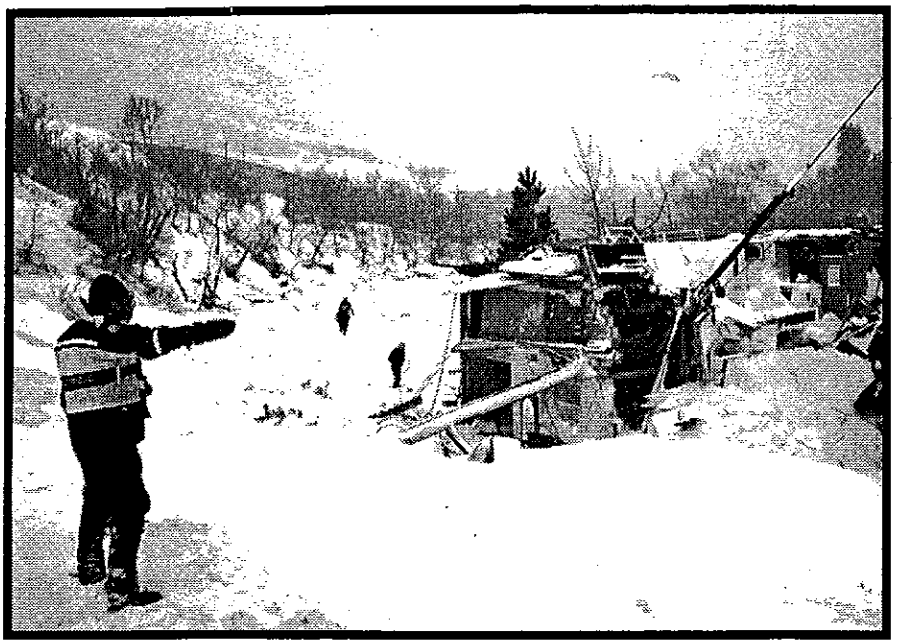

The historic and spectacular January slide cycle caused damage to the bottom terminal of the Bridal Veil Falls tram.

The Argenta slidepath hit the Big Cottonwood Canyon road for the first time since 1948 wiping out dozens of acres of mature trees in the process.

UTAH AVALANCHE FORECAST CENTER ANNUAL REPORT

1995-1996

Snow and Avalanches in Utah

United States Department of Agriculture
Forest Service
Intermountain Area
Wasatch-Cache National Forest
Manti La-Sal National Forest
in partnership with the Utah State Department of Public Safety Division of Emergency Management, Salt Lake County, Friends of the UAFC, Cache County, National Weather Service, and Utah State University

Authors:

Bruce Tremper
Tom Kimbrough
Evelyn Lees
Mike Jenkins
Brian Murray

Cover photos:
Bruce Tremper

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 Friends of the Utah Avalanche Forecast Center Utah Department of Public Safety Division of Emergency Management Salt Lake County, Cache County National Weather Service and Utah State University

Copies of this report can be obtained by writing or calling:

Utah Avalanche Forecast Center
2242 West North Temple
Salt Lake City, Utah 84116
(801) 524-5304

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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 routinelly 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, through the Forest Service National Avalanche Center, we are producing another video especially for snowmobilers, which should be available next season. Finally, we "preach the avalanche gospell" as much as possible to the local, national and international media. This season, for instance, three different international film doccumentaries on avalanches were aired repeatedly througout the winter (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 puting 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.

Brian Murray issues the advisories for the La Sal Mountains near Moab. He works part-time and issues advisories twice weekly and more often during times of rapidly changing avalanche conditions. 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 five, three full time and two part time, 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 tenth season, heads the operation along with an extremely capable staff of Tom Kimbrough, Evelyn Lees, Seth Shaw and Carol Ciliberti. 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.

The Utah Avalanche Forecast Center is a Forest Service program under the Salt Lake District of the Wasatch-Cache National Forest, and the Manti-La Sal National Forest, and in partnership with the Utah Department of Public Safety, Division of Emergency Management, Salt Lake County, Utah State University, the National Weather Service and the private contributions from the Friends of the Utah Avalanche Forecast Center.

The public can access advisories in the following ways:

Recordings on local telephone lines in the following locations:

Salt Lake City 3-minute advisory (14 lines)	364-1581
Salt Lake City 6-minute advisory (2 lines)	364-1591
Park City (one line)	649-2250
Logan (two lines)	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

Season Highlights

* Two avalanche fatalities occurred this season. First, an experienced ski patroller was caught in a huge avalanche doing avalanche control work at Solitude. The second fatality was a backcountry skier who triggered a very small wet sluff on a very steep slope and he was killed by trauma when he hit a tree.

* Utah experienced perhaps the largest and most widespread series of avalanches in the past 20-50 years during a huge January storm in which 16 feet of snow fell in 16 days. Although this occurred in the Wasatch Front directly adjacent to a major metropolitan area, thanks in part to the efforts of the Utah Avalanche Forecast Center, no one was killed during this avalanche cycle.

* There were 51 recorded incidents in the backcountry where a person unintentionally triggered an avalanche. Of these, 15 people were caught, three were partially buried, two completely buried and two killed.

* UAFC Director, Bruce Tremper was featured in three national television documentaries about avalanches including National Geographic and two other documentaries aired on the Discovery Channel. The National Geographic film toured the country as part of the Banff Festival of Mountain Films.

* The recorded avalanche advisory was accessed 119,731 times this season, slightly down from the record setting snow year of 1994-95. Several more thousand people accessed the advisory over the Internet and several million people hear the advisory each morning on two different radio stations.

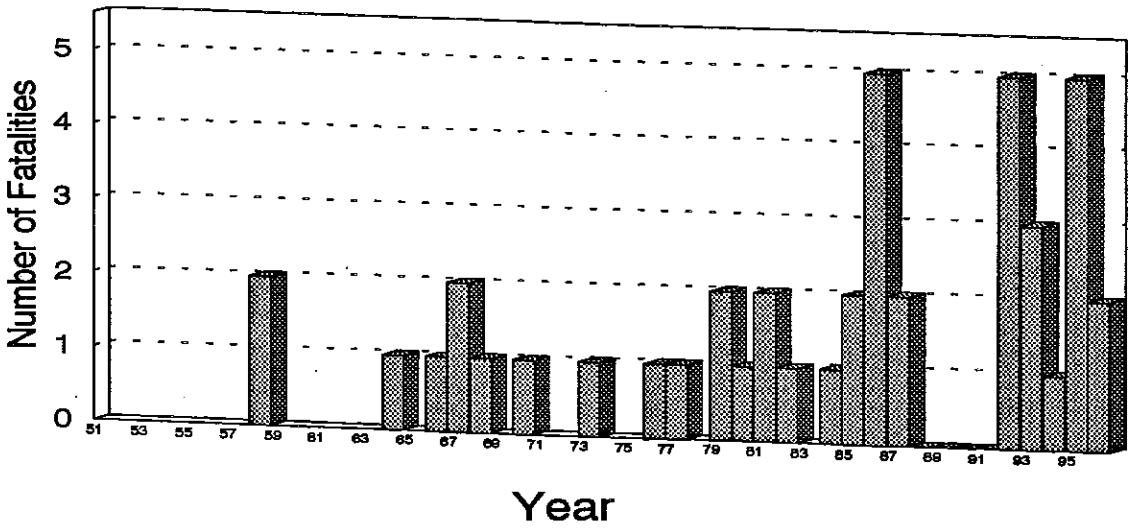
* The UAFC staff was interviewed or quoted in at least 31 television programs, newspapers, magazines or on the radio. Many were national media such as Good Morning America, National Geographic, Discovery Channel and a Japanese magazine.

* The Utah Avalanche Forecast Center staff taught 30 avalanche classes throughout the season which directly reached 2,802 people.

* Northern Utah ended the season with above normal snow amounts while southern Utah had significantly below average snow amounts.

Avalanche Fatalities in Utah

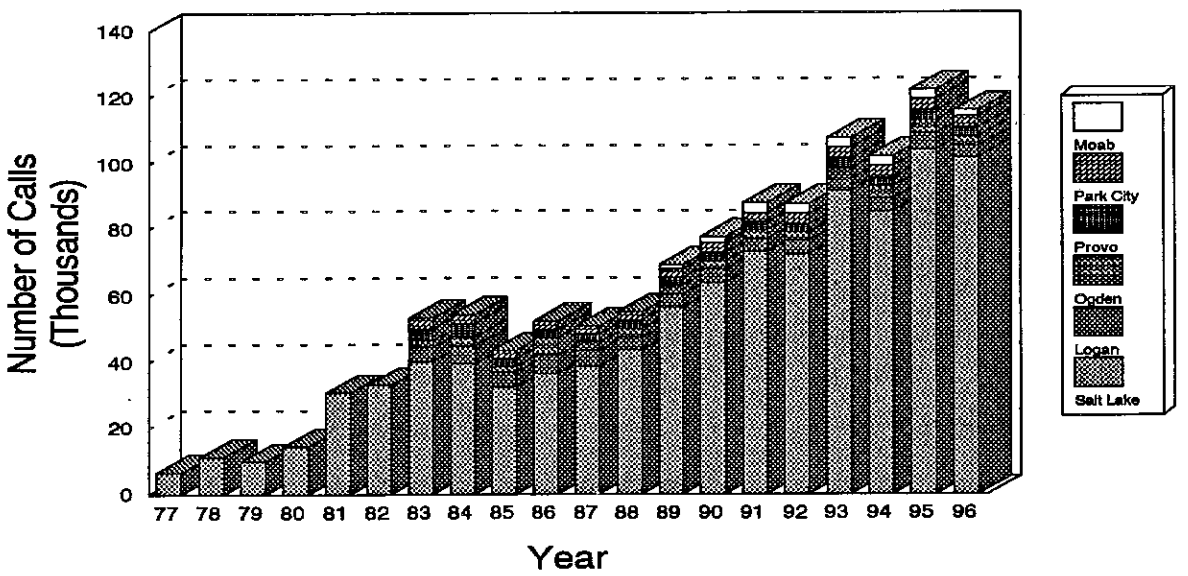
1950-96



Utah had two avalanche fatalities which is slightly below the 10-year moving average of 2.4 fatalities.

Yearly Call Totals

Avalanche Advisory



Calls to the recorded avalanche advisory were down slightly from the record setting snow year of 1994-95. Still, the UAFC receives over twice as many calls as any other avalanche advisory service in North America.

Season History

Northern Utah

It was a year with two months of almost no snow, then two weeks of huge snows, then another three months of fairly stable conditions. It was either on or off and not much in between.

The first snowfall of the season arrived in late September putting down five inches at Alta. Then two more storms in October, brought 36 inches in Little Cottonwood but the sun and warm temperatures melted the total depth stake at the Alta Guard Station back to zero by the beginning of November. The first avalanche incident of the season occurred on October 4. Although the storm totals were not enough to cover most surface obstacles, some upper elevation north facing slopes still held last winter's snow. This old snow gave both the best skiing during these early storms but also provided a bed surface for new snow to slide on.

November

November also hosted two decent storms, totaling 58 inches and 7.07 water. The first resulted in a rash of human triggered slides. Saturday, November 11, dawned clear with about two feet of fresh snow. Weekend skiers and boarders, filled with early season powder hunger, lost their cool and most of their avalanche training as well. The new snow covered a layer of faceted crystals on the shady slopes and warming temperatures added the final touch. Hundreds of skiers and boarders swarmed over the still closed slopes at Alta where the ski patrol had not yet done any avalanche control. Several skiers triggered avalanches but luck prevailed and despite one total burial, no one was injured or killed.

December

December started very warm for the first two weeks, breaking several high temperature records at the Salt Lake airport. The warm weather created an unusual snowpack pattern in the mountains. While almost no snow existed at lower elevations, the upper elevations had a near normal amount of snow but it was much more dense than usual. Avalanche dragons were generally quiet and the Forecast Center staff enjoyed a nice Christmas vacation during the federal government shutdown.

January

A storm on the New Year put down about 36 inches in Little Cottonwood over a seven day period. Lesser amounts fell in other areas. Despite lots of weak underlying snow this storm did not produce widespread avalanches, because the snowfall came gradually over a week. However, this layer of snow played it's part in upcoming events, acting as a bridge of varying strength over the weak faceted snow closer to the ground.

Then the hammer came down. From mid January to the end of January, parts of northern Utah received a record January snowfall which all came in a two week period. More snow fell in two weeks than in the previous

The Big January Storm

three months—16 feet of snow in 16 days. Needless to say, the snowpack reacted violently to the added weight. The Ogden mountains produced the first series of full depth slides, because they had a thinner and consequently weaker pre-existing snowpack. The largest 24 hour total of the storm cycle fell on January 25, with 26 inches at the Alta Guard Station. Almost every steep slope released in the Mill Creek and Big Cottonwood drainages during this period making one of the most widespread avalanche cycles in recent memory. For the first time in 50 years the Argenta slide path hit the Big Cottonwood road on January 26 wiping out about a dozen acres of 50-year old trees. In Mill Creek, the West Porter slide ran over a mile and a half, wiped out dozens of acres of mature trees and dusted the upper most cabins in the Porter fork drainage. Strong winds helped trigger many of these slopes over the weekend of January 27 and 28.

One of the most spectacular slides occurred in the Provo area mountains. When Darwin Stoneman of Wasatch Powderbird Guides flew a bombing run to control the highway above Provo Canyon, he mentioned to the Provo Canyon highway forecaster, Rip Griffith that 80 percent of the slopes above Bridal Veil Falls had not yet slid. Griffith relayed this information to Seth Shaw at the Utah Avalanche Forecast Center. Shaw in turn warned people to "stay clear of this run-out zone" on the afternoon forecast of January 30. Nine hours later, at about 1:00 A.M. on the morning of January 31, Bridal Veil Falls and many nearby slopes released, completely destroying the base terminal of a tourist tram which spans Bridal Veil Falls. The tram, normally closed during the winter, was a privately operated tourist attraction in the summer. It was damaged in the February 1986 avalanche cycle and dusted once since then. The Bridal Veil slide also crossed the Provo Canyon highway and ran uphill past the highway several hundred yards. Although the road was open at the time, no cars were hit. This is a perfect example of how avalanche professionals in Utah communicate closely with each other which translates into saved lives. Miraculously, no general public lost their lives in this historic series of avalanches.

A Solitude Patroller Looses his Life

But unfortunately, one avalanche worker lost his life. On February 2nd, two days after the last of the big January snows ended, avalanche control crews at Solitude Ski Area began working on areas that had been closed since the storm started. In Honeycomb Canyon, 20-year veteran patroller Jeff Brewer tossed a hand charge, releasing a huge, full-depth hard slab which pulled up onto the flat portion of the ridge where Brewer was standing. He was swept into the bottom of the canyon and buried. Although uncovered in about 15 minutes, he never regained consciousness and died when life support was removed two weeks later. (See Avalanche Accidents and Incidents for more details.)

This avalanche cycle was the largest and most widespread since February 1986 and may have exceeded it. That such a natural cataclysm can take place so close to a population center as large and as outdoor oriented as the Wasatch Front with no general public killed is a striking tribute to all the Wasatch avalanche workers and the Utah Avalanche Forecast Center in particular. Unfortunately, since all the lives saved are non-events, and

consequently non-news, the significance can easily escape the consciousness our funding agencies.

February

The snow pack must have exhausted all its energy during these two January weeks. Two more storms graced February with fine skiing and boarding and mostly stable snow. Snowfall was of average quantity and density; 104 inches containing 10.16 water.

March

The post January pattern continued in March with a nice powder storm each week. Warm, sunny weather between storms consolidated the snow and produced good spring conditions on the south faces. The last avalanche fatality of the season occurred on March 27:

Although in general, the snowpack was extremely stable that day, as often happens in the spring, warm temperatures and the "greenhouse effect" from a high, thin cloud cover dampened the powder on the extreme low elevation North faces in the afternoon. A skier exiting a side drainage in Little Cottonwood at about 3:00 P.M. triggered a very small wet sluff at about 7,500 feet in elevation. Although just a tiny slide, only 4 feet wide and 3 to 6 inches deep, the slope was steeply convex, up to almost 50 degrees, and once he started sliding on the hard bed surface he couldn't stop himself. After descending about 200 feet at a high rate of speed on the extremely steep slope, he suffered fatal injuries when he struck a tree. (See Incidents and Accidents for more details.)

One of this person's companions had taken the UAFC three day avalanche workshop in January. She quickly recognized the changing conditions as becoming more hazardous and tried to stop the victim from continuing, but he was too far ahead of her to hear her warnings.

March totals were slightly below average with 82 inches of snow and 6.86 water. The total settled snow reached maximum depth on March 6 with 138 inches at the Alta Guard Station.

April

Around the first of April, we received news of a much lower Forest Service funding than we expected (see Budget for more details) and we had to lay off all but one UAFC staff and end our advisories for the season a month earlier than usual. Right on cue, the weather kicked in with three more storms, each with some short-lived but nasty density inversions and wind slabs. Although there were several human triggered avalanches in the backcountry from people bumbling into the unstable situation without any of the information they normally get from the UAFC, luckily they kept from getting buried or injured. April remained quite a bit colder than usual and a snowstorm graced the Wasatch each weekend of the month, two of which brought snow to the valley floor, covering all the tulips.

The Alta DOT station in Little Cottonwood Canyon ended the season with 562.7 inches of snow which is 115 percent of normal.

Season History

La Sal Mountains

by Brian Murray

During my previous two seasons with the La Sal Avalanche Forecast Center (LSAFC) major changes and challenges have been the norm. This year was business as usual. Following the departure of the center's director, Dave Medara, I found myself in the driver's seat last spring. Dave left in late March to take a position with Utah Department of Transportation as a part-time forecaster and with hopes of an eventual full time position he could count on from year to year. Dave got his full time position this winter and as for myself, I decided to take the wheel again for the 95-96 winter season.

"This first thing I noticed about this 'vehicle' that I was given to drive was that a couple of its tires had gone flat."

The first thing I noticed about the "vehicle" that I was given is that a couple of its tires had gone flat. Another disturbing fact was that there were no passengers, I was alone. Forest Service budget cuts reduced the staff to one part-time position with no assistant or alternate. I was beginning to long for the good old days when I held what has been called by some "the best job in Southern Utah", the assistant forecaster's position. Not wanting to see the forecast center fade away, I decided that something was better than nothing and made the best of it. Instead of issuing advisories five days a week, the decision was made to update forecasts twice a week and during periods of heavy snowfall. In addition to recorded advisories accessible by phone, advisory updates where faxed to the Moab Information Center and also broadcast on the local fm radio station, KZMU.

Season History

The winter took it's time in arriving to southeastern Utah. Skiing wasn't possible until mid-January and the snowpack didn't approach average amounts until March. The slow arrival of winter did allow me to comfortably deal with the weather station deployment and troubleshooting, making friends with the computer system, and just generally settling in before getting down to business. Once winter did arrive, snowfall amounts and the frequency of storms matched those that I had seen in the previous two seasons. The lack of snow during November through mid-January put the snowfall total for the season at 20% less than average (200 inches). As of April 15th, the snowfall total for the season at 9,600 feet was 166 inches but the snow/water equivalent in the snowpack was up to average amounts. Avalanche wise, there had been no reported close calls and no fatalities.

October

Sunny, warm days prevailed through most of October and a couple of dustings of snow is all that the La Sals saw. Dave Medara, who was still "summering" in Moab was contracted to help with setting up two remote access weather stations. Dave was soon due to head north and late October was his only window of time to assist me with this yearly task.

The wind station on Laurel Ridge (11,700 ft) went up without a hitch. It was the first time that Dave and I were able to work on this station in t-shirts

not to mention finish up without frozen hands and feet. The precipitation station below Geyser Pass (9,600 ft) on the other hand was more of a chore. This station had been in the works since early last season and this year was it's first deployment. Just like the wind station in its early days, there were bugs to work out. This station was developed to give real-time snowfall amounts, water content, and temperature readings. This information allowed me to provide morning forecasts with current information. In the past, forecasts were generally updated in the evening after a tour and overnight snowfall/water content amounts could only be guessed. (Moab lies roughly 5,000 feet lower than this precipitation site and given favorable conditions, is an hour away by vehicle.)

November

More weather station work. Following a storm on November 1st which left behind 6 inches of new snow, the wind station quit working. I suspected lightning and eventually confirmed it by the evidence of a fried potentiometer on the wind vane and a non-functioning transmitter.

The annual fund-raising party hosted by Club Rio was a great success, the best to date. The rest of the month was spent trouble-shooting weather station problems. What was left of the 12 inches of snow that fell during the month could be found in northerly gullies in the form of rotten faceted snow and graupel layers.

December

The wind station came back on line in early December. Precipitation station problems continued and I returned the snow depth sensor for replacement. By mid-month it had only snowed 10 inches and the opportunities for skiing and snowmobiling were nil. On December 20th, I was put on furlough because of the budget impasse in Washington. I was told that unless there is an extreme danger to public safety, don't come to work. Fortunately, or perhaps unfortunately, It didn't snow for the rest of December. Despite this mandatory vacation, I did take a hike into the La Sals on my own time in late December. Northerly terrain was still setting the stage for future avalanches with wind slabs overlying varying depths of depth hoar. Southerly slopes were basically devoid of snow. A storm which put down two feet plus of snow in the Intermountain West brought 6 inches of snow to the La Sals on New Year's Eve bringing the total for December up to 16 inches.

January

On January 8th, with the furlough finally over, I returned to work. By the middle of the month, both weather stations were working and I installed a new program to graphically display and archive data. Credit and thanks are given to Dan Judd, Dave Medara, Jim Harte, Austin McHugh, and Raine Guymon for their contributions of expertise on remote weather stations. A late ski swap was held mid-month but interest was understandably low. Winter was still playing it's waiting game and old timers in town were talking about an "open winter", could they be right? Many were beginning to believe , but it was not meant to be. On the 17th winter finally arrived with a good wet storm out of the southwest which dumped 14 inches at 9,600 ft. During a tour the following day, whumpfing and propagating cracks accompanied us throughout the day. Avalanche observations were limited to the Gold Basin area but three large slides on northerly terrain drove the point home, the

avalanche hazard had gone from non-existent to high.

Another storm starting on the 23rd and ending on the 25th put down an additional 16 inches. Two storms worth of snow sitting on top of ten inches of rotten depth hoar, along with strong northwest winds prompted an avalanche warning for the La Sals. Oddly, no natural releases were observed following this warning. Contrary to my call, the snow pack had adjusted enough to support the additional weight, but stability tests where still frightening enough to keep me waiting for a big avalanche cycle. With avalanche hazards still high, the month closed out with a storm which lasted into the first two days of February, leaving behind 14 inches. Like the last storm, this one was out of the northwest with strong winds. Wind speeds during these three storm periods all averaged 35-40 mph and maximum gusts where 75-90mph. The snowfall for the month totaled at 43 inches.

February

The avalanche cycle I expected occurred following the storm which ended on the 2nd. Many large paths with northwest through northeast aspect released to the ground. Fortunately, no one taunted the dragons in the La Sals during this time and no incidents occurred. Following this avalanche cycle, the "thaw" that usually sets in during January chose to take place in February. After all, we were a month or two behind the usual schedule. The snowpack gradually strengthened somewhat and the overall hazard dropped to moderate. By the 10th, I found corn snow conditions on sunny aspects yet stashes of settled powder also existed on shady aspects. Wet slide activity was the most prevalent hazard during this time. On the 22nd, winter returned with 18 inches of snow at 9,600 ft. This was followed four days later by another storm which left 16 inches. These storms put the avalanche hazard on steep, northerly terrain back up in the moderate to high range for the remainder of the month. Skiing and boarding conditions on lower angle slopes was excellent. A total of 38 inches of snow fell during February.

March

By March deep instabilities in the snowpack had settled out and new snow avalanches were my main concern. Early March also marked the beginning of "computer hell" at the LSAFC. Programs were slowly falling apart along with other strange occurrences. I became painfully aware of my dependency on that magic box on the desk. While the computer was in for repairs, It was back to pencil and paper. I compiled Weather information using the old fashioned method of calling the Weather Service and paying more attention to the sky versus those colorful pictures on the computer monitor.

During the 5th and 6th, 17 inches of snow fell at 9,600 ft. This new snow bonded well to the old snow but a weakness within the new snow put the hazard at moderate. Warm temperatures prevailed for several days and the avalanche hazard became isolated to wind loaded areas. Not much happened except a couple of dustings up until the 23rd when it snowed 12 inches. This put the hazard back up to moderate for a couple of days. Then wet slides became the concern as temperatures warmed for the remainder of the month. March finished up with 33 inches of snowfall.

April

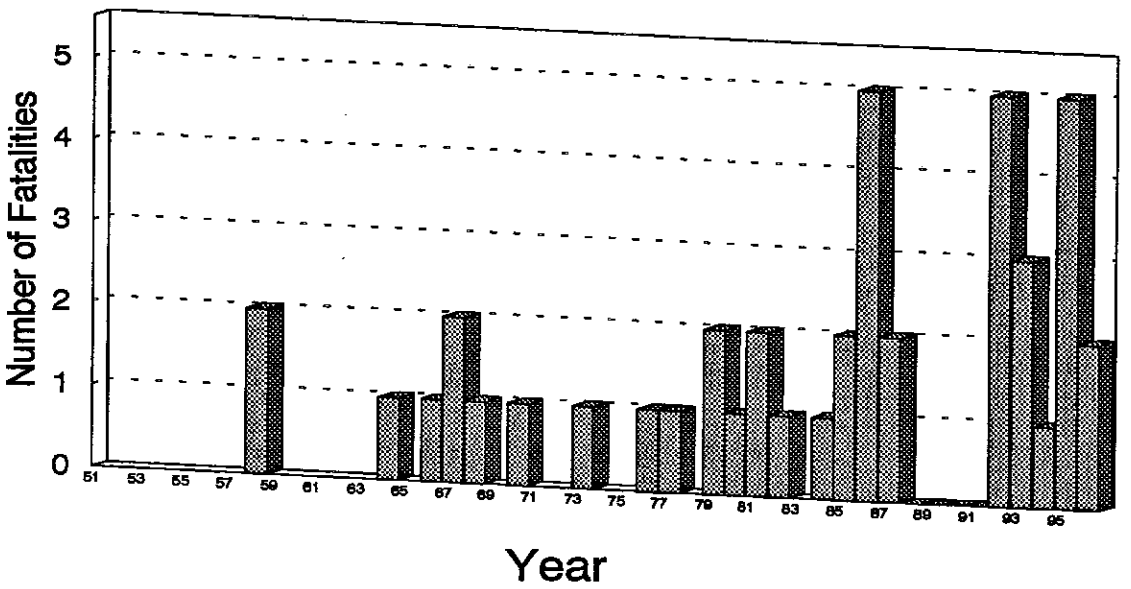
The first half of April looked like Spring. Warm afternoon temperatures and sunny skies pushed the wet slide hazard up to moderate by mid-day each day and several wet slides were observed from time to time. Above freezing overnight temperatures on the 9th and 10th caused this hazard to occur earlier in the day but no large releases were recorded. With the money running out, I issued the last advisory of the season on April 12th; the following day it snowed 18 inches at 9,600 ft and 30 inches at 11,00 ft. The spring sun wasted no time in turning this new snow to glop as skies cleared. As of this writing, spring storms continue to hold off those in seek of corn.

The decision to make the LSAFC a part-time entity proved to be less than effective at times. Something is better than nothing but many things fell through the cracks; the only public contacts made this season were training sessions with the local winter rescue team. No avalanche awareness talks, no media contacts, and no avalanche safety classes. Record keeping was also cut back or discontinued. During a big snow year with the constant potential for unforeseen technical glitches, one part-time person could not issue accurate and timely forecasts. Weather and avalanches are not part-time. A precedent of providing public safety for winter travelers has been made for the La Sals. Many would like to see it continue.

The long-term future of the LSAFC remains a question mark. Unlike my comrades farther north in the Wasatch Range, the LSAFC isn't able to tap into a local network of ski area avalanche information nor gain financial support from a large, nearby population. Fund-raising efforts by the local Friends of the LSAFC have shown that a growing part of the local population supports the center and wishes to see it's operation continue but the overall population, and financial base, is small. Although winter visitation to the La Sal Mountains noticeably decreased this season due to the low amount of snow, an increasing amount of both local and non-local winter recreationists continue to travel here each year to sample it's beauty and solitude.

There is hope that restructuring how Forest Service avalanche centers are administrated in the future may supply the needed funding stability. Because of the uncertainty of funding each season, I will most likely not be able to run the program next season, and others who take my place in the future may have the same problem. In the avalanche forecasting business, continuity of personnel from season to season is extremely important. It often takes years to learn all the local variations in terrain and climate with respect to avalanches. And a stable, adequate yearly budget would allow a skilled forecaster fertile ground to develop a good program.

Avalanche Fatalities in Utah
1950-96



Avalanche Incidents and Accidents

This season, the number of avalanche incidents and accidents in the backcountry were down from previous years, only about 60% of normal. Though we at the Utah Avalanche Forecast Center would love to take full credit, more likely the weather and snowpack had more to do with it. An early season lack of snow kept many people away from skiing, boarding, snowmobiling and other backcountry activities. Then a major winter storm cycle and dangerous avalanche conditions in the second half of January again limited the number of backcountry travelers. After that, the snowpack remained quite stable for the rest of the season.

For us forecasters, the highlight of the season was making it through one of the largest and wildest avalanche cycles in the past 20-50 years with no backcountry injuries or fatalities. Five of the other intermountain states did not fare so well, ending the cycle with a combined total of 13 backcountry fatalities nation wide. Sadly, Utahans didn't completely escape the avalanche cycle unscathed. Two days after the January storm finally abated, a ski patroller was killed in an avalanche while performing control work at Solitude ski resort (see below).

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October

The avalanche season officially started in early October. After a small storm which wasn't enough to cover up most of the rocks, a skier took advantage of some of the upper elevation firn (old snow pre-existing from last season). He went into the upper elevation of the still-closed Snowbird ski area and triggered a wind slab of new snow which slid on the old firn and went for a ride, losing equipment.

November

The subsequent lull in storm action came to an end November 9th-10th. The usual early season desperation for turns, any turns, had people out in droves on the 11th. It was an avalanche forecaster's nightmare because all the conditions came together to make avalanche incidents all but certain. First, it was a sunny Saturday early in the season with powder fever running high. This alone, tends to turn people instantly stupid and forget any avalanche training they may have had. Second, with a shallow snowpack, skiers and boarders flocked to the unopened ski areas, where the ski patrol had not done any avalanche control yet for the season. In other words, large numbers of people habituated to their favorite slopes being compacted mogul fields winter long were swarming over a dangerous backcountry-like snowpack. And third, the snowpack had just enough booby traps ready to spring on a parking lot full of powder hungry skiers and boarders.

That day, skiers triggered four separate avalanches in upper little Cottonwood, two within the Alta ski area, which was unopened and uncontrolled. The most serious was a skier who triggered a slide in one of the Wolverine Cirque chutes, going for a long ride and losing all his gear. As he felt the snow slow, he pushed hard and popped out, ending up on the surface. despite the shallow snow and numerous rocks, no injuries except bruises.

December

A lack of storms put the ski season back into hibernation through most of December, only small storms in late November and early December. For the entire month of December there were only 7 incidents, most in fresh wind slabs. Many of these 7 incidents were close calls, with 5 of the skiers and boarders being caught and going for rides.

January - the hammer comes down - a 20-50 year avalanche cycle

Then in the major event of the winter, starting in the second half of January, the Wasatch mountains received a record to near-record amount of snow for the month of January—but all compressed into two weeks. Nineteen days in a row all had measurable snow, 16 feet in 16 days combined with several strong wind events. This precipitated a 20-50 year avalanche cycle. In other words, using historical data and tree ages, it was determined that many of the slides which occurred had not run as far or as large for 20 to 50 years. During this time, there were 12 incidents, including one death, one full burial, a partial burial, and one skier going for ride and being injured when he hit the trees that stopped his slide. Many outdoor recreationists spent time in the snow covered foothills. sledders triggered a slide above Olympus Cove, going for a short ride.

The UAFC issued avalanche warnings for a record 15 days straight from January 17th through January 31st. These warnings go out over the National Weather Wire to all media including television, radio, and newspapers

all over the country. The warnings are designed to reach potential visitors to the mountains in the winter which don't normally call our advisory, especially Boy Scout troops, hikers and other more casual visitors to the mountains. Thanks in part to the avalanche warnings broadcast by the UAFC, miraculously no one was killed during this very dangerous avalanche cycle.

February and the Jeff Brewer Fatality

But the first avalanche death of the season occurred on February 2nd, just two days after the snows finally stopped, and this time, it was an avalanche professional. The Solitude ski patrol was trying to open Honeycomb Canyon, a more remote part of the Solitude resort which they had not opened yet for the season. Earlier in the season there wasn't enough snow to open it and during the big January storm there was too much. Much of it had avalanched naturally during the storm and they were trying to trigger some of the remaining unslid sections with hand-thrown explosives.

As they reached the lower section of the ridge, throwing hand charges from the safety of the ridge above, Jeff Brewer and his partner threw a shot below them which triggered a huge avalanche 4-8 feet deep, 1200 feet wide and 1000 vertical feet. The hard-slab avalanche broke right up onto the flat part of the ridge where they were standing. Although he was standing very near the rocks, Jeff Brewer, a 20 year veteran patroller suddenly found himself barely on the wrong side of the fracture line. The slide took him down 800 vertical feet, through sparse trees, over a cliff and buried him vertically, head up, with his head 1 1/2 feet from the surface.

The other patrollers, Jeff's partner and two other nearby spotters, descended as quickly as they could, but they had to negotiate through cliffs and very steep slopes and despite these impediments, they dug him out within 15 minutes. He never responded to CPR and was disconnected from life support two weeks later in the hospital.

After any avalanche death in the Wasatch, backcountry recreationists seem to become more conservative. Combined with a stable snowpack and poor snow conditions most folks stayed out of trouble until the end of the month.

March

A smaller storm cycle in late February into early March created unstable surface snow conditions with 7 skier triggered avalanches, one boarder and 3 incidents in the Logan area mountains.

For the rest of March, with a stable deep snow pack steady weekly storms created short-lived instabilities within the new snow with 11 more unintentional incidents in the backcountry, only one person caught. We thought we had escaped the season with only one avalanche fatality, less than half our average. But on March 27th one backcountry skier proved that bad things can happen even on very stable days and even in very small avalanches if you're in the wrong place:

Werner Ruegner Fatality

Local skier and climber, Werner Ruegner and his two partners were very nearly at the end of their tour, just a couple hundred vertical feet from the road. They were exiting Maybird Gulch in Little Cottonwood Canyon after skiing very stable, but shallow powder all day long. Not far from the Little Cottonwood Canyon road, and nearly as low of elevation which snow still

existed at that time, Maybird Gulch narrows down to a very steep-sided gully. Most skiers know that they have to keep left and stay up on the ridge on the skier's left to avoid the dangerous gully. But Werner had skied the very steep shot into the gully bottom before and apparently intended to ski it again that day.

He was out ahead of his two partners and as they followed Werner's tracks through the trees, they noticed that the 4-6 inches of new snow was becoming damp at that low elevation of 7,500'—nearly the lowest elevation which snow still existed at that time. They were able to trigger several small wet sluffs which tended to grab their skis and make them slide on the hard, old, melt-freeze bed surface.

One of his partners had taken a 3-day avalanche class taught by UAFC staff earlier in the winter and she quickly recognized the danger. They called ahead to Werner that he shouldn't go down there but they got no answer despite repeated attempts.

They discussed what to do but decided to follow his tracks down. But as the slope became increasingly steep, they triggered several more wet sluffs as they descended. On two occasions the wet sluffs caused them to slide on the hard underlying bet surface and had to grab trees to keep from being taken down the steepening slope. They finally spotted Werner's body wrapped around a tree, about 100 vertical feet above the creek bottom and on an extremely steep slope of nearly 50 degrees. They used their ski poles as self-arrest devices and descended down to him. They found Werner with severe head trauma, and he never responded to CPR.

Not wanting to descend into the narrow gully below with all the shallow new snow above sluffing so easily, they wisely decided to use their skis as ice axes and boot back up to the ridge above. From the ridge they skied out on gentler slopes without incident to notify the authorities.

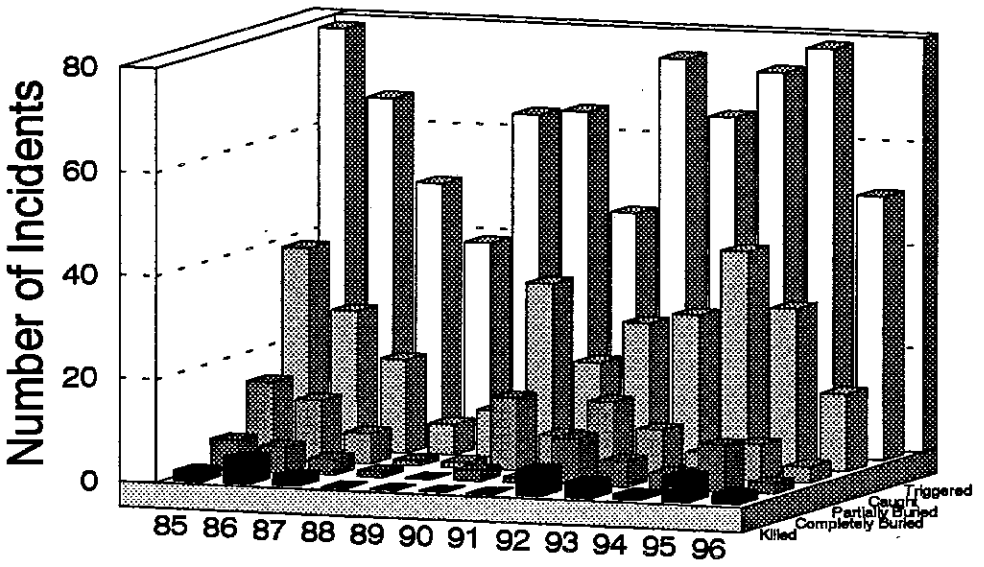
The following morning UAFC director, Bruce Tremper found the spot where Werner had triggered the wet sluff which knocked him off his feet. Werner's tracks show that he, had triggered several wet sluffs as he descended. The tracks also show that he stopped and made a small platform with his skis sideways just above the fateful point. He seemed to stop to take a breath or perhaps think again about his situation. Then the tracks make a final right hand turn and the sluff begins. It was only 4 inches deep and 3-4 feet wide. The bed surface still contained scratch marks where he apparently tried in vain to stop himself from sliding. The slope was so steep that Bruce could only travel on foot with an ice axe. Werner slid almost 200 feet and must have built up quite a bit of speed before hitting the small tree, or perhaps some of the other trees on the way down.

Werner was a regular fixture of the Wasatch. Nearly every day, it seemed, we would see him out somewhere either skiing or climbing, always eager to engage in lively conversation. We will miss him.

After Werner's accident, no other significant incidents occurred for the remainder of the season.

Avalanche Incidents in Utah

1985-96



51 Total backcountry incidents
15 Caught
3 Partially buried
2 Completely buried
2 Killed

Incidents and Accidents 1995-96

This list contains mostly unintentional backcountry avalanche incidents. Ski patrollers routinely intentionally trigger avalanches with ski cuts and it is not unusual for them to ocassionally be caught and carried, mostly by small avalanches. This list contains only the more significant events involving professionals at ski areas.

DATE	LOCATION	DETAILS
10/4	Pipeline, Am. Fork Twins	**Skier triggered, caught, lost equipment**
11/11	Catherines Pass	Skier triggered
11/11	Wolverine Cirque	**Skier triggered, lost all gear, partial burial**
11/11	Alta, High Nowhere (unopened)	Skier triggered
11/11	Alta, Baldy Shoulder (unopened)	Snowboarder triggered
12/6	Rocky Point	Skier triggered, not caught, took out 8 tracks.
12/8	Snake Creek	**Skier caught, arrested on bed surface**

12/13	Brighton, Milicent (unopened)	**Snowboard triggered, one buried to waist**
12/29	Brianhead (out of bounds)	Skier triggered
12/31	Alta (patroller)	**Patroller went for ride, lost gear**
12/31	Alta (patroller)	**Patroller went for ride, lost gear**
12/31	Mill D	Sympathetic to skiers
1/5	Silver Fork	Skier triggered
1/7	Cardiac Ridge	Skier triggered
1/7	Cardiff Bowl	Triggered by alpine boot hiker
1/12	Superior	Skier triggered
1/12	Wolverine Cirque	**Boarder triggered, carried, injuried**
1/12	Superior	Boarder triggered
1/13	Double Top, Logan	Snowmobile triggered
1/13	Logan mountains	Snowmobile triggered
1/17	Powder Mountain	**Partial burial**
1/17	Logan mountains	Skier triggered
1/19	Snowbasin	Boarder triggered
1/20	Thaynes ridgeline	Sympathetic to skier
1/20	Snowbasin (patroller)	**Patroller totally buried, OK**
1/21	Snowboard Alley	**Skier caught, injuried**
1/21	Mineral Fork	Sympathetic to skiers
1/25	Olympus Cove	Triggered by sledders
1/26	Mineral Fork	Skier triggered
1/27	Little Cottonwood Canyon	**Occupied vehicle hit and buried on road**
1/27	Logan mountains	Skier triggered
1/28	Thaynes ridgeline	Sympathetic to skier
2/2	Honeycomb	**Patroller killed doing control work**
2/21	Millicient chutes	Skier triggered
2/21	Provo Mountains	Sympathetic to skier
2/24	Wilson Glade	Skier triggered, took out 40+ tracks
2/28	Superior	**Skier carried 1000 vert., no injuries**
3/1	Murdock	Snowboarder triggered
3/2	Logan mountains	Skier triggered
3/2	Logan mountains	Skier triggered
3/2	Logan mountains	Skier triggered
3/8	Squaretop	Skier triggered with cornice
3/13	Patsy Marley	Skier triggered
3/16	Patsy Marley	Skier triggered
3/17	Grizzly Gulch	Triggered by boot hikers
3/24	Pink Pine	Skier triggered
3/24	Gobblers	Skier triggered
3/24	Wilson Chutes	Skier triggered, caught, short ride
3/27	Maybird	**Wet sluff caught skier, killed by trauma when hit tree**
4/4	Kessler	Skier triggered
4/5	Superior	**Skier caught, carried**

Avalanche Education

Here at the Avalanche Forecast Center we view avalanche education as one of the most important parts of our job. Our avalanche advisories not only provide valuable information to help people make their routefinding decisions, but the advisories help to educate the public on a daily basis. For more detailed education we put on a number of classes and workshops throughout the season. We try to give people "avalanche eyeballs", show them what dangerous terrain and dangerous snow looks like. To do that we must show photographs and videos and best of all show them the real thing.

First, we offer a number of basic avalanche awareness classes—a two hour talk using slides, videos and models to explain the basics of the avalanche phenomenon, terrain and safe travel, stability evaluation, the human factors, and avalanche rescue. We teach them for free to encourage everyone who needs the knowledge to attend. We have many more requests for talks than we can give so we try and limit talks to groups of around 100 or more. But for groups we're trying to reach more, such as snowboarders and snowmobilers, we often make exceptions. REI usually hosts the most popular talks each season where we do three talks, each with standing room only crowds of about 250 people. We also give talks on university campuses, high schools, businesses, or any place where a large number of people have expressed an interest.

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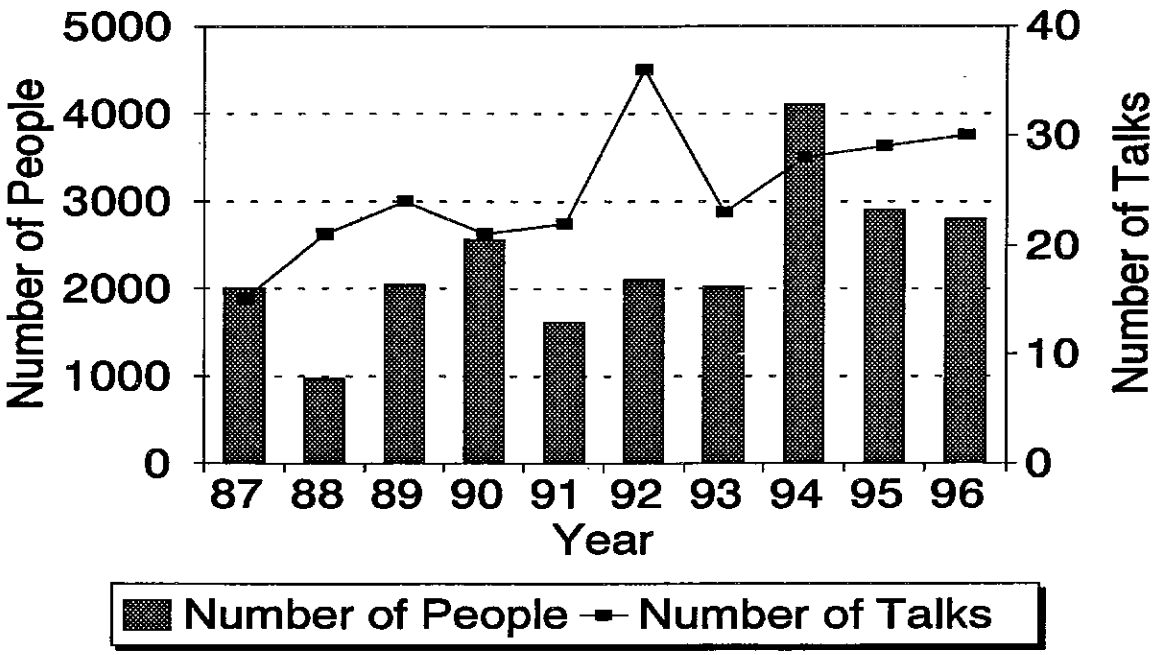
We also teach more advanced courses, or workshops, which last 3 days. The Friends of the Utah Avalanche Forecast Center puts on a 3 day workshop each year which is taught by several of our staff, a few of the local avalanche experts, and at least one instructor from outside Utah. Evelyn Lees worked with snowboarders in 3 separate classes this winter, in order to increase their knowledge and awareness of avalanche activity. Bruce Tremper gave two different lectures at Plaza Cycle especially for snowmobilers. As snowmobiles become increasingly powerful with better traction systems, snowmobilers can now go virtually any place a skier can go, and cover 100 times the amount of terrain as a skier. As a result they account for a higher percentage of avalanche fatalities each year. Carol Ciliberti gave an avalanche awareness talk to a large group of Girl Scouts, emphasizing safe winter recreation. Each year we also offer a number of avalanche beacon clinics in order to teach people the basics of beacon searching, and to encourage them to practice on a regular basis on their own. Finally, the Friends of the Utah Avalanche Forecast Center donated Bruce Tremper's avalanche awareness and education video "Winning the Avalanche Game" to schools and public libraries throughout Salt Lake City, Provo, Park City, Ogden and Logan.

Since education is a crucial link in preventing avalanche fatalities, we attempt to provide quality information in a variety of ways to diverse groups of people. As more and more people head into the backcountry each winter, it becomes more essential that we continue to provide education locally in order to keep Utah's fatality rate from rising to higher levels.

Avalanche Education by UAFC Personnel

Date	Forecaster	Event	No.People
10/28	Tremper	AAAP Seminar	150
10/29	Tremper	National Avalanche School (5-days)	300
11/6	Kimbrough/Shaw	Rockreation-Beacon Drill	20
11/9	Tremper	Blasters Meeting	200
11/10	Tremper	White Pine Beacon Talk	15
11/24	Staff	Brighton-Beacon Drill	6
11/28	Staff	REI-Avalanche Awareness	250
12/6	Ciliberti	U of U Met. Dept. Seminar	50
12/11	Tremper	State Parks Rangers	70
12/12	Staff	REI-Avy Awareness	250
1/2	Tremper	Plaza Cycle - Snowmobile	50
1/9	Staff	Black Diamond-Avalanche Awareness	30
1/10	Ciliberti	Weber State-Avalanche Awareness	50
1/10	Tremper	Snowbird-Avalanche Awareness	80
1/13-15	Staff	3-day Avalanche Workshop	30
1/18	Tremper	U of U-Avalanche Awareness	50
1/20	Ciliberti/Bodily	Weber State	100
1/21	Tremper	Wasatch Mountain Club	60
1/23	Tremper	REI Advanced Snow Stability	250
1/28	Lees	Snowboarder-Avalanche Education	10
2/4	Lees/Kimbrough	Snowboarder-Avalanche Education	15
2/6	Tremper	NOLS Workshop	20
2/11	Lees	Snowboarder-Avalanche Awareness	12
2/13	Tremper	Plaza Cycle-Snowmobile	24
2/14	Tremper	Intermountain SAR conference	100
2/10	Ciliberti	Girl Scouts-Avalanche Awareness	60
2/17	Ciliberti	Avalon Theatre-Video Showing	20
2/24	Kimbrough	Rockreation Beacon Drill	30
2/29	Tremper	Banff Mountain Film Festival	500
		Total Talks 30 **Total People**	**2802**

Avalanche Education



Media

Last season, UAFC director Bruce Tremper was filmed by three different national and international film companies who produced avalanche documentaries. All of those programs aired repeatedly throughout the 1995-96 season. The programs include a 25 minute avalanche documentary by National Geographic and two other programs which aired on the Discovery Channel, a one-hour British production and a 10 minute piece on World of Wonder. The National Geographic film also toured the country as part of the Banff Festival of Mountain Films, which shows to theater audiences in most major cities and mountain towns.

The Utah Avalanche Forecast Center was portrayed in a very positive light and represented the epitome of a "white hat" organization for the Forest Service. Perhaps 50 million people saw at least one of the programs, and as every politician knows, you can't buy exposure like that.

The Utah Avalanche Forecast Center also has a very high profile in local media such as television, newspapers and radio. We had at least local 31 media contacts this season which included 12 television appearances.

UAFC Director, Bruce Tremper was featured in three different national television documentaries about avalanches.

Media Contacts 1995-96

Date	Forecaster	Agency	Subject
12/15	Ciliberti	SLl Tribune	New Forecaster
12/15	Tremper	Scholastic Magazine	General Avalanches
12/20	Tremper	SL Tribune	Beacons
12/31	Tremper	Channel 5	On camera - Avalanche Warning
12/25	Kimbrough	Event Magazine	Avalanche Awareness
1/2	Shaw	KBRE	General Avalanche
1/3	Kimbrough	Channel 13	On cmera - Forecasting
1/8	Tremper	Channel 5	On camera - Avalanches
1/17	Ciliberti	Channel 2	On camera - Avalanche Warning
1/20	Lees	SL Tribune	Avalanche Warning
1/21	Tremper	SL Tribune	Avalanche Warning
1/21	Tremper	Channel 2	On camera - Warning
1/23	Shaw	Herald Journal	Current conditions
1/23	Shaw	Deseret News	Current conditions
1/22	Ciliberti	Channel 5	On camera - Avalanche Warning
1/24	Ciliberti	Daily Examiner	Avalanche Education
1/27	Lees	Channel 2	On camera - Avalanche Warning
1/29	Ciliberti	Wasatch Wave	Avalanche Hazards
1/29	Tremper	Channel 4	On camera - General avalanches
1/30	Shaw	Good Morning America	General Avalanches
1/31	Ciliberti	Standard Examiner	Provo Canyon slide
2/5	Ciliberti	Channel 4	On camera - Wet slide potential
2/5	Ciliberti	Standard Examiner	New-old beacons
2/7	Kimbrough	SL Tribune	Avalanche Accidents
2/3	Tremper	Channel 4	On camera- General Avalanches
2/13	Tremper	Channel 4	On camera - Snowmobile Avi Education
2/13	Tremper	Butte Standard	Avalanches and snowmobiles
3/2	Ciliberti	Japanese Powder Mag	Avalanche Forecast Center
3/25	Kimbrough	Channel 4	On camera - Wet slides
3/25	Kimbrough	Channel 5	On camera - Wet slides
3/25	Kimbrough	SL Tribune	Avalanche death

31 Total media contacts

Volunteer Observer Program

Since we can't be everywhere at once, for a number of years, we have used what we call "volunteer observers" which we pay around $10 per day to cover their expenses. The idea is to round up a small and trusted cadre of backcountry skiers, snowboarders and snowmobilers who are out on a regular basis, and then pay them a small stipend to cover their expenses. In exchange, they gather a little extra snow stability information and call in their observations each day they go out. In this way, we get a large amount of critical information for a small amount of money. It has been an extremely effective program.

Thanks to the hard work of Tom Kimbrough who organizes the volunteers, this season the number of observations nearly doubled from last season.

Bob Athey is the backbone of the backcountry observer system. He was hired as a full-time contract observer by the Friends of the Utah Avalanche Forecast Center this season. He thoroughly justified this salary by getting into the backcountry nearly every day of the season. In addition to his skill at analyzing snow stability, he communicates that information to our forecasters very effectively and he has become a very good avalanche educator as well.

This year Bruce Englehart and Phill Lowery became contract observers for the Forest Service. Between them they contributed 87 observations.

The new additions to the observer list are Joey Dempster and Shawn Wagner. Both are regular skiers that often get to rarely visited areas of the Wasatch. Despite becoming active at mid season, they both contributed over 25 observations.

Brad Bodily and Brian Smith performed well in the Ogden Mountains. Brad also conducted several educational sessions for skiers and snowmobilers around Ogden.

Observer	Nov	Dec	Jan	Feb	Mar-Apr	Total	Cost
Bob Athey		Observations nearly every day					$6,000
Brad Bodily	2	3	6	6	3	20	$200
Greg Dolhousen	3	6	5	4	11	29	$290
Bruce Englehart	5	7	9	8	12	41	$410
Brian Smith		2	3	2	1	8	$80
Phill Lowery	12	4	10	10	10	46	$460
Rip Griffith	5	9	8	8	8	38	$456
Joey Dempster			5	8	14	27	$270
Shawn Wagner			8	7	11	26	$260
Totals	27	31	54	53	70	235	$8,426

Budget

For the first time in the 15 year history of the UAFC, the Forest Service has become a minority funding partner.

For the first time in the 15 year history of the Utah Avalanche Forecast Center, the Forest Service has become a minority funding partner. Even though the UAFC is a Forest Service program, the Forest Service presently represents the smallest of the four major contributing sources.

In the past, the Forest Service funded the entire operation to the tune of around $70,000 per season. Starting three seasons ago, the UAFC staff and the Friends of the Utah Avalanche Forecast Center made a concerted effort to find funding partners. The result has been the epitome of a successful partnership between federal, state and private entities. The Friends of the Utah Avalanche Forecast Center is a private, non-profit group formed to raise money for avalanche forecasting and avalanche education in Utah. They have been very successful, thanks to the dedicated staff of Chris McLean, President; Peter Donner, Vice President; Louise Schultz, Treasurer and Mark Holbrook, Secretary and many others who also volunteer their services.

This season, the funding partners, listed in order of contribution size, for northern Utah are:

Friends of the UAFC (private contributions)	$27,000
State of Utah	$24,000
Salt Lake County	$20,000
Forest Service	$19,000
Logan Fundraising (private)	$ 1,500
Total Revenues	$91,500
Total Expenditures	$102,000
Total Deficit	$10,500

As you might expect, a low Forest Service funding and a high deficit are quite related, and this requires some explanation:

As we all know, this year was an especially difficult budget year for most federal programs and especially the Wasatch-Cache National Forest. Because of the historic budget impasse in Washington, as of this writing, the federal government still does not have a budget, seven months into the fiscal year. And all the politicians are saying that this budget battle is only a small skirmish compared to what must come in future years.

But an even more problematic situation existed this year because a significant budget decrease came at the same time as a major fical reorganization in which the Wasatch-Cache, Uinta and Ashly National Forests were combined into one. Instead of funding general programs, the budget team decided to fund inividual projects, and they also had to decide which specific projects made the cut and which got the axe. Fortunately the

UAFC made the cut but because of huge cuts in recreation dollars system-wide, our specific project request for $30,000 was trimmed down to only $18,000.

Of course, no one likes budget cuts, but we can handle them as long as we can plan for them. This season, however, the timing of the cuts became a major disaster. Because of an insane flaw in the budget process, we don't know how much money we get until after we spend it! In other words, our program operates in the winter and wraps up in April, just at the time when news of the final Forest Service contribution to the program comes down the pipe. This year we budgeted for $30,000 from the Forest Service and after we spent it we found out that we only got $18,000. That leaves us $12,000 in the red for this season. Not good.

The UAFC has become the epitome of a successful partnership between federal, state, county and private entities.

We had to abruptly end our avalanche advisories and lay off the staff in the first week of April—during a series of large snow storms and no lack avalanche activity. We didn't even have enough money to write this annual report, (which is required by our funding partners) but District Ranger Mike Sieg benevolently allocated another $1,000 to finish the job (Bruce Tremper volunteered most of his time and the $1000 barely covered the printing cost).

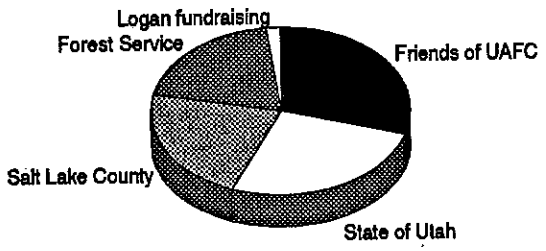
In the past, the way we have handled the budget timing problem is to get a firm promise of a certain dollar amount at the beginning of the season, so we can plan our budget and hire employees. But this season, the fiscal reorganization within the Forest Service combined with huge budget cuts threw a monkey wrench into the plan.

As of this writing the Regional Office Winter Sports Service Center and the National Avalanche Center may be able to make up the $10,500 deficit. Otherwise, it may be carried over to next season.

In the past, each forecast center in the Region was under a local Ranger District. In many ways, this makes no sense because, for instance, the northern Utah operation not only spans several districts, but several National Forests, in this case, the Wasatch-Cache and Uinta Forest. Next season, it appears that all the avalanche forecast centers in the Region will be combined under one program under the Regional Office. This would include Jackson Wyoming, Ketcham Idaho, and both northern and southern Utah. In this way, administration of the programs can be more uniform and consistent. But most important, each forecasting entity would have a firm dollar amount committed at the beginning of each season in order to plan their individual budgets.

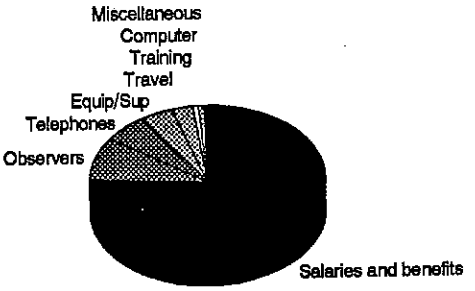
This difficulty of budget timing and fluccuating budgets has been a long standing problem especially in the Moab area where three different forecasters have cycled throug the job in the last 5 years. The Moab District, like most Districts, can not make firm commitments from year to year for specific dollar amounts and even if the position will still be in existence for the next season. As a result, two of the three people in the forecaster positions have left for more stable employment, and the staff from northern Utah must train a whole new forecaster each time. In the avalanche business, continuity of personnel is extremely important because it takes time to learn local patterns of avalanche activity. We feel that this move to a Regional level can help alleviate this problem and that it is a long awaited step in the right direction.

Northern Utah Revenues
1995-96



Northern Utah Total $90,609
In-kind support is provided by the National Weather Service and Utah State University.

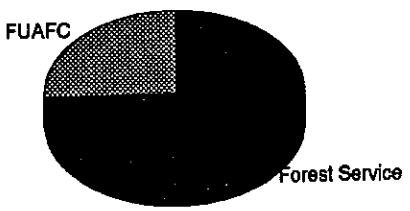
Northern Utah Expenditures
1995-96



Northern Utah Total $102,739

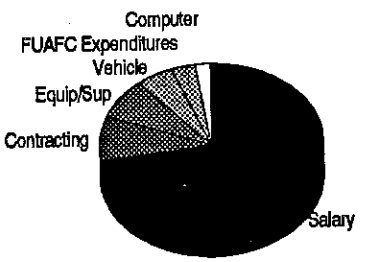
For the first time in the 15 year history of the UAFC, the Forest Service has become a minority funding partner. This season, we found out the amount of Forest Service contribution at the end of the season. It was $12,000 less than we had anticipated. Consequently, northern Utah was left in a severe deficite.

La Sal Revenues
1995-96



La Sal Revenues $14,791

La Sal Expenditures
1995-96



La Sal Total $11,427

The La Sal operation has a more difficult time raising private funds than in northern Utah. But the Moab Ranger District has supported the operation very well.

Breakdown of Funds by Region

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

Friends of the UAFC	26,000
Forest Service	$19,000
Utah Dept. of Public Safety, Div. of Emergency Management	$23,000
Salt Lake County	$23,000
Total	$87,000

Logan

(These funds cover only weekend advisories and volunteer observers. The Central Wasatch staff record weekday advisories. Utah State University provides generous in-kind support of office space, computers, telephones and partial salary for director, Mike Jenkins.)

Friends of UAFC	$1,697
State of Utah	$1,000
Avalanche Courses	$910
Total	$3,607

Moab

Moab Ranger District	$11,031
FUAFC	$3760
Total	11,427

Statewide Total	**$102,034**

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**
1995-96	6,750	14,743	**25,537**	19,673	14,220	8,202

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**
1995-96	89,965	11,529	3,566	2,744	2,813	3,338	1,794	115,749

** Estimates.*

*** Estimates due to call count lost.*

Total Calls versus Total November-April snow at Alta

	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**
1995-96	115,749	562.0	
	51 year average	497.2	

Backcountry Avalanche Incidents

Year	Triggered	Caught	At Least Partially Buried	Totally Buried	Killed
1995-96	51	15	3	2	2
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

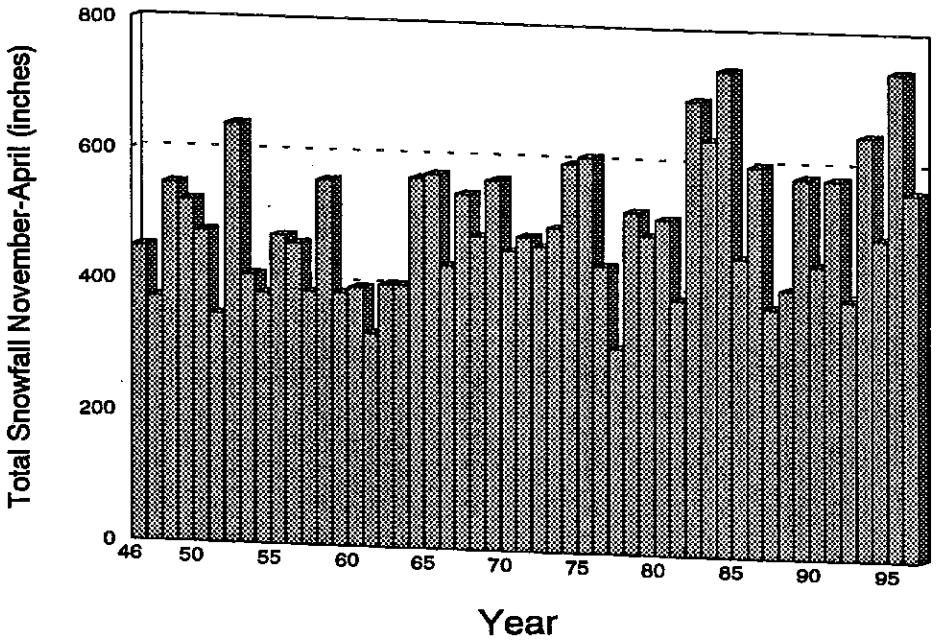
** Including one roof slide*

Snowfall at Alta DOT Study Plot 1944-Present

Year	Ending	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	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**
1995-96		57	53	187	104	82	79	562
Average		71.1	90.7	94.2	81.0	91.4	66.1	497.2
Maximum		205.9	244.5	199.7	155	183	136.3	745.4
Year of Max		94	83	95	68	64	91	95

Alta Snowfall (inches)

1945-96



Utah Avalanche Deaths - 1950-present

Season	Date	Deaths	Sex	Location
1950-51	-	-	-	-
1951-51	-	-	-	-
1952-53	-	-	-	-
1953-54	-	-	-	-
1954-55	-	-	-	-
1955-56	-	-	-	-
1956-57	-	-	-	-
1957-58	3/9/58	2	Males	Snowbasin
1958-59	-	-	-	-
1959-60	-	-	-	-
1960-61	-	-	-	-
1961-62	-	-	-	-
1962-63	-	-	-	-
1963-64	3/29/64	1	Male	Snowbasin
1964-65	-	-	-	-
1965-66	12/31/65	1	Male	Park City
1966-67	2/12/67	2	Males	Pharoah's Glen
1967-68	2/19/68	1	Male	Rock Canyon
1968-69	-	-	-	-
1969-70	1/29/70	1	Male	Alta
1970-71	-	-	-	-
1971-72	-	-	-	-
1972-73	1/29/73	1	Male	Park West
1973-74	-	-	-	-
1974-75	-	-	-	-
1975-76	1/6/76	1	Male	Alta
1976-77	3/3/77	1	Male	Snowbird
1977-78	-	-	-	-
1978-79	1/19/79	1	Male	Helper
1978-79	4/2/79	1	Male	Lake Desolation
1979-80	1/11/80	1	Male	Evergreen Ridge
1980-81	2/1/81	1	Male	Cardiff
1980-81	3/1/81	1	Male	Millcreek
1981-82	3/22/82	1	Male	near Park West
1982-83	-	-	-	-
1983-84	1/2/84	1	Male	Superior
1984-85	2/22/85	1	Male	Near Powder Mountain
1984-85	3/19/85	1	Female	Park City (wet slide)
1985-86	11/13/85	2	Males	Sunset Peak
1985-86	1/6/86	1	Male	Provo Canyon
1985-86	2/17/86	1	Male	Big Cottonwood Canyon
1985-86	2/19/86	1	Male	Alta
1986-87	11/20/86	1	Male	Sugarloaf, Alta (unopened)
1986-87	2/15/87	1	Male	Twin Lakes Reservoir
1987-88	-	-	-	-
1988-89	-	-	-	-
1989-90	11/25/89	1	Male	Tony Grove Lake, Logan
1990-91	-	-	-	-
1991-92	2/12/92	4	3-M/1-F	Gold Basin, La Sal Mtns
1991-92	4/ 1/92	1	Male	Mineral Basin, near Snowbird
1992-93	1/16/93	1	Male	Sundance (closed area)
1992-93	2/25/93	1	Male	Pinecrest, Emig. Cyn.
1992-93	4/3/93	1	Male	Wolverine Cirque
1993-94	2/18/94	1	Male	10,420 Peak, B.C.C.
1994-95	11/7/94	1	Male	Snowbird (unopened)
1994-95	1/14/95	2	Males	Ben Lomond, Ogden
1994-95	1/23/95	1	Male	Midway
1994-95	2/12/95	1	Male	Gobbler's Knob, B.C.C.
1995-96	2/2/96	1	Male	Solitude patroller
1995-96	3/27/96	1	Male	Maybird Gulch, L.C.C.
Total Deaths since 1950:		44	42 Males 2 Females	

Avalanche Fatalities in the U.S. -1995-96

As of June 1st

Date	Location	Type of Activity
December 31	Vail Pass CO	1 Snowboarder
January 5	Galena Pass, ID	2 Snowboarders
January 5	Mt. Washington, NH	1 Hiker
January 14	Jackson, WY	1 Heliski Client
January 21	Snowy Range, WY	1 Backcountry Skier
January 23	Aspen, CO	1 Backcountry Skier
January 28	Pyramid Peak CO	1 Climber
February 2	Solitude Ski Area, UT	1 Ski Patroller
February 3	Cottonwood Pass, CO	1 Snowmobiler
February 4	Arapahoe Basin, CO	1 Out of Bounds Skier
February 4	Taos, NM	1 Backcountry Skier
February 10	Ketcham ID	1 Heliski Guide
February 10	Salt Mtn. Range, WY	1 Snowmobiler
February 11	Mission Mountains, MT	1 Snowmobiler
February 18	Delta Range, AK	3 Climbers
February 21	Vail, CO	1 Resident (roof slide)
February 25	West Yellowstone MT	1 Snowmobiler
March 4	East Vail Chutes, CO	1 Out of bounds skier
March 9	West Yellowstone MT	1 Snowmobiler
March 24	Mt. Washington, NH	2 Backcountry skiers
March 27	Maybird Gulch, UT	1 Backcountry skier
May 14	Mt. Hunter, AK	2 Climbers

27 Total fatalities, Ties U.S. record.

Activity	**Number**
Climbers	7
Backcountry Skiers	7
Snowmobilers	5
Snowboarders	4
Helicopter Skiers	2
Ski patroller	1
Resident	1
Total	27

Example - Avalanche Advisory

ZCZC SLCWRKSNW SLR
TTAAOO KSLC DDHHMM

GOOD AFTERNOON, THIS IS BRUCE TREMPER WITH THE UTAH AVALANCHE FORECAST CENTER. TODAY IS SUNDAY, JANUARY 28 1996 AT 5:00 P.M. THIS MOUNTAIN WEATHER AND AVALANCHE INFORMATION IS BROUGHT TO YOU BY THE FOREST SERVICE, IN PARTNERSHIP WITH THE NATIONAL WX SERVICE, THE STATE OF UTAH, SL COUNTY, AND THIS WEEK BY BLACK DIAMOND, DESIGNERS AND MANUFACTURERS OF INOVATIVE CLIMBING AND SKI EQUIPMENT AVAILABLE AT FINE SPECIALTY SHOPS AND AT THEIR RETAIL STORE IN SLC AND THEIR NEW STORE ON WASHINGTON AVE IN OGDEN.

BOTTOM LINE: MANY LARGE AND DESTRUCTIVE AVALANCHES THESE PAST COUPLE DAYS. A HIGH DANGER OF SPONTANEOUS AND HUMAN TRIGGERED AVALANCHES EXISTS ON SLOPES STEEPER THAN ABOUT 30 DEGREES, ESPECIALLY THOSE WITH RECENT DEPOSITS OF WIND DRIFTED SNOW. PEOPLE WITHOUT GOOD AVALANCHE SKILLS SHOULD AVOID SLOPES STEEPER THAN 30 DEGREES AND AVALANCHE RUN OUT AREAS.

SALT LAKE, PARK CITY, UINTAS, OGDEN, PROVO:
I HAVE HEARD ABOUT AT LEAST 20 LARGE AND SCARRY AVALANCHES WHICH OCCURRED EITHER TODAY OR OVERNIGHT. IF YOU WANT A DETAILED BLOW BY BLOW YOU CAN CALL OUR MORE DETAILED NUMBER WHICH IS 364-1591. BUT FOR A QUICK SAMPLER: ALMOST ALL OF MEADOW CHUTES IN SILVER FORK SLID TODAY IN 4 SEPARATE PIECES. THE SOLITUDE PATROL SAID THEY LOOKED OVER THIS MORNING AND SAW ONE SLIDE AND THE NEXT TIME THEY LOKED THEY SAW THREE MORE. THESE WERE ABOUT 4 FEET DEEP AND SEVERAL HUNDRED YARDS WIDE. ALSO NORTHEAST FACING LITTLE SUPERIOR BUTTRESS SLID ABOUT 6 FEET DEEP, SEVERAL MORE DEEP RELEASES IN GREENS BASIN AND GOBBLER'S KNOB AND SEVERAL 6-10' DEEP SLIDES ON THE PARK CITY SIDE OF THE RANGE. FINALLY THERE WERE SEVERAL NATURAL SLIDES WHICH CAME DOWN ON THE MILL CREEK ROAD LAST NIGHT, ONE WITH TREES IN THE DEBRIS. THAT'S NOT TO MENTION ALL THE SLIDES IN THE OGDEN AND PROVO AREA MOUNTAINS. THANKS TO EVERYONE FOR CALLING THOSE IN. WE CAN'T BE EVERYWHERE AT ONCE AND WE DEPEND ON PEOPLE LIKE YOU.

TODAY THE WIND SWITCHED TO THE NORTH WITH THE PASSAGE OF THE COLD FRONT AND ALTHOUGH THEY DIMINISHED SOMEWHAT THEY STILL BLEW HARD FOR MUCH OF THE DAY. IN OTHER WORDS, FIRST THEY NUKED FROM THE SOUTHWEST YESTERDAY AND LAST NIGHT BLOWING 50 GUSTING TO OVER 100 AND THEN THEY NUKED FROM THE NORTHWEST TODAY FOR A FEW HOURS. IF IT AIN'T ONE THING, IT'S THE OTHER. ARE YOU GETTING AS TIRED OF SNOW AND WIND AS I SURE AM? I NEVER THOUGHT I WOULD GET TO THE POINT WHERE I WOULD RATHER WATCH THE SUPER BOWL THAN GO INTO THE MOUNTAINS BUT I'M VERY CLOSE.

WE STILL HAVE AN AVALANCHE WARNING IN EFFECT FOR THE MOUNTAINS OF NORTHERN UTAH. THERE'S A HIGH DANGER OF BOTH HUMAN TRIGGERED AND SPONTANEOUS SLIDES ON SLOPES ABOVE ABOUT 7,500', STEEPER THAN ABOUT 30 DEGREES AND ESPECIALLY ONES WITH RECENT DEPOSITS OF WIND DRIFTED SNOW. THERE'S STILL PLENTY OF SAFE PLACES TO GO THAT ARE SAFE. THE FOOTHILLS, FOR INSTANCE, HAVE MUCH MORE STABLE SNOW AS LONG AS YOU AVOID STEEP SLOPES WITH RECENT WIND DRIFTS. BUT THEY ARE QUITE WIND BLASTED THESE DAYS. AND I HAVE HEARD ABOUT REASONABLY GOOD AND SAFE SKIING AND BOARDING CONDITIONS FROM MID TO LOW ELEVATION WIND SHELTERED AREAS, ESPECIALLY IN TREES AND LOWER ANGLES SLOPES.

MOUNTAINS WEATHER:
TODAY'S STORM WAS MOSTLY HUFF AND PUFF BUT NOT MUCH FLUFF. 3-7 INCHES OF NEW SNOW FELL IN THE MOUNTAINS BUT THE WIND WAS BLOWING SO HARD IT WAS HARD TO TELL. TEMPERATURES TODAY PLUMMETED DROPPING AS MUCH AS 10 DEGREES IN ONE HOUR. TONIGHT THEY WILL BE JUST ABOVE ZERO ON THE RIDGETOPS WITH A 30 MPH WIND FROM THE WEST AND NORTHWEST. ON MONDAY THE RIDGETOP TEMPERATURES WILL SLOWLY WARM UP TO THE MID TEENS WITH WESTERLY WINDS AROUND 35 MPH. CLOUDS WILL CONTINUE TO LOWER ON MONDAY AND TUESDAY UNTIL WE START GETTING SOME SNOW WITH STRONG SOUTHWEST WINDS ON TUESDAY IN ADVANCE OF THE MAIN STORM ON WEDNESDAY. WE'LL LET YOU KNOW ABOUT THE DETAILS AS IT APPROACHES.

READ WHEN POWDERBIRDS ARE FLYING:
WASATCH POWDERBIRD GUIDES ARE BEGINNING THEIR HELICOPTER SKIING SEASON. THEY HAVE A TELEPHONE RECORDING THAT TELLS YOU WHERE THEY SKIED TODAY AND WHERE THEY ARE PLANNING TO SKI TOMORROW. THE SALT LAKE NUMBER IS 521-6040, EXT 5280.

READ WHEN THERE'S TIME:
ALSO, YOU CAN ACCESS THIS ADVISORY ON THE INTERNET AT SEVERAL LOCATIONS INCLUDING: HTTP://WWW.CSAC.ORG. CSAC STANDS FOR CYBERSPACE SNOW AND AVALANCHE CENTER. CHECK IT OUT. YOU CAN ALSO SEE OUR ADVISORY AT HTTP://WWW.MET.UTAH.EDU.

TO REPORT SNOW CONDITIONS OR AVALANCHE ACTIVITY, PLEASE CALL 524-5304, OR IF YOU'RE CALLING LONG DISTANCE, 1-800-662-4140.

FOR MORE DETAILED INFORMATION CALL 364-1591
CAROL CILIBERTI WILL UPDATE THIS FORECAST BY 7:30 ON MONDAY MORNING.
THANKS FOR CALLING.

TREMPER
NNNN

Example - Avalanche Warning

ZCZC SLCSABSLC
TTAA00 KSLC DDHHMM
UTZALL-281400

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

0630 HRS, SUNDAY, JANUARY 28, 1996

*** AVALANCHE WARNING ***
*** NORTHERN UTAH MOUNTAINS ***

HEAVY SNOWS OVER THE PAST COUPLE WEEKS HAVE CREATED SOME VERY LARGE AND DESTRUCTIVE AVALANCHES THESE PAST COUPLE DAYS. RECENT STRONG SOUTHWEST WINDS CONTINUE TO CREATE A HIGH DANGER OF BOTH HUMAN TRIGGERED AND SPONTANEOUS AVALANCHES, ESPECIALLY ON SLOPES ABOVE ABOUT 7,000 FEET AND ONES WITH RECENT DEPOSITS OF WIND DRIFTED SNOW. PEOPLE WITHOUT GOOD AVALANCHE SKILLS SHOULD AVOID SLOPES STEEPER THAN ABOUT 30 DEGREES AND AVOID AVALANCHE RUN OUT AREAS.

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

FOR MORE DETAILED INFORMATION, CALL:

SALT LAKE CITY	364-1581
PARK CITY	649-2250
LOGAN	797-4146
OGDEN	621-2362
PROVO	374-9770

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

Example - Mountain Weather Forecast

ZCZC SLCWRKMTN SLR
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****MOUNTAIN WEATHER FORECAST****
UTAH AVALANCHE FORECAST CENTER

MONDAY JANUARY 29, 1996, 0600 HRS

THE FLOW IN THE E. PACIFIC IS SPLIT, WITH A HIGH OVER A LOW BLOCK, AND LOTS OF MOISTURE STREAMING NORTHWARD INTO OUR AREA FROM THE LOW. A COLD SHORTWAVE DROPPING S FROM CANADA GETS FORCED TO THE NORTHEAST OF US SO THE MAIN BLOCK OF COLD AIR WON'T QUITE MAKE IT TO UTAH. BY LATE MONDAY A DEEP LAYER OF MOISTURE SHOULD MOVE INTO UTAH WITH ENOUGH LIFT TO GIVE US A CHANCE OF SNOW SHOWERS TONIGHT, MOSTLY UP NORTH. THE BEST CHANCE OF PRECIP SHOULD BE STARTING EARLY TUESDAY AS A WARM FRONT ROLLS THRU THE STATE, WITH A CHANCE THAT OROGRAPHICS COULD KICK IN AFTER NOON. A S/W RIDGE SLIDES THRU LATE TUESDAY BUT THERE SHOULD STILL BE ENOUGH MOISTURE TO KEEP MOUNTAIN PRECIP GOING. TODAY WINDS WILL BE MODERATE INCREASING TO STRONG FROM THE WEST AND TEMPERATURES SHOULD START TO INCREASE IN WARM ADVECTION.

THE CONFIDENCE IN THE EXTENDED GUIDENCE IS LOW AS THE MODELS SEEM TO CHANGE THE SOLUTION SUBSTANTIALLY WITH EACH RUN. THE LOW NOW IN THE E. PACIFIC COULD WEAKEN AND MOVE EASTWARD W/O ANY COLD AIR SUPPORT, OR COULD BE FORCED SOUTH THRU ARIZONA. THE BEST THREAT OF PRECIP SHOULD BE LATE WED OR THUR, AND COULD BE ONLY A FEW INCHES INSTEAD OF THE FOOT OR MORE EXPECTED EARLIER.

LOCATION	CLASS	CROWN	WIDTH	ASPECT
MEADOW CHUTES (ALL OF THEM)	HS-N-4	4'	1/2 MILE	E
4 SLIDES, 3 CAME OUT THIS MORNING, ONLY 20% LEFT UNSLID				
STEVE CARRUTHERS MEMORIAL PATH	SS-N-3	?	?	SE
MILL CK ROAD, SEVERAL SLIDES ONTO UNPLOWED SECTION ONE HAS SOME TREES IN THE DEBRIS.				
GREEN'S BASIN, SEVERAL 4' DEEP AND 100' WIDE NATURALS ON NORTH FACING				
MONITER BOWLS, BOTH OF THEM	HS-N-4	10'	300'+	E
HOMELIGHT (NEAR PARK CITY)	HS-SYM-3	4'		
CONE BOWLS (PARK CITY)	HS-AE-3	3'	300'	
EMPIRE CYN (NEAR DEER VALLEY)	HS-N-3	3'	250 YDS.	NE
JAMES PEAK (NEAR POWDER MTN)	HS-N-4	12'	150'	SE
PROVO CYN LOST CK CYN	HS-N-4	6-8'	400'	NE
PROVO CYN SLIDE CYN	HS-AE-3	4-6'	250	E-NE
LITTLE SUPERIOR BUTTRESS	HS-N-3	6'	300'	
DRY FORK, SEVERAL MID EL. SLIDES	HS-N-3	6'	TO GROUND	N-NE
MINERAL BASIN, WHY NOT	HS-N-4	8'	WALL TO WALL	NE
CASCADE RIDGE, SHINGLE MILL	HS-N-4	LARGE SIGNIFICANT		E-NE
CASCADE RIDGE, BIG SPRINGS	HS-N-4			
CASCADE RIDGE, BUNNEL FK	HS-N-4			

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
700 MB (10,000' FREE AIR)				
WIND DIRECTION	W	W	SW	SW
WIND SPEED (MPH)	25>50	30-50	35-45	35-45
TEMPERATURE	15	18	25	20
8,000' TEMPERATURE	28	22	32	25
CLOUD COVER	C	C	C	C
WEATHER		S--	S-	
SNOW LEVEL		5K	5K & RISING	
LIGHTNING				

QUANTITATIVE PRECIPITATION GUESSTIMATE (INCHES OF SNOW):

	5AM-5PM TODAY	5PM-5AM TONIGHT	5AM-5PM TOMORROW	5PM-5AM TOM NITE
LOGAN MOUNTAINS		2-4	2-5	
OGDEN MNTS		2-4	2-4	
PARK CITY/DEER VALLEY		1-3	1-3	
BRIGHTON/SOLITUDE		1-3	2-4	
ALTA/SNOWBIRD		1-3	2-4	
PROVO		T-1	1-3	

CILIBERTI
NNNN

Letters of Support

ALTA SKI LIFTS COMPANY

P.O. Box 8007
ALTA, UTAH 84092-8007
PHONE 801-742-3333

April 13, 1996

Mr. Mike Sieg
District Ranger
6944 S. 3000 E.
Salt Lake City, UT 84121

Dear Mike,

First, I would like to point out a few facts:

- Since the Forest Service pulled out of avalanche forecasting in Little Cottonwood Canyon and started the Utah Avalanche Forecast Center, I have only been a luke warm supporter of that notion.

- The number of back-country snow users is up.

- The number of incidents and deaths is about the same or lower.

The education component along with the daily forecasting that Bruce Tremper and his crew have put together can only be deemed - very successful. I would like to offer my congratulations to all of you for your efforts in the program.

Sincerely,

Onno Wieringa
Vice President & General Manager
Alta Ski Lifts Company

ALTA

ESTABLISHED 1938

12001 Ventura Place, Suite 600,
Studio City, California 91604
Tel: 818 - 753 3400 *Fax: 818 - 753 0084*

Mr. Bruce Tremper
2242 W. North Temple
Salt Lake City, Utah 84116

November 1, 1995

Dear Bruce:

We would like to thank you for your contribution to our series WORLD OF WONDER. The segment in which you participated in will appear in episode #20. This episode is scheduled to air on Tuesday, November 7, 1995 at 9:30pm Eastern Standard Time and Pacific Standard Time on the Discovery Channel.

Thank you again for all your help.

Sincerely,

Stephanie Botoglou

Stephanie Botoglou
Script Coordinator

BLACK DIAMOND
EQUIPMENT, LTD.

2084 East 3900 South
Salt Lake City, UT 84124 USA
TEL (801) 278-5552
FAX (801) 278-5544

October 10, 1995

Bruce Tremper
Utah Avalanche Forecast Center
2242 West North Temple
Salt Lake City, UT 84116

Dear Bruce:

Many thanks for your gracious note of September 28 - it's greatly appreciated. More importantly, thanks for the fantastic and greatly needed work that you and your "bros" do for the skiers of Utah. You guys and gals are the best, and it's both a privilege and a lot of fun to help.

Best regards,
BLACK DIAMOND EQUIPMENT, LTD.

Peter Metcalf
C.E.O./President

PM:cmg

enclosure

The National Outdoor Leadership School
Rocky Mountain Branch
Idaho Base
Mailing Address:
P.O. Box 345
Victor, ID 83455
Base Address:
166 East 200 South
Driggs, ID 83422
Tele: 208-354-8443
FAX: 208-354-8443
Jim Ratz
Executive Director

Bruce Tremper
Utah Avalanche Forecast Center
2242 West North Temple
Salt Lake City, UT 84116

February 12, 1996

Dear Bruce,

I would like to thank you very much for your help with our level II avalanche seminar. Your input was very informative, and everybody gained from seeing your excellent teaching style. One of the key points I took away from the seminar was the emphasis on simple and quick test pits (i.e.-the breakdown into 3 simple questions cleaned up the whole process of assessing stablity). On our last day we went on two separate, four hour tours and dug 13 test pits.

I'll need to be in touch with Eric to verify this, but from our end we would love to have you and Scott return next year for another level II seminar. I'll be in touch later this year with details. I'd like to come down to SLC to see the center, and spend some time in the backcountry, but if that doesn't work out I imagine I'll see you at Banff (ISSW).

Since you left we have had some 1' to 4' natural releases in the backcountry - mostly on graupel and mostly on sunlit aspects (SE & SW). There were also a few wet slabs below 8,000', but for the most part, things have become stable on angles less than 45°. The backcountry skiing is pretty crummy, except for south facing runs that are corning up nicely. The skating is phenomenal!

Your umbrella is on its way (UPS) to this same address.

Have a blast,

Don Sharaf
Idaho Winter Program Coordinator

Wendy Zeigler
Friends of the Utah Avalanche Forecast Center
2557 East Valley View Ave
SLC, UT 84117

March 14, 1996

Mike Sieg
District Ranger
U.S. Forest Service
6944 South Grant BLVD
SLC, UT 84121

Dear Mike:

At our March Friends of the Utah Avalanche Forecast Center meeting we discussed the proposed Forest Service restructuring. We noted the UAFC was not included in this plan. I am writing to discuss my concerns with you.

I am aware of budget cuts hitting all areas of the Forest Service, and the UAFC has seemed to take major hits each year. Our budget from the Forest Service has decreased by approximately 41% over the past 3 yrs. The "Friends" has worked very hard to make up the difference. We have lobbied the State and County governments very successfully to build a partnership between the three government levels. We have also worked hard to increase community participation in the funding. Through these efforts the UAFC has maintained the high quality Avalanche Forecasting for which we are respected world wide.

I am concerned that if the Forest Service pulls out of this 4-way partnership it will be detrimental to the UAFC. First and foremost, it would probably mean an end to the State's involvement. The State entered into this partnership 2 years ago because it was a State/Federal Gov. partnership. And I believe that funding would be on very shaky ground if the Forest Service pulls out their support.

Second, it would also seriously affect our ability to raise money in our community because of the change in people's perceptions. In observing donors the past several years, I do not think people would be as likely to support the UAFC if it were a private entity.

I hope you will help us to maintain funding/support for the UAFC within the Forest Service. The board of directors or representatives from the board would like to meet with you regarding this issue at your convenience.

Warm regards,

Wendy Zeigler

cc :Bruce Tremper
Chris McLean

Media Articles

Massive Slide Pours Into Provo Canyon

Avalanche Shuts Highway 189, Buries Business

By Taylor Syphus
SPECIAL TO THE TRIBUNE

PROVO — David Grow had his livelihood wiped out early Wednesday morning when a wall of snow 1,000 feet wide plunged over Bridal Veil Falls in Provo Canyon and buried his business.

"We don't have the resources to rebuild," Grow said as he surveyed the destruction caused by the avalanche that broke loose about 2 a.m. and poured over the aptly named Cascade Mountain.

The Provo resident owns the concessions at the waterfall, which is popular with summer visitors and features one of the world's steepest trams. The tram provided an aerial view of the falls. Grow also maintained snack and gift shops at the site, and two railroad cars, one of them an antique caboose.

Wednesday they all lay under 60 feet of snow, which also blocked the Provo River.

"It's hard to give up," Grow said. None of the damaged structures was insured.

Damage estimates have ranged from $500,000 to $1 million.

Fearing the natural dam would cause flooding in the Utah County community of Springdell, a mile below the falls, officials evacuated about 100 residents from 25 houses about 4 a.m. Wednesday. However, all were allowed to return to their homes after workers at Deer Creek Reservoir diverted the water that would have flowed down the river.

By 6 p.m., the snow blocking the river had been undercut by the backed-up water and officials expected the river's flow to be running at normal levels today.

Kevin Griffith, avalanche control specialist for the Utah Department of Transportation (UDOT), said the avalanche started at 10,400 feet above sea level on the south side of the canyon and fell more than 5,000 feet, plowed across U.S. Highway 189 and traveled 200 feet up the canyon's north side, leaving a 1,000-foot-wide swath of snow littered with debris.

As the snow ripped through ravines, it pushed 200-mph winds before it, uprooting and splintering trees like matchsticks.

A 70-foot-long boxcar that Grow used for storage at the falls

■ See AVALANCHE, B-3

Lynn R. Johnson/The Salt Lake Tribune

David Grow of Provo owns the tram and concessions at Bridal Veil Falls in Provo Canyon. Wednesday's avalanche wiped out his facilities, which were not insured. Damage estimates at the site range from $500,000 to $1 million.

Provo Canyon Slides Have Killed Four Over the Years

By Robert Kirby and Ann Shields
SPECIAL TO THE TRIBUNE

PROVO — The huge avalanche in Provo Canyon on Wednesday was the latest in a string of slides that have claimed at least four lives since 1897 and made the canyon's road impassable, sometimes for weeks at a time.

The first recorded death from an avalanche in Provo Canyon happened on Feb. 19, 1897. William Ferguson was killed around midnight when his house near South Fork, approximately two miles above Bridal Veil Falls, was crushed in a torrent of moving snow.

Despite the avalanche danger, Ferguson customarily wintered in the canyon, providing shelter to travelers who braved the two-day trek between Provo and Heber City.

The slide also killed Ferguson's cat and dog.

Twenty-seven years later, in March 1924, an avalanche killed three Denver Rio Grande Western employees.

The victims were members of a five-man crew hired to remove the snow and debris of two previous avalanches from the railroad tracks near Bridal Veil Falls.

The group was packing 50-pound bundles of dynamite through the slide area when they stopped to rest. Without warning, an avalanche plunged down Cascade Mountain, carrying two of the men to their deaths.

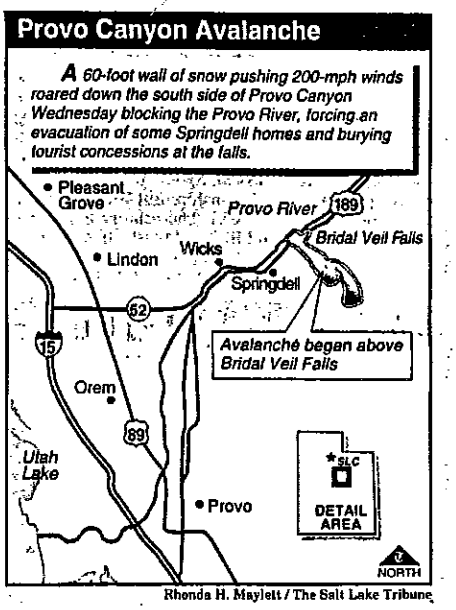
The third victim was hurled 250 feet through the trees by the avalanche.

It took crews five days to dig out the bodies.

Despite the increase in traffic, there have been no avalanche-related fatalities in the canyon in recent years. There have been close calls, however.

In 1993, an avalanche destroyed the

■ See SLIDES, Page B-3



Rhonda H. Maylett / The Salt Lake Tribune

Thursday, February 1, 1996 ◦◦ B3

Avalanche Closes Road, Buries Business

■ Continued from B-1

as blown 100 feet off some old acks and landed in the river.

About 35 Utah County Search and Rescue volunteers converged on the scene to search the area popular with ice climbers and now campers. Rescuers said here apparently was no one in- ured in the slide.

The highway was reopened at 10 a.m. despite an extreme danger of more avalanches, according to Utah County sheriff's Lt. Jon Fernstedt. But Sheriff David Bateman said UDOT described he risk to drivers posed by such slides as minimal.

To try to control the avalanches, UDOT workers in a helicopter dropped about 50 explosive charges Sunday, said Griffith. The effort cut loose eight avalanches.

Griffith said Wednesday's avalanche was caused in part by the presence of relatively warm, dry weather before storms started dumping snow Jan. 19.

The original snowpack warmed up and consequently weakened, and was unable to support the weight of recently fallen snow.

The snow late Tuesday was especially heavy. Earlier in the day, its water density was about 5%. But as more tropical moisture streamed into Utah County and temperatures warmed, the snow's density increased to 24%, said Carol Ciliberti of the Utah Avalanche Forecast Center.

The avalanche hazard remains high in the northern mountains, Ciliberti said.

Tribune reporter Mike Gorrell contributed to this story.

■ What's Next in the Weather?

The deluge is over.

Snow is giving way to cold as high pressure settles over the West, ending a remarkable two-week period in which up to 15 feet of snow fell in the northern mountains and valleys were buried under a knee-deep snowpack.

The storminess exited with one last big shot in Utah County, where Mapleton received 30 inches of snow and Springville 24 in a 48-hour period.

An invading front of cold Canadian air could reduce Wasatch Front low temperatures to single digits through Saturday. Daily highs should be confined to the mid- to upper 20s, said National Weather Service meteorologist William Alder.

Slides Have Been Deadly In the Past

■ Continued from B-1

truck and camper of two ice climbers who were parked at the falls. The pair suffered only minor injuries and were able to dig themselves out of the snow.

Large avalanches have blocked the road several times since 1897.

Most notable was a slide in February 1931 that dammed the Provo River and flooded the road above Bridal Veil Falls, paralyzing traffic between Heber and Provo for weeks.

A year later, an avalanche 1,000 feet across — one of the largest ever measured in the canyon — again closed the road for weeks.

In 1986, a slide from Cascade Mountain destroyed the Bridal Veil Falls snack bar.

TRIBUNE Month Nov Day 21 Year 1995

Missoula Skiing Expert Joins Utah Avalanche Forecast Center

By Craig Hansell
THE SALT LAKE TRIBUNE

Meteorologist Carol Ciliberti is the newest member of the avalanche-forecasting team in Utah.

The 32-year-old Missoula, Mont., native joins Seth Shaw, Tom Kimbrough, Evelyn Lees and Bruce Tremper as an avalanche forecaster at the Utah Avalanche Forecast Center based in Salt Lake City.

Ciliberti is a five-year veteran of the ParkWest Ski Patrol and is nearing completion of a master's degree in meteorology at the University of Utah. An avid backcountry skier with a dozen years of experience in the Wasatch Mountains, Ciliberti is also a mountain climber capable of leading difficult routes.

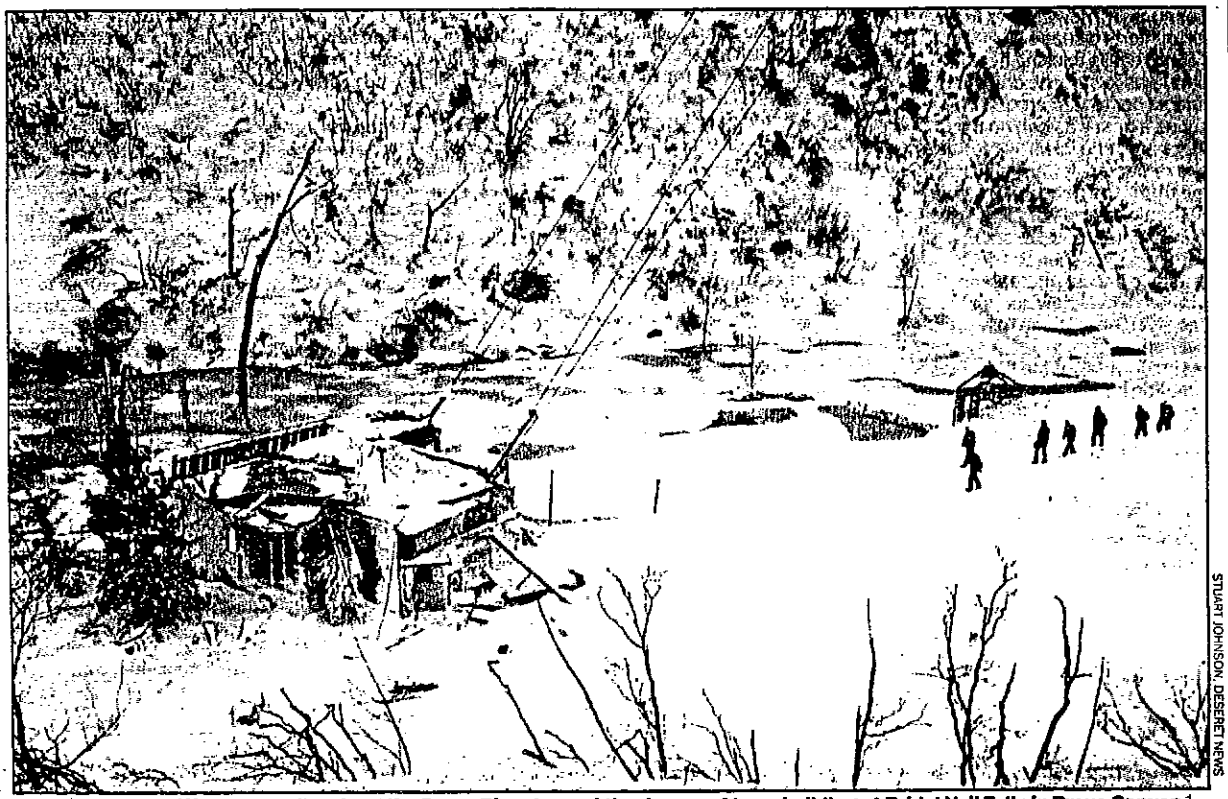
"She is a good addition to the program," said Tremper, the center's director. "She is also the third forecaster we have hired from Missoula."

With stable funding and as many as 16 different phone lines at locations in Salt Lake, Logan, Ogden, Park City, Provo and Moab, the center is geared to provide snowmobilers, snowboarders and skiers with the information needed for safer travel in avalanche terrain.

Carol Ciliberti has joined Utah Avalanche Forecast Center.

For the latest snow conditions and hazard evaluation recording, call 364-1581 in Salt Lake City, 797-4146 in Logan, 621-2362 in Ogden, 649-2250 in Park City, 374-9770 in Provo and 259-7669 in Moab.

The Forecast Center is a joint operation of the U.S. Weather Service, Forest Service and Friends of the Utah Avalanche Forecast Center.



STUART JOHNSON, DESERET NEWS

Utah County sheriff's team walks along the Provo River toward the damaged tram building at Bridal Veil Falls in Provo Canyon.

SNOWSLIDE

P. Nam 2/1/96

Resort's a sight to see, but owner is worried

'War zone' of Bridal Veil Falls is still an attraction — for now.

By Jeff Vice
Deseret News staff writer

PROVO CANYON — For years Bridal Veil Falls has been a tourist attraction. On Wednesday, it became one again, but not for reasons that its owners would prefer.

As U.S. 189 in Provo Canyon was reopened to traffic Wednesday afternoon, sightseers and other onlookers goggled at the damage done to much of the resort by Mother Nature early Wednesday morning. Hurricane-force winds brought nearly 60 feet of snow down on a tourist shop and tram cable lines located at the foot of the falls. Small trees were uprooted or buried, a metal Dumpster was thrown several hundred feet and the tram-car restaurant wound up submerged in the Provo River.

Resort co-owner David Grow likened the destruction to a war zone.

"Things have been blown apart like they were hit by giant percussion bombs," Grow said. "And it wasn't just the snow. It was a bombastic force of wind. I mean, it thrust a solid-steel boxcar into the river without the help of the slide itself."

Though Grow and the other owners have been unable to send crews to the upper resort for damage estimates, damage from the lower resort alone could reach $1 million and might close the resort, which is shut down for the winter, for good.

"We've survived more than a half-dozen avalanches and one much bigger than this in 1986, but this is devastating," he said. "Right now, the only recovery we're thinking about is emotional, but — assuming there are options — I'm not sure we could rebuild here without help. I certainly can't absorb those sorts of costs." He said he has no avalanche insurance.

While the resort owners ponder their options, residents of the Springdell subdivision in Provo Canyon were busy reset-

Please see **AVALANCHE** *on B2*

Rescuer Dies From Avalanche After Years of Saving Others

Tribune 2/19/96

By Joshua B. Good
THE SALT LAKE TRIBUNE

Jeff Brewer lived for outdoor adventure. He skied. He hiked. He mountain biked.

"If I can't ski and bike, just shoot me," he often told his friends.

Since Feb. 2, when Brewer was critically injured in an avalanche at Solitude Ski Resort where he worked as a ski patroller, doctors at University Hospital have told his family and friends that he would never ski again. Too much brain damage. He was under the snow, without oxygen, for 16 minutes.

In the hospital, his lungs filled with fluid. The 36-year-old man's body began to shut down. He was in a coma.

Still, Brewer didn't give up.

"He was fighting big time, he didn't want to let go," said Brewer's friend, Dana Richardson. She described how Brewer would open his eyes and struggle to focus.

But Brewer died Sunday morning.

Richardson was holding one of Brewer's hands and Susan Despain, another of Brewer's friends, was holding the other when their friend stopped breathing.

"He used up 10 or 12 lives; he's cheated death many times," Despain said.

Hours after he died, a small group of Brewer's friends gathered at Richardson's Salt Lake City home to swap stories about their buddy.

They talked about the freak accident that took Brewer 1,500 feet down a mountainside in Honeycomb Canyon. He had just set off an explosive charge to knock down a dangerously steep slope. It was supposed to be a controlled avalanche. But the snow slide worked its way to Brewer's position on a mountain ridge and he tumbled through trees and across rocks, carried by snow chunks as big as boulders.

After 16 minutes, his fellow ski patrollers pulled him out of the snow and he was flown to University Hospital.

Jeff Brewer

It wasn't the first time he was injured while out in the wild.

There were numerous car wrecks, usually while heading to or from backcountry trips. There was the time he was camping near Zion National Park with his friend Lawrence Buhler. Two times during the night Buhler pulled Brewer out of the fire.

"He wanted to stay warm," Buhler said.

Brewer also is credited with saving lives. He worked as a ski patroller at various Wasatch Front resorts for 20 years. One year at Alta, he watched an avalanche cover a skier. He was the first on scene, and after he and other patrollers dug a tunnel to the buried man, Brewer reached in and cleared snow out of the skier's mouth.

Another time he performed CPR on a downed motorcyclist in Big Cottonwood Canyon, his friends said.

"He was always just there when you needed him," Richardson said.

Avalanche Beacons Help Backcountry Skiers Live

By Craig Hansell
THE SALT LAKE TRIBUNE

Utah backcountry skiers are gaining a reputation as being a savvy lot who know how to stay alive to ski the greatest snow again and again.

Avalanche and rescue officials hope backcountry skiers, snowboarders and snowmobilers place as much importance on updating their rescue beacons as they do their equipment.

Enjoying the solitude of a perfect slope far from crowds is the pleasure — and the hazard — of the backcountry.

Backcountry groups should be equipped for self-rescue. According to Dale Atkins at the Colorado Avalanche Information Center, a rescue beacon is the best tool for survival. The beacons are small, palm-sized radio transmitter-receivers that send out a radio signal allowing others to home-in on the signal and dig out an avalanche victim buried deep in the snow.

In a snow-burial, time is critical.

If a member of your party is under the snow and you have to leave to summon rescuers, chances are the searchers will be looking for a body, not a live person, when they return.

While the beacons are the key, there is a glitch.

In use since the late 1960s, the beacons have been credited with saving 31 buried Americans and finding 34 more buried bodies, according to Atkins.

"A number of those found dead would have been found alive if their rescuers had shovels or knew how to use their beacons better," said Atkins.

The problem is a change in broadcast frequency.

Older beacons don't broadcast or receive the 457 kHz signal from the newer beacons, which have been accepted as the world standard. Backcountry users with the older beacons can neither find nor be found by those using the new 457 kHz models.

"Old beacons haven't been sold in Europe for seven years," said Utah Avalanche Forecast Center Director Bruce Tremper. "The whole world is sold on this new 457 frequency because it works so much better. In Europe, there have been several unfortunate accidents were people [with the old beacons] couldn't be found."

Ski patrols and helicopter-skiing companies have switched to the new 457 kHz beacons.

"We sold our first 457 to Greg Smith [Wasatch Powderbird Guides]," said Dwight Butler at Wasatch Touring in Salt Lake. "Helicopter skiing operations have bought 200 [beacons] from us."

Tremper hopes the backcountry public will think of the new beacons, which can cost almost $300, as a 10-year investment in safety.

"It is an expensive proposition but it goes with the territory when you are in avalanche terrain. If you get a beacon it will last for a lot of years," Tremper said.

He suggests backcountry travelers coordinate with every member of their group to make sure everyone has new-frequency beacons.

The new Focus beacon made by Ortovox, for example, has small lights and an arrow that points to the buried beacon. It also has a small radio speaker which emits a beep that gets louder as the search pattern narrows to the buried beacon. Ortovox has about 70% of the world avalanche-beacon market.

Another beacon is the Pieps Opti.

"They [new beacons] are quite idiot-proof. They are nice beacons," said Tremper. "It makes a good Christmas present."

More people use beacons in Utah than Colorado, due to a better general awareness of beacons in Utah.

"A beacon is the best way, and really the only way, that a buried avalanche victim can be found alive," said Atkins, who has been a Colorado avalanche forecaster for eight years.

Colorado averages about five avalanche fatalities a year. Historically about 20 people die, including about three Utahns, annually in American avalanches.

In addition to owning a new-frequency beacon, backcountry users need to practice rescue procedures.

"Most recreational backcountry travelers probably can't use a beacon well enough to save a life," said Atkins.

White Pine Ski Touring Center in Park City, 521-2135, has scheduled an avalanche-beacon practice clinic Saturday.

Avalanche Hot Line: Keep Those Calls Coming

The Salt Lake Tribune **UTAH** Monday, January 22, 1996

By Katherine Kapos
THE SALT LAKE TRIBUNE

Several feet of new snow on top of an already weak snow pack has set up dangerous avalanche conditions in the backcountry areas of Utah.

"It's like putting a cast-iron frying pan on a package of potato chips," said Bruce Tremper with the Utah Avalanche Forecast Center.

And the danger continues today as a storm front moves through the state.

Sunday in northern Utah, snow accumulation varied. At the Salt Lake City International Airport about 1 inch fell, while Sandy was covered with 3 ½ inches.

The snowstorm was done with Salt Lake City well before midnight, but Blanding and Kanab were expected to get hit hardest starting early this morning.

By this afternoon, Blanding and Kanab should receive between 6 and 8 inches of snow, said Dave Sanders, a National Weather Service forcaster in Salt Lake City.

While Tremper said there is little avalanche danger within ski areas, most of the problems occur in the backcountry and involve snowmobiles.

"They are the biggest danger these days," said Tremper, noting that snowmobiles cover 100 times the area a skier can, thus raising the chance of triggering an avalanche.

On Saturday, the center received several reports of avalanche activity, most outside the ski areas and outside the Cottonwood canyons.

In the Ogden area, there was one complete burial. But fortunately, a ski tip was still visible and companions were able to dig the skier out rather quickly.

Skiers also triggered an avalanche 15 feet away on the north side of Gobblers Nob area. There were no injuries.

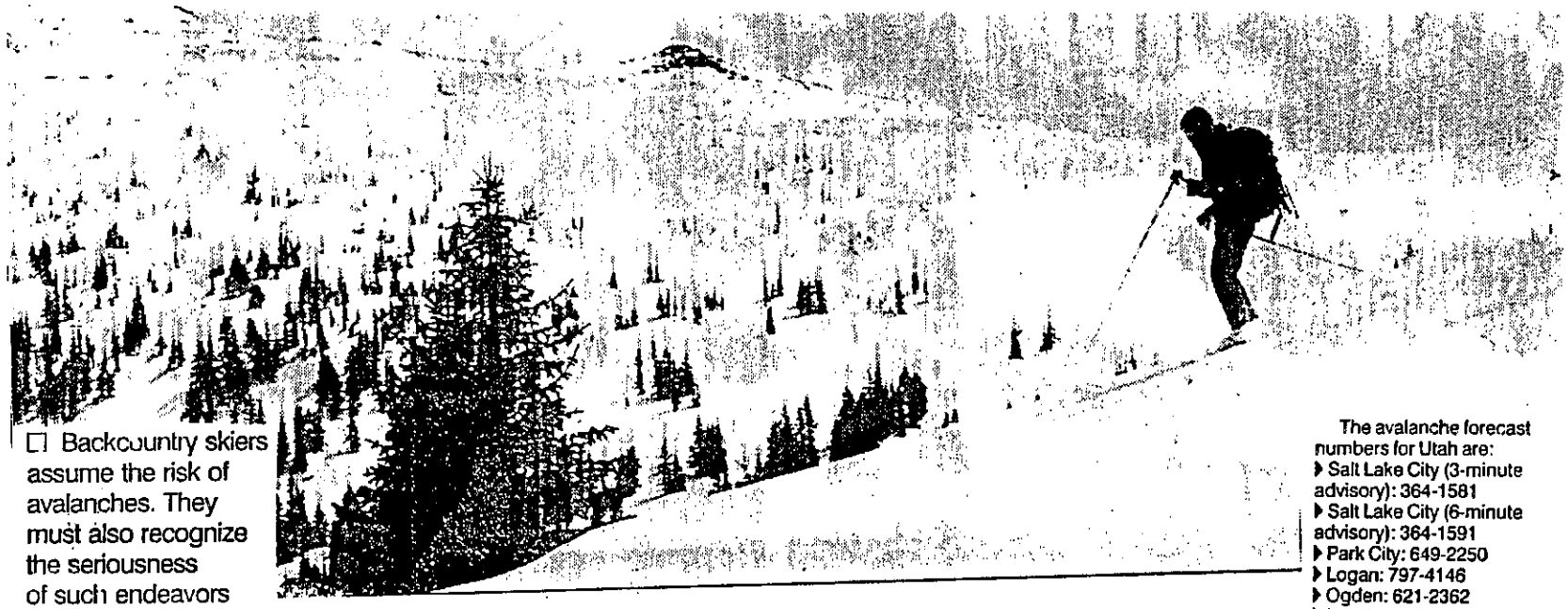
Maybe the most troublesome avalanche for Tremper was on the east side of Mount Timpanogos in Primrose Cirque. The snow descended 2,000 vertical feet and crossed several trails in the Aspen Grove area that people had used for skiing and walking.

"People need to stay off of steep slopes and out from underneath steep slopes," Tremper warned.

Many Utahns already are taking precautions, including calling the center's hot line. Tremper said there have been as many as 2,000 calls to the Salt Lake City forecast number alone.

"It has been hard to get through in the mornings, even with 16 phone lines," he said.

The hot line numbers are Salt Lake City, 364-1581; Park City, 649-2250; Logan, 797-4146; Ogden, 621-2362; and Provo 374-9770.



☐ Backcountry skiers assume the risk of avalanches. They must also recognize the seriousness of such endeavors

By JIM WRIGHT

BACKCOUNTRY BEAUTY: Skiers in the backcountry carry transceivers, shovels and probe poles all in preparation of potential avalanches.

What's of particular note to backcountry skiers is that Atkins' report states that of 160 skiers and mountaineers whose abilities were known, 119 of them were experienced in backcountry travel and knowledgeable about avalanche hazards. They knew what they were doing, but they died anyway.

Atkins attributes this not to a lack of avalanche education, but a failure to understand the seriousness of the risk. It's one thing to recognize a hazardous slope, another thing entirely to decide whether it should be avoided.

"Risk-taking in the backcountry is no longer limited to a small and select group of hard-core adventurers," Atkins said. "Today's adventurers often are thrill-seeking, athletic weekend warriors."

As backcountry skiing has grown in popularity, so have the number of avalanche deaths. From the winter of 1985-86 to the 1990-91 season, an average of 5.5 people died in backcountry avalanches. In the last four years, the average number of deaths has more than doubled to 13.

The only way a backcountry skier can completely eliminate the risk of avalanche is to go bowling instead.

Anyone who's ever been in the backcountry knows that sooner or later he or she is going to have to take a chance. Anytime you ski or traverse an open slope there is a risk of avalanche. The skiers who are still breathing have learned to evaluate that risk.

Avalanches occur in a wide variety of conditions, some of which are truly freakish. There's not really a "typical" avalanche scenario, but they are more likely to occur under certain conditions. Nearly all fatal avalanches (92 percent) are triggered by the victims themselves. Most are small to medium-size slides that kill a single person.

Nearly all are "slab" avalanches, where a discrete section of the snow's surface breaks loose. Most of these (64 percent) are soft, or dry slabs, in which freshly fallen snow hasn't settled. Hard slab avalanches, which are composed of compacted snow, account for 20 percent of fatal slides, and wet slabs of melting snow caused 7 percent of fatalities.

This is an oversimplification, but soft slab avalanches most often occur in the first few days after a big snowstorm. These are the slides that ski resorts control with explosives.

The avalanche forecast numbers for Utah are:

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

Updated avalanche information is also available on the Internet. Addresses are: http:\\www.met.utah.edu; http:\\www.wasatch.com; and http:\\www.starwave.com\outside.

Avalanche Awareness Week

- **When:** Now through Feb. 25
- **What:** The Friends of the Utah Avalanche Forecast Center has scheduled fund-rasing events that can also improve your understanding of avalanches.

On Saturday, two presentations of "Winning the Avalanche Game" will be given at the Avalon Theater, 3605 S. State in Murray. Tickets are $5, and shows will begin at 5 p.m. and 7 p.m. Call 266-0258.

On Feb. 24, a free beacon search instruction and practice will be held at Rockreation, 2074 E. 3900 S., in Salt Lake City between 8 p.m. and 11 p.m. Call 278-7473 for information.

- **Want to learn more?** The physics of snow and avalanches is tricky and complex. Avalanche courses can teach much of the basic information, but for a more complete understanding of the phenomenon, one of the best sources is "The Avalanche Handbook," by David McClung and Peter Schaerer. It's published by The Mountaineers, a Seattle publishing company. It can be purchased ($19.95) at some outdoors stores, or ordered by mail from: The Mountaineers, 1011 SW Klickitat Way, Seattle, Wash., 98134.

PROVO D.News 1/31/96

Snowslide forces closure of canyon

Tram system buried, and U.S. 189 shut down. Residents evacuated.

By Jeff Vice
Deseret News staff writer

PROVO CANYON — A massive snowslide in Provo Canyon buried the tram system for Bridal Veil Falls and caused Utah Highway Patrol officers to close both the Utah County and Wasatch County sides of U.S. 189 Wednesday morning.

Utah County Sheriff's spokesman Ron Fernstedt said the snowslide — which is estimated to be as wide as a half-mile and as deep as 60 feet — spilled onto the highway and into the Provo River shortly after 2 a.m., posing a potential threat for flooding. Because of that threat, deputy sheriffs evacuated the Springdell subdivision in the canyon, temporarily leaving as many as 100 canyon residents homeless.

"All the snow has made the water rise to the level of the slide, and it could come rushing out at any time. We're just not sure how much of a surge we're going to get," Fernstedt said. The central Utah chapter of the American Red Cross has set up an emergency shelter for evacuated families at the LDS Church's Provo Edgemont South Stake Center.

Karen Campbell, director of emergency services for the local Red Cross chapter, said that nearly 40 people have checked into that shelter so far.

"We are providing a warm shel-

Please see **SNOWSLIDE** *on A2*

STUART JOHNSON, DESERET NEWS

WEATHER D.News 1/28/96

Snow to bring increased risk of avalanche

Forecaster says 'huge storm' coming. Snowpack levels looking much better.

By Nicole A. Bonham
Deseret News staff writer

Add heavy, wet snow to a layer of soft powder and you get avalanche danger.

Add more snow, wet or otherwise, and the threat turns extreme.

That scenario is Utah's, especially in light of the forecast.

"Avalanche danger is expected to go up with more snow — there is a huge storm that is going to hit," said Seth Shaw, a forecaster with the Utah Avalanche Forecast Center.

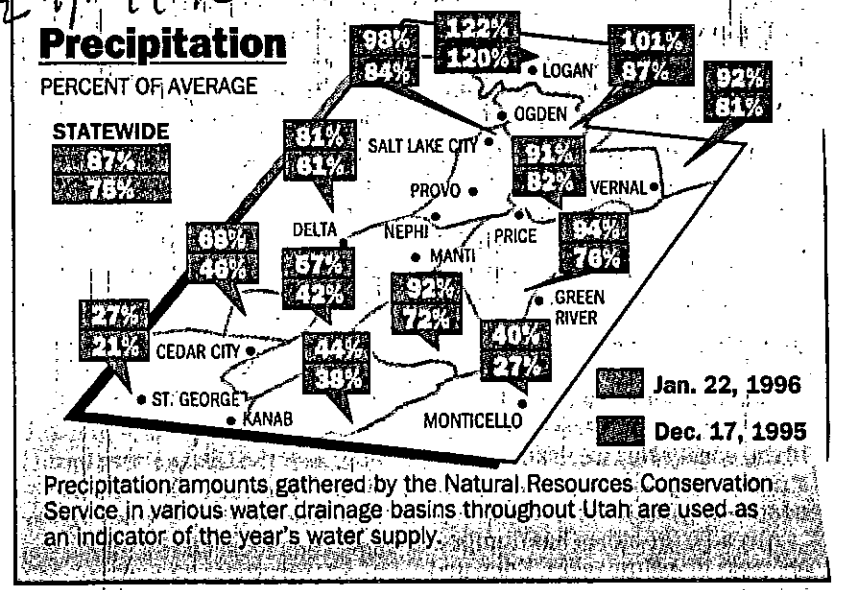
Already, there have been several near-misses. But, so far, this season is nothing like last year, when five Utahns died in avalanches.

"A few people have gone for rides, but I don't think anyone has been seriously hurt," Shaw said.

The threat is more prevalent on northern and eastern slopes, especially those 30 degrees or greater. Just the weight of a footstep can trigger an avalanche big enough to kill, Shaw said.

Such was the case recently when a group walking on a ridgetop triggered a slide behind them. When

Please see **SNOW** *on B2*



Precipitation amounts gathered by the Natural Resources Conservation Service in various water drainage basins throughout Utah are used as an indicator of the year's water supply.

DESERET NEWS
Monday Feb Day 12 Year 1996

When knowledge becomes dangerous

Avalanche awareness courses a must for thrill-seekers

By PATRICIA WOOLMAN
Standard-Examiner correspondent

When ignorance can mean death, there's no excuse to not learn about the biggest hazard to winter backcountry travel.

In locations all along the Wasatch Front, many experts teach avalanche awareness classes.

Local universities, outdoor recreation businesses, the Utah Avalanche Forecast Center and others offer expertise in the field of avalanche awareness. These courses teach the skills and conduct a variety of field tests to help determine snow stability to skiers, snowboarders, snowshoers, climbers, snowmobilers and other outdoor enthusiasts.

Some classes are considered "basic," inviting anyone who's interested. Other courses are designed specifically for backcountry skiers, snowmobilers or other specific groups.

Most avalanche courses divide class time between indoor and outdoor instruction. Lecture topics usually include avalanche hazards and recognition, route selection, rescue and statistics of accidents.

Field exercises take the class out on the mountain to dig snow pits, observe the snowpack layers and practice rescue methods. Because the science of avalanches is so complex, experts encourage winter enthusiasts to attend an avalanche awareness class every year, in order to remember all the varied components that aid in determining the dangers.

Class instructors usually have years of experience in the backcountry, and many have worked for ski resorts. Many instructors are connected with the Utah Avalanche Forecast Center, whose main job is avalanche education and information.

The forecast center puts on many avalanche courses during the season, which are free to the public. Last season, they taught 29 classes to 2,300 people.

Before starting a day into the backcountry, it's wise to call the Utah Avalanche Forecast number.

The daily recorded update is a lengthy, detailed account of what the weather monitoring equipment and field reports are advising about backcountry avalanche conditions.

The UAFC provides several phone numbers, depending on the geographic area of interest. The Forecast Center divides its operations into the areas of the Logan mountains, the LaSal Mountains near Moab, and the Wasatch Mountains from Provo to Ogden.

The advisory recording for the Wasatch Front near Salt Lake City receives the largest number of phone calls. About 85 percent of the calls made to the UAFC are received at the Salt Lake numbers.

Overall, the UAFC received more than 700 calls a day last season, about double the number of calls made to any other avalanche forecast facility in North America.

The Ogden area phone number provides information about the Wasatch Front from Bountiful to Ben Lomond peak. The Logan area number covers conditions from Willard Peak to the Idaho border, including the Cache Valley.

The information regarding the back side of Ben Lomond is sometimes overlapped between the two numbers. No daily reports are available for areas like Monte Cristo or the High Uintas. The forecast center advises skiers that conditions for the Ogden area can usually be considered typical of Monte Cristo.

OK, so you've mastered the telemark turn. You've seen Northern Utah blanketed in snow from the tops of half a dozen mountain peaks. You've taken avalanche courses, and own shovel, beeper and know how to dig a snow pit. You're starting to think you were born to be a backcountry skier.

According to a recent study in Colorado, you also fit the profile of a likely avalanche victim.

You could be forgiven for understanding that sentence to mean, "The better you ski, and the more you understand avalanches, the better your chance of dying."

It's not quite that severe, but Dale Atkins of the Colorado Avalanche Information Center compiled a report recently about avalanche deaths in the United States. Since 1950, 462 people have died from avalanches in the United States.

Utah, with 42 deaths, ranks fourth in the nation. By far the largest number of avalanche deaths have occurred in Colorado, where 152 people have lost their lives in the last 45 years. Washington and Alaska both tallied 58 deaths during that period.

Avalanche Kills Skier in Little Cottonwood Canyon

By Brian Maffly
THE SALT LAKE TRIBUNE

LITTLE COTTONWOOD CANYON — As the mercury rose Wednesday, so did the avalanche hazard in the Wasatch Mountains as a top layer of snow turned to unstable slush.

These conditions proved fatal for backcountry skier Werner Ruegner, 50, who was slammed into trees by moving snow at about 3 p.m. While separated from his two ski companions, he unleashed a small avalanche of wet snow in Maybird Gulch, a southern drainage of Little Cottonwood Canyon, authorities said.

The skiers started out from White Pine trailhead around 11 a.m. for an afternoon tour in the drainage below the northern face of the Pfeifferhorn. The conditions were safe at the top of Maybird, but then deteriorated as the skiers descended at mid-afternoon.

The victim, a Salt Lake City man, and his two companions, a young man and woman, realized they were in peril when their skis began sinking 6 to 8 inches, knocking sluffs down the steep slope.

"The change in the snow conditions happened in such a short distance topographically," said the male companion, who asked to remain anonymous. "The [top] layer was sliding down a firmer surface underneath."

About a half-mile above the mouth of the gulch, the group traversed an east-facing slope, hoping to reach Maybird's western ridge to make a safer exit from the canyon, the skier said.

But Ruegner's traverse headed sharply down canyon, while the other two reluctantly followed after losing sight of him.

"I could see the open shots," the companion said. "That's not where we wanted to be. We hollered and got no response."

The victim's tracks disappeared into a slide path, which led the companions to Ruegner — dead against a tree. The slide did not bury the victim, who died from traumatic injuries, said Salt Lake County sheriff's Capt. Lee Smith.

"He was fairly close to the bottom of the drainage," Smith said. "Ultimately, he was wrapped around a tree backwards."

Wasatch Tours, the most complete ski guide to the Cottonwood canyons, describes the lower reaches of Maybird as "a narrow, avalanche-prone ravine with wooded and rocky sides."

"Extreme care should be exercised in this area at all times of the year," authors David Hanscom and Alexis Kelner wrote.

Ruegner triggered the slide on a 40-degree slope at the 7,500-foot elevation, according to an accident reconstruction by forecaster Bruce Tremper. Because of the convex shape of the slope, the avalanche gained a lethal speed as it slid about 200 feet down a face that steepened to 48 degrees.

Shaken and fearing for their own safety, the companions took off their skies and postholed a path to the ridge for a two-hour hike to Little Cottonwood Canyon highway. The two hitched a ride to their vehicle parked at White Pine, then drove to Alta to notify the sheriff.

The U.S. Forest Service's prerecorded avalanche forecast on Wednesday did not mention the possibility of wet-slab avalanches, but it is a hazard all backcountry travelers should be wary of this time of year.

Wednesday's accident was the Wasatch range's only recreational avalanche death this winter. However, a Solitude ski patroller was fatally injured in February while performing avalanche-control work. Avalanches claimed 17 lives in other Intermountain states.

Tribune 3/28/96

SKIER KILLED

A backcountry skier was killed in a Little Cottonwood Canyon avalanche Wednesday. Two members of the victim's party survived the 3 p.m. slide in Maybird Gulch, said Tom Kimbrough, a U.S. Forest Service avalanche forecaster. The two survivors hiked to Little Cottonwood Canyon Road and then hitchhiked to White Pine trail head where they had left their car. They drove to Alta to notify the sheriff's office. The victim was carried by the rumbling wet-release avalanche 300 feet down a slope. It is believed he was killed when he was thrown against a tree. The skier, Warren Ruedner, 50, was not buried by the snow. Search-and-rescue teams skied in at nightfall and had not recovered the body as of press time.

Little Cottonwood LGS Winter 95–96