with this energetic and positive man of the hills, are all the better for it.

We extend our heartfelt condolences to all of George's family and many friends. His contributions to avalanche safety training and public safety efforts will be sorely missed.

CAA Website Update www.avalanche.ca

The CAA website will be getting a new look thanks to the volunteer work of Cyril Shokoples.

Cyril is a professional member of the CAA and owner of Rescue Dynamics. www.compusmart.ab.ca/resqdyn

Cyril is a computer guru and has offered to spruce up the website and make it so everyone is able to understand the avalanche terminology.

Using the public glossary which is published in the Recreational Avalanche Course (RAC) curriculum, Cyril will be adding an advanced glossary that will be an expanded version with photos, animation and video footage.

The new expanded version will allow people to read and understand the bulletin using visual imagery. Beside each word will be some sort of visual explanation. If you are unsure of what a class two avalanche is, a visual image will appear to help explain it to you. The words people learn in a RAC course will be what they see in the Bulletin.

The new glossary will be added to the website as it is ready, with hopes it will be completed by mid-winter. Visit our website and see what's new.

www.avalanche.ca

The Granduc Mine Disaster

By Murray Lundberg

"40 Missing in B.C. Avalanche"

To a 14-year-old boy living a sheltered life in a Vancouver suburb, the screaming headlines were virtually incomprehensible. The aerial photo of a huge glacier on the B.C./ Alaska border was a view of a world that I had never seen except in my imagination, fueled by the Northern stories of Jack London and Robert Service. This was my first look at what life could be like in that world - for reasons that I still don't completely understand, I saved every article on the Granduc avalanche, never dreaming that ten years later, almost to the day, I'd be working underground at the Granduc copper mine, looking out of a portal high over the glacier where 26 men lost their lives on that awful morning of February 18, 1965, in one of the worst avalanches in Canadian history.

The region around the Granduc Mine has been attracting prospectors for over 100 years now. It was on May 4, 1898 that the first large group arrived at the head of Portland Canal - 64 men from Seattle, following rumours of gold in the glacier-studded mountains that make this one of the most spectacular fjords on the coast. Although this group of prospectors was only mildly successful, the first gold claims were staked in 1899. The number of prospectors working along the canal grew each year, and by 1903 the annual report of the B.C. Minister of Mines was able to report that:

> *The past season has seen a large number of prospectors in this camp and considerable development work done, besides some 40 miles of trail cut, and houses built on various properties. Still, with all the prospecting done, there is a large extent of this vicinity which has never yet been entered by a white man. It is expected that this will develop into an important camp before many years, the geological formation and general conditions being reported as exceptionally favourable.*

Among the "exceptionally favourable" conditions was the fact that Portland Canal, as well as being very sheltered, is Canada's most northern ice-free waterway. Not until 1929 did the Department acknowledge, however, that "in several places the slopes are so steep and the valleys so narrow that, in certain times of the year, snow slides down continually in a narrow stream, building up snow fans in the larger valley." Those extremely steep mountainsides, combined with heavy snow, would result in the construction of an extensive network of aerial tramways during mining development.

As more and more claims were staked, two small communities grew at the head of Portland Canal. In 1905 the town of Stewart, British Columbia was officially named after its first settlers, brothers John and Robert M. Stewart, who had arrived and staked claims on American Creek 6 years previously. Hyder, Alaska, located 3 miles away, was named after Canadian geologist Frank B. Hyder.

In 1906, the Stewart area came to prominence when stories spread about "a mountain

(Continued on page 9)

(Continued from page 8)

of gold" that had been found. While not exactly a mountain full, some rich properties had certainly been located, and the following year, a 75-ton-per-day mill was constructed to process the ore. Staking activity in the area was so intense that a separate mining district, the Portland Canal District, was created. As well as gold, copper and silver-lead-zinc properties were being developed, although not on as large a scale. A large gold operation at Maple Bay, 35 miles south, built 3 aerial tramways, the longest of which ran 6,000 feet, to connect their 3 main tunnels to ore bunkers on the beach. Three railways were soon incorporated - the promoters apparently raised money before they scouted out the topography, though. Although the important railway linking the region to the south was never built, one 12 mile long line was built along the fairly level valley floor to the north, providing access to several small mines.

This boom did not last long, and Stewart and Hyder both became virtual ghost towns for a few years. In 1916, however, Pat Daly staked what would eventually become the Premier Mine, one of the richest gold mines in the world - the entire mine was paid for in the first 2 years of production. At its peak in 1927, the Premier employed more than 800 men, working in over 17 miles of tunnels; the ore body was worked for another 23 years before the mine finally closed.

The richness of the ore at the Premier naturally prompted prospectors to force their way further and further into the mountains, and other rich properties, copper as well as gold, were discovered. At the Big Missouri, it was reported that pockets of nearly pure gold were discovered. In 1928, Charlie Lake and Neil McDonald were hard at work, driving a tunnel on their copper property near glacier-ringed Tide Lake, 30 miles from Stewart. Although they were never able to find a commercially viable ore body, they remained optimistic that they were close - and their optimism was well-founded.

In 1948, Tom McQuillan and Einar Kvale located and staked the copper that Lake and McDonald had predicted. Four years later they optioned the property to Granby Mining, but it took many years for Granby's engineers and financiers to work out how to extract the ore from this most difficult of locations.

Finally, in 1964, it was announced that everything was in order, and work would begin at once on a development expected to cost $55,000,000. The ore, centred in what was named the Leduc ore body, would be extracted through a 11-mile-long tunnel, to be drilled from both ends. Several camps were set up, including one to house 140 people at the Leduc Glacier end of the proposed tunnel. With 4 bunkhouses, a dining hall, recreation hall, auditorium, offices and powerhouse, the workers were able to live fairly comfortably in the harshest of conditions. The buildings were all constructed on skids; in the winter, they were to be hauled out onto the glacier away from any danger from avalanches.

A large runway was also constructed right on the glacier, and supplies arrived by aircraft on the few days when the weather allowed. The rest of the time, Cat trains brought everything needed by the miners. The Cat trains wound through the mountains on a circuitous, 22-mile route that crossed a 5,500-foot pass, and involved travel along several glaciers, including the massive Salmon Glacier. In September 1964, work began on the tunnel.

The snow piles up deeply in the coastal mountains. This area gets some of the heaviest snowfalls on earth, averaging about 800 inches each year, with the record at over 1,100 inches. It's heavy snow, perfect

(Continued on page 10)

(Continued from page 9)
for building glaciers, awful to work in. To the men working at Portal Camp, the 16 feet of snow that fell in the first two weeks of February 1965 merely meant some extra work to keep their work areas usable. But high above the camp, incredible pressures were building as the snow deepened.

It is an eerie, desolate scene. A huge signal fire sends up warming flames and sparks - a beacon to rescuers. One building only is intact. Tired men huddle inside. Twenty fellow workers are out there in the snow, probably dead in their shattered bunkhouse. The injured lie on the floor. Dr. Veasey from Stewart moves from one to the other doing his best under primitive conditions. There is no light. It's cold...

On the steep mountainsides above Portal Camp of the Granduc Mine, millions of tons of snow and ice let loose at 10:16 AM, February 18, 1965. The survivors mostly remembered that it happened silently, with no warning.

Radio operator Innis Kelly managed to get a brief "Mayday" message out before his equipment faltered, and within hours, a massive rescue force from across Canada and the United States was battling storms to reach the scene, where 50-70 mile per hour winds were reported. While nearby helicopters and fixed-wing aircraft waited for the weather to ease, 4 cat trains ground through the drifts at top speed, the U.S. Coast Guard cutter *Cape Romain* got into position to move the injured to hospital as quickly as possible, the huge Alaska ferry *Taku* was equipped as a hospital and sailed for the harbour closest to the disaster, and a wide array of other military, police and civilian aircraft and boats from both countries sped to the area.

Virtually the entire camp was wiped out by the avalanche. Some of the survivors were missed when the slide split into two forks, and many were able to dig themselves out when they were buried. Bertram Owen-Jones, a 20-year-old cook, was holding a knife when the cookhouse was blown apart - caught under a portion of wall, he was able to use the knife to cut himself free after 3 hours.

The mine tunnel, located 500 feet below the camp, had only been driven 28 feet when the avalanche struck, but it protected several men working inside it.

In the desperate hours following the main slide, miners, cooks and mechanics struggled to rescue their comrades from what was now a small mountain of debris, covering about 10 acres up to 30 feet deep. When night came, a few small flashlights provided the only light.

Then more slides came. We could hear rumbling and more slides all over the place. When we heard the rumbling we would run to the tunnel. We were all scared. Every time it rumbled we got scared. When the rumbling stopped we would go outside and try to dig some more. There were two bunkhouses still left but they were too cold to stay in so we took wood from the wrecked buildings and built fires and tried to keep warm.

By about 8:00 the next morning, help started arriving from every direction. Ketchikan, Stewart, Annette Island and Prince Rupert shared the work of dispatching crews with a wide range of duties to perform, from locating mountain rescue experts to

(Continued on page 11)

(Continued from page 10)
feeding the survivors. As always in disasters there were heroes everywhere. The aircrews, and the rescuers who flew with them, stand out in all of the newspaper reports. Day after day, they risked their lives in terrible storms, in one case having to land on a glacier for the night and then chip ice off the rotors to get going again in the morning. But there were also some scoundrels - while most men were digging to find fellow workers, someone robbed the commissary.

The storms that raged during the rescue efforts made work exceptionally difficult. The wet snow, driven by 40-50 mph winds, was so heavy that even the RCMP rescue dog had to have goggles fitted so that his eyes wouldn't freeze over.

Due to the amount of debris in the snow, digging by hand became useless, and Cats were brought in, much to the horror of many people who had not been to the scene. The operators dug a trench, and then shaved off about 6 inches of the snow and debris on each pass; rescue workers followed behind checking for any sign of air pockets or bodies.

One of the real miracles of the disaster was the story of Eino Myllyla, a carpenter who was buried for 79 hours, while huge rescue helicopters landed on the snow directly above him. He was uncovered by a bulldozer which dislodged a cap of ice covering him. Suffering from frostbite, dehydration and oxygen deprivation, he was rushed to hospital in Ketchikan, where he remained for months.

Winter harassed the rescue crews right until the second they left - extreme danger from more slides forced the emergency evacuation of the last 54 rescuers, with helicopter pilots braving a wild snowstorm to bring them out, navigating to the camp using the smoke from still-burning fuel tanks.

Throughout the rescue effort, a heated battle for control of the operation was waged by R. D. Baker, the general manager of Granduc. He felt that all of the organizations assisting should work under him, and as a result, there was a great deal of wasted effort. During the inquests that followed, Baker would be widely condemned for his actions, and many changes were made in the procedures of the Provincial Emergency Program to prevent a reoccurrence.

Portal Camp was never reopened. No technology available could protect men working in that location against another avalanche. The options for extracting the ore were few - an open-pit mine would be impossible due to the snowfall, so engineers had to find a way to cut the tunnel using only the camp at Tide Lake, 10.3 miles from the main ore body. The huge extra expense involved nearly forced the mine into receivership, but on the basis of reserves of 32,500,000 tons of 1.93% copper ore, refinancing was arranged.

Once work restarted, progress was amazing - several world records were set by the tunneling crews, including a single-day advance of 155 feet, and a one-mile advance in only 73 working days.

While the tunnel crews were at work, a permanent camp and a massive concentrator were also being constructed at Tide Lake. To get supplies in and concentrate out, a 32-mile all-weather road was built to reach Stewart, where a large dock was built to berth ore freighters as large as 50,000 tons. The town of Stewart quadrupled in size, with the modern "Granduc Subdivision" extending to the north of town. By November 1970, everything was completed - the final bill came to $115,000,000, over twice the original budget. Only 3 months later, however, the first shipload of copper concentrates were on their way to Japan.

(Continued on page 12)

(Continued from page 11)

Over the following years, Granduc had its ups and downs as most mines do. Copper is one of the metals that is the most sensitive to world market demands, and the massive cost over-runs in developing the mine led to a crippling debt load when interest rates climbed. Operating costs far exceeded expectations as well - the bill just to keep the road to Stewart open ran over $1 million in some years when the snowfall was particularly high.

The ore reserves at Granduc, though massive, were not rich, and the severe drop in copper prices in the 1980s led to layoffs, then short closures, then indefinite closure of the mine. A skeleton crew attempted to maintain the Tide Lake Camp and Granduc Subdivision through several winters, but expenses were enormous. Maintenance was scaled down further and further, and the decision was finally made to dismantle the camp and concentrator and shut down permanently.

Visiting Stewart now, it's clear that Granduc will never be forgotten. Although it may not be clear when you first enter town why all the now-empty homes and apartments were built, anybody in town will be able to tell you the story. And if you take the drive to see the Salmon Glacier, you'll get an up-close look at the conditions that were faced to construct the Granduc Mine, and that miners and engineers still regularly face in the North.

The quotes used from the rescue operation are from the *Vancouver Sun*

Granduc Avalanche - February 18, 1965

By Mike Boissonneault
Ex-Snowbird 79-85

Having lived in Stewart for 12 years and worked on the Granduc road for several of those years, details of the Granduc avalanche have always fascinated me. Even more fascinating are the stories by individuals still living in Stewart who participated in the rescue. Bob McKay and Al Soucie are two such individuals, both of them real northern men. Bob is one of the few born in Hyder, BC (before the entire townsite built on pilings above the tide flats burned down in 1927) and Al arrived in Stewart in the late 1950's. Both have worked to develop many roads and mines in the area, but of all the projects they have worked on, nothing compares to the Glory Days of Granduc.

The winter of 1964-65 started with unusually cold temperatures and low snowfall amounts. Strong winds at high elevations created hard slab conditions throughout the local mountains. Conditions of cold temperatures and low precipitation persisted throughout much of January as well. In February things changed. Heavy snow, upwards of 4.3 metres fell in the days preceding the accident. Winds were very strong and temperatures rose. Although there are no reports of snow profiles I believe it is fair to speculate that the heavy snows, strong winds and warming temperatures loaded a fragile faceted snowpack on Granduc Mountain. The Leduc mining camp of 154 men was directly below.

The avalanche struck the Leduc Camp just before morning coffee break on Thursday, February 18. By 11:30 am, word had reached Stewart that the camp had been hit by an avalanche and they needed help, desperately. Bob McKay and Al Soucie left Stewart shortly afterwards in a rainfall so heavy it was nearly impossible to walk through it. Several avalanches had to be cleared on the road beyond Stewart. When it became to difficult to clear the avalanches

(Continued on page 13)

(Continued from page 12)

Bob and Al walked the final 5 km to their D-7 "cats". Once on the cats, they "walked" them up the Salmon River valley to the Salmon Glacier. Overland access to the Leduc Camp from Stewart was only possible by cat over a glacier full of crevasses. Besides the ever present danger of dropping into a hole, there were avalanches screaming across it from the slopes above. Despite the difficulties, Bob and Al persevered and arrived at the site of the avalanche disaster by 5:30 pm, Saturday night. It took them 54 hours to get from Stewart to Leduc.

They took a break long enough to have a sandwich and a coffee, then became involved in the rescue effort, which up until that time was largely disorganized. Bob and Al began a systematic search pattern using the blades of their cats by shearing away thin sections of debris. They felt that by taking thin slices through the avalanche debris they might uncover buried victims without injuring them with their machinery. Unfortunately, most of the victims uncovered had already succumbed to the forces of the avalanche. They worked without sleep for 6 days.

When the hired avalanche consultant, (Monty Atwater) arrived, the storm had pretty much run it's course. What was left in it's wake was an exhausted group of men, confused and shocked about what had happened. Monty decided that it was necessary to remove the fear of further avalanches so in a bold move he performed what is believed to be the first ever avalanche control helicopter bombing mission on Granduc Mountain. Monty reported that there was barely enough snow in the start zone to cover the brush, yet blasted the entire path, full width and full length. Although he did not produce any avalanches he did relieve the anxiety and stress by the men below that they would not get hit by another slide.

The Leduc camp never operated in winter months again. In the thirty-four winters since the avalanche occurred on Granduc Mountain the memories of tragedy and heroism are still alive. If you ever travel through Stewart, check out the local museum, travel the Granduc Road or better yet, give Bob and Al a call. As long as your prepared to "set a spell" and join them in some elbow bending, you'll get the full story.

Next to the avalanche disaster of 1910 in Rogers Pass, the Granduc incident is the worst in Canadian history. Of the 133 men in camp (21 were working underground), 68 were buried and 26 lost their lives.

In the twenty years that the Granduc Mine operated since the tragic events of February 18, 1965 there was never another avalanche fatality at the work site. The Granduc Road which connected the Mill with the town of Stewart contained some of the most active avalanche paths above a road in the province. With a five person crew working 24 hours/day, seven days/week the Granduc "Snowbirds" ensured the safety of mine workers until the mine permanently closed in April 1985.

The following information on the Granduc Mine was taken from The National Research Council of Canada's Avalanche Accidents In Canada, 1955 To 1976.

Written by Chris Stetham and Peter Schaerer.

The following weather observations were taken at sea level at Stewart B.C.

Observations at Stewart, 45 m ASL			
	Temperature °C		Precipitation mm
Date	Max	Min	
11 February	3	-10	15.2
12 February	1.5	-3	17.8
13 February	1.5	-12	15.2
14 February	2	-10	15.2
15 February	3	-7	17.8
16 February	2	-4.5	35.6
17 February	3	-5	33.0
18 February	2	-4.5	17.8

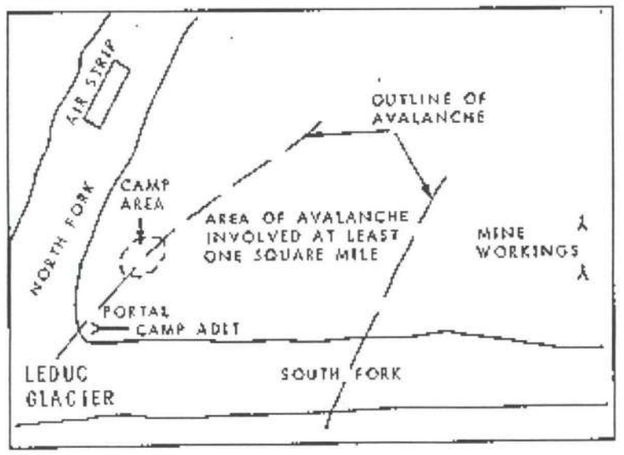


Figure 6 Plan of Leduc Camp, Granduc Mine (not to scale). (British Columbia Department of Mines and Petroleum Resources, Annual Report, 1965)

SNOWSMART - Avalanche & Alpine Awareness for Youth

By Gordon Ritchie

A number of high school avalanche awareness and mountain safety programs are being developed under a banner called "SNOWSMART".

At the spring meeting of the CAA, a group representing the Canadian Avalanche Association, the Canadian Ski Patrol System, Parks Canada and the SMARTRISK Foundation agreed to apply, with the support of Canada's ski area associations, for a NIF grant from the National Search and Rescue to fund SNOWSMART -

"a comprehensive communications strategy designed to increase the knowledge and awareness of 12-18 year old youths about risks associated with winter recreation. Ultimately ...., to change the risk-taking behaviour of youth to reduce the number of snow-related injuries and deaths."

The NIF proposal was submitted last summer and a decision on funding is expected early in the new year. If funded, this three year project would develop and deliver print and audio visual materials suitable for use as part of high school curricula, and for use in magazines, public service announcements and promotional materials. These materials will promote awareness and understanding of avalanche risks and the risks associated with advanced moves (jumps, aerials, high speed maneuvers, etc.) in mountainous terrain.

Last spring we also became aware that Alberta Education was requesting resources for its new physical education curriculum. Using last winter's Calgary and area avalanche awareness talks as a starting point, two SNOWSMART curriculum modules, five lessons in length, were developed and submitted to Alberta Education. These modules are suited for delivery by physical education and outdoor education teachers. A grade 10 module addresses avalanche awareness and a grade six module focuses on safe skiing / boarding and the Alpine Responsibility Code. The avalanche module is available in a skier/boarder version and a snowmobile version. The avalanche module uses existing print and video materials such as the CSPS *Avalanche Be Aware* pamphlet and the CAA *Beating the Odds* video. A response from Alberta Education is expected in mid 1999.

High School Information Package Available

Have you considered making avalanche awareness presentations in your local schools? A very successful program in southern Alberta last winter made 70 presentations and reached over 3000 students. Teaching students about avalanches can be very rewarding and is a first step to promoting further avalanche education through the RAC program.

An information package has been assembled to facilitate high school talks. The package includes a one hour lesson plan and copies of letters introducing the program which were sent to principals and physical education teachers last winter.

CAA members who would like to approach their local schools can obtain a copy of the high school information package from the Canadian Avalanche Association.

MEMBERS!!
Do you have an e-mail address? If so, send a quick note to canav@avalanche.ca with details.

Letter to the Editor:

The Digital Transition: An Update on the Tracker DTS Avalanche Beacon

Submitted by Bruce Edgerly, head of marketing for Tracker DTS. The Canadian Avalanche Association assumes no responsability for the information contained in this letter or it's use in the future.

Dear Editor:

We are impressed with the report by Nic Seaton published in your spring issue, entitled, "Digital Avalanche Rescue Transceivers: Are We Ready for the Transition?" We agree with his conclusions that: 1) to ensure a smooth transition into the digital era, more specific pulse rate standards must be implemented worldwide; and 2) during this process, avalanche professionals play an important role in providing field testing and feedback to the manufacturers.

We appreciate the thoroughness of Seaton's report and have responded to his feedback with some significant design improvements to the Tracker DTS (Digital Transceiving System). While we briefly addressed the issue of pulse rate standards and multiple burials in our presentation at last month's ISSW conference, time constraints prevented us from thoroughly introducing our new design improvements. Therefore, we would like to offer them here. We would also like to provide the avalanche instructors in your readership with some insights into "jumped flux lines." In his report, Seaton encouraged avalanche instructors to begin teaching this to students, as this phenomenon will probably become more prevalent in the future with the increasing sophistication of modern transceivers.

Tracker DTS Highlights

First, we will highlight some points that were mentioned in Seaton's report, but which were not thoroughly addressed in his oral presentation at the Canadian Avalanche Association annual meeting:

1) The Tracker DTS had faster search times than analog beacons in all scenarios, including multiple burials—except those in which fast and slow transmitters were mixed. In the latter case, search times were inconsistent, but they improved with practice.

2) Seaton's tests were performed by experienced avalanche technicians from the B.C. Ministry of Highways and professional ski patrollers from Apex Mountain. All participants had many more years experience with analog beacons than with the Tracker DTS—and their search times were still faster with the Tracker. However, a more useful test would have included novices, which, according to several recently published reports, now represent 90 to 95 percent of beacon users worldwide. Testing by Backcountry Access has shown the reduction in search times with the Tracker DTS to be most dramatic among novices.

While Seaton's data on mixed, multiple burials was valuable, it did not determine whether novices found those situations more difficult with an analog beacon or with a Tracker DTS. However, we anticipate that such questions might be answered in an extensive transceiver testing program now being performed by the Swiss Federal Institute for Snow and Avalanche Research, which has chosen to include novices in their tests.

3) Part of Seaton's study was designed to test the validity of concerns within the industry that the Tracker's receive range is less than that of existing 457

(Continued on page 17)

(Continued from page 16)

kHz analog beacons. Based on 30-meter and 60-meter scenarios, he concluded that the Tracker's shorter range, in fact, did not adversely affect search times. This is consistent with a report presented this autumn to the International Commission on Alpine Rescue by AAAP statistician and search-and-rescue chairman Dale Atkins. In that report, Atkins studied the results of small-party rescues in North America from 1977 through February, 1998, comparing the survival rates between shorter-range (2275 Hz) and longer-range (457 kHz) units and between expert and novice users:

> *Transceiver range does not affect the outcome of companion rescue. It is significantly more important to be well practiced than have a transceiver with long range. Future comparison tests of transceivers should not report maximum ranges, rather only report that the transceivers meet and/or exceed a determined minimum range (say 20 meters).*[1]

Atkins concurred with a 1997 report by Brugger *et. al.* in which the authors determined that existing analog beacons were too complicated for the majority of users to operate efficiently.[2] Atkins and Brugger *et. al.* determined that average burial times for recreational transceiver users averaged 32 to 35 minutes, well over the 15-minute threshold generally cited as the limit for a probable live recovery.

Design Improvements

In 1998-99, the Tracker DTS features several improvements that should mitigate the concerns Seaton expressed in his report:

1) Processor multi-tasking. In both Search and Special modes, the Tracker DTS can now receive and process one signal while it is displaying the distance and direction information for another signal. The processor in last season's model could not do this. This improvement has resulted in fewer "dead spots" where an incoming transmission would be missed because it could not be processed. Consequently, when receiving faster transmit pulses (from a Tracker, Pieps, or Arva) the Tracker no longer tends to "overpower" slower signals (from an Ortovox or SOS), but is more likely to "see" them consistently. Like an analog beacon, it simply receives and processes those signals at the same rate at which they are received. The only difference is that the data is not displayed real-time, but is displayed 50 milliseconds after being received.

2) Increased feedback. In both Search and Special modes, the Tracker now provides constant feedback to the user. Last season, there were several situations in which the distance and directional displays would not always provide the searcher with visual data:

· When no signal was being received;
· When a signal was not captured because another signal was being displayed (as above);
· When two signals were received instantaneously; and
· When a signal's flux line was outside the Tracker's reduced 20-degree search window in Special mode.

In 1998-99, if no data is being displayed, the distance indicator will flash "SE" or "SP" every 1.5 seconds, depending on

(Continued on page 18)

(Continued from page 17)
the current operating mode. This way, when no data is displayed, users are less likely to be confused about whether they are in Transmit, Search, or Special mode.

3) Multiple signal strength filtering. In Search mode, the Tracker DTS will now isolate the strongest (closest) signal once the searcher is within approximately 15 meters. When multiple signals are first detected, they are all displayed. The searcher can then choose which signal to pursue first (normally the closest), engage that signal in the center search light, then follow it until the signal is locked in. At that point, information for the other signals will not be displayed. Once that transmitter has been pinpointed, the searcher can continue with the secondary search until the next transmitter is closer than the one just found. The Tracker will then lock in the next signal. This technique is equally as effective for close proximity burials.

With the development of signal strength filtering in Search mode, Special mode now has a slightly different purpose than in 1997-98. Now Special mode is only used to "unlock" from the closest signal, if necessary, to get an approximate distance and direction to the next-closest signal (assuming the first transmitter can't be turned off immediately). By switching from Search to Special mode, the Tracker isolates signals by their position rather than by their strength. By travelling approximately 3/4 of the distance in the approximate direction displayed in Special mode, the searcher will be closer to the next transmitter than to the one just found. He or she can then re-enter Search mode to lock in the next transmitter.

Signal strength filtering addresses three issues highlighted in Seaton's findings: 1) the ability to consistently "see" slow transmitters, particularly in the pinpoint phase of the search (discussed above); 2) the reduced speed required to follow the flux lines of slower transmitters in Special mode, and 3) the "jumped flux line" syndrome.

Special Mode: A New Purpose

By enabling the searcher to lock in the strongest signal, this season it is no longer necessary to follow flux lines so precisely in Special mode. Seaton stated in his report that, when searching for slower transmitters, the searcher must slow his movements to approximately one-third his normal speed. As the searcher is constantly reorienting the beacon slightly to keep it aligned with the flux line, it was possible to pass over the flux line of the slower transmitter between pulses. With the new procedure, however, the searcher needs to precisely follow the flux line only for a brief time: when isolating the next-closest signal in Special mode as he "unlocks" from the signal just found. The searcher only needs to follow the flux line long enough to determine whether the distance readings are truly decreasing—and therefore he is headed in the right direction. Once this is determined, he can rapidly walk or ski approximately 3/4 the distance shown, then lock in to that signal in Search mode.

The "Jumped Flux Line"

Since the searcher no longer follows flux lines so precisely in Special mode, he or she is much less likely to "jump" flux lines. Seaton found that when moving toward a slower transmitter after having found a faster transmitter, it was possible, at an intersection of their flux lines, to reorient the Tracker enough to get diverted to the flux line of the faster beacon. This is ex-

(Continued on page 19)

(Continued from page 18)
tremely rare in grid searches, as the searcher never reorients the beacon. Using the flux (or induction) line method, Seaton stated, it can sometimes happen with an analog beacon, but only if the searcher were to stop and reorient exactly at such an intersection. Now, jumping flux lines is extremely rare with the Tracker DTS: In Search mode, it has never been an issue; in Special mode, the searcher now reorients only once—when "breaking away" from the closest signal. At this close proximity, however, it is difficult to jump to another flux line, as it is obvious which of the multiple signals corresponds to the transmitter just found.

Despite these improvements, of course, it is still possible for some users to jump flux lines. This is more likely if the user insists on following flux lines longer than necessary in Special mode or has a 1997-98 model. (This older model is easily recognized by the absence of graphic icons surrounding the Options button; on new 1998-99 models, descriptive icons near the Options button illustrate the differences between Search and Special modes).

As stated in the owner's manuals for both models, the technique for remaining on your intended flux line is simply to walk through such intersections on the path of your intended search. Essentially, this means the user should maintain the basic curve of their flux line search, which is shown by the directional LEDs just left and right of center. The searcher will know he or she is at such an intersection because two signals will be apparent in the 20-degree Special mode search window. As you continue on the curve of your flux line search, however, the other signal will no longer be displayed.

In 1998-99 models, the pinpoint phase of the search will always be performed in Search mode, not in Special mode. The Tracker will be locked on to the closest signal; therefore Special mode is unnecessary. With last season's model, the pinpoint search could be performed in either Search or Special mode. When pinpointing in either mode, it remains important for the searcher to tilt the beacon toward the snow surface when he or she obtains a "spike" reading in the distance indicator. (This is the equivalent of the "shadow box" of analog beacons, where the flux lines are temporarily perpendicular to the receiving antennae. However, since the Tracker searches on a line, not a grid, this "box" is reduced to a point, which we call the "tilt point.") This tilt technique realigns the Tracker with the transmitter's flux line in the vertical plane. It is especially important when pinpointing in Special mode; at the "spike," the flux line will now be outside the reduced Special mode search window, meaning no data will e displayed. In the absence of this signal data, it might be possible to get diverted to the flux line of another transmitter. The "tilt" technique is intuitive to most users: they naturally tend to point the Tracker toward the snow surface as the distance readings decrease below two or three meters and the Tracker's audible "beeps" increase in pitch.

Three or More Burials

In advanced scenarios involving more than two transmitters (assuming none can be turned off immediately), it is helpful to stage the secondary search for each transmitter from a common reference point—normally the location of the second transmitter. This way, as the searcher isolates signals in Special mode, he or she will recognize the distances and directions being displayed for the transmitters

(Continued on page 20)

(Continued from page 19)
already found. After pinpointing all transmitters from that common reference point, the searcher should return to the point at which he or she abandoned the primary signal search. If other transmitters are still buried, the signal search should resume from here, to prevent leaving any "holes" in the primary search pattern.

One of the great benefits of digital technology is the speed at which designs can be improved. The advances made since Seaton delivered his report last May—especially for multiple burials—are as significant as any advances made to analog beacons over the past 30 years. And with modernized standards on pulse rates, among other issues, it would be entirely possible to design the beacon of Seaton's dreams: one that requires only a 30-second introduction for a novice to use effectively. We support the establishment of standards in North America and the modernization of existing standards in Europe. In the meantime, we look forward to another season of valuable feedback from avalanche professionals. To borrow a Tracker DTS sample from Backcountry Access, please feel free to contact us.

Bruce Edgerly
Vice President
Backcountry Access, Inc.
(303)417-1345
bcaccess@csd.net

---

[1]Atkins, D., September 1998: Companion Rescue and Avalanche Transceivers: The U.S. Experience. *Report to the International Commission for Alpine Rescue*.
[2]Brugger, Falk, Buse, and Tschirky, 1997: The Influence of the Transceiver for Persons Buried in an Avalanche on Their Death Rate. *Der Notarzt,* **13,** 143-146.

Avalanche Education in the Schools

By Robin Siggers

In light of tragic avalanche incidents involving youth, the Fernie Alpine Resort wanted to attempt educating our local students about avalanche dangers. Encouraged by the work done in Alberta schools by the C.S.P.S and Lake Louise patrol, as well as the Smart Risk Foundation, a presentation was prepared. The program sponsored by the ski area consists of a one hour presentation starting with *Beating The Odds* followed by a discussion of safety options for the out of bounds skier. This is followed by a quick slide show and talk about our avalanche control program and ski area avalanche signage. In addition, the schools receive copy's of Bruce Jamieson's books. Anyone who checks the book out will also receive an Avalanche Danger Scale and C.S.P.S avalanche safety brochure to keep.

The program has been very well received by students and faculty. So far we have been to all senior grades in Cranbrook, Fernie, Kimberly, and Elkford. There are plans for evening public presentations and we are still getting requests from younger grades to come to them. Our travelling show will continue to speak to kids about avalanche safety. Unfortunately out on the mountain, we are still seeing people who put themselves at great risk.

CAA Welcomes Sandman Inns

Our new stellar sponsor, Sandman Inns has generously offered a portion of all rooms booked by CAA memebers and affiliates through their central booking number to support public safety.

All bookings made by calling 1-800-762-3626 by CAA member and affiliates will receive a corporate rate and a donation will be made to the public safety initiative.
For more information, please call the CACentre.

International Commission for Alpine Rescue IKAR – CISA

Report by Peter Schaerer

MEETING OF THE IKAR

In 1948, the Austrian Alpine Club organized the first international meeting on mountain rescue at the Wilden Kaiser and at Obergurgl in the Tyrol Mountains of Austria. During that meeting, the participating organizations resolved that knowledge on mountain rescue should be shared and coordinated in the future. Consequently, the IKAR was formally established as a society in 1955.

Obergurgl was chosen as the location for the 1998 annual conference of IKAR-CISA in recognition of the first international meeting 50 years ago. On September 20, 1998, celebrations took place with numerous guests of honour, and on September 21 and 22; the four technical committees (Terrestrial Rescue, Avalanches, Air Rescue, and Alpine Emergency Medicine) met separately. In the afternoon of September 22, the delegates of the member organizations assembled for the annual general meeting with the President Martin Schori in the chair. Tim Auger (Air Rescue), Mike Swangard (Emergency Medicine), and Peter Schaerer (Avalanches) represented Canada at the meetings.

Significant news was that the IKAR now is accessible by Internet under the address: www.ikar-cisa.org. The web site contains a public domain with information about the objectives, organization, and members of the IKAR, and a non-public domain that can be accessed only by user ID and password. The non-public domain contains reports, minutes of meetings, and test data of the technical committees.

The next IKAR meetings will take place on 23-26 September 1999 at Sonthofen in the Bavarian Alps, and on 15-18 October 2000 at Grand Canyon in U.S.A.

BUSINESS OF THE AVALANCHE COMMITTEE

François Valla (France) chaired the Avalanche Committee meetings which were attended by 38 persons who represented 14 countries. Following is a summary of the topics of the meetings.

Accident Statistics:

As in other years, the statistics on avalanche fatalities and the description of significant accidents were the major topics of the meeting. An estimated 137 fatalities occurred in the IKAR member countries in 1997-1998. This number is lower than the average of the previous 20 years and confirms the downward trend of the number of avalanche accidents. In addition, favourable snowpack conditions in Western Europe in this past winter contributed to the low number. Backcountry skiing again produced the largest number of accidents with 45% of the fatalities.

Avalanche accidents with snowmobiles were reported to IKAR under "Miscellaneous" in the past. Now, because of the great number of accidents involving snowmobiles in Canada and the U.S.A, the Committee resolved that snowmobile accidents shall be reported in a separate category in the future. The committee members discussed also whether fatalities of snowboarders and people on foot would deserve separate reporting categories, but made no decision.

Frank Tschirky of Switzerland and Krister Kristensen of Nor-

(Continued on page 22)

(Continued from page 21)
way presented an analysis of accidents in their countries. In Switzerland there were on the average 22 fatalities per year in the past 13 years, compared with an average of 25 fatalities in 1936-1998. In 1985-1998, 93% of the accidents occurred outside of controlled areas. Of 1376 persons, who were known to be involved with avalanches, roughly one third were not buried, one third were partially buried, and one third were completely buried. One half of those completely buried were found dead. About 90% of the backcountry skiers in Switzerland wear transceivers, but barely one half of the skiers who leave ski area boundaries are equipped with transceivers. Dogs proved to be the most successful means of search in organized rescues, where dogs found 44% of the victims (26% of them alive and 74% dead). Frank Tschirky concluded that the avalanche statistics of each country should indicate whether the victims wore transceivers.

The Norwegian study covered documented avalanche accidents since 1855. Before 1900, there were on the average 13 fatalities per year, but in this century, the average had dropped to 7. The decrease reflects a de-population of avalanche-exposed areas, a greater awareness of hazards, and perhaps a change of climate. As in previous periods, in the past 14 years the non-recreation accidents dominated, although there is a suspicion that recreation accidents were underreported. Particularly in Northern Norway, buildings were located without consideration of avalanche hazards, because the property owners would have to carry out an assessment of avalanche hazards at their own cost. In the winter of 1997-1998, two residents of a building at sea level in Lofoton, North Norway lost their lives when an avalanche destroyed the ground floor and carried the second floor and the roof into the water. The victims were in the ground floor and neighbours found them by shoveling.

François Sivardière (France) described an accident that had occurred on 23 January 1998 in the Southern French Alps near Briançon. An avalanche had caught a group of 32 persons on snowshoes who walked in a 150 m long line across an avalanche slope. The snow on the slope was 160 cm deep and the avalanche danger rating was "High". Collisions with trees resulted in 11 deaths and 9 persons injured. The accident received much attention because a mountain guide with the assistance of ski instructors was in charge of the group and the party included children. The guide was prosecuted and convicted to three weeks in jail. Subsequently, a working group was charged with the task of studying the safety of hiking parties. Probably it will recommend legislation, which would require, for example, at least one guide per eight persons of a hiking group.

The Avalanche Committee members agreed that avalanche accident investigations must take into consideration the leadership of a group and the experience of the leaders. Therefore, accident reports must include comments of an expert mountain guide and not only those of an avalanche specialist.

Avalanche Dogs:

Peter Ogi (Switzerland), chairman of the avalanche dog group, announced that the next meeting with dogs will be held at St.Jakob in the South Tyrol on 14-16 May 1999. The organizers ask the participants to present case histories of rescues by dogs. Another topic on the agenda is the use of dogs on glaciers. Notices of the meeting will be mailed, and 15 April 1999 is the deadline for

(Continued on page 23)

(Continued from page 22)
registration.

Prevention of Accidents:

Jean Paul Zuanon announced plans for a meeting in April 1999 on the prevention of avalanche accidents. ANENA in Grenoble will organize the meeting in the French Alps, but the objective and program still need to be defined.

The members of the Avalanche Committee recommended that discussions concerning the prevention of accidents include participants who have expertise in educating and communicating with a variety of user groups; for example youths, skiers, snowboarders, and snowmobilers. The meeting participants should also be familiar with danger warnings and safety publications.

Tests with Transceivers:

The Swiss Federal Institute of Snow and Avalanche Research, with the approval of the president of IKAR, has initiated a test program for new transceivers. The tests affect the ARVA 9000, Ortovox M1, Tracker, Pieps, and Barryvox.

Extensive field tests in Switzerland, France, Italy, Austria, and Germany follow laboratory tests that were carried out in September 1998. In each country, twelve persons made up of experts, lay people, and youngsters will be busy for five days. The final report, which is expected to be available and approved by IKAR on 15 December 1998, will describe the strong and weak points of each type of transceiver, but will not rank them. It is not intended to develop specifications with minimum requirements for transceivers, because the specifications would require evaluations in the future and no organization is prepared to pay for this task. The report of the current test program will be mailed to the members of the IKAR Avalanche Committee, which includes the Canadian Avalanche Association.

Representatives of the manufacturer stressed, that despite the improvements of transceivers, continuous practice with them is essential. It was mentioned also, that transceivers must transmit and receive exactly on the correct frequency. The present tolerance of ±1Hz frequency appears to be not strict enough.

Avalanche Balloon:

The ABS avalanche balloon was not mentioned at the meeting, but Frank Tschirky of the Swiss Institute of Snow and Avalanche Research informed me that the balloon pack has improved and now may be used as packsack. Numerous skiing groups in Switzerland use it.

There are 13 known incidents with 18 persons who wore a balloon pack and were caught in avalanches. Of these persons, 14 were not buried or partially buried. Four persons were completely buried, but part of the balloon was visible on the surface, and that allowed a rapid rescue of the victims who had survived without significant injuries.

It is recognized that balloons reduce the frequency and seriousness of burial and often allow the quick rescue by party members. It must be realized, however, that the balloon does not prevent all avalanche deaths. For example, it does not protect against collisions with trees. Presently, at the Swiss Institute, Martin Kern is developing theories on how a human body with a balloon would react in an avalanche.

Vanni Eigenmann Foundation:

As published in *Avalanche News* Number 53 (Fall 1997), the Vanni Eigenmann Foundation has ceased its activity. At the IKAR meeting of 1998, Ruth Eigenmann had the plea-

(Continued from page 23)
sure of announcing that the Italian Alpine Club continues the work. The Avalanche Service of the Italian Alpine Club has obtained the files of the Vanni Eigenmann Foundation, has assembled them on computer, and will continue to act as an information centre in an office in Milano. The address is:
Servizio Valanghe Italiano;
Via E. Fonseca Pimentel, 7,
20127 Milano, Italy. Telephone 39 – 2 - 26 14 13 78;
Fax 39 – 2 26 14 13 95;
Internet: www.cai-svi.it.

At the annual general meeting of IKAR on 22 September 1998, Mrs. Ruth Eigenmann was elected honorary member of IKAR. Honorary membership is restricted to persons with special merits, and few persons have received this distinction. The avalanche workers in Canada have benefited much of the work of the Foundation under Ruth Eigenmann and the Canadian Avalanche Association applauds Ruth for the honour.

Story of avalanche death put on newspaper wire nine months later

A story from the Vancouver Province was accidentally put on the newspaper wire nine months later, where a Kamloops paper picked up the story and printed it.

The story of an avalanche which took the life of a snowmobiler had police and coroners puzzled.

Once the mistake was realized an apology was printed and the Vancouver Province is taking steps to ensure this doesn't happen again.

Use of Helicopters in Transceiver Searches

By Hugh Laetitia

In the 1996 edition of the Crystal Ball, Wayne Carran and Peter Weir described developments from the Milford Road on the use of helicopter mounted transceivers for Avalanche search and rescue. The NZ heliski industry is working on standardizing the technique. Hugh Laetitia of Harris Mountains HeliSki Reports:

For avalanche events where time is a factor in covering large areas of debris or where there is a danger to ground searchers from further avalanches, helicopter transceiver searching can be used.

A transceiver is attached to the skid of a helicopter and connected to earphones worn by the pilot - usually the helicopter will be wired in advance to facilitate this as it requires an extended lead from skid to cockpit.

The transceiver is set to the maximum setting for large (class 4-5) events or at 20-30m for smaller avalanches. The pilot then flies as low to the debris as possible and when a signal is heard the pilot can home in on it just by flying to the point where the signal is loudest. A ground crew ready in the helicopter with transceivers, probes and shovels can be dropped at this point. In multiple burials several recovery crews can be transported to a "strike" very quickly. Obviously the danger to a ground crew must be assessed before they are dropped.

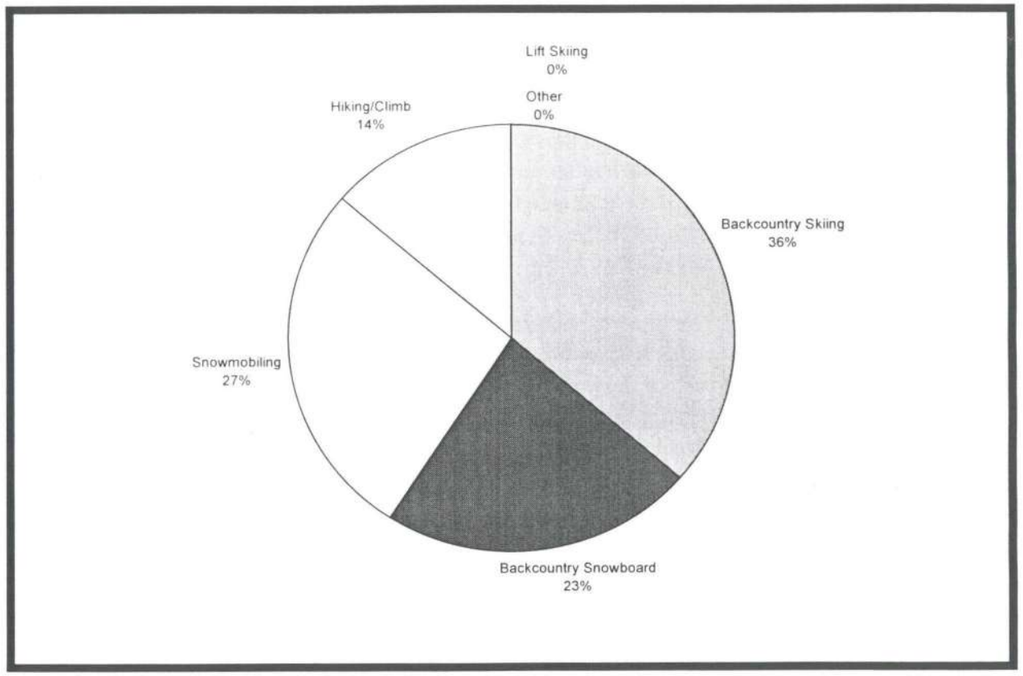
Tests have shown that a helicopter can narrow down a search area to 5m in very rapid time (less then 1 minute!).

A system of standard operating procedures is being set in place in New Zealand so that any helicopter called to an avalanche is equipped to transceiver search. The use of a helicopter in searching gives another option to speed up the rescue process.

Avalanche Incidents

It has been common in the past to report details of fatal avalanche incidents in the summer issue of Avalanche News. It was felt by some that this was the wrong emphasis, and that the Newsletter was more appropriately used to tell people about what their association was doing to prevent tragedies.

A brief summary of fatal avalanche incidents in the 1997/1998 season appears here. Let us know what you think of the change in policy.



1997 - 1998 Fatalities by Activity

Activity	Fatalities
Backcountry Skiing	8
Backcountry Snowboard	5
Snowmobiling	6
Hiking/Climb	3
Lift Skiing	0
Other	0

Canadian Avalanche Foundation Proposal

By Richard Rotteveel

Dear Members,

At long last we have been able, as a strong Association, to work towards addressing the needs of the public safety services by forming a charitable foundation. This will help us accomplish a variety of goals that the long time members, as well as the new members have been envisioning strengthening our organization.

For several years now as you are all well aware, the public safety service area of the association's budget has placed a drain on the association's resources to provide services to the membership as a whole. Of course this action is and always has been a priority function of the CAA, in the past to balance the equity of the public safety service with resources provided from the membership. This program has always relied heavily on government and corporate sponsorship in the form of grants and pledges. We as an association, have been limited in receiving donated funds due to the inability to provide large and small donors with adequate tax receipts for their contributions. The major corporations in today's economy have funds set aside only for Charitable Donations. Charitable Foundations that can provide a charitable tax number to substantiate its credibility and function can access these funds. These funds, while normally tied directly to the marketing budget of the corporate section, are generally released in large blocks and for 3 to 5 year terms. This will allow us to form strong partnerships with various sectors of industry and commerce for long term initiatives in public safety and research programs.

The other area the Foundation status will address is the concern of the professional membership in the area of professional development. As the Association has grown in numbers and popularity among the backcountry user groups, there has been the trend that a lot of people want to be a part of this program. At first glance we look at this as being a positive step. But in further study we find that the introduction of increasing numbers of non-professionals would irrevocably change the focus of the CAA and what it stands for, as well as impacting what so many of you have worked so hard for. The CAA is an organization of professionals for professionals.

There have been numerous discussions in the area of crests and logos on shirts, hats outerwear, etc. The concern is that the professionals should be the only ones wearing the CAA logo. I think that everyone can agree that the CAA is highly visible and highly marketable in the general population. The creation of the Canadian Avalanche Foundation can be of service to the professional membership in these various ways. The backcountry enthusiast will gladly participate in the purchasing of logo line product with a new CAF logo as the public arm of the CAA. They would also support the foundation with membership fees and feel good about their personal contribution to this worthwhile service. They could keep informed via a separate newsletters.

To address the concerns of the membership that a Canadian Avalanche Foundation may stray from the goals of the Canadian Avalanche Association we are taking these steps:

- We will ensure that the CAA and the CAF have similar board members and management and will never be able to take on a

(Continued on page 27)

(Continued from page 26)

life of it's own unless voted to do so by the professional membership at large.

- The Foundation will purchase its information from the CAA and be managed with separate books and cost centers out of the Canadian Avalanche Centre in Revelstoke.

- All activities incurred by public safety initiatives will be tracked and charged to the appropriate agency within the center.

- The budget for the Foundation will reflect the various cost centers within the center and pay it's share of operating expenses. In an over simplified version the Foundation will just be another program in the accounting eyes of the CAA but will be self-funding and self-sustaining.

A proper business plan for the Foundation will be presented to the board in due course. It will basically reflect the public safety service funding and expenses and a reasonable 3-year plan. When adopted, the plan will be an integral part of the CAA budget and business plan.

I invite any and all members who have ideas and suggestions to take an active role by contacting me via e-mail (richard@avalanche.ca) or at the center (250-837-2435) to discuss the future of this exciting program.

The Canadian Avalanche Association Training Schools are off to a great start.

Despite the lack of snow so far this year, the CAA Training Schools don't seem to have had any problems filling courses.

All Ski Operations Level 1 courses before Christmas are now full.

There are still some spots left in the Snowmobile Level 1 course which is scheduled to run in Revelstoke this year January 3-9, 1999.

All Level 2 course are now full. Please ensure that you register early next year to avoid disappointment.

Ski Operation Level 1 courses in the New Year are now beginning to fuli up. We have opened three un-advertised courses.

These are the courses that still have some seats available on them as of the time of printing:

* Rogers Pass Jan. 10-16
* Fernie Jan. 17-23
* Ptarmigan Jan.31-Feb. 7
* Bow Lake Jan. 24-30
* Lake Louise Feb. 21-27
* Revelstoke Snowmobile Level 1 Jan. 3-9

For registration information please call the CACentre at: (250) 837-2435.

Attention: Canadian Avalanche Association Training School Instructors

The new CAATS Instructor manuals are now ready, and will be sent out to instructors along with a paper copy of the new overheads within the next week.

Please keep an eye open for these in the mail. If you have not received your manual by December 15th, please call Heather at the CACentre and one will be sent to you .

AVALANCHE NEWS

PRINTING AND DISTRIBUTION:
Snow Avalanche Program
Ministry of Transportation & Highways
4C - 940 Blanshard Street
Box 9850 STN PROV GOVT
Victoria, BC V8W 9T5

The deadline for the spring issue is January 15,1999
Canadian Avalanche Centre
Box 2759
Revelstoke B.C. V0E 2S0
E-mail: schools@avalanche.ca
Fax: (250) 837-4624 Tel: (250) 837-2435