

Utah Avalanche Forecast Center Annual Report

Snow and Avalanches in Utah

1994-1995



United States Department of Agriculture
Forest Service
Intermountain Region
Wasatch-Cache National Forest
Blair-Lafayette National Forest

in partnership with
the State of Utah Department of Public Safety
Division of Emergency Management, Salt Lake County,
Friends of the UAFC, Cache County, National Weather Service,
and Utah State University

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Cover photo by Susi Hauser

UAFC Director Bruce Tremper analyzes a fracture line of an avalanche on Patsy Marly, a backcountry area near Alta. This was a human triggered avalanche which caught several people who luckily escaped with only minor injuries.

The Utah Avalanche Forecast Center is a Forest Service program under the Wasatch-Cache National Forest and the Manti-La Sal National Forest, in partnership with the Utah Department of Public Safety Division of Emergency Management, Salt Lake County, Cache County, the Friends of the Utah Avalanche Forecast Center, the National Weather Service and Utah State University. Copies of this report can be obtained by writing or calling:

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The Utah Avalanche Forecast Center

An Overview

Our goal:

Help keep people on top of the Greatest Snow on Earth instead of buried beneath it.

Where do avalanche accidents occur?

Almost all avalanche accidents happen in the backcountry—outside of ski area boundaries where no avalanche control is done. Ski areas and highway avalanche control crews routinely knock down avalanches with explosives before the public arrive each morning. They have done their jobs so well that they have almost completely eliminated avalanche deaths at ski areas and on highways. (Since 1980 only 2 percent of the people killed in avalanches have been general public on open ski runs or on highways.) In other words, the innocent victim is very nearly a thing of the past.

What kind of people get caught in avalanches?

They are almost always recreationists who are very skilled at their sport. In Utah they are usually backcountry skiers, snowmobilers, snowboarders, climbers, showshoers or hikers, in that order. In almost all cases, their skills at their sport significantly outpace their avalanche skills. The larger the gap, the more likely they will get caught.

How do people get caught?

Over 95 percent of avalanche accidents, are triggered by the victim or someone in the victim's party. In other words, we have met the enemy and the enemy is us. And that's good because 95 percent of the time, we can control avalanche accidents by controlling our behavior.

In summary, avalanche accidents almost exclusively occur in the backcountry, they are almost always recreationists and they almost always trigger the avalanche which catches them.

How we help to solve the problem:

We attack the problem with a very powerful weapon and that weapon is knowledge. We teach people about three basic parts of the avalanche accident equation:

- 1) How avalanches work (terrain, snowpack and weather).
- 2) How people trigger avalanches (the human factors which cause accidents).
- 3) Current avalanche conditions (our daily avalanche advisories and warnings).

We address these first two factors by teaching avalanche classes throughout the season. We teach a number of basic avalanche awareness courses along with a couple of 3-day workshops. We have also produced an hour-long avalanche education video called *Winning the Avalanche Game*

which is widely available and quite popular, and we plan on producing another video especially for snowmobilers next season. Finally, we "preach the avalanche gospel" as much as possible to the local, national and international media. This season, for instance, three different international film documentaries were produced on avalanches (National Geographic Discovery Channel and Channel 4 in England). Program director, Bruce Tremper was a major feature in these films.

We provide information on current avalanche conditions primarily through our avalanche advisories. People access these either by calling a recorded message, hearing it live each day on two different radio stations, or they access it online through the Internet. In times of extreme or unusual avalanche conditions, we issue an avalanche warning over the wire services. These succinctly worded warnings go out to all the television, radio, newspapers and are on NOAA weather radio.

Our Philosophy:

But just because people hear it doesn't mean they listen. In other words, if it sounds like a government recording, people get bored, they won't remember what you say, and they just quit calling after awhile. Our philosophy has long been to present these advisories in an entertaining way so that people will most likely remember what they hear. We have become rather well known for making our advisories fun to listen to. We try and use all the standard tools of effective writing and speaking such as using active voice and first person, using examples and stories to illustrate points, using humor where appropriate, and reading the advisories in a natural voice, like talking to a friend. They're informal, chatty and funny yet informative. It also makes our work fun.

We also believe in diversified avalanche forecasting. In other words, local forecasts recorded by local people. Avalanche forecasting is much more of an art than it is a science. And because of this, computers never have, and most likely never will, be able to forecast avalanches. For instance, how are you going to design a robot which can ski around in avalanche terrain, dig snowpits, feel the snow, smell the wind, feel the mood of the day, make friends with all the other people in the backcountry and get them to call in important information to you, make friends with all the other avalanche workers and cooperate closely with them, access 40 years of personally-stored data, integrate all the pieces of data together and creatively write and deliver an avalanche advisory? This is a job that only a human can handle, and not by sitting in an office all the time.

We believe that whoever is putting out the avalanche advisory must have been in the backcountry looking at the snow in the previous day or two. We also do not forecast for places which we do not visit on a regular basis for the same reason that a bowler won't be very good if they can't see the pins. In both Logan and Moab, local people record the local advisories. The Salt Lake based staff of four simply can not visit Logan and Moab often enough to know what's going on. The Salt Lake staff covers from Ogden to Provo—about an 80 mile section of the Wasatch Mountains and by far the most heavily used section.

This is our philosophy and it seems to be working. The numbers of people accessing our advisory is about twice that of any other avalanche advisory in North America, and the number keeps increasing each season. The number of people getting killed in avalanches is increasing proportionally more slowly than the number of people going into the backcountry each year. There is an increasing demand for avalanche education and information by not only Utahns but by the national and international media.

We are very passionate about our work because it's more than just a job, it's our life. We enjoy our lives and we hope it shows.

Nuts and Bolts

The UAFC is operationally separated into three entities, the Logan area mountains, the La Sal Mountains near Moab, and the Wasatch mountains from Ogden to Provo.

Mike Jenkins and Kevin Kobe record the avalanche advisory in the Logan area mountains on the weekends and the Salt Lake staff records it on the weekdays. Mike Jenkins has taught an avalanche class for Utah State University for a number of years and he has organized a fine consortium of local volunteers, graduate students and workers. Their office is located at Utah State University, Department of Forest Resources.

The ever-popular and energetic Dave Medara has headed up the La Sal avalanche advisory for the third season. He took over after the tragic avalanche accident which claimed the life of Mark Yates the founder of the La Sal Avalanche Center. Unfortunately, because of an uncertain Forest Service budget for next season, it looks as if Dave Medara will move back to Alta for the coming season and work as an avalanche forecaster for the Utah Department of Transportation. Dave's part-time assistant, Brian Murray will remain in Moab but will not be able to take over full time. Next year's staff looks uncertain at this time. The Moab office is located in the Moab Ranger District on the Manti-Lasal National Forest.

Last, but not least, the vast majority of the backcountry use occurs in the Wasatch Range near Salt Lake City. A staff of four cover an area from Ogden to Provo which also includes the mountains near Park City. This is about an 80 mile section of the Wasatch Range and it is perhaps the most heavily used mountain range in the country. Bruce Tremper, in his ninth season, heads the operation along with an extremely capable staff of Tom Kimbrough, Evelyn Lees and Seth Shaw. Tremper also oversees the Logan and Moab areas. The Salt Lake office is co-located at the National Weather Service at the Salt Lake Airport.

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The public can access advisories in the following ways:

Recordings on local telephone lines in the following locations:

Salt Lake City 3-minute advisory (11 lines)	364-1581
Salt Lake City 6-minute advisory (2 lines)	364-1591
Park City (one line)	649-2250
Logan (one line)	797-4146
Ogden (one line)	621-2362
Provo (one line)	374-9770
Moab (one line)	259-7669

Radio Stations (on the air live around 8:00 am each morning):

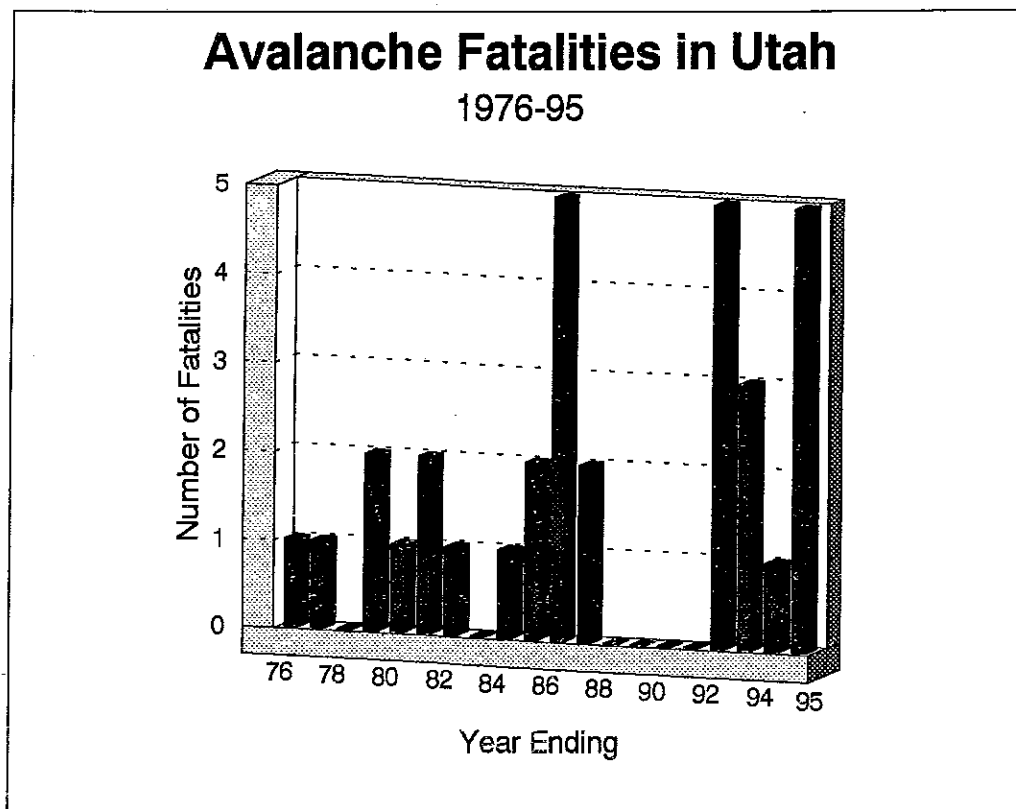
KRCL 91 FM
KPCW 92 FM

Internet:

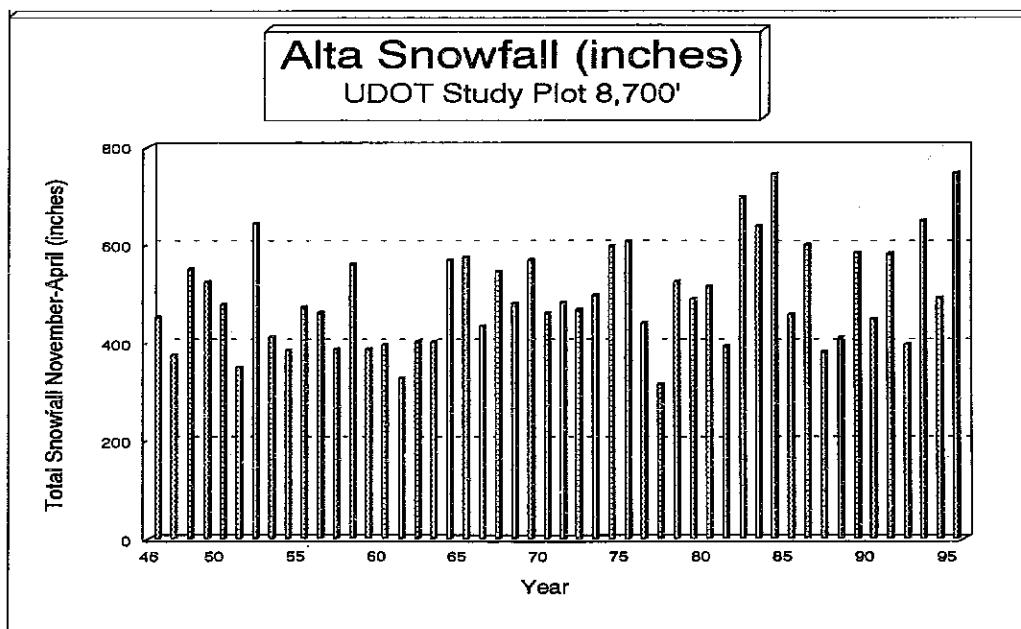
<http://www.met.utah.edu>
<http://www.wasatch.com>
<http://www.starwave.com/outside>

Season Highlights

- People called the UAFC hotlines in record numbers this season. The calls to the Salt Lake lines rose 13.6 percent from any previous season. A record of 103,822 people called the Salt Lake Recorded advisory between November and April and over 122,000 people called the advisory state wide. This averages 726 calls per day with an estimated maximum of nearly 2000 per day. The UAFC receives about twice as many calls as any other avalanche advisory in North America.
 - An estimated 1.6 million people each season hear our advisory on both KRCL and KPCW radio when we go on the air live each morning. This averages over 12,000 people per day.
 - For the first time this season, we posted our avalanche advisory and the mountain weather forecast on the Internet. The avalanche advisory was accessed about 150 times per day (27,000 times per season). At the University of Utah it was the most often-accessed product on campus.
 - It was also a record breaking year for snowfall. Alta UDOT station (which has kept accurate records for 50 years) broke their all-time record for total snowfall in one season. The new record stands at 745.4 inches—over 62 feet of snow. Many other ski resorts had near record snowfalls. Both November and January were record breaking months for snowfall and February broke records for warm temperature. As of mid June, over 13 feet of snow still lay on the ground at the Collins study plot at Alta.
 - Five avalanche fatalities occurred this season. Four of these occurred in the backcountry and one was a 7-year old boy who died in a roof slide in the town of Midway. Utah experienced its first snowmobile avalanche fatalities this season as two died in the same avalanche near Ogden.
 - The media focused an unprecedented amount of attention on avalanches this season. UAFC director Bruce Tremper was a major feature in three avalanche film documentaries including National Geographic, Discovery Channel and Pioneer Productions (an international British production company). He was also featured in an avalanche video documentary on the local Channel 13 and was the subject of a 10 minute avalanche documentary for National Public Radio. The UAFC staff was also quoted in national magazine articles including Men's Journal and Powder Magazine, and featured or quoted in more than the usual number of local television, radio and newspaper articles. The UAFC staff was on local television 17 times, quoted in the newspapers at least 18 times and on special radio interviews at least 5 times. There was probably more but with this season's frenetic pace, we neglected to write many of them down.
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This season tied the dubious record of five fatalities in one season.



This season broke the all time, 50 year record for snowfall at the Alta UDOT station

Season History

Central Wasatch

A season of contrasts. Snow ranged from the very, very light to the very, very dense; from the very, very good to the very, very bad. Avalanche accidents claimed an experienced backcountry skier and but also people without any avalanche knowledge. Records were broken for snowfall at the Alta DOT station, not only the 50 year record for total snowfall in a season, but also for the months of November and January, then for average high temperatures in February and much of March. There were five avalanche fatalities, tying the previous record.

October

Early October produced its usual round of snow which quickly turned to depth hoar. About two feet of snow on the northerly facing slopes rotted away during a clear spell during the second half of the month. Avalanche workers became increasingly worried because depth hoar makes for the most persistently unstable foundation to any snowpack. But except for one fatal day, it was never a major player.

November

With the arrival of November, unusual people began to snow up in the Wasatch. Grizzled old Swiss mountaineers and brilliant young French scientists, immaculate Japanese gentlemen and leather-tough ladies from the Montana backwoods started filtering through the Salt Lake airport. From the world over interesting folks began to gather in Little Cottonwood Canyon for the International Snow Science Workshop. For a week, Snowbird seethed with the latest theories and stories of summer adventures, both in the lecture hall and in the bar, as old friends and new acquaintances exchanged ideas. Then on the last day, many lectures began by announcing urgent messages from ski areas in the Northwest for their avalanche workers to return home ASAP. A major storm had swept across the Cascades and was headed for Utah. The last day of the conference was to be a field day but it was canceled by a major storm.

Eager to ski, Salt Lake locals were out in force on Sunday morning, November 6. Unfortunately the wind was also out in force and the result was sensitive and widespread wind slabs on top of the weak, brittle depth hoar. With the ski areas still closed, the resort slopes provided the most accessible terrain but with no avalanche control work, the snowpack was the same as the backcountry. We had not even started issuing avalanche advisories yet. We were still involved with the ISSW conference and our phone lines were not even re connected yet for the season.

In upper Little Cottonwood a skier triggered a slide from below and found himself mostly buried with a damaged knee. Down canyon worse trouble was brewing. An expert skier was out by himself looking for steep and challenging terrain. He talked with another group which encouraged him to join their party but he continued on his own. That night he did not return

home. His car was found in the parking lot and Snowbird ski patrollers started searching. It didn't take long. The slide was right under the tram. The first person there spotted something just above the snow surface. Jeff Waugh was found almost completely buried. Utah had its first avalanche fatality at the very start of the season.

With an active southern track, a steady series of storms hit the Wasatch. The rapidly building snowpack had few weaknesses and the powder was light (averaging just 6% density), a combination that equals happy skiers, boarders and resort operators. The month ended with 205 inches of snow at the Alta Guard Station, 33 inches over the old record set in 1988.

December quieted down. In contrast to November, there was only one decent storm which produced a quick shot of 30 inches at Alta. While of little interest from an avalanche point of view, this snowfall provided remarkable skiing. It fell with almost no wind. The snow just piled in great heaps, with a little sloughing on 40+ degree slopes. Runs consisted of one long face shot. Just breathing became a great challenge. Even the oldest, most burned out patrollers were whooping with joy on perhaps the best powder day in many years.

Mostly fair weather held sway through the holidays and into the new year. Despite many old tracks and various crusts in the backcountry the shady slopes still held good settled and re-crystallized powder as the first January storm approached.

The weather change began with a skiff of snow on January 4th and at least some precipitation was recorded at Alta for the next 15 days. The initial impulse produced about a foot of snow, followed by several days of strong winds from the Southwest. Weak disturbances piled on a few more inches on January 11-13. By the end of the week avalanche activity took on two distinct forms. Southerly facing slopes had a crust and faceted snow sandwich that was starting to overload. Some Northerly faces had very thick wind deposits, over 10 feet deep, on top of the weak re-crystallized snow from the Holiday clear spell. A pair of snowmobilers triggered this latter setup on Saturday, January 14th near Ogden. Both were buried and killed. One body lay under 20 feet of snow which took the rescue crew a week to find.

The weakness in the Southerly facing snowpack was much more sensitive, producing spontaneous slides as well as the human triggered type and plenty avalanche control work. Several people had close calls, including several teenaged boys left to play on the slopes of Timpanogos by their parents. Somehow they all survived a brush with a huge slide that came off the crest of the ridge 1500 feet above them.

On the last big day of this storm cycle, January 17, a spontaneous slide demolished a car on the Little Cottonwood road but the two occupants escaped with minor injuries. He had only owned the car for two weeks.

These copious snows heavily loaded roofs in the mountain communities with tragic consequences in one case. On January 23rd, two 7 year old boys were knocking icicles off their roof in Midway, Ut. when the entire snow load released burying one of them under tons of debris. He was under for about 30 minutes and never regained consciousness.

December

January

Two smaller storms usured out the month bringing the total Alta snowfall for January to just a hair under 200 inches, another record.

February started warm; the overnight Alta low temperature for the first day of the month was a balmy 32 degrees. The only decent powder storm fell on 10-11-12 February with about 20 inches of snow. Unfortunately, a well known and skilled local backcountry skier was killed by a small avalanche on the 12th. They triggered a wind slab from below; running fast on a sun crust, it hit Steve Carruthers and his friends, slamming them into trees. Steve, after sustaining multiple injuries and at least a 30 minute burial, did not respond to resuscitation. One of the others suffered a broken femur.

Then one of the rarest of weather events, rain at Alta, usually home to the "Greatest Snow on Earth", fell on 14 February. The following night, the low was -2 degree F, which signaled the start of a winter corn snow cycle. The water saturated surface snow, cooled each night by sub freezing temperatures, provided excellent supportable crusts on many slopes and lasting for a solid two weeks. The Wasatch was wide open, with safe skiing and boarding all over, but much of the local community, sobered by Steve Carruthers' death, did not take advantage of the conditions.

By this time, the pattern for the winter had revealed itself. A month of record breaking snow followed by a month of little snow. February was the off month and that means that March would have to be another record breaker. It was—almost—but not quite in the expected direction. Yes, there was plenty of precipitation but the thermometer was stuck on the wrong end. Snowfall might have reached a mark close the record of 183 inches if densities had been in the normal Wasatch single digits but four storms with rain and 15%+ snow pushed the snow total into the basement of the record department. The term glit (half glue, half worse) was even heard in Little Cottonwood. In the middle of the month, on a warm day after one of the warm storms, there was a fairly widespread wet snow avalanche cycle but with no human involvement.

Towards the end of March, as most folks began to think longingly of Spring, temperatures plunged and powder made a late reappearance in Utah. Then April showers continued to thwart corn snow seekers. Frequent small storms gave short periods with decent powder skiing and even a few avalanches as well but, except for the usual scattering of diehards, the annual warm country migration had begun. By the third week of April most of the avalanche forecasters from throughout the intermountain West were sighted in Moab, Ut., signaling the end of Winter. Or so we thought.

Total snowfall at UDOT Alta study plot was 745.4 inches at the end of April, just barely ahead of the 1983-84 record of 743 inches—and this is a 50 year record. But the number needs a big asterisk in front of it with an accompanying explanation.

Although the UDOT forecasters measured the snow in the same location as in 1984, nowadays they measure the snow much more often during storms. In 1984, the UDOT forecasters measured the snow every 12 hours while this season, the forecasters measured every couple hours or so during

February

March

April

The all-time record for snowfall at Alta

storms. Because of this, the snow did not get a chance to settle. In other words, in 1984 if the forecasters measured every couple hours during storms, the previous record would have been at least 10 percent higher. People who worked during both seasons claim that there was no comparison, 1984 was much snowier. The snow totals at both Alta Lifts and Snowbird were below their 1984 record. Snowbird was 141 inches below and they have used exactly the same methods for the past 20 years.

But then again, the pattern of snowfall was much different this season than in 1984. This season, many of the storms came in on a southwest flow while in 1984 experienced many more classic "Little Cottonwood Canyon storms," meaning a cold northwest flow. A northwest flow tends to snow more on the UDOT study plot and less higher up on the ski resorts across the canyon. This season, with the southwest flow, the mid elevation settled totals at the Snowbird are higher than in 1984, while at the bottom the totals are less.

So is it a record or not? To answer that would be just another black and white answer to a shade-of-grey question. And just like nearly everything in the natural world, there is no such thing as an either/or situation. We will list it as a record but with an explanation because this is no ordinary record. On the average, Alta gets more inches of snowfall than any other ski area in the United States. In addition, the data spans 50 years, much longer than most snowfall data in existence. So this is a record not to be taken lightly.

But no matter how you measure it, it was an extremely snowy winter.

May

Although the official winter records end at the end of April, the weather didn't seem to catch on. May continued snowy and cloudy with a continuous series of storms. The sun showed its warm face only for a couple half-days from mid April to mid June and at least some section of the Little Cottonwood Canyon road was closed for avalanche danger on 15 different occasions. There were 10 backcountry avalanche incidents in May alone, and good powder days outnumbered good corn days by a wide margin.

On May 15th we finally issued our last avalanche advisory for the season, nearly a month longer than usual. It was the last avalanche advisory not because there were no more avalanches, but because all of the UAFC staff were off to their summer jobs. At that time, the Logan area mountains had 192 percent of average snowpack for the date, the Ogden area mountains had 188 percent, and the Salt Lake and Provo area mountains had an incredible 305 percent of normal. Snowbird had nearly 60 inches of water equivalent and their usual is 16 for the date. The snowpack had not even started melting yet.

Season History - Logan Area Mountains

by Mike Jenkins

The winter of 1994-95 was unlike any I've experienced in 20 years in the Logan area mountains. This year was characterized by several days of storminess and good powder conditions followed by prolonged dry spells. We skied more corn in January and February than in March and April, and experienced two of the most incredible rain events I can remember. In general, the pattern resulted in periods of instability associated with the storms, and mostly restricted to new snow. The underlying snow became very solid, and deep instabilities were not a serious concern after about mid January.

There were several storms in the latter part of November, and by the 19th, the Tony Grove area above 9000 feet had about 46 inches of snow. The snowpack remained thin in lower elevations and remained so for most of the season. Strong winds accompanied the new snow, and created a moderate avalanche hazard on slopes above 8000 feet. The snowpack remained fairly stable, however, throughout much of November.

November

December arrived with windy conditions resulting in wind crusts and some wind slab development along the ridgelines. Conditions on upper-elevation, north-facing slopes remained good, and the snowpack was relatively stable except in these isolated areas. The total snow depth in Garden City Canyon was approximately 42 inches by December 10, and conditions were good when Bruce Tremper joined us for our annual backcountry observer's workshop. Toward the end of December, the split flow developed leaving us in high pressure with time to work on other things. This is not an unusual situation for that time of year as I recall from winters past. Some of the precipitation we did receive toward the end of the month fell as rain making Cascade crud and conditions that challenged the faint-hearted.

December

The first week of January was marked by cold temperatures followed by a storm on January 6 that dumped anywhere from 14-17 inches in the Logan area mountains, with a few more inches falling throughout the week. The snowpack became very sensitive during this period, and we issued an avalanche warning. A skier triggered one large slide in the Garden City Canyon slide path on January 6, and other skiers reported various signs of instability throughout the area. Southwest winds along with the new snow created wind slabs on northeast-facing slopes. There was a wave of avalanche incidents beginning on the weekend of January 14 and 15. Two snowmobilers were buried and killed near Ben Lomond Peak. A skier was caught on Logan

January

Peak in a slide triggered from above by his partners, and two skiers sympathetically triggered a big slide on White Pine Knob. During the week, other avalanches were observed on all aspects. A total of 14 avalanches were reported in the Logan area mountains. The widespread instability and sympathetic releases occurred mainly on a layer of buried surface hoar about 2-3 feet down, with some slides stepping down to old depth hoar layers.

February

The first of February arrived with rain to 9400 feet resulting in horrible crusts on all aspects and at all elevations. At the very lowest elevations, what little snow that remained disappeared. Conditions remained poor, and warm temperatures increased the hazard of wet slab avalanches at lower elevations on south through west-facing, sun-exposed slopes. This pattern continued until the middle of the month when several storms produced heavy snowfall on top of melt-freeze crusts. As expected, the avalanche hazard rose to high, and wind aggravated the situation by loading slopes along ridgelines. By the end of the month, high pressure and blue skies returned for the February version of spring skiing with 10000 foot temperatures exceeding 40 degrees.

March

During the first week of March, the high pressure broke down, and a storm system dumped 12 inches of new snow in the Logan area. The underlying snowpack was consolidated by this time from the February rain and warm temperatures, and the only instabilities observed involved the new snow. Skiing conditions were good on north-facing, protected slopes, but the hazard of human triggered avalanches was high on slopes steeper than about 35 degrees. The next storm system arrived on March 11 bringing nearly an inch of rain that caused conditions to greatly deteriorate. The rain saturated the snowpack to the ground. It was miserable, mushy, slushy, and wet. The avalanche hazard was mostly low except high on ridgelines where strong SW winds had created wind slabs. By mid-March, low overnight temperatures provided a solid refreeze greatly increasing snowpack stability. A few small storms provided some nice dust on crust conditions and mostly low avalanche hazard. March 21-23 brought two sizeable storms with new snow totals ranging from 8-12 inches making for excellent conditions on north-facing slopes. The storms came in warm, and the new snow bonded well to the old snow surface resulting in only moderate avalanche hazards.

April

There were no significant storms from the end of March into April, but good conditions were still reported on sheltered north-facing slopes on recrystallized powder. The avalanche hazard was low, and there were no signs of lingering wind slabs. By the second week, in April warm temperatures provided good corn snow on all aspects with infrequent storms bringing moments of good powder on nice supportable base. By mid April, most backcountry travellers had lost their enthusiasm, and we issued our final advisory on April 8 ending our second season of operation.

Season History - La Sal Mountains

by Dave Medara

The 1994-1995 season was a year characterized by good skiing, a relatively stable snowpack, continuing advances in technology and community involvement, and major personnel changes for the La Sal Avalanche Forecast Center (LSAFC). We finished the year with 142% of normal snowfall for the season and an unseasonably cool spring, making for a snowpack that will last long into the summer. The boaters are happy as well as those hearty souls who are still skiing the high peaks of the La Sals as of this writing, in mid-June.

November

November started out with it's typical early season madness. Fund-raising, administrative details, meetings in Salt Lake City, setting up weather stations and even a bit of forecasting (sometimes it's hard to remember that's what we do with all the distractions). Fortunately (unfortunately?) we did not have the massive November snow totals that the Wasatch mountains of northern Utah had. This gave us the time we needed to gear up for the season. We issued forecasts intermittently for the month of November and got on-line full time after the Thanksgiving weekend. We finished up the month with 35" of total snowfall, and only 16" on our total stake at 9600 feet. Up high however, there was more snow and we had a respectable avalanche cycle on the 20th, with 4 large class 2's or larger observed.

December

December, usually the second busiest month of the season, was no exception this year. We had our annual fund-raising party at Club Rio with the Watusi Gurus from Salt Lake City providing the music. The first annual LSAFC Ski and gear swap was held the same day and these events netted about \$500 to help defray the costs of the LSAFC. This year we tried to offer more educational programs to the public and the first one was an avalanche awareness talk given by Dave Medara at the Moab information center auditorium. There weren't enough seats in the small auditorium for all the attendees.

The busy month was helped out with a surprisingly stable early season snowpack. We did not have phenomenal amounts of snow but what did fall was generally in heavy dense layers. This combined with periods of prolonged wet, cloudy weather yet only small amounts of snow left us with a relatively strong snowpack for most of the month. In contrast to the usual dry, rotten, faceted, nightmare snowpack we usually have at this time of year, things were looking "mighty northwestern" and the skiing was good. Looking at the snow totals for the month, they were low despite the wet weather. We finished the month with only 25 inches of snowfall at 9600 ft. A small avalanche cycle occurred early in the month but for the most part the snowpack was quiet and stable. The addition of Weather Brief, an on-line weather forecasting service based in Salt Lake City, helped improve the

accuracy of the weather component of our forecast, that component being the toughest part of the forecast for most of December.

January started out with both forecasters either sick or injured. The snowpack remained stable and the down time gave Dave and Brian a chance to get ready for the avalanche class on the 6th and 7th of the month. The class was very successful and drew interest from the Telluride area as well as the local Moab folks. Bruce Erickson, a very experienced and savvy backcountry skier from the San Juan Mountains in Colorado came over to help out with the class. Bruce was a big help, being really knowledgeable about the "Colorado snowpack" and skiing conditions likely to be found in the La Sals. The field day for the class was pretty dramatic. Our lucky class got to experience one of the worst storms of the season; 21" of snow at 9600' coupled with winds up to 70 mph gave the class a real feel for worsening conditions. If the snowpits were showing instability, the snowpack didn't seem to care. Despite all the huff and puff and new snow, not a single slab avalanche release was observed from this storm. So much for theory and historical expectations. The old snowpack was demonstrating much more strength than normal this year and continued to do so for the rest of the month. While our education continued, public education also progressed as Medara presented several avalanche awareness talks during the month. Several weekends of the month also saw either Medara or Murray at the Geysers pass trailhead working with the Southeast Utah Winter Rescue Team on avalanche and rescue drills. No significant avalanches were recorded until the end of the month following a 10 inch storm with plenty of southwest winds. By month's end we received 41" snow at 9600 ft. with only 2 class two slides being recorded for the entire month.

January

February was a dry month. The lack of snow and great weather had folks thinking about mountain biking and rock climbing more than skiing, even though we had a great corn cycle late in the month. The second week of the month brought us a little snow and a high hazard period mostly due to high winds. Our weather station was flattened by 120 mph winds on the 15th of the month. That was the only significant occurrence above treeline for the month of February. We finished up the month with only 14 inches of new snow at 9600'.

February

In March, winter returned with a vengeance and a couple of very large avalanche cycles occurred. The timing was bad, but the center's lead forecaster, Dave Medara, accepted a job with the Utah Department of Transportation as an avalanche forecaster in northern Utah and left the Moab Ranger District. After the dreamy month of February, it was a tough decision to leave but in the chase of the almighty dollar and job security won out. (The Moab Ranger District has no guarantee of year to year employment for seasonal avalanche specialists nor do they have benefits.) Brian Murray reluctantly took over the reigns of the forecast center, giving up the best job in southern Utah, the assistant forecaster's position. The center was now operating on a reduced schedule, with forecasts only being issued 3-4 days a week as Brian did not have time to run the center on a full-time basis. Mother

March

Nature wasted no time putting him to the test as 22 inches of snow with 2 inches of water fell at 9600' over the 4th and 5th resulted in the largest avalanche cycle of the year for most of the Southwest, including the La Sals. Several class 4 and 5 avalanches were observed in Gold Basin, the largest being a class 5 wall-to-wall slide in Talking Mountain Cirque that was 3-6 ft deep and 5000 ft wide. Talking Mountain Cirque is the site of the 1992 accident that claimed the lives of 4 skiers. March was a relatively wet month in the La Sals and 2 more avalanche cycles occurred before the calendar was flipped to April. Snow totals for march were 71" at 9600', making it the snowiest and most active month of the season.

April

While snowfall amounts were not dramatic, stormy wet weather characterized the month of April in the La Sals. Like most other places in the west, the snow just kept coming in little dribbles, and at least here in sunny southern Utah, the melt-freeze cycles began to kick in again. Good corn skiing occurred on a wide variety of aspects and elevations throughout the range along with a little wet slide activity, but nothing unusual or overly large. With the light snowfalls, the LSAFC coasted through the final weeks. When Brian closed up shop on 18th we'd received only 11 inches of new snow at 9600' and there was still a lot of skier traffic going on. The snowpack was very consolidated and deep by this time and the more adventurous were starting to venture out on to the more dramatic lines the La Sals have to offer the thrill-seeking skier.

The Uncertain Future

As of this writing the future of the LSAFC remains uncertain. Funding for all Federal entities is more uncertain than usual in the present political climate and avalanche forecast centers are not a high priority, especially on more traditional land use forests such as the Manti-Lasal. The Moab district, however, remains committed to keeping the center alive, at least on a part-time basis. The addition of a remote snow sensor to the program this year will make it possible to do more forecasts from town, eliminating the sometimes 2 hour drive time needed to reach the trailheads and return with critical snow and wind data. This will help reduce manpower needs and save money, which may be necessary if the center is going to stay in operation. Given the current political climate, budget cuts seem inevitable, but with continued support from the Moab Ranger District, the Friends of the LSAFC and the people and skiers of Moab, the forecast center will continue to provide it's services to the skiers and winter recreationists of southeast Utah, even in a diminished capacity.

User numbers appear to be about the same as last year in the La Sals. Dark Canyon and La Sal Pass Sign-ins were not kept this year and the Geyser register was not kept stocked due to lack of manpower late in the season, but the Geyser Trailhead sign-in's are just about the same as last year despite the lack of sign-in sheets.

Once again, it is time to thank all those who helped us out this year. Rainee Guymon (the Wizard - you'll be rich when Campbell Scientific discovers you) and Jim Harte from the BLM here in Moab once again provided invaluable technical support for our telecommunications equipment. Everyone on the Board of Directors of the Friends of the Lasal Avalanche

Forecast Center. Peter Lawson, our silent benefactor in Professor Valley, the LSAFC wouldn't be here without your interest. Bill Levitt, the mayor of the town of Alta, must be thanked for his continued lobbying at the state level for avalanche funding and his personal interest in our well-being. Don Oblak, Brett Sutteer, Carrie Howard and everyone else who helped us out with fundraising activities this winter, thanks for your time everyone.

Keep your fingers crossed for next winter.

Calls to the UAFC Recording

This season, the public called the recorded avalanche advisory in record numbers. State wide, people called the advisory a total of 122,092 times, which is about twice the number of calls to any other avalanche advisory in North America. This averages 726 calls per day with an estimated maximum number of nearly 2,000 per day. This total number of calls does not include about 200 calls per day during May when winter didn't seem to realize what time of year it was and we continued to update the advisory.

On the Salt Lake City machine, which accounts for 85 percent of the calls statewide, we started out the season with 9 phone lines which can simultaneously access the advisory. But people complained that they were busy all the time so we added two more phone lines, it was still busy all the time so we maxed out the machine and now have 16 phone lines, but because of technical problems we were not able to hook them up to the machine until the end of the season. The call rate would probably be much higher if we had more phone lines installed.

Each of the outlying areas of Logan, Ogden, Park City, Provo and Moab have just one phone line hooked to an answer machine located in each community to which local public can call without paying long distance charges. We record these machines remotely each day from our Salt Lake City office with the exception of Moab and Logan in which local staff record the advisory (only on weekends for Logan). One phone line can handle only so many calls per season and Logan seems to have found that maximum number at around 5,000 calls. In Logan, Utah State University donates space on their automated telephone system for the advisory. Next season they plan on adding another phone line to access the advisory so that people won't get as many busy signals.

In all the other areas, we simply use a digital answer machine, the type available for under \$100 in most stores. This system seems to work reasonably well but we continue to have intermittent problems with the machines cutting us off when we record the advisories. They were just not designed for that type of use and we are certainly pushing the envelope of the technology by remotely recording a 3-minute announcement on it twice a day.

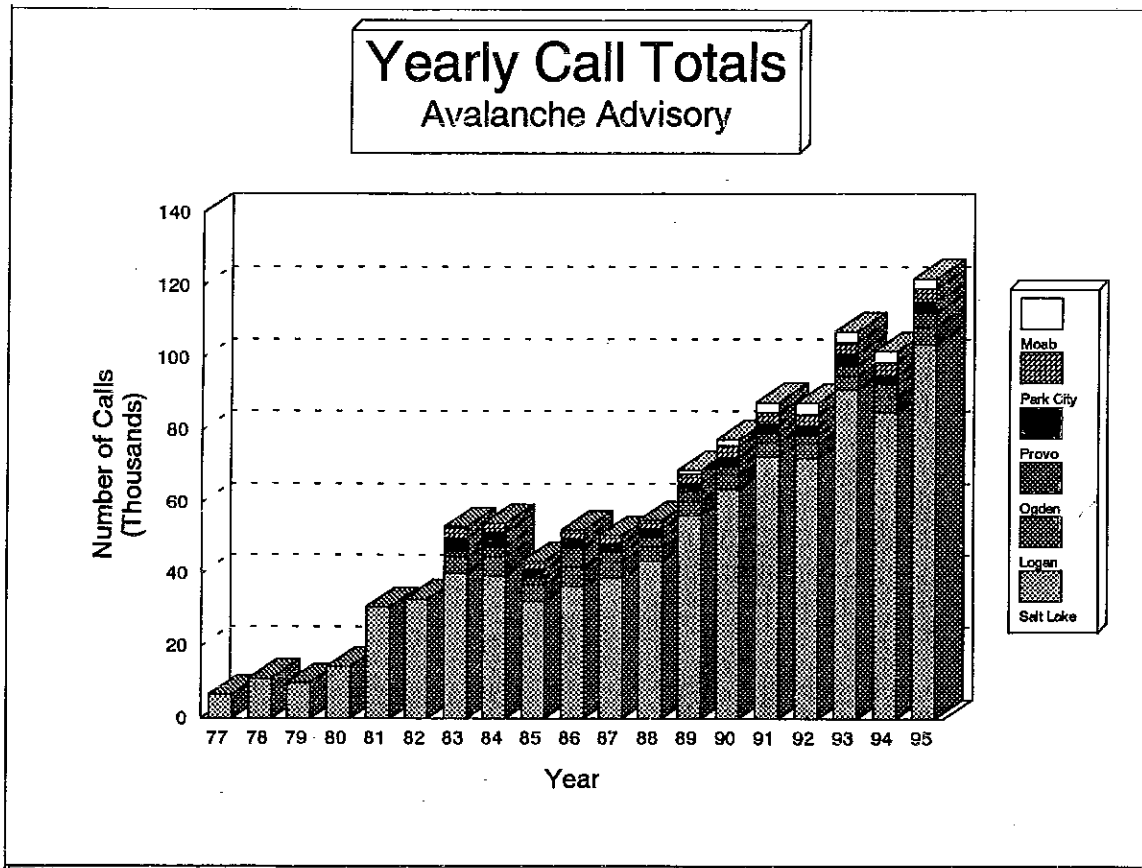
Record Number of Calls

Humble Pie

Two years ago we installed call counters on all the remote machines to finally get accurate numbers for these areas. We searched high and low and failed to find any device which would work for our purposes. So we contracted electronics whiz Dan Judd to build us some. They work great except for one caveat which Dan was careful to explain, "If the polarity on the line is reversed, then the counter will click off three counts instead of one."

When we installed them two years ago, we thought that we checked that out but it became apparent this season that some of the counters did indeed count three events for each actual event.

In other words, two years ago we were pleased with the higher than expected call counts we were getting in some of the outlying areas, but they turned out to be bogus. So this season, we had to eat humble pie and adjust the numbers which we reported in our annual reports for the last two seasons. We mention this for anyone compulsive enough to notice these changes in the tables located in the Appendix.



The public called the UAFC recording in record numbers this season. People called 122,092 times statewide which is twice that of any other avalanche advisory in North America. Daily call rates average over 600 per day with an estimated maximum of nearly 2000 per day.

Avalanche Incidents and Accidents

The number of people tangling with avalanches in the backcountry was about the same as the last 3 years. But this year they came out the worse for the wear, and in five cases, they didn't survive. The winter of 1994-5 saw 79 total backcountry incidents, with 31 people caught, 7 partial burials, 9 complete burials, 4 backcountry avalanche deaths and one urban avalanche fatality from a roof slide. This is twice the average for fatalities in Utah. Five avalanche deaths ties the recent records from the winters of 85-6 and 91-2.

Perhaps we should have known it was going to be a bad winter, when the first avalanche fatality of the year occurred on November 6th, even before we were issuing avalanche advisories and before any ski area was open or doing avalanche control. We had been busy in avalanche conferences all week and on the last day of the conference, a snowstorm arrived accompanied by high winds. The next day, November 7th, Jeffrey Waugh was reported missing, having been last seen on the 6th, skiing within the Snowbird ski area which had not yet been open for the season or begun their avalanche control operations. A search by the Snowbird ski patrol found him in the Upper Silver Fox area with the hood of his jacket above the snow.

He was a Snowbird employee and had skied the same slope a couple times earlier that season. But during the dry spell in the last half of October, the snowpack had turned entirely to depth hoar. Recrystallized snow such as depth hoar often makes good skiing but it makes a very dangerous foundation if a slab sits on top of it. The slab, in this case, was a wind slab provided courtesy of the new snow and wind. In other words, strong, brittle snow lay on top of weak, unconsolidated snow and all that was balanced on a 40 degrees—a bad combination.

Some other local skiers accompanied by an Alta ski patroller had run into Jeff Waugh that day and warned him about the wind slabs and offered for him to join their group. He declined and continued to ski alone. That was the last time anyone saw him alive.

It's a common scenario, really. Skiers get habituated to skiing all the steep slopes at a ski area which are safe because the ski patrol knocks down the avalanches each morning. But before the area opens, or after it closes for the season, suddenly it's back to the stone age. People who lack the skills to recognize avalanche conditions quickly get surprised. Even avalanche professionals commonly get surprised in the early season because they are dealing with essentially a backcountry snowpack in a place they aren't used to seeing it. It's often hard to make the mental switch. Jeff Waugh may have been one of these cases.

This wasn't the only avalanche incident on the 6th either. Two skiers skinning up within the unopened Alta ski resort triggered a slide from below.

Jeff Waugh Fatality

**And on the same day,
different place....**

Young snowboarders have a close call on Mt. Timpanogos

Utah's first snowmobile fatalities near Ogden

It broke out 550' above them, and one skier was completely buried except for his head and arm, and sustained a knee injury. Unstable snow was widespread throughout the Wasatch, and the Logan area mountains also had a skier triggered slide on the 6th.

In spite of record snow amounts for the rest of November, the snow pack was mostly stable, and there were few other avalanche incidents.

In early December, there were several skier triggered slides, with one person in Cardiff going for a ride and losing their ski pole. On the 23rd of December, a skier traversing towards Cardiac Pass triggered a small slide, 50 feet wide and 12 inches deep, but it was enough to take him for a ride and bury him to his neck.

After a dry December, January was another month of record snowfall, and the three cycles of avalanche incidents followed the 3 major storm cycles. January 5th through 9th saw 8 people triggering slides, with 4 getting caught. On January 7th four snowboarders triggered a slide off the Timpanogos Trail, above Aspen Grove, and two were caught and buried to their necks. Though the oldest in the group was only 13, they kept cool, dug out their friends, and made their way back down to the parking lot uninjured.

A second storm cycle started on January 10th. In the 5 days between 13th and the 17th, there was widespread instability through out the Wasatch Mountains with 10 avalanche incidents, with 4 burials and 2 deaths.

January 14th was d-day. Six backcountry skiers triggered avalanches, with three of them in the Logan mountains. But the worst was yet to come. The call came that 2 snowmobilers were buried in an avalanche off Cutler Ridge of Ben Lomond peak in the Ogden mountains. Neither of them survived.

Richard Scothern and Devon Wheeler were snowmobiling on the east side of Ben Lomond Peak. They rode with two other people, one was the brother of Devon Wheeler. They were high marking slopes high on the east side of Cutler Ridge. They had split into two groups and after awhile, two of the snowmobilers could no longer hear the other two. When they rode over to check on them they found a recent avalanche, and Douglass Wheeler saw part of his brother's snowmobile sticking out of the debris.

Unable to find either victim, they rode out to get help. A consortium consisting of The Weber County Sheriff, the Weber County Mountain Rescue Team, a Powder Mountain ski patroller and Life Flight continued the search. They found Devon Wheeler around 3:00 pm by probing. He was 15 feet uphill of his snowmobile and against a tree.

For the next several days, dozens of volunteers and several agencies helped search debris up to 30 feet deep and they eventually brought in a snow cat to excavate the site. Finally on January 22nd, eight days after the accident, they found Richard Scothern, buried about 12 feet deep and among trees. Neither victim was wearing beacons or shovels or had any avalanche training.

As is often the case, the avalanche was fairly small, only 220 vertical feet and 150 feet wide. It was a small but steep, heavily wind loaded bowl near crest of the south ridge line which connects to Ben Lomond Peak. The slide drained into a narrow V-shaped gully which is a classically dangerous situation. Few people survive slides which terminate in narrow gullies, which are called "terrain traps" in the avalanche business.

This was Utah's first snowmobile avalanche fatality and frankly, we were surprised it took so long. Nationwide, snowmobile avalanche fatalities have experienced a dramatic rise. The previous winter (93-94), 9 out of 11 avalanche fatalities in the U.S. were snowmobilers.

And no wonder. If you could design the perfect setup for avalanche disaster you would take a large group of people who know almost nothing about avalanches, who seldom carry beacons or shovels, disperse them throughout the western U.S., then give each of them a powerful, heavy machine, which can go not only any place a skier can go but can cover 100 times the amount of hazardous avalanche terrain in a day.

We have tried for years to interest snowmobilers in taking avalanche classes or calling the avalanche advisory, but with very little success. Suddenly, we are getting a lot of calls for avalanche classes. We are designing slide shows especially for snowmobilers and we are planning on making an avalanche video especially for snowmobilers next season.

We have seen this happen with every type of user group in the mountains. First, it was the mining towns at Alta and Bingham Canyon, then the ski resorts, then it was the telemark skiers, then the snowboarders, now, finally the snowmobilers are realizing that they need to get educated about avalanches. Unfortunately, in all cases it has taken a string of avalanche deaths to get people's attention.

The mid January avalanche cycle was finished off with a very close call on the 17th. A spontaneous/natural avalanche swept down out of White Pine Chutes onto the Little Cottonwood Canyon highway, carried a car 150 feet off the road, and demolished it. The two occupants of the vehicle were very lucky—totally buried and unable to move in a car filled with snow, they were dug out by witnesses and sustained only minor injuries.

It's extremely rare for avalanche victims to be innocently hit by an avalanche they didn't trigger. In Utah, about 99 percent of the time, the avalanche is triggered by the victim or someone in the victim's party. This was one of those rare exceptions, but it goes to show that it does indeed happen.

On January 23rd, a seven year old boy was playing under a steep cabin roof in Midway, and died when an avalanche came off of the roof. Chris Johnson and a friend were breaking icicles off the eaves of their cabin's steep A-frame roof when a slab of snow four feet deep and weighing several tons slid off the roof and buried him. He was buried for about 20 minutes, and died after being transported to hospital.

Although a roof slide is technically an avalanche fatality, it's certainly an unusual one for Utah. We will include it in this season's number of avalanche fatalities, but with an astrix next to it to explain the circumstance. Obviously, there is not much the Utah Avalanche Forecast Center can do to prevent these types of accidents. We do, however, mention the hazard of roof slides on our avalanche warnings when an unusual amount of snow falls in the valleys.

January's end of the month storm had smaller snow amounts, but lots of winds. On January 28th, apparently clueless to the extreme hazard, a 32-year-old snowboarder from Florida booting his way up the Flagstaff shoulder above the town of Alta when he triggered an avalanche that broke out above him. He was carried by the slide, but came out on top uninjured. His

Snowmobiles—the perfect setup for avalanche disaster

Close call on the Little Cottonwood Canyon Road

An urban avalanche fatality

Steve Carruthers fatality

snowboard was buried, however, and never found. On the 29th, the Salt Lake Twin was the site of 3 avalanches, two triggered by a snowboarder and 1 by a skier. The skier was carried, but not injured.

February gave Utah its 4th backcountry avalanche fatality of the season. After a week of warm temperatures and no snow, a storm dropped almost 2 feet of wind-drifted snow onto old icy crusts. A party of three very experienced backcountry skiers were breaking trail through deep, windblown snow across the southwest face of Gobblers Knob when they were hit by a slide from above. They most likely triggered the wind slab from below, as two other skiers had also triggered avalanches in the same area that day, and one at a distance of 200 feet. But there is always the possibility that it may have occurred spontaneously because several other slides occurred naturally in the same area in the same day as well.

The three skiers were on a slope of less than 30 degrees when the slide descended from the steeper slopes above. The slide carried them into a grove of aspen trees and all three were hung up by the trees and completely buried. Two party members, Marshall Denton and John Paul, were buried with an arm out of the snow and were able to clear an air space, free their heads, and yell for help. The third skier, Steve Carruthers, was buried 2 feet deep and wrapped around a tree, with his coat pushed over his head. All three must have been closely grouped together when they triggered the slide.

Another party of backcountry skiers was following the track broken by the Carruthers party, heard their cries for help, and followed the track to the accident site, arriving about 30 minutes after the slide occurred. Because of their quick actions, they were able to save the lives of two of the three. Marshall Denton was hypothermic, in shock and had a badly broken femur but survived. John Paul had minor injuries, and Steve Carruthers did not respond to resuscitation. Subsequent medical examinations showed that Carruthers had broken ribs and pelvis and sustained some internal injuries. There was no ice mask and he apparently made no attempt to clear an air space. He most likely died from suffocation shortly after the avalanche came to a stop.

The avalanche path does not immediately come to mind as a dangerous slope. It's small and it slides perhaps every couple years only when it gets loaded with wind drifted snow, such as on the day of the accident. They were breaking a trail along the same path the summer trail follows, and indeed, many backcountry skiers follow this same trail. A safer route is to drop into the bottom of the cirque and follow the flat cirque bottom to the pass. But you loose about 300 vertical feet by doing so. Consequently, many backcountry skiers use the traverse to avoid loosing their hard-won elevation. But it was just not the day to do so.

Three other skiers triggered avalanches in Butler Fork area that day. Up the East Fork of Butler, a skier triggered a 150' wide, 2' deep slide that deposited him in a gully bottom, uninjured, with head out. A second person was unglamorously dumped onto the Butler trail when he triggered a small slide on steep slopes near the road, and a third skier triggered a slide sympathetically in the Circle All area. Skiers in the Butler Fork area attributed the instability to a period of intense snowfall, greater than 3"/hr, that had occurred earlier that morning.

More close calls in the same area

Steve Carruther's death was quite a shock to the outdoor community of Salt Lake City. He was a locally famous rock climber with many first ascents to his name. He had also backcountry skied for many years and was fairly well versed in avalanche craft. His brother Tom Caruthers is a long-time guide for the Wasatch Powderbird Guides, the local helicopter skiing company. This was no avalanche neophyte as is often the case. In other words, if Steve Caruthers can get killed in an avalanche, nearly anyone can. And this is especially disturbing news to the avalanche professionals because we spend so much time in dangerous avalanche terrain and we depend on our good judgement to keep us alive.

A combination of Carruther's death and less than optimal ski conditions seemed to discourage backcountry activity for a while. The Park City side of the range had two skier triggered slides on the 16th and 17th, with one person going for a ride and being partially buried.

March was a month of heavy, wet snow storms. The first wet storm came on the second and third, and there were 8 incidents on the 3rd and 4th of March. One skier off of Pioneer Ridge was carried and sustained minor injuries to a knee, other skiers went for rides on Bonkers, which is in Broad's Fork, and on Highway to Heaven, near Solitude Resort.

The snow from this storm was slow to stabilize. On the 6th, an interesting post control release occurred in Days Fork. Explosive testing by the helicopter skiing company earlier that morning had produced no results on that slope. Approached by a group, the slope sympathetically broke out, 8 feet above the bomb crater. A snowmobile also triggered slide on the 6th in Mineral Basin. Though it broke out 200' above him, he was not caught. On the 8th a skier went for a ride in the Birthday Chutes of White Pine Canyon, but was uninjured.

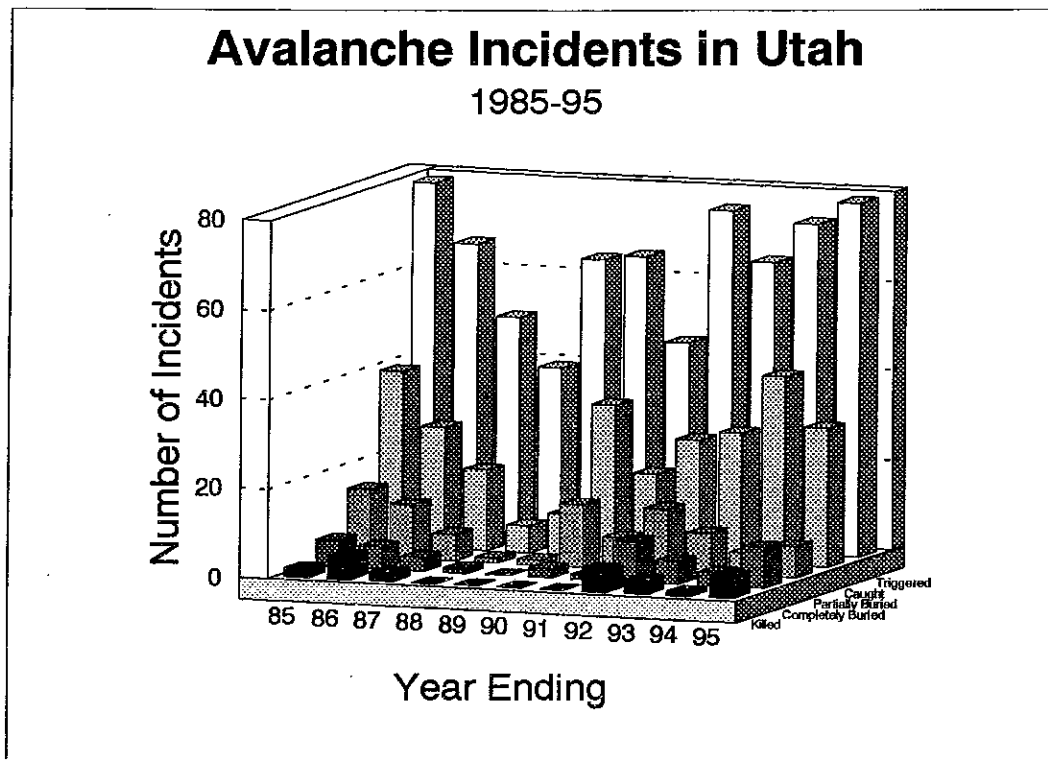
The rest of March was quiet. Generally warm temperatures helped to stabilize snowpack, and also made for poor ski conditions. It seemed to rain as much as snow, and a combination of crusts and mush kept many people out of the backcountry.

But the winter just refused to give up. Snow continued to fall throughout April and May with many very good days of powder. But most backcountry travelers were just sick of winter, and would rather ride bikes and climb in the rain. The same kind of conditions which people trample each other for in November were almost totally ignored in May. But not by everyone.

On May 4th, a 22 year old Norwegian was traverssing high in the starting zone in Valerie's slidepath in Little Cottonwood Canyon. It was one of the few warm days in a month and the soggy snowpack was ripe for wet slabs. He triggered a wet slab sympathetically and then was caught in another. The slide carried him into a tree and he narrowly escaped a very long ride. Luckily the slide he triggered stopped short of the highway.

Then for the rest of May and the first week of June, it just kept snowing. The usual suspects of hard-core skiers and boarders were busy, many at the closed ski resorts. Once again, many got lulled into the feeling of safety in familiar terrain and there were at least 9 more unintentional human triggered slides in the backcountry with two caught. Wow, what a year.

**More close calls in the
Spring**



79 Total backcountry incidents
1 Urban avalanche incident
31 Caught
7 Partially buried
9 Completely buried
5 Killed (including one urban roof slide)

Incidents and Accidents 1994-95

This list contains only unintentional avalanche incidents in the backcountry—areas not normally controlled for avalanches.

Date	Location	Details
11/6	East Greely, Alta area unopened	Triggered from below, one skier buried except for head and arm
11/6	Silver Fox, Snowbird area unopened	B-C skier killed
11/6	Tony Grove, Logan	skier triggered
11/10	Bountiful Peak	skier triggered
11/13	Silver Fork Meadows	skier triggered, carried
11/25	Foothills	dog triggered
11/25	Monitor Bowl	triggered by cornice kicking
12/4	Cardiff	went for ride, lost pole
12/7	Tuscarora Notch	skier triggered

12/9	Toledo Chute	skier triggered
12/16	Slide Canyon, Provo	4 skier triggered
12/23	Cardiac Pass	skier buried to neck
1/5	Red Pine	went for ride
1/6	Provo Mnts	skier triggered
1/6	Garden City, Logan	sympathetic to skier
1/7	Aspen Grove	boarder triggered, 2 buried to necks
1/8	Highway to Heaven	broke out above skier, not caught
1/8	Wilson Peak	skier triggered, skied out to side
1/9	Timpanogos	skier triggered
1/13	Snake Creek	sympathetic to skier
1/14	Ben Lomond	snowmobiler double fatality
1/14	Clayton Peak	sympathetic to skier
1/14	Silver Fork	skier triggered
1/14	Emmas	sympathetic to skiers
1/14	Dry Canyon, Logan	triggered from above, carried
1/14	Logan Peak	sympathetic to skiers
1/14	Woodcamp	skier triggered
1/16	Dutch Draw	sympathetic to skier
1/17	White Pine Finger	natural - demolished car, 2 occupants with minor injuries
1/19	Wilson	skier triggered
1/23	Midway	fatality from roof avalanche
1/28	Flagstaff Shoulder	snowboarder triggered, lost gear
1/29	Salt Lake Twin	skier triggered, carried
1/29	Salt Lake Twin	snowboarder triggered
1/29	Salt Lake Twin	snowboarder triggered
2/12	Gobbler's Knob	skier fatality
2/12	Gobbler's Knob	total burial, broken femur
2/12	Gobbler's Knob	total burial , minor injuries
2/12	Butler Fork	went for ride, mostly buried
2/12	Butler Fork	skier triggered, went for ride
2/12	Circle Awl	sympathetic to skier
2/12	Alta south side	3 skier triggered
2/16	10,420	skier triggered, buried to thighs
2/16	Limelight	skier triggered
2/17	Superior	skier triggered
3/3	Pioneer Ridge	skier carried, hit tree, minor injury
3/3	Slide Canyon	skier triggered
3/4	Daley Bowl, chutes	2 sympathetically skier triggered
3/4	Tuscarora	sympathetic to skier
3/4	Rocky Point	ski cut and took out tracks
3/4	Bonkers, Broads	skier triggered, went for short ride
3/4	Highway to Heaven	skier triggered, went for ride
3/6	Days Fork	post control sympathetic to skier
3/6	Mineral Basin	snowmobiler triggered 200' above
3/8	Birthday Chutes	skier triggered, went for ride.
3/12	Rocky Point	skier triggered
3/19	Cardiff Fork	sympathetic to skier

3/19	Cardiff Fork	skier triggered
4/9	Grizzly Gulch	sympathetic to skier
4/9	Point Supreme	skier triggered
4/20	Clayton Peak	skier triggered
5/4	Valery's	skier triggered, carried into trees
5/7	East Greely	skier took short ride
5/12	Patsy Marly	skier triggered soft slab
5/12	Patsy Marly	skier triggered ss with cornice
5/13	Devil's Castle	skier triggered ss
5/14	Christmas Tree	skier triggered wind slab
5/14	Jitterbug	skier triggered wind slab
5/14	High Rustler	skier triggered wind slab
5/14	Millicent	snowboarder took a ride

Avalanche Education

We view avalanche education as our primary job. Since over 95 percent of avalanche victims trigger the avalanche which catches them, it's obvious enough that we can avoid most avalanche accidents by not triggering them. And the best way to avoid triggering avalanches is first by educating people about avalanches, and second, give them critical, up-to-date information on the pattern of snow stability they need to make their decisions in avalanche terrain. In other words, we arm people with the weapons they need stay alive. And as is usually the case, knowledge is the most powerful weapon of all.

The centerpiece of our knowledge distribution system is the avalanche advisory. The callers can follow the evolution of the snowpack on a daily basis. We talk about the various kinds of instabilities, what causes them, what triggers them, and how long they will likely last. Through osmosis, the Utah community of backcountry users slowly becomes part of an "avalanche culture," a group of people who can speak the avalanche language, understand the changing snowpack, the significance of strong winds, heavy snows, the various types of weak layers, and percolating meltwater. Some of these are complex concepts and require daily schooling for the public to understand them. We have their attention each day for only three minutes, and we give them their daily cram course, often with a little humor to help the medicine go down.

But for more detailed education, we put on a variety of avalanche classes throughout the season. The mainstay is the basic avalanche awareness class, in which we give about a two hour talk using slides, videos and models to explain the basics of the avalanche phenomenon, terrain, stability, safe travel, the human factors and avalanche rescue. These are free and open to the public.

The public just can't seem to get enough of these classes. For instance we give three different talks at REI each season and 250 people cram into the room each time with many being turned away. We also give these same talks at various universities, high schools, or businesses—anywhere we can collect larger groups of people. We get so many requests for talks we have to turn many of them down.

We often teach in more detailed classes which last three days. These are offered usually by the American Avalanche Institute or a similar organization. Each year there is more demand for these classes than can be filled. So each season the Friends of the Utah Avalanche Forecast Center put on a 3-day class which is taught by members of our staff, several other local avalanche instructors and at least one visiting instructor from outside Utah, usually Alaska or Montana.

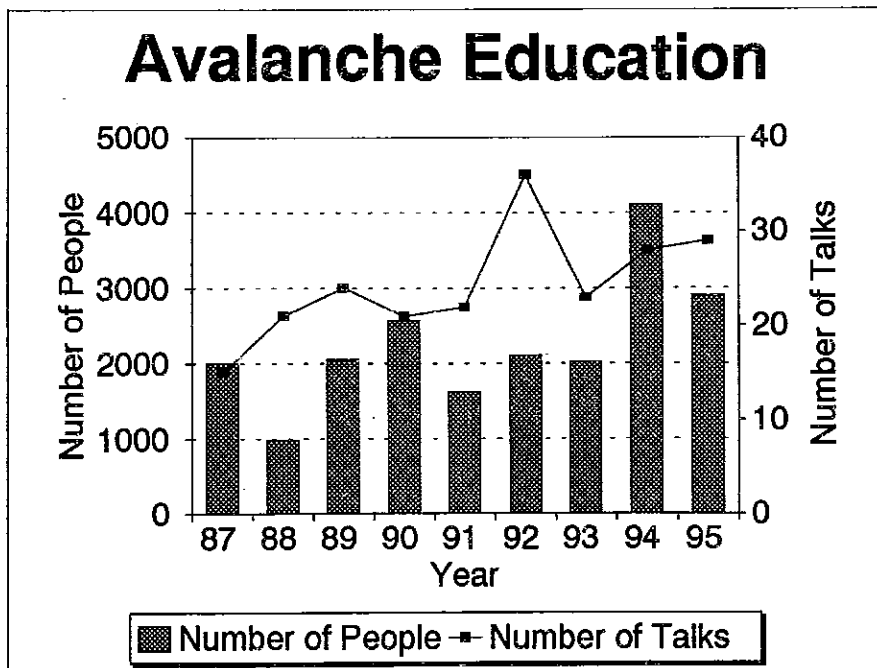
This season, we taught a total of 29 separate classes which personally reached over 2300 people. This was fewer classes than last season, mainly because it was such a heavy snow year that we just didn't have time to teach more.

But 2300 people doesn't seem like much compared to the millions of people television can reach. This season we spent a total of a couple weeks working with local, national and international television crews who were doing avalanche documentaries. UAFC director, Bruce Tremper was a major feature of programs by National Geographic, Discovery Channel, Channel 4 in England, National Public Radio and even our own local Channel 13.

These programs will reach a "wider audience", as they say in the television business, meaning millions and millions of people. We are, after all, in the business of preaching the avalanche gospel, and as so many other preachers have discovered in recent years, television is a powerful medium indeed. The difference between us and television evangelists is that we do it for free.

"The public just can't seem to get enough of these classes."

Preaching the Avalanche Gospel to a Wider Audience



Avalanche Education by UAFC Personnel

Date	Forecaster	Event	No. People
11/1	Tremper	Intl. Snow Science Workshop	300
11/29	Staff	REI-Avy Awareness	270
12/2	Tremper	Vail - 3 day course	40
12/10	Tremper	Logan - volunteer training	50
12/12	Medara	Avi Awareness	70
12/13	Staff	REI - Avy Awareness	250
12/14	Tremper	Canadian Mountain Holidays	60
12/19	Kimbrough	Am. Avalanche Inst. - Alta	25
1/4	Jenkins	Quarter USU avalanche class	30
1/4	Tremper	Logan	150
1/6	Medara	2-day course	14
1/7	Lees	Am. Avalanche Inst. - Alta	20
1/10	Staff	U of U - Avy Awareness	100
1/10	Medara	Avi Awareness BLM	30
1/10	Medara	Avi Awareness Boy Scouts	20
1/11	Tremper	Weber - Avy Awareness	140
1/12	Staff	Black Diamond - Avy Awareness	50
1/15	Medara	Rescue Team Training	15
1/19	Tremper	Wasatch Mnt Club	150
1/22	Murray	Rescue Team Training	12
1/24	Tremper	REI - Snow Stability	250
1/28	Lees	Girl Scouts - Avy Awareness	60
2/7	Tremper	Patagonia - Avy Awareness	100
2/18	Staff	3-day Aval Workshop	35
2/25	Lees	Women in Math and Science	40
2/26	Tremper	Jansport, PC Avy Awareness	40
3/2	Tremper	State Parks Rangers	45
3/3	Kimbrough/ Shaw	Rockreation - Beacon drill	15
5/25	Tremper	NOLS Alaska avi course	10

Total : 29 courses
2371 Total People

Media

This year, for some reason, the media showed an exceptionally frenzied interest in avalanches, especially the national and international media. Even in an average season, the television stations, newspapers and radio seem to love covering the sexy subject of avalanches. This season, the media attention rose to a unprecedented pace to where dealing with the media was at least a part time job.

UAFC Director Bruce Tremper was a major feature in three international film documentaries including National Geographic, Discovery Channel's World of Wonder and in an hour-long documentary by Pioneer Productions, which is the largest television production company in England. All of these programs will air next season. Bruce was also featured on a 10-minute radio documentary on National Public Radio, in a video documentary for the local Channel 13, and quoted in national magazines such as Men's Journal and Powder Magazine.

In addition, all of the UAFC staff were featured or quoted in much more than the usual number of local media features on avalanches. We were in at least 16 television stories, 18 newspaper articles and 7 radio programs. There were, no doubt, several more than we're mentioning because much of the attention occurs during especially hazardous avalanche conditions and we sometimes neglect to write them down. In addition, Tom Kimbrough wrote a monthly avalanche column for the TUNA News and Bruce Tremper wrote two avalanche articles for the Sports Guide.

We don't know why all the media attention—especially the national attention—has come our way, but who's complaining? It gives us a rare opportunity to "preach the avalanche gospel" to a wide audience.

It's a sobering thought to think that all the avalanche awareness courses we teach each season only reaches a tiny fraction of the people one national television program can reach. Even if we spent all of our time giving avalanche talks to every university, high school, junior high, and snowmobile club in the state, one good television program can reach thousands of times more people in a single evening. The medium of video and film is undoubtedly the most efficient way to educate the general public about avalanches and keep Utah avalanche deaths down. In addition, national exposure like this is also a tremendous "white hat" service in which the Forest Service is represented in a very positive light. As every politician knows, you can't buy good exposure like that.

Three international film documentaries featured the UAFC staff this season

A white hat program for the Forest Service

Media Contacts by UAFC Personnel

Date	Forecaster	Agency/reporter	Topic
8/20	Tremper	National Geographic	Documentary Film
11/1	Tremper	National Geographic	Documentary Film
11/7	Kimbrough	SL Tribune	Skier death
11/8	Tremper	Powder Magazine	Avalanche Information
11/8	Shaw	Carrier, KUER	Skier death
11/11	Kimbrough	Channel 4	Avalanche conditions
11/13	Lees	Channel 7	Avalanche conditions
11/14	Tremper	Assoc. Press	Avalanche awareness
11/17	Tremper	Channel 5	Avalanche conditions
11/19	Kimbrough	Channel 2	Avalanche conditions
11/22	Shaw	Wells, Mens Jour.	Roman Lata death
11/30	Tremper	Rice, KUER	Avalanche forecasting
12/20	Shaw	Griffin, Men's Jour.	Roman Lata death
12/21	Shaw	Wells, Men's Jour.	Roman Lata death
12/28	Shaw	KPCW	Avalanche awareness
1/4	Shaw	Huff, Tribune	Athey article
1/6	Kimbrough	Standard Examiner	Avalanche conditions
1/10	Shaw	Palmer, Deseret News	Avalanche conditions
1/14	Tremper	Channel 4	Snowmobile deaths
1/14	Tremper	Channel 5	Snowmobile deaths
1/14	Tremper	Channel 2	Snowmobile deaths
1/14	Tremper	SL Tribune	Snowmobile deaths
1/14	Tremper	Standard Examiner	Snowmobile deaths
1/15	Lees	Channel 2	Warning, deaths
1/15	Lees	Channel 4	Warning, deaths
1/15	Tremper	Pioneer Productions	Documentary Film
1/15	Tremper	ESPN	Avalanche video
1/17	Shaw	Palmer, Deseret News	Avalanche conditions
1/17	Tremper	Hansell, SL Tribune	Avalanche conditions
1/17	Tremper	Holenhurst, KSL	Avalanche awareness
1/18	Tremper	Gorell, Tribune	Avalanche conditions
1/18	Tremper	Channel 2	Avalanche conditions
1/18	Tremper	Standard Examiner	Avalanche conditions
2/2	Tremper	Channel 2	Wet avalanches
2/2	Tremper	Channel 4	Wet avalanches
2/2	Tremper	Channel 5	Wet avalanches
2/3	Tremper	National Geographic	Documentary
2/7	Athey	S.L. Tribune	Backcountry Observations
2/13	Lees	KSL Radio	Avalanche death
2/13	Lees	Deseret News	Avalanche death
2/13	Lees	Channel 4	Avalanche death
2/13	Lees	SL Tribune	Avalanche death
2/13	Lees	SL Tribune	Avalanche death

2/13	Tremper	Channel 13	Avalanche Documentary
2/13	Lees	Channel 5	Avalanche death
2/14	Shaw	Palmer, Deseret News	Avalanche conditions
2/14	Shaw	Tribune	Avalanche death
2/14	Shaw	Hansel, Tribune	Avalanche death
2/14	Shaw	Monitor Radio	Avalanche information
2/14	Shaw	Wasatch Mnt Times	Avalanche death
2/24	Tremper	Pioneer Productions	Documentary
2/25,26	Tremper	National Geographic	Documentary
4/25	Tremper	National Geographic	Documentary
5/5	Tremper	World of Wonder	Documentary

Volunteer Observer Program

Several years ago, we started a volunteer observer program which has been extremely successful. Since there's only four of us, and we obviously can't be everywhere at once, we decided to tap into the vast network of people who regularly go into the backcountry anyway. We usually train them and try and spend a day skiing with them each year to show them what information we need. Each day after they return home from the backcountry, they call in an observation. For the ones who we trust and provide useful information, we pay them a nominal amount per observation, usually \$10.00 per observation. It costs very little and makes our advisories much more accurate.

Volunteers can be paid from two different sources, either by the Friends of the UAFC or directly from the Forest Service. The Forest Service volunteers are usually the more reliable ones because they must submit a bid and sign a contract. For more casual observers, we pay them through the Friends of the UAFC account because there is much less red tape.

The volunteer backcountry observer program continued a rebuilding process this season, making some modest strides towards the high level that existed during Brad Meiklejohn's energetic tenure as program director several years ago.

We were able to recruit several new observers. Two of these, Phil Lowery and Bruce Englehart, became quite active, contributing many accurate and detailed reports. Next season, they will most likely be Forest Service contract volunteers.

Bob Athey, our #1 observer, was out nearly every day of the season, once he got over his November bout of pneumonia. He even starred in a feature article in the Salt Lake Tribune about his backcountry exploits. He also helps teach avalanche classes and is especially useful in teaching classes to snowboarders.

Brad Bodily covers the Ogden area. In addition, he participated in the recovery of Ben Lomond snowmobile fatality, showed our avalanche

video to several groups of Ogden folks and conducted a field session for the Ogden Search and Rescue.

Costs this season were up some, reflecting the increased activity of the observer program. But it's still our greatest investment considering information received per dollar spent.

Total observer expenses this year were \$4008.

For the first time this season, the Logan observers began to be paid directly through Mike Jenkins USU program, which records the Logan area avalanche advisory on weekends. With this diversified forecasting they will continue to pay their observers directly through the Logan program. Bruce Tremper and Mike Jenkins conducted a training session for the Logan area volunteer observers in the early season. About 30 people attended and many of those people eventually became regular observers—a very successful program no matter how you measure it.

UAFC Observers (paid by Friends of UAFC)

Observer	Nov	Dec	Jan	Feb	Mar-Apr	Total	Cost	
Bob Athey	9	17	20	23	21	90	\$1350	
Bruce Englehart	3	6	9	7	4	30	\$300	
Andy Starr	0	5	5	3	3	16	\$90	
Phil Lowery	6	11	14	9	0	40	\$330	
Luke Smith	1	2	0	0	0	3	\$30	
Logan Volunteers							\$1120	
						Total	179	\$3220

USFS Contract Observers

Brad Bodily	2	4	4	3	7	20	\$200	
Greg Dollhausen	4	4	2	3	5	18	\$180	
Rip Griffith	3	7	6	6	12	34	\$408	
						Total	72	\$788
Grand Total							\$4008	

Budget

Looking at the numbers, we can't help to come to the narcissistic conclusion that people love us, or at least they love what we do. People call the avalanche advisory over 122,000 times each season, which is about twice that of any other avalanche center in North America, 1.6 million people listen to us on the radio each season, 27,000 on the Internet, three national and international film documentaries have featured us this season including National Geographic and the Discovery Channel. We help make the Forest Service look good in a time when the budget axe falls on those who don't. So you would think that we wouldn't have to fight for our funding. Not so.

We narrowly dodged the budget bullet in the 1993-94 season when the Forest Service portion of the funding dropped dramatically. Salt Lake County, the State of Utah and private money collected through the Friends of the UAFC came through with major funding to save the UAFC. Two seasons ago, nearly our entire budget came from the Forest Service. This season, it's about a third. With continued federal cutbacks promised by the new Republican congress, it seems that we must continue to be fiscally creative.

This season, the Wasatch-Cache National Forest contributed \$35,000, the Manti-La Sal National Forest contributed \$10,000, the Utah Department of Public Safety, Division of Emergency Management contributed \$25,000. Salt Lake County contributed \$20,000, Utah State University contributes about \$15,000 in in-kind support, the National Weather Service contributes office space and the weather forecasting infrastructure which is worth several thousand dollars per year, and last but not least, the Friends of the UAFC raised about \$30,000 this season.

Once again, the Friends of the Utah Avalanche Forecast Center has been a very effective fund raising organization. The FUAFC is a private non-profit group created to solicit and collect private donations. Each season, the FUAFC host a ski swap, a fund raising party, and several other functions. They raise about \$30,000 per year from the private sector. Many thanks to the hard work of Jim Frankenfield, Howie Garber, Louise Schultz, Chris McLean, Bert Lindler, Wendy Zeigler, Bob Athey, ex-Salt Lake Mayor Ted Wilson, Rick Reese, Mayor Bill Levitt and Kitty Calhoun-Grissom. We feel very lucky to have such an energetic and distinguished board.

In short, the UAFC has become a shining example of what partnerships can accomplish. It has taken some hard work and some creativity, but it shows that the concepts of re-inventing government can and do work. We now have a diversified source of funding which can better withstand the inevitable fiscal fluctuations of today's government. It also shares the financial burden among those various entities who benefit from the service.

**"Looking at the numbers,
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Nuts and Bolts of the Budget

As far as the budget, the state of Utah is separated into three entities, 1) the "Central Wasatch" which includes the Salt Lake, Ogden, Park City and Provo area mountains, 2) the Logan area mountains and 3) the Moab area mountains (La Sal Mountains). Although each area has varying degrees of independent budgets and varying degrees of separate forecasting programs, some funds are shared among all the regions. For instance, the money from the State of Utah Department of Public Safety, Division of Emergency Management as well as the Friends of the Utah Avalanche Forecast Center is shared between the three regions. However it is divided up according to the number of telephone calls to the advisory from each area. Therefore, the vast majority of this collective money goes to the Central Wasatch since that is where the vast majority of the use occurs.

The Moab center operates quite independently primarily from funding by the Manti-La Sal National Forest. They also have local fundraising events and solicit local donations through their local chapter of the Friends of the UAFC. The Salt Lake chapter of the Friends of the UAFC continues to subsidize both Moab and Logan by matching any money raised locally. Also, \$1000 of the State of Utah money goes to both the Moab and Logan centers.

Logan is more of a special case. The Logan forecast has been recorded by the Salt Lake based staff for the last 15 years. But two years ago, motivated by Forest Service budget cuts, several Mike Jenkins and Kevin Kobe from Logan volunteered to record the forecast locally on the weekends while the Salt Lake based staff recorded it on week days. This system has worked very well for two years now. This season they continued to raise more funds locally and have garnered a prodigious amount of in-kind support primarily from Utah State University. We hope that sometime in the not too distant future there will be enough money for the local staff to record the forecast full time.

Mike Jenkins is a professor with the Utah State University Department of Forest Resources and has taught an excellent university avalanche course in Logan for a number of years. He heads the Logan forecasting effort and is aided by a number of both volunteer and part time staff including Kevin Kobe and Liz Hebertson. Utah State University donates a portion of Mike Jenkin's time as well as office space, computers and phone lines. This in-kind support adds up to around \$15,000 per year. The "actual" dollars for other salaries and supplies come from pool of Utah Division of Emergency Management, Friends of the UAFC and money raised from local private sources.

Although the program operates on a very modest budget, it has become a great success both as an example of a cooperative effort but as a wonderful training ground for avalanche students at USU.

wonderful training ground for avalanche students at USU.

Breakdown of Funds by Region

Central Wasatch (Salt Lake City, Park City, Ogden, Provo)

Wasatch-Cache National Forest	\$35,000
Utah Dept. of Public Safety, Div. of Emergency Management	\$23,000
Salt Lake County	\$20,000
Friends of UAFC	\$10,556
Total	\$88,556

Logan

(These funds cover only weekend advisories and volunteer observers. The Central Wasatch funds pay for the weekday advisories.)

Friends of UAFC	\$3,317
Utah Dept. of Public Safety, Div. of Emergency Management	\$1,000
Cache County	\$500
Cache Valley High Markers	\$250
Fundraisers	\$507
Beaver Mountain	\$50
Consultation	\$100
Total	\$5724

Moab

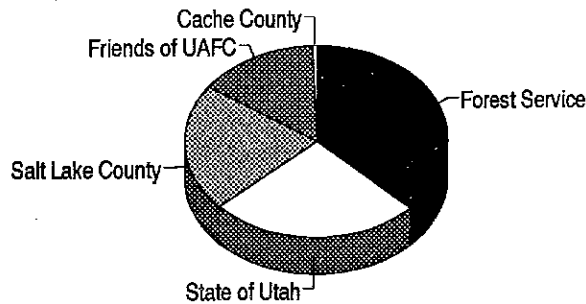
Manti-La Sal National Forest	\$10,500
Friends of LSAFC	\$2,500
Utah Dept. of Public Safety, Div. of Emergency Management	\$1,000

Total **\$14,000**

Total Statewide **\$108,220**

Northern Utah Revenues

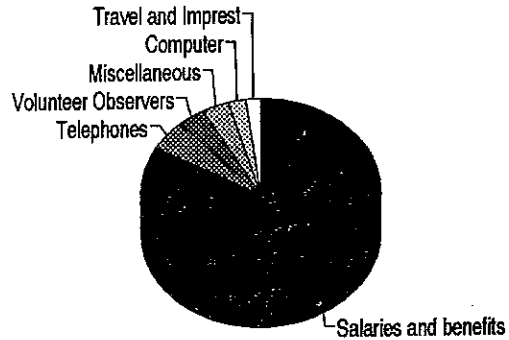
1994-95



Northern Utah Total \$93,288
 Generous in-kind support is provided by the National Weather Service and Utah State University.

Northern Utah Expenditures

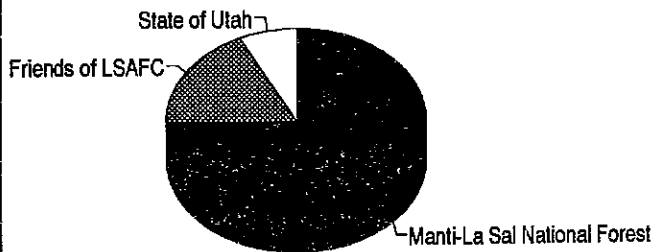
1994-95



Northern Utah Total \$91,775

La Sal Revenues

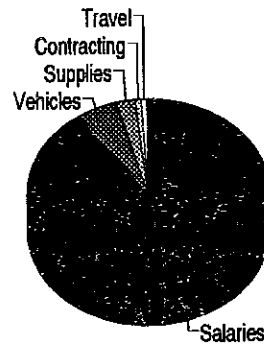
1994-95



La Sal Revenues \$14,021

La Sal Expenditures

1994-95



La Sal Total \$13,021

APPENDIX

Monthly Call Rate - Salt Lake Short Recording

	November	December	January	February	March	April
1979-80	714	1,514	4,274	2,967	3,389	1,313
1980-81	2,200	4,800	6,257	7,277	6,887	3,135
1981-82	1,761	6,879	8,522	5,485	6,361	3,416
1982-83	2,741	6,804	7,614	7,731	9,911	5,339
1983-84	3,216	10,708	7,073	7,032	5,983	4,396
1984-85	2,827	5,704	5,260	8,399	7,122	3,021
1985-86	4,119	4,703	6,298	10,628	6,225	3,706
1986-87	3,903	3,911	10,022	8,201	8,364	3,406
1987-88	2,390	6,534	10,201	7,297	9,208	3,780
1988-89	6,200	11,484	8,603	9,678	9,050	3,472
1989-90	3,854	7,626	14,126	12,528	10,831	3,933
1990-91	5,800	11,813	12,789	8,864	13,087	5,964
1991-92	10,925	8,075	10,322	15,000	13,107	5,000
1992-93	15,281	15,282	16,842	15,349	10,971	5,523
1993-94	5,656	10,400	16,760	19,115	12,407	7,879
1994-95	11,545	14,261	21,176	15,760	16,340	10,970

Yearly Call Totals - All Areas

	SLC 3 MIN	SLC 5 MIN	Logan	Ogden	Provo	Park City	Moab	Total
1976-77	6,522							6,522
1977-78	11,258							11,258
1978-79	9,924							9,924
1979-80	14,469							14,469
1980-81	30,736							30,736
1981-82	33,099							41,610
1982-83	40,355		4,357	1,890	3,671	3,042		53,315
1983-84	39,647		5,300	2,725	4,076	2,577		54,325
1984-85	32,476		4,652	1,706	2,278	2,386		43,498
1985-86	36,535		5,469	5,464	2,292	2,562		52,322
1986-87	38,841		4,693	2,587	2,518	2,121		50,760
1987-88	39,614	4,020	2,500*	2,500*	2,500*	2,500*		55,134
1988-89	48,488	8,033	2,500*	2,500*	2,500*	2,500*	1,100	69,121
1989-90	52,898	10,947	4,000*	2,500*	2,500*	3,000*	1,693	77,538
1990-91	62,814	10,160	4,000*	2,500*	2,500*	3,000*	2,811	87,785
1991-92	62,429	9,970	4,000*	2,500*	2,500*	3,000*	3,216	87,615
1992-93	79,248	12,136	3,676	3,034	3,134	3,419	2,763	107,410***
1993-94	71,880	13,296	4,110	3,000**	2,610	3,663	2,911	101,467
1994-95	90,052	13,770	5,044	3,746	3,000**	3,640	2,842	122,092

* Estimates.

** Estimates due to call count lost.

*** This total was adjusted down slightly from previous season reports because call counts were later found to be systematically incorrect on two outlying areas.

	Calls	Alta Snow (Inches.)
1976-77	6,522	314.5
1977-78	11,258	524.5
1978-79	9,924	588.0
1979-80	14,469	514.0
1980-81	30,736	391.0
1981-82	41,610	696.0
1982-83	53,315	637.0
1983-84	54,325	743.5
1984-85	43,498	457.0
1985-86	52,322	599.0
1986-87	50,760	378.0
1987-88	53,000	410.3
1988-89	67,621	581.5
1989-90	80,297	448.0
1990-91	90,785	580.2
1991-92	90,615	395.0
1992-93	107,410	647.0
1993-94	101,470	490.3
1994-95	122,092	745.4 - 50 Year Record High
	50 year average	490.8

Backcountry Avalanche Incidents

Year	Triggered	Caught	At Least Partially Buried	Totally Buried	Killed
1994-95	79	31	7	9	5*
1993-94	74	42	5	3	1
92-93	65	29	9	5	3
91-92	76	27	14	9	5
90-91	46	19	7	1	0
89-90	65	34	14	2	0
88-89	64	9	1	0	0
87-88	39	6	(1)	(1)	0
86-87	50	18	6	3	2
85-86	66	27	12	5	5
84-85	79	39	15	6	2
83-84	M	24	M	M	1
82-83	M	M	15	M	0
81-82	M	M	M	M	1
80-81	M	M	M	M	2
79-80	M	M	M	M	1
78-79	M	M	M	M	2
77-78	M	M	M	M	0
76-77	M	M	M	M	1
75-76	M	M	M	M	1
74-75	M	M	M	M	0
73-74	M	M	M	M	0

* Including one roof slide

Snowfall at Alta DOT Study Plot 1944-Present

Year	Jan	Feb	Mar	Apr	May	June	July	Total
1944-45	45	—	57.0	19.5	67.0	—	57.0	
1945-46		109.0	83.0	84.5	50.0	69.0	55.5	451.0
1946-47		69.0	63.0	61.0	53.0	68.0	60.0	374.0
1947-48		118.0	80.0	46.0	66.0	165.0	74.0	549.0
1948-49		71.0	160.0	132.0	58.0	97.0	5.0	523.0
1949-50	50	39.0	137.0	133.0	34.0	109.0	25.0	477.0
1950-51		60.0	66.0	112.0	58.0	53.0	0.0	349.0
1951-52		67.0	156	115.0	105.0	163.0	35.0	641.0
1952-53		44.0	65.0	112.0	40.0	93.0	57.0	411.0
1953-54		50.0	107.0	54.0	57.0	101.0	14.0	383.0
1954-55	55	37.0	53.0	134.0	129.0	60.0	59.0	472.0
1955-56		86.0	112.0	103.0	72.0	33.0	54.0	460.0
1956-57		36.0	50.0	86.0	41.0	97.0	76.0	386.0
1957-58		74.0	79.5	83.5	131.5	80.0	111.0	559.5
1958-59		38.0	47.5	81.0	107.0	84.5	28.0	386.0
1959-60	60	22.0	39.5	59.0	155.0	92.0	28.0	395.5
1960-61		75.0	40.0	1.0	62.0	113.0	35.0	326.0
1961-62		46.0	82.5	86.0	110.0	35.0	42.0	401.5
1962-63		31.0	17.0	85.0	39.0	93.0	136.0	401.0
1963-64		55.0	53.0	108.0	68.0	183.0	99.0	566.0
1964-65	65	95.0	141.0	150.0	66.0	44.0	77.0	573.0
1965-66		69.0	69.0	73.0	103.0	70.0	49.0	433.0
1966-67		53.0	84.0	168.0	72.0	61.0	106.0	544.0
1967-68		22.0	131.0	39.0	84.0	70.0	133.5	479.5
1968-69		87.5	132.6	113.0	148.0	35.0	50.0	566.1
1969-70	70	56.0	70.0	103.5	60.5	79.0	90.0	459.0
1970-71		79.0	142.0	58.0	73.5	87.0	42.0	481.5
1971-72		64.5	159.0	94.5	45.0	47.0	56.6	466.6
1972-73		—	122.0	64.5	77.0	124.0	109.0	496.5
1973-74		90.9	128.2	104.5	91.0	45.0	136.0	595.6
1974-75	75	25.5	146.5	104.0	88.0	151.0	90.0	605.0
1975-76		94.0	67.0	74.5	69.0	93.0	42.0	439.5
1976-77		13.5	17.0	50.5	73.5	129.0	31.0	314.5
1977-78		53.0	106.5	99.5	92.5	85.0	88.0	524.5
1978-79		62.5	96.0	78.5	86.0	71.0	94.0	588.0
1979-80	80	79.5	27.0	143.0	112.5	123.0	29.0	514.0
1980-81		40.0	34.0	73.0	82.0	110.0	52.0	391.0
1981-82		47.0	184.0	143.0	85.0	164.0	73.0	696.0
1982-83		66.0	165.0	75.5	68.0	150.0	112.5	637.0
1983-84		143.5	244.5	42.0	104.0	85.0	124.5	743.5
1984-85	85	112.5	105.0	44.0	61.5	99.5	34.5	457.0
1985-86		132.0	62.0	56.0	112.7	100.0	135.7	599.0
1986-87		73.0	12.3	96.0	73.0	104.0	23.5	381.8
1987-88		30.0	91.0	105.1	39.75	115.5	29.0	410.3
1988-89		172.5	124.5	70.75	97.5	64.75	52.0	581.5
1989-90	90	76.0	49.0	107.5	100.5	84.0	31.0	448.0
1990-91		109.5	91.0	82.8	49.7	110.9	136.3	580.2
1991-92		133.4	57.2	41.8	85	50.1	27.5	395.0
1992-93		118.8	119.2	165.3	102.9	63.0	81.2	650.4
1993-94		40.7	64.85	122.7	134.05	47.2	80.8	490.3
1994-95	95	205.9	73.8	199.7	56.3	128.9	80.7	745.4
Average		68.7	91.8	90.2	81.1	90.8	65.5	490.8
Maximum		205.9	244.5	199.7	155	183	136.3	745.4
Year of Max		94	83	95	68	64	91	95

Examples of Avalanche Advisories

ZCZC SLCWRKSNW SLR
TTAAOO KSLC DDHMM

GOOD MORNING, THIS IS EVELYN LEES WITH YOUR BACKCOUNTRY AVALANCHE AND MOUNTAIN WEATHER ADVISORY. TODAY IS SUNDAY, JANUARY 15, AT 7:30 AM. THE UTAH AVALANCHE FORECAST CENTER IS BROUGHT TO YOU BY THE UINTA-WASATCH-CACHE NATIONAL FORESTS IN PARTNERSHIP WITH SL COUNTY AND BRACHMANS BROS. BAGELS, WHERE YOU CAN GET BAGELS, CREAM CHEESE, CARAVALI COFFEE, AND REALLY NICE LIGHTING, NOW OPEN IN OLYMPUS COVE.

LOGAN: ..BY COLLEGE OF NATURAL RESOURCES OF USU, UINTA-CACHE NATIONAL FOREST, AND NAT'L WEATHER SERVICE.

SYNOPSIS: **** AVALANCHE WARNING. HIGH DANGER OF SPONTANEOUS AND HUMAN TRIGGERED AVALANCHES OF HUMAN TRIGGERED AVALANCHES ON SLOPES APPROACHING 30 DEGREES. ****

I HAVE ISSUED AN AVALANCHE WARNING FOR THE NORTHERN MOUNTAINS OF UTAH. A STRONG COLD FRONT, WITH ASSOCIATED LIGHTENING, HIGH WINDS AND HEAVY WET SNOW CROSSED THE NORTHERN UTAH MOUNTAINS, NORTH TO SOUTH AROUND 5 TO 7 AM THIS MORNING. AS OF 5 AM, SNOW TOTALS WERE 6 TO 9" WITH A BOAT LOAD OF WATER - 1 TO 1.5 INCHES. OVER NIGHT, THE WINDS RAGED, AVERAGING 35 TO 45 FROM THE SOUTH AND SOUTHWEST, WITH GUSTS IN THE 70'S. BEHIND THE FRONT, THE WINDS ARE QUIETING DOWN TO LESS THAN 20 FROM THE WEST TO NORTHWEST. TEMPERATURES ARE ALSO DROPPING, AND IN THE LOW 20'S AND TEENS.

THERE WAS A LOT OF AVALANCHE ACTIVITY YESTERDAY, AND WITH THE RECENT AND CONTINUING WEATHER, THERE WILL BE EVEN MORE TODAY.

EAST AND SOUTH EAST FACING SLOPES WERE THE MOST ACTIVE YESTERDAY, WITH BOTH HUMAN TRIGGERED SLIDES, SOME OF THEM TRIGGERED AT A DISTANCE SYMPATHETICALLY, AND NATURALS. TWO SNOWMOBILERS TRIGGERED AN AVALANCHE AND WERE BURIED NEAR CUTLER RIDGE ON BEN LOMOND PEAK IN THE OGDEN MOUNTAINS YESTERDAY. RESCUERS FOUND ONE BODY, BUT THE SECOND PERSON IS STILL MISSING. THE SLIDE WAS TRIGGERED ON A STEEP, HEAVILY WIND LOADED, EAST FACING SLOPE. OTHER EAST AND SOUTH FACING SLIDES WERE REPORTED FROM THE EMMAS ABOVE ALTA AND THE MEADOW CRUTES. THESE SLIDES ARE RUNNING ON A BURIED SUN CRUST, WHICH MAKES AN EXCELLENT BED SURFACE. NORTH FACING SLOPES ALSO STARTED TO BECOME ACTIVE YESTERDAY, WITH 2 DOG SLIDE PATH IN UPPER DAYS BROKE OUT DEEP AND RAN FULL TRACK, A NORTHWEST FACING SLIDE OFF THE TOP OF SUPERIOR, AND A NORTHERLY FACING SLIDE OFF THE BACK SIDE OF CLAYTONS. THE REPORTED AVALANCHE IN Y COULOIR IN LCC WAS THOROUGHLY SEARCHED, BUT AS OF LAST NEWS CONSIDERED A FALSE ALARM.

THERE ARE NUMEROUS COMBINATIONS OF SLABS AND WEAK LAYERS OUT IN THE BACKCOUNTRY NOW. AREAS OF NEWLY WIND LOADED SNOW WILL BE VERY SENSITIVE, AND NOT BE FOUND JUST ALONG THE RIDGELINES, BUT ALSO WELL OFF THE RIDGELINES AND IN OPEN BOWLS. THERE ARE ALSO MORE DEEPLY BURIED WEAK LAYERS OF FACETED SNOW ON ALMOST ALL ASPECTS THAT THE ADDITIONAL WEIGHT OF THIS NEW SNOW MAY TRIGGER.

THERE IS A HIGH DANGER OF HUMAN TRIGGERED AVALANCHES ON SLOPES APPROACHING 30 DEGREES OR STEEPER. THERE IS ALSO A DANGER OF SPONTANEOUS AVALANCHES, SO AVOID AVALANCHE RUN OUT ZONES. PEOPLE WITH OUT GOOD ROUTE FINDING AND AVALANCHE SKILLS SHOULD AVOID BACKCOUNTRY TRAVEL TODAY. TRACK SKIING OR RESORTS MAY BE A GOOD CHOICE TODAY.

MOUNTAIN WEATHER:

BEHIND THE FRONT, THE SNOW SHOULD CONTINUE TO BE HEAVY FOR THE NEXT FEW HOURS, AND THEN DECREASE TO LIGHT TO MODERATE SNOW. THE MOUNTAINS SHOULD RECEIVE ANOTHER 8 TO 12 INCHES OF SNOW TODAY, BUT OF LIGHTER DENSITIES. THE WINDS HAVE QUIETED DOWN, AND SHOULD AVERAGE LESS THAN 20 MPH OUT OF THE WEST TO NORTHWEST. WE MAY HAVE SEEN THE HIGH FOR THE DAY, AND TEMPERATURES ARE COOLING OFF INTO THE TEENS. CONTINUED SNOW TONIGHT WITH ANOTHER 6 TO 8 INCHES POSSIBLE IN THE COTTONWOODS. SNOW SHOWERS TOMORROW.

(TO FIND OUT WASATCH POWDER BIRDS SKI PLANS CALL 521-6040, EXT: 5280 FOR A RECORDING OF THEIR PROJECTED SKI PLANS.)

TO REPORT BACKCOUNTRY SNOW AND AVALANCHE CONDITIONS, GIVE US A CALL AT 524-5304 AND LEAVE A MESSAGE ON THE ANSWERING MACHINE. (OGDEN, PARK CITY, PROVO 1-800-662-4140; LOGAN 797-4145)

FOR MORE DETAILED MOUNTAIN WEATHER AND SNOWPACK INFORMATION, CALL 364-1591.

I WILL UPDATE THIS FORECAST BY 7:30 AM ON MONDAY MORNING.

THANKS FOR CALLING.

LEES
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ZCZC SLCWRKSNW SLR
TTAAOO KSLC DDHMM

SYNOPSIS: SLC, PARK CITY, PROVO **** MODERATE-HIGH DANGER OF HUMAN TRIGGERED WIND SLABS ABOVE 9,500'. MODERATE DANGER OF WET SNOW AVALANCHES ON STEEP SLOPES BELOW 8,000'. LOGAN, OGDEN - LOW DANGER BUT RISING WITH THE STORM. ****

GOOD MORNING, THIS IS BRUCE TREMPER WITH YOUR BACKCOUNTRY AVALANCHE AND MOUNTAIN WEATHER ADVISORY FOR TUESDAY, MARCH 21, AT 7:00 AM. THE UTAH AVALANCHE FORECAST CENTER IS BROUGHT TO YOU BY THE UINTA-WASATCH-CACHE NATIONAL FORESTS IN PARTNERSHIP WITH THE NATIONAL WEATHER SERVICE, SALT LAKE COUNTY AND THE STATE OF UTAH.

LOGAN: ..BY COLLEGE OF NATURAL RESOURCES OF USU, UINTA-CACHE NATIONAL FOREST, AND NAT'L WEATHER SERVICE.

HANG ONTO YOUR HATS KIDS, BECAUSE WE HAVE WIND AND SNOW ON THE WAY TODAY. THIS MORNING THE WIND ALONG THE RIDGETOPS WAS BLOWING AT HOURLY AVERAGES OF 40 MPH AND GUSTING TO 70 IN PLACES EXPOSED TO A SOUTH TO SOUTHWEST WIND. AND WE SHOULD HAVE SOME SNOW LATER TODAY AND TONIGHT TO FRESHEN THINGS UP. AND BOY DO WE NEED IT. YESTERDAY ON GOBBLER'S KNOB I FOUND DAMP, CRUSTY SNOW ALL THE WAY TO 10,000' AND JUST PLAIN ROTTEN SOGGY SNOW DOWN LOW WHERE I WOULD JUST FALL THROUGH PAST MY KNEES WITH MY SKIS ON. I WAS WISHING I WAS ON A SNOWBOARD OR A PAIR OF FAT SKIS.

UP HIGH YESTERDAY AFTERNOON THE MOUNTAINS LOOKED LIKE THEY WERE ON FIRE AS THE STRONG WINDS WERE BLOWING LOTS OF SNOW AROUND MAKING DANGEROUS WIND SLABS ON THE DOWNWIND TERRAIN. ABOVE ABOUT 10,000' BEFORE THE WIND STORM, THERE WAS A STYRAFOAM CRUST NEAR THE SURFACE WITH WEAK FACETED SNOW BOTH ON TOP AND UNDERNEATH. THERE WAS A COUPLE OF HUMAN TRIGGERED WIND SLABS ON THIS LAYER A COUPLE DAYS AGO IN CARDIFF FORK, AND WITH THE RECENT WIND SLABS ON TOP IT WILL MAKE IT EVEN MORE DANGEROUS. TODAY, YOU'LL FIND A MODERATE TO HIGH DANGER OF HUMAN TRIGGERED AVALANCHES ON ANY STEEP SLOPE ABOVE ABOUT 10,000' WITH RECENT DEPOSITS OF WIND DRIFTED SNOW. THEN JUST WHEN YOU THINK YOU'VE ESCAPED THE WIND SLABS UP HIGH, YOU'LL HAVE TO WORRY ABOUT WET SLUFFS AND SLABS BELOW ABOUT 8,500' WHERE THE SNOW IS EXTREMELY WET AND SOGGY. BRUCE'S BEST BET TODAY IS TO STAY HOME, GET SOME WORK DONE AND GO OUT TOMOROW WHEN WE'LL HOPEFULLY HAVE SOME NEW SNOW.

MOUNTAIN WEATHER:

WE HAVE A COLD FRONT WHICH SHOULD BE HERE BY ABOUT AFTERNOON. WE'RE NOT EXACTLY SURE WHAT IT'S GOING TO DO OR WHEN IT WILL ARRIVE, BUT THE BEST GUESS IS FOR ABOUT 8 INCHES OF SNOW OVERNIGHT. THE RAIN-SNOW LINE SHOULD START OUT AROUND 8,500' THIS AFTERNOON AND THEN DROP TO AROUND 6,000' BY WEDNESDAY MORNING. THERE MAY BE SOME LIGHTNING THIS AFTERNOON AS WELL. TODAY RIDGETOP TEMPERATURES WILL BE AROUND FREEZING AND DROP INTO THE LOWER TEENS BY WEDNESDAY. RIDGETOP WINDS WILL BLOW HARD TODAY FROM THE SOUTH AND SOUTHWEST, SWITCHING TO THE WEST TONIGHT AND ON WEDNESDAY. AS FOR THE EXTENDED FORECAST, IT LOOKS LIKE WE'LL GET A SLIGHT BREAK ON WEDNESDAY, THEN THE BIG BROTHER OF THIS STORM WILL ARRIVE ON THURSDAY AND LAST THROUGH ABOUT SATURDAY. THIS SECOND STORM HAS THE POTENTIAL FOR SIGNIFICANT SNOW AND WILL PUT SNOW ON THE VALLEY FLOOR. AND YOU THOUGHT THE WINTER WAS OVER. REMEMBER, THIS IS MARCH, THE SNOWIEST MONTH OF THE YEAR FOR THE MOUNTAINS.

IF YOU LEFT YOUR SKI PACK AT THE BCC PARK AND RIDE YESTERDAY, IT WAS FOUND AND TURNED INTO THE SHERIFFS.

THE FRIENDS OF THE FORECAST CENTER ARE HOPE TO FIND SOME NEW MEMBERS FOR THEIR BOARD OF DIRECTORS. IF YOU ARE INTERESTED IN GIVING SOMETHING BACK FOR ALL THAT YOU'VE BEEN GETTING ALL THESE YEARS, CALL US HERE AT THE OFFICE, 524-5304 OR CALL THE FRIENDS AT 488-1003.

REMEMBER, IF YOU ARE GETTING OUT AND SEE ANYTHING WE SHOULD KNOW ABOUT, ESPECIALLY IF YOU TRIGGER AN AVALANCHE, YOU CAN GIVE US A CALL AT 524-5304 AND LEAVE A MESSAGE ON THE ANSWERING MACHINE. (OGDEN, PARK CITY, PROVO 1-800-662-4140; LOGAN 797-4145)

FOR MORE DETAILED MOUNTAIN WEATHER AND SNOWPACK INFORMATION, CALL 364-1591.

(ANNOUNCE ONLY WHEN POWDERBIRDS WILL LIKELY FLY)

FOR A RECORDING OF WASATCH POWDER BIRD'S PROJECTED SKI PLANS, CALL 521-6040, EXT: 5280.

(READ ON OCCASION)

FINALLY, WE WANT TO REMIND EVERYONE THAT THERE'S TWO DIFFERENT BEACON FREQUENCIES AND THAT EVERYONE IN THE WORLD HAS SWITCHED OVER TO THE NEW FREQUENCY. THE OLD LOW FREQUENCY BEACONS HAVE NOT BEEN MANUFACTURED FOR SEVERAL YEARS AND THEY ARE NOW VERY MUCH OUT OF DATE. IF YOU HAVE ONE OF THESE OLD DINOSAURS, YOU SHOULD DEFINITELY THINK ABOUT TRADING IT IN FOR A NEW ONE OR A DUAL FREQUENCY BEACON. OTHERWISE, IF YOU GET BURIED, YOUR FRIENDS MAY NOT BE ABLE TO FIND YOU. ASK THE FOLKS IN ONE OF THE SHOPS IF YOU HAVE ANY QUESTIONS.

TOM KIMBROUGH WILL UPDATE THIS FORECAST BY 7:30 WEDNESDAY MORNING.

THANKS FOR CALLING.

TREMPER

NNNN

Examples of Avalanche Warnings

ZCZC SLCSABSLC
TTAA00 KSLC DDHHMM
UTZALL-271300-

UTAH AVALANCHE FORECAST CENTER
NATIONAL WEATHER SERVICE, SALT LAKE CITY, UTAH

0900 HRS, SUNDAY, MARCH 26, 1995

*** SPECIAL AVALANCHE ADVISORY***
*** SOUTHWESTERN UTAH MOUNTAINS***

RECENT SNOW ACCOMPANIED BY STRONG WINDS HAS CREATED A HIGH DANGER OF HUMAN TRIGGERED AVALANCHES ON SLOPES STEEPER THAN 35 DEGREES IN THE SOUTHWESTERN UTAH MOUNTAINS. PEOPLE WITHOUT GOOD AVALANCHE SKILLS SHOULD AVOID THE BACKCOUNTRY.

THIS WARNING DOES NOT APPLY TO SKI AREAS WHERE AVALANCHE CONTROL IS NORMALLY CONDUCTED.

UTAH AVALANCHE FORECAST CENTER (USDA FOREST SERVICE/NATIONAL WEATHER SERVICE)

LEES
NNNN

ZCZC SLCSABSLC
TTAA00 KSLC DDHHMM
UTZALL-150900-

UTAH AVALANCHE FORECAST CENTER
NATIONAL WEATHER SERVICE, SALT LAKE CITY, UTAH

1000 HRS, TUESDAY, FEBRUARY 14, 1995

*** AVALANCHE WARNING ***

HEAVY SNOWFALL RATES AND HIGH WINDS HAVE CREATED AN EXTREME AVALANCHE DANGER FOR THE MOUNTAINS OF NORTHERN UTAH. PEOPLE WITHOUT WELL DEVELOPED BACKCOUNTRY SKILLS SHOULD AVOID TRAVEL IN THE BACKCOUNTRY TODAY. SPONTANEOUS AVALANCHES ARE LIKELY, SO AVALANCHE RUN OUT ZONES SHOULD BE AVOIDED.

THIS WARNING DOES NOT APPLY TO HIGHWAYS AND SKI AREAS WHERE AVALANCHE CONTROL IS NORMALLY CONDUCTED.

UTAH AVALANCHE FORECAST CENTER (USDA FOREST SERVICE/NATIONAL WEATHER SERVICE)

SHAW
NNNN

Examples of Mountain Weather Forecasts (available on computerized bulletin board or the Internet)

ZCZC SLCWRKMTN SLR
TTAA00 KSLC DDHMM

****MOUNTAIN WEATHER FORECAST****
UTAH AVALANCHE FORECAST CENTER

MONDAY DECEMBER 12, 1994
1300 HRS

THE LOW IS OFF THE OREGON COAST, AND THE ASSOCIATED COLD FRONT IS CURRENTLY IN CENTRAL CALIFORNIA. THE LOW SHOULD BEGIN TO PUSH EASTWARD THROUGH THE INTERMOUNTAIN REGION TONIGHT THROUGH TUESDAY. BASED ON SATELLITE IMAGERY, THE CENTER OF THE LOW COULD GO A BIT FARTHER SOUTH, WHICH WOULD GIVE THE LOWER SNOW AMOUNTS. BUT CAN'T TELL YET. WHEN THE FRONT PASSES OVER UTAH, IT WON'T BE TERRIBLY STRONG, BUT WILL HAVE LOTS OF MOISTURE TO HELP THE SNOW ALONG. FRONTAL PASSAGE IN THE WASATCH GUESSED AT BETWEEN 6AM AND NOON. COLD AIR ARRIVING TUESDAY AFTERNOON WILL KEEP THE SNOW GOING, UNTIL THE SYSTEM STARTS TO FALL APART TUESDAY NIGHT.

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
700 MB (10,000' FREE AIR)				
WIND DIRECTION	SW	SW	SW>WNW	WNW
WIND SPEED (MPH)	25	25	15	15
TEMPERATURE	21	16	14	10

8,000' TEMPERATURE	30	19	22	15
CLOUD COVER	SCT/BKN	OVC	OVC	OVC>BKN
WEATHER		S-	S	S--
SNOW LEVEL		6.5K > VALLEY	----->	
SNOW DENSITY		8%	6%	6%
LIGHTNING		NO	NO	

QUANTITATIVE PRECIPITATION GUESSTIMATE (INCHES OF SNOW):

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
LOGAN MOUNTAINS		2-4	2-4	<2
OGDEN MNTS		2-4	3-6	<2
PARK CITY/DEER VALLEY		2-4	3-6	<2
SOLITUDE/BRIGHTON		3-5	6-10?	2-4
ALTA/SNOWBIRD		3-5	6-10?	2-4
SUNDANCE		2-4	3-6	T

LEES
NNNN

ZCZC SLCWRKMPN SLR
TTAA00 KSLC DDHMM

****MOUNTAIN WEATHER FORECAST****
UTAH AVALANCHE FORECAST CENTER

THURSDAY, JANUARY 26, 1995
0600 HRS

YESTERDAY'S SLOWER MODEL HAS TURNED OUT TO BE CORRECT. DESPITE THE VARIOUS WINTER STORM WARNINGS FOR TONIGHT AND THIS MORNING, IT NOW LOOKS LIKE THE BEST PRECIP PERIOD WILL BE LATE THIS AFTERNOON THROUGH TONIGHT, AND DRAGGING INTO FRIDAY. THE INITIAL IMPULSE HAS BECOME RATHER DISORGANIZED WITH LITTLE ENERGY GETTING THIS FAR NORTH. A SECONDARY SHORT WAVE IS NOW ENTERING CALIFORNIA, AS SEEN ON THE SATELLITE PHOTOS. THIS FEATURE DOESN'T SHOW UP WELL ON THE COMPUTERS BUT MAY TURN OUT TO BE THE MAIN PLAYER FOR NORTHERN UTAH. ALL MODELS DO GIVE US COLDER AIR AND NORTHWEST FLOW BY TONIGHT. ALL THIS SHOULD GRADUALLY TAPER OFF FRIDAY WITH SOME RIDGING PROVIDING SOME HOPE FOR A NICE WEEKEND.

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
700 MB (10,000' FREE AIR)				
WIND DIRECTION	S>SW	SW>NW	NW	
WIND SPEED (MPH)	10-20	10-20	5-15	
TEMPERATURE	20+N	15	15+	

8,000' TEMPERATURE	25+	20	20	
CLOUD COVER	OVC	OVC	OVC	
WEATHER	S-,S	S	S,S-	
SNOW LEVEL	6K	4.5K	4K	
SNOW DENSITY	8%	5-6%	4-5%	
LIGHTNING	NO			

QUANTITATIVE PRECIPITATION GUESSTIMATE (INCHES OF SNOW):

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
LOGAN MOUNTAINS	1-3	3-6	2-4	
OGDEN MNTS	2-4	3-6	1-3	
PARK CITY/DEER VALLEY	2-4	3-6	1-3	
SOLITUDE/BRIGHTON	2-4	5-10	2-4	
ALTA/SNOWBIRD	3-6	6-12	4-8	
SUNDANCE	3-6	3-6	1-3	

KIMBROUGH
NNNN

MEDIA ARTICLES

Page 6-WASATCH CANYON REPORTER, 23 November 1994

Jeff Waugh: Death of a Friend

On Sunday November 6, an avalanche claimed the life of Snowbird employee Jeff Waugh, in the first slide fatality of the season.

Sunday morning, Jeff Waugh, 27, started hiking between the Alta and Snowbird ski resorts with three friends. Equipped with an Avalanche transceiver, it is no doubt that Jeff knew the dangers of skiing in uncontrolled areas. Waugh, an Ohio native, left his group to venture upward into steeper terrain, more easily accessible to him because of the "skins" strapped on his skis. "Skins" are a form of gripping. His friends, believing he would ski with another group visibly above them, decided to ski down for the day.

Jeff Waugh was last seen alive by a group of off-duty Alta ski patrollers (possibly the group his friends thought he would ski with) at

about 1 pm.

Avalanche Forecast Center Director Bruce Tremper explains, "They talked to him and said there was avalanche activity. They asked him to ski with them and he declined."

It is unknown exactly how Jeff Waugh died because he was skiing alone. His friends became worried when he didn't show up for work the following day, and found his car still parked at the same place up Little Cottonwood Canyon.

Searchers discovered his body Monday morning in the Upper Silver Fox region of Snowbird. Apparently he died after crashing down 650 vertical feet over cliffs and through trees, his jacket with the hood of his jacket visible above the snow. Anthony Dixon, a touring partner of Jeff's, said the fracture was two to three feet

deep and three hundred feet long. A snow mask had formed around Jeff's face when they found him. This suggests that he was alive but quite probably unconscious when he came to rest.

"Sunday was a real windy day, there was a lot of wind transported snow... the tram was closed, and there was wind slab development at upper elevations," Pete Shory of the Snowbird Snow Safety Department recalls of the day. The Utah



"We will miss his big hair, smile, and enthusiasm towards life."

Avalanche Forecast Center is designed to warn skiers of the risk of backcountry skiing and can be reached daily at 364-1581. Pre-recorded messages warn callers of the inherent risks of the day; on a recent day the message read: "Wind is the four letter word causing the current avalanche conditions."

Jeff Waugh's obituary read: "A passionate man, he loved coaching, skiing, rock climbing. He will always be remembered for the ambition he had for life's many challenges. He will be sorely missed by friends and family, far and wide." Or more aptly put by Anthony Dixon, "We will miss his big hair, smile, and enthusiasm towards life." "He was crazy," said Stacey Thorum with a smile of remembrance.

Tuesday, November 8, 1994

Avalanche Kills Snowbird Employee; First Fatality of '94-'95 Ski Season

By Craig Hansell
THE SALT LAKE TRIBUNE

SNOWBIRD — Searchers found the body Monday of a seasonal Snowbird employee who is Utah's first avalanche fatality this ski season.

Jeff Waugh, 27, of Salt Lake City apparently died Sunday on a steep north-facing slope at about 10,500 feet.

The victim, who was skiing alone Sunday, died after falling 650 feet over cliffs and through trees, officials speculate.

His body was found Monday by Snowbird crews. Only the hood of his jacket was visible above the snow.

A group of off-duty Alta ski patrollers were the last to see him alive, about 1 p.m. Sunday.

"They talked to him and said there was avalanche activity. They asked him to ski with them and he declined," said Avalanche Forecast Center Director Bruce Tremper. "He was a pretty typical avalanche victim — his skiing skills outpaced his avalanche skills by quite a margin."

Up the canyon, another skier was caught Sunday in an avalanche in the East Greeley area at Alta. He received only minor injuries.

Officials say it is not unusual for snow conditions to be dangerous this time of year. Since resorts have not opened, steep mountain slopes are as hazardous as the backcountry.

"Frequently, there is a disproportionate number of accidents early in the season, the thin snowpack

favours the formation of [layers and slippery snow crystals] conducive to slides," said Tom Kimbrough of the Utah Avalanche Forecast Center.

Utah averages two avalanche fatalities annually. Utah's last avalanche death was Feb. 18 near Guardsman Pass.

This season, the old snowpack from the storm three weeks ago developed weak surface layers as clear skies and cold nights changed the snow's crystal structure. Strong winds Sunday put a slab of dense snow on top of the weak layers.

"There wasn't too much hazard until the wind started blowing," said Tremper. Of all the weather conditions that cause avalanches, wind is the most important."

At Alta Sunday, skier Steve Lewis saw the avalanche that injured a skier in the East Greeley area.

"It was above the summer road on East Greeley. Two guys started going across, together. One started up through the pillow of snow, took three steps and cut it loose. The avalanche hit the other kid and blew him down. If that person's head had been buried, I am sure he would have died," he said.

On a northeast-facing slope, the sizeable avalanche — 3 feet deep and 40 feet wide — did not bury the skier but injured his knee.

Skiers and snowboarders are being urged to move from one island of safety to another, exposing only one skier to danger.

Salt Lake Tribune reporter Mike Gorrell contributed to this report.

DESERET NEWS, TUES. P.M./WED. A.M., NOV. 8-9, 1994

Body of Snowbird worker is pulled from snowslide

By Nicole A. Bonham
Deseret News staff writer

LITTLE COTTONWOOD CANYON — Searchers pulled the body of a seasonal Snowbird employee from a snowslide on Monday, marking the season's first avalanche-related fatality.

Jeffrey D. Waugh, 27, was skiing with three friends Sunday when he left the group to hike into higher terrain, Salt Lake County sheriff's spokesman Rod Norton said. Originally from Kent, Ohio, Waugh had lived in the Salt Lake Valley at least one year. An experienced skier, he may have worked in Utah on a temporary basis as early as 1992.

Sunday morning, Waugh's friends saw him meet other skiers at the top of the hill overlooking the Snowbird and Alta resorts and they left, believing he would ski down with the others, Norton said. Unlike his partners, Waugh was wearing "skins," which allow the climber to dig into the snow and access steeper terrain.

"He wanted to continue climbing up higher," Norton said. "The rest of the group was pretty well tired of climbing and ready to start skiing down."

It's unknown if Waugh ever met up with the second group. He apparently died while skiing alone.

Although Waugh was wearing an emergency transmitter designed to pinpoint the location of a downed skier, the device wasn't effective because he was alone.

"Your buddies can use that to help find you at the spot. It doesn't transmit off the mountain side," Norton said. "The fact that he was alone and nobody knew he was in trouble... it didn't do him any good."

Snowbird ski patrol members located Waugh's equipment and eventually his body about 10 a.m.

Monday in a snowslide area in the Upper Silver Fox region above the two ski resorts.

Waugh's friends had become worried after learning he didn't turn up for work at another job in Park City Monday and that his vehicle remained parked at the overlook between Snowbird and Alta resorts in Little Cottonwood Canyon.

Moderate to high avalanche danger exists in upper-elevation slopes above 9,000 feet in the Wasatch Mountains, according to Tom Kimbrough, an avalanche forecaster with the U.S. Forest Service.

"One of the problems is early season enthusiasm. People really aren't thinking avalanches. There's not a lot of snow, so people are not alert to the problems as much as they may be later in the season. People have a hard time thinking that (someone may be) killed around the first of November. But in reality, early season conditions are often hazardous," Kimbrough said.

"A thin snowpack favors the formation of weak layers of snow, so we frequently have serious avalanche potential before people are quite ready for it. But they are ready to go skiing, and the two don't match up that well."

Kimbrough said the Utah Avalanche Forecast Center will begin full-time operations this week. Updated conditions are available at 364-1581.

Avalanche conditions may have been unexpected, but Norton urged all backcountry skiers to recognize the danger.

To avoid such tragedy, authorities urge skiers and backcountry climbers to travel in groups and know their location at all times.

Deseret News staff writer Douglas Palmer contributed to this story.

Helicopter Hauls Out 3 Snowmobilers Who Got in Over Their Heads in Uintas

By Tom Noffsinger
SPECIAL TO THE TRIBUNE

HEBER CITY — Three snowmobilers were rescued Monday morning after spending a frigid night in the Uinta Mountains, where they learned that everything that goes down cannot necessarily come back up.

They were in a group of four friends dressed in jeans and light jackets who left the Soapstone trail head on the Mirror Lake Highway Sunday for a day of snowmobiling in the Shepherd Lake area of the Wasatch National Forest about 35 miles northeast of Kansas.

They ran into trouble when they came to the top of a ridge that dropped into a bowl hemmed in by steep slopes.

Gary Rush, 32, Vancouver, and Douglas Markel, 27, Salt Lake City, pointed their machines down the hill and plunged through the deep powder to the bottom of the bowl. But when they reached it, they realized the steep angle of the slope made it impossible to ride back up and the depth of the soft snow prevented them from climbing out.

They warned Mitch Eden, 38, Salt Lake City, who was still near the top and his brother, Barry Eden, 36, also of Salt Lake City, who was about half way down the slope, to stop and turn around.

Mitch made it back up, but Barry was stuck. His attempts to climb the slope were futile as he sunk in snow up his armpits. Instead, he joined the pair at the bottom of the bowl.

"We went a little too far," said Mitch Eden at the trail head. "I was the closest one to the top so I walked out and got help."

Close to 70 rescuers from Wasatch and Summit counties, Wasatch Mountain State Park and

Boy Dies After Roof Snowslide

A 7-year-old Salt Lake City boy buried Sunday by snow sliding off a cabin roof died Monday morning in a Salt Lake City hospital.

Chris M. Johnson died at 7:32 a.m. Monday as a result of suffocation, said Primary Children's Medical Center spokeswoman Colleen Clark.

The boy was playing with a friend around the Johnson cabin, Sunday at Brighton Estates, 10 miles north of Midway on state Route 234. They were breaking ice off the eaves of the cabin's steep A-frame roof when a slab of snow four

feet deep and weighing several tons slid off and buried the boy.

The friend ran for help and the boy's father and a passing snowmobiler dug the youngster out.

He had been under the snow for about 20 minutes, according to Don Morgan, assistant manager for Wasatch Mountain State Park.

The boy was not breathing and did not have a pulse when he was pulled from the snow.

Rescuers regained a pulse as he was being flown to the hospital.

the National Forest Service began combing the area just as the sun set and temperature dropped, said Wasatch County Sheriff Mike Spanos.

Two rescuers from Summit County finally reached the stranded trio at about 10:30 p.m. They stayed the night with them building a fire against temperatures that dropped to minus 30 degrees. "The rescuers kept the guys moving around all night so they wouldn't get cold," said Wasatch Deputy Todd Bonner.

Monday morning more rescuers reached the stranded group and a medical helicopter from LDS Hospital in Salt Lake City plucked the men and carried them to safety after locating the spot where they had spelled out "Help" in the snow.

The men suffered minor frostbite but refused medical treatment, said Bonner.

"We screwed up," said Rush

who sipped hot chocolate after being examined at the trail head. "It was pretty nerve-racking, but everyone's OK."

Barry Eden said he knew he was not going to get out once they dropped into the bowl.

"The first thing I thought of is 'we have to have a fire. It was really cold. The two rescuers came down and that was a real highlight."

Although the men were dressed in jeans, Barry Eden said the group thought they were well prepared. "We had knapsacks with food and extra clothing," he said. "You never know what's going to happen."

Susan Branch, the nurse manager of adult LifeFlight for LDS Hospital, said Monday's mission was the fourth rescue its helicopters have been involved in this month.

It also was used to rescue a West Jordan boy who suffered frostbite on his hands and feet after his snowmobile wrecked in the Uinta Mountains, south of Soapstone Basin.

Joshua Holdaway suffered severe frostbite after becoming separated from his snowmobile party during a Dec. 31 outing. He spent the entire night out in subzero temperatures.

After his rescue the next morning, the 18-year-old spent the next 11 days in LDS Hospital while doctors treated his frost-damaged hands and feet. Holdaway faces a long and painful recovery, and possibly the loss of fingers and toes.

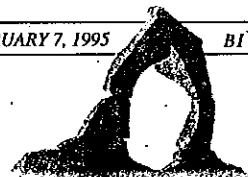
Many of those rescued or who die from exposure are unprepared for the conditions. "There are Lewis on more dead bodies than anything," Branch said.

The Salt Lake Tribune

TUESDAY, FEBRUARY 7, 1995

B1

Daybreak

**OUTDOORS &
RECREATION**


WIZARD OF THE WASATCH



Photos by Deirdre Eitel/The Salt Lake Tribune

Backcountry enthusiast Bob Athey loves skiing down steep Wasatch slopes.



Colorful skier Bob Athey is called the Wizard of the Wasatch.

Backcountry Skier Bob Athey Keeps Mountains Safe

By Paula Huff
THE SALT LAKE TRIBUNE

Bob Athey looks like a Woodstock version of the Cowardly Lion — wild red hair gushing around a chiseled, bearded face.

But unlike the "Wizard of Oz" character, Athey's eyes are almost always masked by sunglasses. And this guy does not have to ask for courage.

Easily one of the strongest, most daring backcountry skiers on the Wasatch, Athey routinely plunges down 45-degree slopes — mountains so steep you can't see more than five feet in front of the powder you're disturbing, and always feel as if you're sliding over a cliff.

"There's the world of winter, and then there's the real world," says the 42-year-old Athey, who spends 150 days each year on the slopes. "I prefer the world of winter. I ski because it is challenging — and I feel like I'm never going to learn how."

Athey skis from sunrise to well after sunset, slicing 12,000 vertical feet of snow by hopping from drainage to drainage. Like all backcountry skiers, Athey glues strips of cloth — called skins — to his ski bottoms be-

fore heading uphill. On particularly steep slopes, he attaches 2-inch pieces of PVC pipe under each heel. That makes it possible for him to walk up some of the highest peaks on the Wasatch.

He prowls the 10,000-foot ridges until finding a run that suits him, then pushes off so hard his legs ricochet off the ground. Athey disappears in a cloud of white. Most can't keep up.

This wiry man with 29-inch hips is a walking contradiction: He appears to have an in-your-face personality, but actually is genuine and caring. He hustles up snow-covered mountains, but has long smoked unfiltered Camels on ridge tops.

After making 287 turns on the way down a long run, Athey once quipped to his partner, "If you can smoke a cigarette and do that many turns, that is good skiing."

"I love him," says Tom Kimbrough, an avalanche forecaster for the U.S. Forest Service. "He is one of my heroes."

For \$15 a day, Athey skis terrain from Ogden to Provo, reporting avalanche and weather conditions to the Uinta, Wasatch and Cache Avalanche Forecast Center in Salt Lake City. It is a job — no, a passion — that supplements his summer work installing vinyl and aluminum siding.

"He is a valuable set of eyes for us," says Kimbrough, who has

■ See WASATCH WIZARD, B-8

Wasatch Wizard Skis to Keep Mountains Safe

Continued from B-1

dubbed Athey Wizard of the Wasatch. "He is good at communicating the conditions he sees out there. If he breaks a leg, we will be at a serious loss. We will get a lot less information."

Backcountry skiing is a fusion between cross-country and downhill, with the intent being to climb a mountain outside a resort and swoosh down in untouched snow. The sport is gaining in popularity nationwide, with 19,797 pairs of backcountry skis sold in 1994, compared with 14,479 in 1993 and 9,451 in 1992. And that does not take into consideration those who mount free-heel bindings on alpine boards.

The adrenalin rush from skiing clifflike slopes and outthinking avalanches attracts the adventurous, who burn 1,010 calories an hour for a 154-pound person. By comparison, cross-country skiing on flat, hard-packed snow burns 500 calories an hour, and alpine skiing burns only 200 an hour.

For Athey, backcountry treks started in the early '80s after he lost a job midwinter. That's when he joined what he calls "the state ski team," a bunch of out-of-work people receiving unemployment checks.

"Most were just on the state ski team for one season," he recalls. "People grow up, get married, have kids. That ends their fun. But some of us are like Peter Pan."

Accident-Prone: For Athey, Never-Never Land was Granger, now West Valley City. An accident-prone child, Athey and his twin brother, William, grew up chasing turkeys on their grandparents' farm.

"I had to get him stitched up more than any of them," says Athey's mother, Pearl. "Would you believe he got hit in the head with a shovel? Bill threw it. He got hit in the head with a baseball that Bill threw, too."

"I took him to the doctor. I think it was about the fifth time that summer, and the doctor said, 'Well, Pearl, it is only two weeks before school starts.'"

This accident-proneness has followed him into adulthood, but not into skiing. Though he has ridden some avalanches, he has never been hurt. Friends call him an extremely safe skier.

One acquaintance recalls Athey climbing four hours to ski a run. After digging a pit to determine whether the snow was stable, he decided the area was unsafe and left.

"I can go out and ski with Bob on a high avalanche day, and if he tells me a 40-degree slope is safe, then I'm going to ski it," says Howie Garber, a ski partner and vice president of Friends of the Avalanche Forecast Center.

Most backcountry skiers' skiing abilities outpace their avalanche skills. Not so with Athey. When he began learning to ski, he delved into snow science. It was necessary to survive the winter.

"Skiing is always changing because the snow is always changing — the wind blows, it snows, the sun shines or there are cold nights," Athey says. "Eskimos have more than 100 names for snow. Well, they are on the right track."

On a ski day, Athey begins collecting avalanche data by looking at snow fields during his drive to the trailhead. If natural avalanches are occurring, he knows to ski gentle slopes. If the snowpack collapses when walked on — making whumping sounds — he stays out of steep areas.

Safety to the Extreme: Athey's regard for safety sometimes goes to the extreme. Once, while standing with Garber at the bottom of a run, with a helicopter dropping off skiers above them on an avalanche-prone ridge, Athey became so incensed that he took off his skis and used them to dig a trench across the entire run.

"I'm not completely anti-helicopter," he says. "But if they are going to have them in the central Wasatch, the days they can ski must be limited. In the past 15 years, these heli-skiers have come to think they own the place and that backcountry skiers come second. The heli-skiers come in and roughshod over you."

Instead of more helicopter skiing, Athey would rather see a backcountry ski preserve in the tri-canyon area. No motorized transport would be allowed.

"There is nowhere else in the United States that has the snow conditions, the terrain and the weather so you could pull off something like this," he says.

That combination — creating the greatest snow on Earth — may help Utah land the 2002 Olympics. But it wouldn't please Athey and other backcountry skiers.

"I have called myself a selfish, spoiled powder skier, and anyone who is a selfish, spoiled powder skier does not want the Olympics," he admits.

With spring on its way, Athey will soon be seen on Wasatch ridges in his trademark attire — Hawaiian shirt and \$2.99 gray Army-surplus pants. When dressed that way, he looks like a cross between a mountain goat and a tourist.

Seasonal changes also call for inventive ski tours.

"Last spring the Bobster biked up City Creek and hiked up a peak on his short skis. My snowboard," recalls Steve Lewis, a Salt Lake City attorney and friend who witnessed the event.

"So in the late afternoon as City Creek was filling up with walkers and bikers, everyone got to see long-haired Bob in his spring attire — cut-off Levis shorts — with his short skis and snowboard sticking out of his pack as he rode down. It was more shocking than seeing a cougar in the canyon. But it fits Bob's winter personality, which is one of a kind."

Skier Rides Out Avalanche Safely

By David Clifton
THE SALT LAKE TRIBUNE

Brooks Jacobsen was skiing with four friends Thursday in the backcountry near Brighton when a massive avalanche roared down the east slope of Mount Timpanogos.

The gigantic slide caught one of the men.

"I gave way and he was in it instantly," said Jacobsen, who identified the man only as Greg. He went for a little ride and popped out on top.

When the slide — 80 yards long, 250 yard long and three feet deep — finally stopped, the group collected itself and stamped out "OK" in the snow with their feet to let passing helicopters know they were all right.

"I count myself lucky," Jacobsen said.

Salt Lake County sheriff's Sgt. Andy Burton said rescue crews were brought in to search for possible victims. No one was found.

He is not sure what caused it, Burton said from a command post in Big 135 Bonwood Canyon. It could have been a snowmelt or a heavy snowfall.

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vice avalanche forecaster Tom Kimbrough. Thursday's slide was located on the east side of the mountain in Wasatch County.

Last February, a 22-year-old Midvale man died in an avalanche on the west slope of the mountain near Guardsman Pass. Layne Mitchell died before rescuers could reach him.

Kimbrough downgraded the avalanche danger in Wasatch Front canyons to moderate on Thursday. Explosive falls on the snowpack triggered only a few large slides, he said. Most of the cannon shots produced nothing.

"But a moderate rating is relative," he said. "I wouldn't go into a bar where I had a moderate chance of being killed."

He suggests backcountry skiers stay off slopes that are 35 degrees or steeper, about the same as expert skiers should avoid.

Thursday's slide was the only one this season that the group injured or killed anyone, he said.

The only person within the search area was a 37-year-old backcountry skier who called Sunday an "average" day between Big Cottonwood and Mill Creek canyons.

He said the search area was covered by loose debris.

AWALANCHE DANGER

Education, Caution Are Keys to Safe Backcountry Travel

By Craig Hansell
THE SALT LAKE TRIBUNE

The adage about there not being any "old, bold pilots" can also be applied to backcountry travelers.

Recent storms buried the Utah Department of Transportation's 10-foot snow stake at Alta. The huge quantity of new snow in Little Cottonwood Canyon—91 inches in 2½ days—has also created a renewed avalanche danger.

Utah avalanches kill an average of two people each year. This year, a skier and a pair of snowmobilers have died.

"Avalanches are everywhere there are steep slopes that get lots of wind and snow," said Bruce Tremper at the Utah Avalanche Forecast Center. "Most are triggered by the weight of people. Ninety-five percent of the time, avalanches are triggered by the victim. I've never heard of an avalanche triggered by loud noise."

Mountain visitors should travel with caution when outside ski-resort boundaries.

Little Cottonwood Canyon, where a

Subaru loaded with two passengers was swept off the highway last week, has the highest avalanche-hazard index of any highway in North America. The index combines avalanche hazard with the volume of traffic.

Despite the danger, the hazard has been controlled to an impressive degree. Since 1980, only 2½% of American avalanche fatalities have been inside ski resorts or public highways.

"Avalanche control has almost eliminated avalanches at resorts. [Avalanche fatalities within controlled resorts] are so exceedingly rare it never happens anymore. Everybody is doing a good job. Ninety-seven percent of avalanches are in the backcountry where the hazard isn't controlled," Tremper said.

This season, six have died in U.S. avalanches. The first fatal avalanche killed a pair of mountain climbers in Colorado in October. Like Utah, Colorado has had three fatalities this year.

Last winter, 90% of U.S. avalanche fatalities involved snowmobilers. In Utah, this season was the first time a snowmobiler died in an avalanche.

Mountain travelers need knowledge to take responsibility for their own safety and rescue in the backcountry. The chance of surviving avalanche burial drops quickly by the minute. Groups should be well-prepared.

■ See AVALANCHE, B-3

'White death'

This winter, avalanches have claimed the lives of mountain visitors in the Rockies, the Alps, the Pyrenees, and the Japan Alps. Skiers, snowmobilers, snowboarders and hikers should closely follow mountain safety guidelines.



Slab avalanche
The most common avalanche and the most deadly is often caused by slabs. Their weight on an unstable slope can easily make a body of snow separate as a moving slab from more stable snow. This type of avalanche leaves a well-defined fracture line.

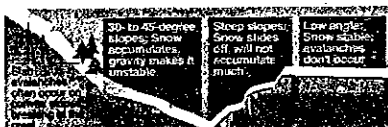
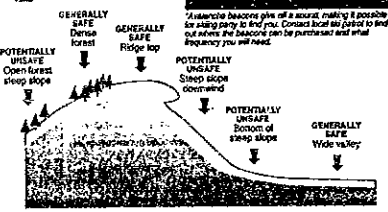
Potentially unsafe conditions

- New snowfall
- Windy conditions, drifting snow
- Downwind sides of ridges, hills, and ribs
- Local depressions on steep slopes, "caps" of gullies, notches
- Complex wind patterns in bowls, cirques and wide depressions
- Exposure to sun and the influence of radiation
- Leeward slopes and ponies on hills

When skiing high terrain:

- Never ski alone
- Always tell someone where you're going
- Wear an avalanche beacon
- Know the mountain and weather conditions
- Obey the rules
- Stay on the marked trails
- Go with an experienced guide who knows the terrain and danger zones
- Bring a portable shovel
- Bring a rope
- Bring a probe

"Avalanche beacons give off a signal, making it possible for a party to find you. Control beacons just to find out where the beacons can be purchased and what frequency you will need."



Loose snow avalanche

Often caused by blowing and drifting snow, these avalanches start in a small area and grow in size and force as they descend.

Caught in an avalanche

Tons of pressure rest on top of the victim. Most die of suffocation within half an hour.

- How to survive:**
- Discard all cumbersome equipment.
 - Use skinning motions (breaststroke), to stay on the surface of the slide.
 - Don't fight the flow. Try to get to the side of the avalanche.
 - Grab trees, bushes or rocks to stabilize your position.
 - As you feel the slide slowing down, make a last effort to get to the surface.
 - Attempt to get a hand above the surface so that others will see you.
 - Keep one hand in front of your mouth. Try to clear a breathing space in front of your face.

Source: Swiss Federal Institute for Snow and Avalanche Research, Lieke-Entsorgung, Inc.
The Associated Press and Knight-Ridder

UTAH QUOTES

"A moderate rating is relative. I wouldn't go into a bar where I had a moderate chance of being killed."
— Tom Kimbrough, avalanche forecaster for the U.S. Forest Service, describing his appraisal of a "moderate" slide risk

Avalanche Buries Urem Boys to Necks; Mountains May Get More Snow Today

By Joshua B. Good
THE SALT LAKE TRIBUNE

Two boys snowboarding in Utah County Tuesday afternoon found that high winds and heavy snow have combined to create the avalanche hazard of the season. The boys were buried to their necks in a snowdrift on the south-facing flank of Flagstaff Mountain, according to the Alta town marshal's office.

The boys, identified as Steve and Joe Jones, 12, of Fairview, were buried in a snowdrift on the Utah County-Sanpete County border. The boys were buried in a snowdrift on the Utah County-Sanpete County border. The boys were buried in a snowdrift on the Utah County-Sanpete County border.

The avalanche center is warning of a high risk of avalanches today on any slope with an angle of 30 degrees or more.

The Wolf Mountain Ski resort, Pointy Peak and the Sound of Music Peak had natural snow slides according to the center. No one was injured.

State Route 31 was closed for a short time when a snow slide covered the highway in the Huntington Canyon area near the town of Huntington around noon Saturday. Snow plows cleared the road within an hour.

At Fairview, with the National Weather Service Office in Salt Lake City, expect up to 6 inches of snow today in mountain areas of central Utah.

That is not a major storm, but the snow is super water laden, making the snow heavier than normal, said Weather Service forecaster Larry Dunn. But the main problem are the winds, he said. On the ridges, the wind was blowing out of the west and southwest at 20 to 40 mph with gusts reaching 50 mph. Dunn said these winds may shove snow into precarious overhangs which can fall and cover a skier. Dunn said.

Floridian Survives Alta Avalanche

By Brian Maffly
THE SALT LAKE TRIBUNE

A 32-year-old Florida man lost his snowboard, but emerged unscathed after riding an avalanche on Forest Service land Monday just outside the town of Alta.

Apparently clueless to the extreme avalanche hazard, the man hiked up the south-facing flank of Flagstaff Mountain, according to the Alta town marshal's office.

His footsteps unleashed a slab of snow 15 feet above him at 4 p.m. The slide carried him down the hill and deposited him unharmed above the surface.

The spot is not part of Alta Ski Resort, but a back-country area across state Route 210.

Salt Lake County sheriff's searchers responded to the avalanche and found the man walking around in search of his board, which was never recovered. Only one set of tracks disappeared into the slide path, so officials didn't search the debris for other possible victims.

Jan Jones 1/10/95

2 Avalanches Close Central Utah Road

FAIRVIEW — Two avalanches in the Manti-La Sal National Forest forced the closure of state Route 31 Wednesday night.

The first slide was reported at 4:05 p.m. A short time later, another avalanche buried the highway a mile away from the first slide, according to the Utah Highway Patrol.

The highway is the main link between the towns of Fairview in San Pete County and Huntington in Emery County.

Nearly 10 inches of snow fell in the mountains above Manti and Moroni Wednesday, said Ed Carle, a forecaster with the National Weather Service office in Salt Lake City.

Road crews are expected to clear the scenic highway today.

A previous slide covered the highway in the Huntington Canyon area on Saturday, but plows cleared the road within an hour.

— Joshua B. Good

Talm 1/12/95

S.L. Skier Dies in Snowslide

Nearby Group Digs Out Two Survivors

By Brian Maffly
THE SALT LAKE TRIBUNE

Larry Dunn and four skiing companions were pushing through knee-deep snow in Big Cottonwood Canyon on Sunday when screams for help interrupted their backcountry trek to Mill Creek Canyon.

On a southeast-facing slope under Gobblers Knob — at about 9,000 feet — Dunn's group found two skiers trapped in an avalanche, their heads peeking out above the snow.

The avalanche had completely buried a third skier, 37-year-old Steve Carruthers, who was found dead 40 minutes later. He is Utah's fourth avalanche death this winter.

The trapped group — all experienced skiers equipped with avalanche beacons — was following a popular backcountry route along the Desolation Trail, a summer footpath. The skiers were near the top of Butler Fork on a gentle slope at noon when a small slide broke 200 yards above them on a 35-degree face.

The slab, which was 1 foot to 2 feet deep and 150 feet across, hit the entire party, sweeping them about 70 yards through a stand of trees.

Experts say the group wasn't breaking any cardinal rules of avalanche safety, although the Salt Lake City trio should have spread out when they crossed under a slope that presented an obvious hazard. Spread apart, the trio would have been less likely to all be hit.

A weekend storm left more than 2 feet of new snow on top of a crusted layer of ice, setting up unstable avalanche conditions, weather forecasters said.

Because the slab released far above them, the survivors don't believe they triggered it, they told rescuers. However, they reported they could hear the slide roaring as it came toward them.

It is rare, however, that avalanche victims are buried in slides they didn't trigger themselves, according to Bruce Tremper of the Utah Avalanche Forecast Center.

"I suspect this slid on the ice," said Tremper. "It wasn't a radical route, but it wasn't the safest route to where they were going."

One of the survivors, 37-year-old James Paul, kept his hands in front of his face — to keep an air pocket surrounding his head — as



Delade Eitz/The Salt Lake Tribune

Slide survivor James Paul is directed by paramedics to an ambulance for observation. He lived by keeping his hands in front of his face, creating an air pocket.

the snow pushed him downhill. He came to rest against a tree, suffering only bruises. His companion, Marshall Denton, 32, however, suffered a serious leg fracture.

Their screams attracted Dunn's party within minutes.

"We dug them out [with avalanche shovels] and kept them warm," Dunn said. "We did a beacon search and found the third person. He was 1 to 2 feet under and had no pulse."

With Dunn were Annette Kelly and Salt Lake City anesthesiologist Al Terse, who tended the survivors and assisted in attempts

at cardiopulmonary resuscitation on Carruthers, who never regained consciousness.

It was unclear Sunday whether Carruthers died of suffocation or from traumatic injury.

Survivor Paul would have been able to dig himself out, but it would have taken him about 30 minutes had help not arrived, Dunn said.

One of Dunn's companions, Graham Stork, rushed for help. He skied down to Big Cottonwood Canyon Road in about 20 minutes and flagged down the first vehicle to drive past

■ See SNOWSLIDE, Page D-2

Avalanche Buries 3; One Dies

Continued from D-1

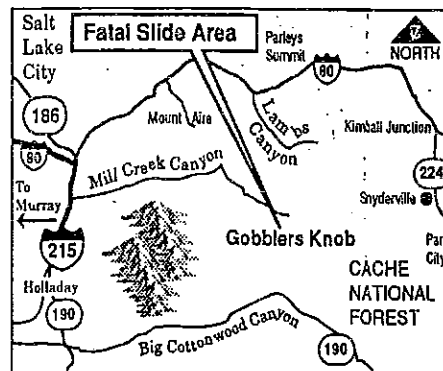
Butler Fork trailhead.

Fog and snow kept aircraft from approaching the accident site until about 3 p.m., when an AirMed helicopter landed nearby. A five-member search-and-rescue team took an hour to ski up and arrived about the same time.

A Life Flight helicopter joined in the effort to the relief of Salt Lake County sheriff's Capt. Lee Smith, who supervised the rescue. Smith feared rescuers on skis would trigger new slides and insisted on airlifting everyone — including Dunn's party and two other skiers who happened upon the scene — from the site as darkness approached.

Life Flight flew Carruthers' body to the command post at Cardiff Fork, while AirMed flew Denton to University Hospital, where he was listed in fair condition Sunday night.

The helicopters landed on a snowbank about 200 yards downhill from the accident site. Life Flight's powerful chopper was equipped with three ski-like landing pads, but the craft still sank to its belly in the



The Salt Lake Tribune

fresh snow.

"My biggest concern was that I would trigger another avalanche above them [the rescuers]," said Life Flight pilot Dave Denham.

This winter's avalanche toll has already doubled Utah's annual average of two fatalities. A slide in Little Cottonwood Canyon killed skier Jeff Waugh on Nov. 8 and snowmobilers Richard Scothern and Devon Wheeler died under a wall of snow last month on Ben Lomond Peak.

THURSDAY, February 16, 1995



Avalanche victim Stephen Carruthers is survived by daughter Lucia, now 4.

Daredevil Quit Taking Risks, But They Took Him

By Brian Maffly
THE SALT LAKE TRIBUNE

Stephen Carruthers pioneered rock-climbing routes throughout Utah and skied some of the most difficult chutes in Wasatch canyons. But the transplanted New Yorker had put most of his thrill-seeking behind him.

And when he was killed in a Big Cottonwood Canyon avalanche Sunday, the 37-year-old Carruthers was traversing a slope novice skiers could handle.

Rescuers were able to dig out his companions, James Paul and Marshall Denton. But they arrived too late to save Carruthers, a cabinet maker and father of a four-year-old girl. His death is a tragic reminder that avalanches can kill even backcountry experts.

"He would take calculated, acceptable risks, but he would never push the envelope," says climber and guide book author Les Ellison. "He had the skills to pull himself out of any situation, but this was one situation where the skills couldn't do it."

All three men trapped on Gobbler's Knob Sunday were familiar with the Wasatch backcountry and avalanche hazards. Two feet of fresh snow over a crust of ice rendered the snowpack unstable as the group skied from Butler Fork in Big Cottonwood Canyon to Porter Fork in Millcreek Canyon, just east of the Salt Lake Valley.

A small slab of snow cut loose more than 100 yards above them as they traversed a benign southeast slope beside an aspen grove.

"It's a very innocuous-looking slide path," says Tom Kimbrough, an avalanche forecaster who studied the site. "I could very easily have been in that situation. The main thing to learn is respect for small avalanches."

A cloud of powder enveloped the group seconds before the snow hit them at about 50 mph, Kimbrough says. Denton, 32, and Paul, 37, were slammed into trees and buried to their heads. But they were able to clear their faces and scream for help.

Five skiers following the same route arrived 20 to 30 minutes after the slide occurred; two of them skied down the mountain to summon help.

The other three — Larry Dunn, Al Treres and Annette Keller — were faced with a difficult decision when they found the buried men and realized another was unaccounted for. Should they dig out and treat the injured Denton? Or search for the missing Carruthers, whose survival chances diminished with each passing minute?

"Twenty to 30 minutes of burial indicated that Steve [Carruthers'] chances were very low," Dunn explains. "I didn't know the extent of Marshall's [Denton's] injuries. He was shivering and in shock and possibly hypothermic."

Denton's face was barely exposed and he was in obvious agony. Dunn and his companions spent 10 minutes digging out Denton and treating his broken leg.

Dunn then used his avalanche transceiver to home in on Carruthers' beacon. The victim, buried for at least 40 minutes, was pulled from the snow with no pulse. An autopsy showed he died from suffocation.

Avalanche forecaster Kimbrough says rescuing Denton first was the proper course.

"Triage theory says you make sure Denton doesn't die," he explains. "If you look for someone who might not be alive, you might lose the person who is alive."

■ See SKIER, Page D-2

Skier Thought He Had Given Up Risks

■ Continued From D-1

Who knows what that meant for Carruthers? It was a tough call, but they made the right one."

The slide snapped Denton's thigh, causing major ligament damage to the knee, perhaps when he struck a tree. He is recovering at University Hospital.

A memorial service for Carruthers will be held Saturday from 1-5 p.m. at Silver Ford Lodge in Big Cottonwood Canyon.

Carruthers moved to Salt Lake in the 1970s to attend college and ski. He took up rock climbing in the nearby Wasatch canyons and by the mid-1980s had become one of the state's leading climbers.

"Whatever he undertook, he did it to the best of his ability, whether it was climbing a new route or skiing a canyon or raising a family," says climber Ellison. "If he said he climbed a route free [without the use of climbing aids], you know he didn't cheat. You won't find his name on a lot of first ascents because of his insis-

Another Tragedy Barely Averted

While rescuers struggled to save Stephen Carruthers, an avalanche carried another skier down an open slope about a mile away.

Jeb Workman and four skiing companions had dug a snow pit on Reynolds Peak, which revealed unstable snowpack on the slope. But they skied it anyway, says Workman, a 23-year-old Salt Lake City man.

Workman carved a few turns when the slope collapsed above him. He tumbled with the slide, trees rushing past.

"I thought this could be it," Workman said. "The next thing I thought was, I have to swim."

The slide hurled him belly-first into a gully, pinning him

against a rock wall. Workman pushed aside a layer of light snow above his head and saw daylight.

His buddies dug him out minutes later. He emerged unharmed but with a newfound respect for avalanches.

The avalanche hazard worsened this week as a storm dumped up to two feet of new snow in the Wasatch Mountains.

"It's pretty dicey out there and it's certainly going to get worse," says avalanche forecaster Seth Shaw.

He advised skiers to stay off south and east facing slopes steeper than 35 degrees, because they've been loaded with wind-blown snow.

tence on purity of style."

With the birth of his daughter Lucia four years ago, Carruthers began spending more time with his family and on the carpentry business he ran with his younger brother, ski guide Tom Carruthers.

Friends recalled how he relished teaching his little girl to ski

and climb.

"He had turned from the pro recreation kid of the '80s to the regular guy of the '90s," says ski companion Scott Reichart.

Donations can be made to the Memorial Trust Fund for Stephen Carruthers at any branch of First Security Bank. The fund will benefit his wife Nancy and daughter Lucia.



Bus passengers work to dig out Seth Horowitz and Marnie Brown, whose car was buried in an avalanche Tuesday. Dan Kurland

2 Survive Little Cottonwood Avalanche

Rescuers Dig With Snowboards To Uncover Snowbird Workers

By Mike Correll and David Clifton
THE SALT LAKE TRIBUNE

Nature's power was displayed again Tuesday in another confrontation between humans and avalanches.

A snowslide 4 feet deep and 100 yards wide swept down the White Pine slide path in Little Cottonwood Canyon shortly after 9 a.m., carrying a car and its two occupants over an embankment.

By the time driver Seth Horowitz, 23, knew what happened, he was topsy-turvy in total darkness. He reached out, touched the head of his girlfriend, Marnie Brown, 25, and said fatalistically, "This might be it."

"I had no idea how long it would take someone to find us. We weren't panicking. We didn't give up. But we wondered whether someone would find us before the air ran out."

Fortunately, their wait was short. Rescuers from a Utah Transit Authority bus and other vehicles extricated the Snowbird employees from their vehicle, which partially was buried after rolling over trees permanently bent by previous slides down the chute.

"The avalanche was like a flash going across the road. I couldn't believe how fast it went," said Dan Kurland, 25, a Snowbird photographer who was on the bus.

"I saw a car had made it to the other side of the slide, but I didn't know anyone hadn't until people started yelling that a car went down (the hill)," he added.

Several rescuers used snowboards to dig out the victims. Kurland snapped pictures and then climbed aboard the bus. "I didn't think it was safe on the road."

This accident occurred three days after an avalanche killed two snowmobilers east of Ogden.

The body of Devon Wheeler, 30, of Ogden was recovered

See AVALANCHE, Page B-3



Terry Bracken crosses bridge into a winter wonderland after heavy snow in Parleys Gulch near Interstate 215. Al Hartmann/The Salt Lake Tribune

■ Avalanche victim lives to tell his tale

B-3



Tim Kelly/The Salt Lake Tribune

Would-be skiers and those who had business up Little Cottonwood Canyon were stalled after an avalanche closed the canyon.

Passengers of Auto in Snowslide Ponder Wild Ride

By David Clifton
THE SALT LAKE TRIBUNE

Seth Horowitz and Marnie Brown blew off college classes Tuesday for a morning of skiing at Snowbird.

The couple climbed in Horowitz's red Subaru wagon shortly before 9 a.m. and joined a string of cars heading up Little Cottonwood Canyon. Most were skiers eager to take advantage of eight feet of fresh powder.

As Horowitz and Brown neared White Pine No. 2, about 4½ miles from the canyon mouth, Horowitz saw a huge white cloud tumbling down the mountain.

"The next thing we know, the car is being picked up," the Salt Lake City man said. "The windshield exploded and snow began pouring in."

The avalanche swept the car off the road and plummeted it 100 feet down the embankment. The car came to rest on its side — with

Horowitz and Brown buried inside.

"I could move my head only a couple of inches and couldn't see a thing," he said. "Neither of us could do anything to dig ourselves out."

Outside the car, panicked motorists from the road above hurried down the unstable slope on foot and snow boards. They used anything they could find to dig snow away from the Subaru.

"We heard someone yelling, 'I see a hand!'" Horowitz recalled. "They dug out around me and I was finally able to pop my head out and breathe.

"It felt good."

It took rescuers a few minutes more to get out Brown. About 20 people wrapped blankets and coats around the couple and helped them walk up to the road. Horowitz, 23, and Brown, 25, sat inside a Utah Transit Authority bus

until medical crews arrived.

"This was the luckiest and unluckiest day of my life," Horowitz said. "Of all the times I have driven up that canyon and all the cars going up around us, we get hit."

"But we were lucky to survive," he said.

The pair were taken by ambulance to Alta View Hospital in Sandy, where they were treated for cuts and bruises and released, said Salt Lake County Fire Capt. Lowell Mikolash.

After cleaning up, Horowitz and Brown planned to spend a quiet evening with friends. Within the week, the couple will be back working at Snowbird. Horowitz is a sushi cook and Brown is a server. Horowitz, who attends the University of Utah, also plans to be on the ski slopes this weekend.

"It will be a little scary," he said. "I just went and looked at my totaled car. I wondered where we fit into all this. Why are we still standing?"

SALT LAKE TRIBUNE R-3

Avalanche ^{B-3} Turns Couple Topsy-Turvy

■ Continued from B-1

Saturday. But a search for Richard Scothern, 25, of Roy, was called off at dark Tuesday after a day of avalanche-control work to protect recovery teams. Scothern is presumed dead after being buried beneath 25 feet of snow in a slide that rushed down a gully on Ben Lomond Peak's east side.

Searchers will resume scanning the area early today with a metal detector and 15-foot probes.

Both incidents clearly illustrate that when snow is abundant and mountain slopes are steep, the danger of avalanches is high.

Snow certainly was deep Tuesday in Little Cottonwood Canyon.

By dusk, Alta had received 97 inches since the storm began early Sunday. That is the second largest total on record from a single storm, exceeded only by the 105 inches that fell Jan. 24-30, 1965, said National Weather Service meteorologist William Alder.

The last 29 inches came Monday night and Tuesday from a squall enhanced by the "lake-effect." The cool air mass picked up moisture as it passed over the Great Salt Lake's warm waters, then retained it until hitting the mountains. There it rose into still colder air and dumped the load.

The lake effect was responsible for the unusual snow conditions that set off the slide in White Pine No. 2 chute, 4½ miles up the canyon.

Utah Department of Transport-

casters skied into White Pine's release area earlier Tuesday. They determined minimal snow had fallen there since avalanche-control work was conducted Monday, said spokesman Kent Hansen.

"White Pine No. 2 chute is the largest, straightest and most active slide path in the past 14 years in that canyon so we pay big attention to it," he said. "But the accumulation was negligible so they moved on to other slide areas."

During the next two hours, however, a band of lake-effect snow moved in. Eight to 10 inches fell quickly. That was more weight than the steep slope could hold and it broke loose, sweeping aside the sedan moments later.

UDOT has been investigating claims by former avalanche forecasters that canyon safety has been impaired because conflicts with the program manager caused frequent personnel changes.

But in this case, Hansen said, "the process was followed and everyone was in agreement. We missed one. That happens."

The avalanche closed Little Cottonwood Canyon until 1 p.m. For people who made it up the canyon before the slide or were staying at Alta and Snowbird, the lack of competition in deep, new snow was wonderful.

"We were running trams half full so the people here had big smiles all morning," said Bob Bonar, vice president of mountain operations at Snowbird. It has received 67 inches since Sunday.

"Even with that much snow we're able to keep our beginner runs groomed so it's not too hard for them. And this is the kind of storm die-hard enthusiasts dream of. There's enough new snow at night that all the tracks are filled in by morning."

In the valleys, however, the lake effect created what Alder calls a "commuter special," snarling morning traffic as sub-freezing temperatures immediately freeze the falling snow.

By 10:30 a.m., a Utah Highway Patrol dispatcher said there were at least 15 accidents between Salt Lake and Juab counties.

Snowmobiler Dies Under Wall of Snow

Missing Friend Presumed Dead

By Brian Maffly
THE SALT LAKE TRIBUNE

One snowmobiler is dead and another missing after they triggered a 50-foot-wide avalanche that barreled down a ravine and buried them under a wall of snow in the northern Wasatch Mountains near Ogden.

The two victims were touring dangerous terrain in Cutler Basin — near Ben Lomond Peak — with two others at the time of the accident, Utah's first avalanche fatality involving a snowmobiler.

The victims' names were not available Saturday night, pending notification of family members. All four snowmobilers were Ogden men in their late 20s and early 30s, said Weber County sheriff's Deputy Jeff Malan.

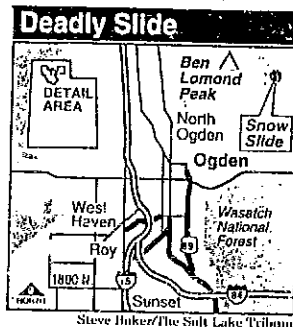
It was Utah's second deadly weather-related incident in two days. Friday, 14-year-old Michael Allred was crushed in a rock slide triggered by rain and melting snow in Big Cottonwood Canyon.

Searchers believe the man they found Saturday was trying to outrun the avalanche after a companion riding above him unleashed a slab of wind-loaded snow.

The other two snowmobilers — one a brother to one of the victims — were cruising a different slope around 11 a.m. when they realized they could not hear their companions' machines.

They rushed to their aid only to find the brother's machine protruding from avalanche-deposited snow. One snowmobiler remained to dig out his brother, while the other left to call for help

■ See AVALANCHE, B-4



Wind & Snow: Deadly Combo

By Craig Hansell
THE SALT LAKE TRIBUNE

Saturday's avalanches were probably the result of wind-transported snow deposited on lee slopes, which are those facing away from the wind.

The slabs of densely packed snow rest on "sun crusts" on south-facing slopes and on unstable snow crystals on some north-facing slopes. The condition on the north faces, according to Utah Avalanche Forecaster Bruce Tremper, is like parking a Buick on potato chips.

The "Buick" is just waiting for a trigger — a snowmobile, skier or the slightest noise or movement — to send it crashing downhill with a deadly result. On Saturday, Tremper said the avalanche danger was "considerable" on slopes with wind deposits. The weather forecast calls for 30 mph southwest winds and as much as a foot of new snow the rest of the weekend. The new

■ See WIND & SNOW, B-4

Avalanche Kills One, Another Missing

■ Continued from B-1

on a cellular phone and meet rescuers.

It was not until 3 p.m. that the sheriff's seven-member team was able to get to the brother, buried under tons of snow 15 feet from his snowmobile. He was found under nearly 10 feet of snow.

Rescuers said he had been carried through trees and apparently suffered fatal internal injuries.

Rescuers flew in Crystal and Lucy, two avalanche dogs from Alta Ski Resort, to assist in the search for the remaining victim, who is presumed dead. The dogs alerted on one spot, but no clues were found when searchers dug up the area, according to Bruce Tremper of the Utah Avalanche Forecast Center.

Although efforts were stopped Saturday when darkness fell, searchers plan to resume this morning after stabilizing the slope, Malan said. Forest Service crews may use explosives to blow down large cornices hanging over the search area.

The victims knew the area and were aware of the slide hazard, Malan said, but were not wearing avalanche beacons, devices that transmit a constant locating frequency.

Until recently, snowmobilers rarely were killed in avalanches. But last winter, nine out of the 11 avalanche fatalities in the United States were snowmobilers.

Snow machines are powerful enough to put their riders in avalanche-starting zones — generally slopes of more than 30-degree angles to the ground.

"They're going virtually anywhere skiers go," Tremper said. "They can cover 100 times more terrain than a skier can cover and very few take avalanche classes or carry rescue gear."

The two Utahns lost Saturday were the second and probably the third avalanche fatalities along the Wasatch Front this winter. Jeff Waugh, 27, died in a snowslide Nov. 6, while backcountry skiing near Snowbird.

A second avalanche was reported up Little Cottonwood Canyon Saturday afternoon, but searchers who probed for victims said they had no reason to believe anyone was buried in the snow.

Tribune 1/15/95

Victim Fled, But Couldn't Outrun Slide

By Brian Maffly
THE SALT LAKE TRIBUNE

Devon Wheeler probably saw the wave of snow in time to turn his snow machine down the hill.

His buddy, Richard Scothern, was snowmobiling up a steep ravine above him when a deep slab of wind-deposited snow broke loose.

The avalanche probably buried Scothern immediately and then caught up with Wheeler, perhaps when he was only a few feet from safety.

No survivors witnessed the accident, but avalanche experts believe this scenario explains Saturday's fatal snowslide in the upper reaches of Ogden Valley, just east of Ben Lomond Peak.

About four hours after the 11 a.m. slide, Weber County sheriff's searchers found Wheeler's body wedged against a tree under 5 to 10 feet of snow.

Searchers failed to find Scothern's body by nightfall Saturday, although a trained rescue dog detected something on a spot in the narrowest part of the gully.

They returned Sunday morning only to call off the search because a new snowstorm prevented helicopters from airlifting personnel into the backcountry. The storm left a foot of new wet snow in the slide area, located high up Cutler Basin above North Fork Park.

"It's just too dangerous," said Weber County sheriff's Deputy Jeff Malan, who is coordinating the search. "We're really worried about putting our people up there."

Malan plans to return today or Tuesday after the weather clears and Forest Service crews blast snow cornices hanging over the slide area.

Wheeler and Scothern are the first snowmobilers to perish in an avalanche in Utah.

Wheeler, a 30-year-old Ogden man, and Scothern, 25, of Roy, were touring with Wheeler's younger brother Doug and a friend, Gregg Chambers, at the time of the slide.

Both victims were married and fathers. Scothern had two boys, ages 1 and 3, and Wheeler had an infant daughter with another daughter due in May.

Funeral services for both victims are pending. Malan said all four of the snowmobilers were experienced riders and familiar with the area.

Chambers and the younger Wheeler didn't hear the avalanche, but their companions' silence alarmed them. They went looking and found a ski from Devon's machine pro-



Wheeler Scothern
Uloh's wet weather D-3

Victim Could Not Outrun Slide

Continued from D-1

truding from the snow in the avalanche area, Malan said.

No one in the party was wearing a locator beacon; despite the fact the two men had no clues except the protruding ski, they hit the snow digging. Chambers called for help on a cellular phone, then left to meet rescuers, while Doug remained to search for his buried brother.

The survivors declined to be interviewed Sunday.

While sheriff's searchers suspended their efforts, three avalanche observers and a rescue dog spent four hours skiing to the accident site Sunday.

Tom Kimbrough, a U.S. Forest Service avalanche expert, found a 100-foot fracture line where the avalanche started at an 8,800-foot elevation. The fracture line, known as a crown face, was an average of 6 feet deep, and 11 feet deep in some places.

The bulk of the avalanche roared down an hourglass-shaped gully, probably burying Scothern at its narrowest point.

Avalanche rescue dog Crystal sensed something there Saturday, as did the dog accompanying Kimbrough on Sunday.

"We dug down 7 or 8 feet and

N. Utah Buried Under 'Sierra Cement'

Saturday, Salt Lake County residents were golfing in balmy temperatures. Sunday, they were slipping off roads and huddling indoors.

"It can change really fast," said Dave Toronto, National Weather Service forecaster.

Statewide, police and fire dispatchers reported several minor accidents on Utah roads and highways Sunday morning.

A storm that pelted California this weekend swept into Utah and dumped "Sierra cement" or wet snow along the Wasatch Front. Alta got 25 inches of snow containing 3.45 inches of water, according to the weather service. The 4

inches of snow at Salt Lake City International Airport included 0.91 inches of water.

Snow showers will continue through this morning, tapering off this afternoon. The temperatures for today and Tuesday will range from the mid-20s to the high 30s.

Evelyn Lees, a backcountry avalanche forecaster for the U.S. Forest Service, issued an avalanche warning for Utah's mountains Sunday morning through today.

Sunday's wet snow greatly increased the chance for avalanches in Utah's mountains, Lees said. "There are a lot of buried, weak layers."

then probed down to the full length of the probes and we still didn't touch bottom," said Crystal's handler, Bruce Ewert, an Alta ski patroller. "There's probably 25 or 30 feet of debris there."

Not much snow is needed to bury someone under fatal depths in a gully, making such areas particularly hazardous.

"If you're trying to get on that ridgeline that's the wrong place to go do it," Kimbrough said.

The slide area was filled with "terrain traps," features that compound the avalanche hazard, such as cliffs and trees.

"There was a bunch of ways to get killed there," Kimbrough

said. "The bottom is full of trees. If you didn't get buried in the gully, one of those trees is going to have your name on it."

Rescuers believe the avalanche slammed Wheeler into a tree, possibly causing fatal injuries.

Since 1980, backcountry skiers have led the way in dying in North American avalanches, followed by mountaineers.

But last winter, snowmobilers accounted for nine of the 11 avalanche deaths in the United States.

Buried snowmobilers have a better chance of survival than skiers because they wear helmets and face masks that create air pockets, Kimbrough said.



John Mears

Search crews Wednesday uncover a snowmobile on Ben Lomond Peak, but the craft's rider, Richard Scothern, remained missing.

Warm Hearts, Cold Toes: Utah Searchers Press On

By Brian Maffly
THE SALT LAKE TRIBUNE

LIBERTY, Utah — On a ridge high above this hamlet, frigid winds tear at volunteers digging snow pits and pushing poles into the ice.

They are searching for the body of Richard Scothern, who presumably died Saturday with his friend Devon Wheeler when their snowmobiles triggered an avalanche on Ben Lomond Peak. The slide left a long mantle of jagged snow in the gully where Wheeler's body and snowmobile were found Saturday.

And as searchers probe cementlike snow much deeper than the 15- to 20-foot poles they carry, they worry about sending another torrent of white down the mountain.

"The first day, Saturday, was really uncomfortable because it looked like it was going to go," says volunteer John Crowley, who works at a Davis County lumberyard.

Three to 4 feet of fresh snow fell during the next two days, delaying a full-scale search until Forest Service crews were able to detonate hand charges above the slide.

Using a sensitive metal detector, volunteers found Scothern's Yamaha under 10 feet of snow Wednesday. It was sitting upright and pointing downhill.

"We were hoping if we found the snowmobile, he would be hanging onto it or around it," Crowley says.

■ See SEARCHERS, Page A-8

The Salt Lake Tribune

Searchers Press On for Snowmobiler

"It's really like finding a needle in a haystack."

FRED KOEGLER, one of the searchers

■ Continued from A-1

But as darkness settled on Cutler Ridge on Thursday, the search for the father of two young sons was called off for another heart-breaking day.

"We want him to be out," says Scothern's wife, Kari, who waits at the Weber County sheriff's command post, thanking scores of volunteers ferried up and down the mountain by helicopter. "Our lives are on hold until he's out. The 3-year-old cries every day. He keeps asking, 'When is dad coming home?'"

The search is difficult, frustrating work. From the helicopter drop-off point, the volunteers — firefighters, college professors, physicians, carpenters and sheriffs' deputies — must trudge a quarter-mile through waist-deep snow to the gully.

There, seven search dogs alert them to spots where human scent may be percolating up. Moving across the 300-yard slide path in single file, searchers shove poles into the ice. Then they dig pits 10 to 15 feet, and again push poles downward, hoping to detect the body.

"The scent might hit an ice layer and try to find a way up," explains Vicki King of American Rescue Dogs. "That's why the probes [poles] are so important. They make a complete path to the surface."

Scothern and Wheeler were close friends who worked together at Morton International, where they tested auto-safety equipment. Like Scothern, Wheeler was a young parent. He left behind a 2-year-old girl and his wife,

Julianne, is expecting in May.

Wheeler of Ogden and Scothern of Roy often toured Weber County canyons and high county. They are the first snowmobilers in Utah to be killed by an avalanche.

While neither man was wearing an avalanche beacon, Scothern was familiar with the 10,000-foot peaks that rim Ogden's northeastern skyline.

"He loved Ben Lomond," says his younger sister Tanya Scothern. "That was his mountain."

After days of strong, warm winds, north-facing slopes were loaded with heavy caps of snow. Scothern and Wheeler ventured into a steep canyon, and unleashed a slab 100 feet wide and 50 feet long. The flowing snow piled high in the deep gully.

Fresh powder and racing winds made a tough search even more harrowing.

"The ridge landings were very treacherous," says Mike Doster, a pilot from Classic Helicopters. Time after time, he lifts his Bell 206 Long Ranger off Cutler Ridge into the blowing fog. The chopper — rented by Weber County — carries searchers to and from the command post at North Fork park and the ridgetop.

"We're encountering white-out conditions," Doster adds, sipping coffee in the old school-bus searchers use for a home base. "It's arctic conditions up there."

Still, searchers will return to their work today, says Weber County Sheriff Craig Deardon.

"The mission is not finished," adds searcher Fred Koegler. "It's really like finding a needle in a haystack. You look at that area and you think spring thaw. We have 20-foot probes and they're going all the way down."

1/23/95 The Salt Lake Tribune UTAH

Snowmobiler's Body Is Recovered 9 Days After Avalanche

By Brian Maffly
THE SALT LAKE TRIBUNE

Two days after uncovering Richard Scothern's boot, volunteer searchers found its mate Sunday afternoon under several feet of snow among some trees.

The find gave renewed vigor to the 9-day-old search for the missing snowmobiler, presumed dead in an avalanche-filled gully on Ben Lomond Peak.

A short time later, a searcher's shovel struck something. More digging uncovered a man's foot.

Scothern, a 25-year-old father of two boys, had been buried under more than 12 feet of snow, his head pointing downward, said Weber County sheriff's Deputy Jeff Malan.

A wall of snow poured onto the Roy man as he drove his Yamaha snowmobile up a steep slope in North Fork Canyon on Jan. 14.

The slide also killed Scothern's companion, 30-year-old Devon Wheeler of Ogden, whose body was recovered a few hours after the slide. They were the first snowmobilers in Utah to die in an avalanche.

"It's been a long nine days," said Malan, who has supervised search efforts every day since the avalanche.

Winter weather and persistent

avalanche conditions delayed full-scale efforts for three days until Wednesday when sheriff's officials airlifted 30 volunteers to the slide area.

The site is located about two miles and 2,500 vertical feet above the sheriff's command post in the North Fork parking lot.

A metal detector led searchers to Scothern's snowmobile that day, but the victim's body eluded searchers' shovels and 12-to-15-foot probe poles.

Volunteers borrowed a snow tractor and mounted a plow blade onto it. They bulldozed snow out of the gully, but Scothern's body remained hidden.

"He wasn't in the center where we thought he would be," said Malan, who assigned crews to dig out wooded spots along the periphery of the slide area.

The victim was found on the right edge of the gully, while the avalanche apparently pushed his snowmobile across the gully and farther downhill.

Some 65 volunteer searchers put in more than 2,000 hours, and the Weber Sheriff's Department spent more than \$10,000, primarily to rent a helicopter to ferry searchers to and from the slide, according to Sheriff Craig Darden.



Backcountry skiers should take safety equipment into mountains.

Craig Hansell/The Salt Lake Tribune

SAFE WINTER TRAVEL

Avalanche Fatalities Increasing in Utah's Mountains

By Craig Hansell
THE SALT LAKE TRIBUNE

More than twice the annual average of fatalities have occurred in Utah avalanches this season.

A Nov. 8 avalanche killed backcountry skier Jeff Waugh in Little Cottonwood Canyon. A Jan. 14 slide in Cutler Basin killed snowmobilers Richard Scothern and Devon Wheeler. Then, on Feb. 12, another slide claimed Steve Carruthers below Gobblers Knob in Big Cottonwood Canyon.

The average number of annual Utah avalanche fatalities is less than two.

Snowmobilers, skiers, snowboarders and those wearing snowshoes to venture into the backcountry can improve their safety with a good route.

"All of us, myself included, get stoppy when going uphill. It is a common time to make errors of traveling too close together," said Utah Avalanche forecaster Evelyn Lees.

In addition to developing good route-selection skills to avoid open slopes steeper than 30 degrees and staying out from under possible avalanche run-out zones,

mountain visitors should perform a snow-stability evaluation. That evaluation can be based on the latest Utah Avalanche Forecast Center recording (364-1581 in the Salt Lake area). Personal observation from digging a snow pit, on the same slope and exposure a skier plans to use, is also recommended.

"People think of safe travel when they are going downhill, but people should also put their up-track in the safest place," said Lees. "People spend 30 minutes going up and only eight going down."

Much winter-travel knowledge can be gained by taking avalanche courses listed in the Recreation Roundup.

Lees offers these other suggestions:

- Turn on the avalanche radio transmitter beacons when leaving vehicles.

- Check to make sure all members of the party have beacons with the same frequency. An avalanche rescue is more difficult if the beacons don't communicate.

- Travel through potential slide zones one at a time, both ascending and descending. Expose as few to danger as possible.

- Move rapidly from one island of safety, out of potential slide danger, to the next.

- Don't move under or over other folks on the slope.

- Keep your partners in sight. It is important to use the buddy system to keep

■ See AVALANCHE, B-3

Avalanche: Pay Attention To Snow Safety

■ Continued from B-1

pared with shovels and avalanche radio beacons. Officials recommend taking an avalanche class and being well-equipped with beacons, shovels and probes.

The energy generated by an avalanche quickly turns snow to a solid cementlike mass when it stops sliding.

(For a list of avalanche-education classes, see the Recreation Roundup on page B-2.)

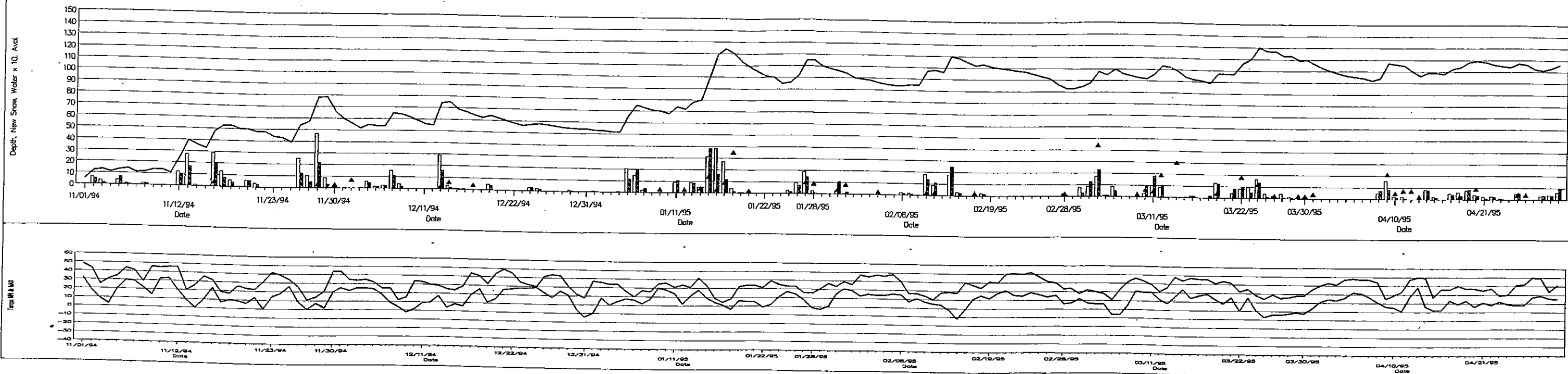
Having good route-finding

skills and learning how to avoid potential danger are keys to safe mountain travel. Slope angle is a key to avalanches. Anything between 30 and 45 degrees should be considered suspect. The target slope where most avalanches occur is 38 degrees. Slopes steeper than 45 degrees — a steep expert run at a ski resort — are generally safe because the snow sloughs off the slope on its own.

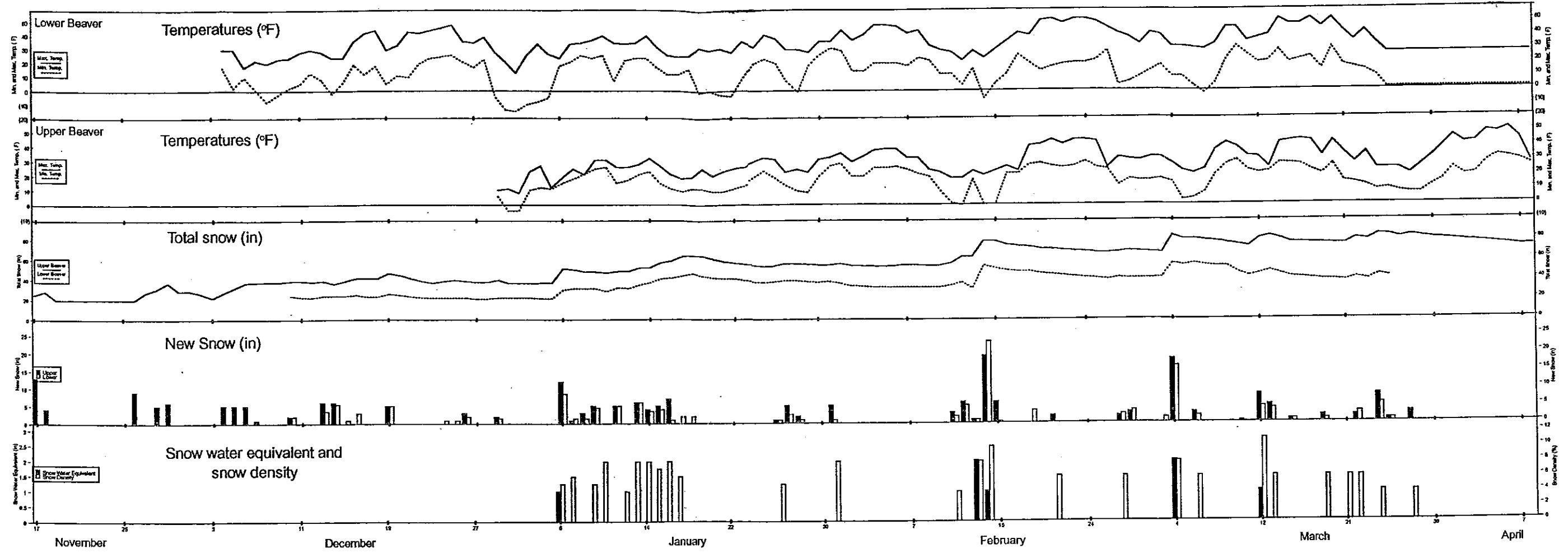
Slopes flatter than 30 degrees are considered safe from avalanche danger. While the slope you ski might be safe, pay attention to slopes above that can avalanche and fill the flat zone.

A slide Jan. 16, along the Big Cottonwood Canyon-Park City ridge, created a fracture line 4 to 10 feet deep and 250 feet wide. It dumped into Dutch Draw on an east-facing hill.

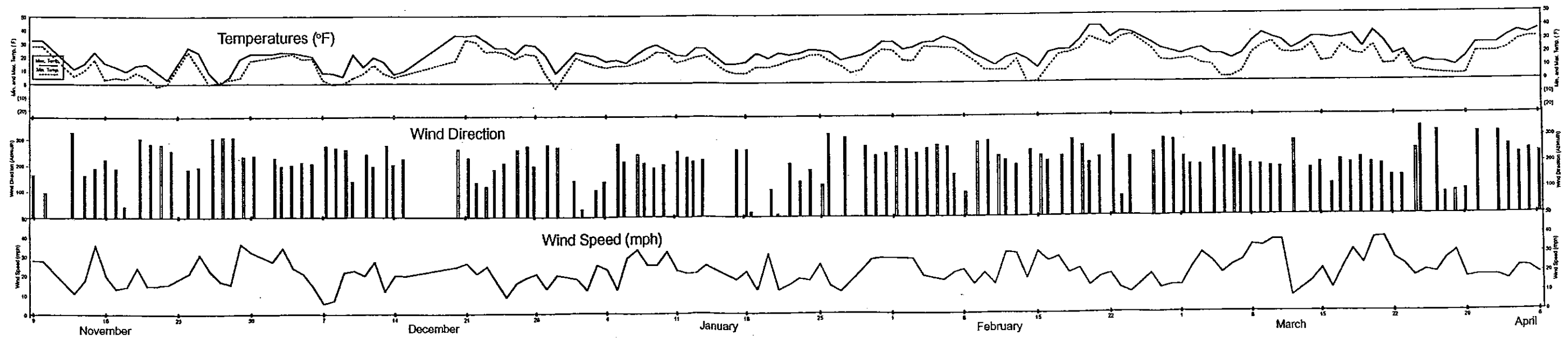
UDOT Alta Study Plot, Alta Utah



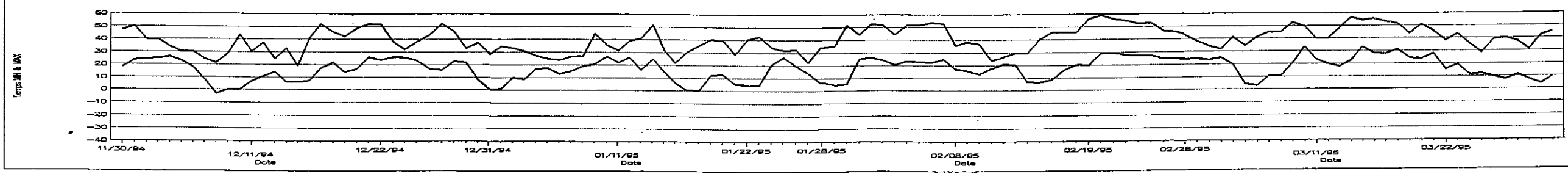
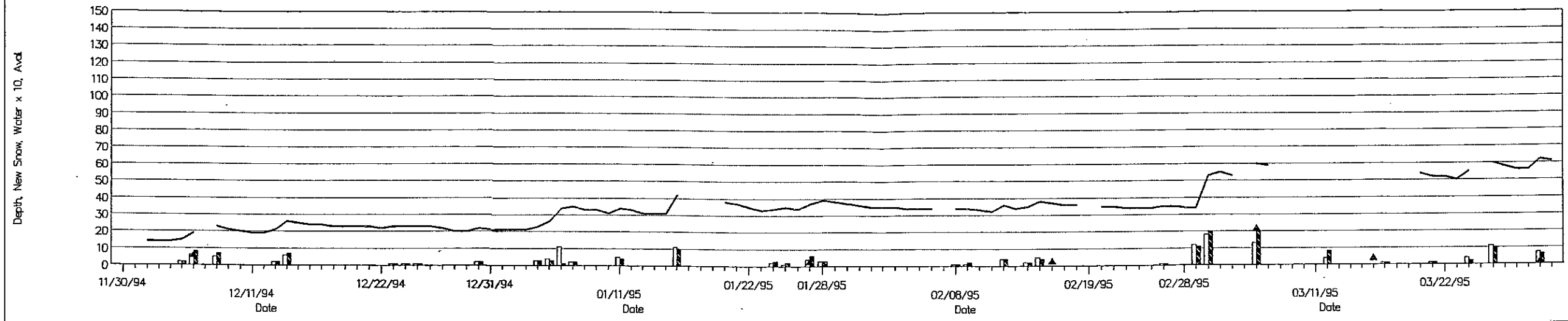
Beaver Mountain Season History 1994 - 1995



Logan Peak Season History 1994 - 1995



La Sal Mountains Study Plot 1994-95



94/95

