

Avalanche Fatality on Mt. Hermann near Mt Baker, WA

~0830 AM, Tuesday, April 18th, 2006

Location of incident—Stoneman's chute off Mt. Hermann near Mt Baker, WA

Number in party—3; 1 skier caught and killed

Type of activity—back country ski

Elevation—~6000 ft

Aspect—East-Northeast

Slope angle—40-45+ degrees

Preliminary Avalanche classification—SS-AS-R5-D2.5

Other avalanche information: 3-3.5 ft deep x 200 ft wide soft slab; slide traveled approximately 1200 ft vertical through and over several benches, interspersed small evergreens and rock outcrops before depositing victim on a lower bench (slide continued some distance below lower bench)

News media Report



www.bellinghamherald.com

Wednesday, April 19, 2006

PUBLIC SAFETY

California man dies near Mt. Baker

KIRA MILLAGE
THE BELLINGHAM HERALD

A 25-year-old man died Tuesday morning after getting caught in a snow slide while skiing west of the Mt. Baker Ski Area, according to the Whatcom County Sheriff's Office.

Tobias Lee of Truckee, Calif., was skiing with his brother and a friend on Mount Herman when snow broke loose and carried him over two rock faces and through trees, according to the Sheriff's Office.

Lee was unconscious after the slide and didn't respond to CPR attempts, according to the Sheriff's Office. After members of Bellingham Mountain Rescue were unable to reach Lee due to avalanche danger, a private helicopter was called to remove the body.

The two survivors' identities were unknown Tuesday evening, but they are reportedly from the Glacier area, the Sheriff's Office said.

Incident report

(Avalanche accident narrative courtesy Tom Walgren, friend of the victim and member of the trio (composed of Elias, Toby and Tom))

“On April 18, 2006, Eli, Toby and myself (Tom) left Heather Meadows parking lot at 0530 AM with the intent of skiing the prominent chute off of Mt. Hermann known as Stoneman. At first the fog was thick, and we put distance between ourselves as we ascended toward Mazama Bowl. The cloud ceiling steadily lifted as we skinned on shallow, crunchy, sometimes icy snow: though a pole could be punched through to 18 inches in places, it did not sound hollow.

Upon reaching our intended run we all prepared for the descent. Eli skied down the top of the ridge to access the cornice, Toby stopped about 50 ft above and back by the stunted trees on the ridge. I skied to Toby, stopped and asked Eli if he wanted the rope. He said yes, so I proceeded to a tree 15 ft behind him and tied the rope off. Eli tied himself into the rope, stepped up to the cornice, and jumped a few times. No movement, so he gives himself more slack and slides over the cornice and jumps again. No movement. Eli unties and I move out holding the rope in both hands to see Eli's descent. After a brief discussion on how he feels about the pack, Eli make about 8 turns and stops on the other side of the choke zone, in a safe spot, under a cliff and above a tree. I slide back and packed up the rope while Toby slid forward to get a visual on his line. When I returned to the edge Eli was recommending a steeper line to the right but Toby had his line sighted and wanted to go so we all confirmed ready.

Toby pushed back about 2 feet and then forward with a little boost off of the small cornice. Due to the steep angle at the top this dropped him 10-15 feet into the steep pitch. With a huge pop the entire slope began moving with Toby in the start zone, then instantly shot down the choke zone of the chute at top speed. I immediately skied to the choke zone to try for last seen spot, but all there was, was a plume of dusty snow in the valley. I turned my transceiver to receive and speed slipped the chute. Eli pulled his shovel and followed. At the first deposition zone, I had no signal and yelled back to Eli to keep chicking behind me in case I missed Toby. On the second deposition zone I found a ski, and on the third deposition zone (1200 ft vertical from the start) I got a signal. Either due to sun glare or operator error we briefly dug 2.4 meters from Toby (believing it to be 1.4 meters). Upon realizing this can't be right, I turned my Tracker off then on, reset to receive and immediately moved in Toby'd direction, got the "hyper beep" and uncovered his right hand. Only a couple of inches under Eli found his head, face up, barely covered by snow. We took his helmet off, and Eli started CPR while I dug the rest of Toby out of shallow snows. Then I started compressions while Eli did the breaths and checked vital. Toby didn't make it.

Whenever we return with fewer than we left with, the surviving member reel through endless scenarios of how it could have gone different, and these need to be explored to learn from this. Some of my friends asked me what we could learn from this loss. Here is my input.

All other scenarios aside, if you end up atop this type of run and it requires a roped ski cut, everyone in the party should enter on rope, and no matter where you go always discuss worst case even when the hazards are obvious. There can never be too much discussion of potential danger especially in a leaderless group. We did not discuss which way to turn when you hear a

pop, nor did we discuss the death potential of that slide path. I knew left was better than right, and that surviving a slide there was unlikely, and that an impact could pop a strong weak layer. In a group of skiers at this level, I did not speak up when I should have started discussion.”



Figure 1. Photo courtesy Lief Hazelet, taken 4-23-2006. Looking up at Stoneman's chute below Mt Hermann, northern Washington Cascades just west of the Mt Baker ski area. Accident fracture line visible in upper part of chute. Victim entered path in upper left of photo and was carried down the path, over the bench and just below the bottom of the picture.



Figure 2. Another closer view of Stoneman's that shows the objective dangers of the hourglass like chute as well as more of the slab as it wraps from the upper right of the path, extends to the ridge and then crosses under the rocks and cornice where reports indicate that it was probably triggered by the victim. Photo courtesy Toby Tortorelli.



Figure 3. Photo courtesy Michael Jackson, taken in mid-late February, 2006. Picture looking across upper Stoneman's toward normal entry area into chute.



Figure 4. Photo courtesy Michael Jackson. View down Stoneman's from near the top, taken mid-late February, 2006. As evident in Figures 1-3, the upper part of Stoneman's is rather steep, in excess of 40-45 degrees, with a starting elevation of approximately 6,000 ft and vertical fall of ~1,200 ft. Objective dangers are considerable to say the least.



Figure 5. Photo courtesy Lief Hazelet. Some of the slab avalanche activity that occurred along Shuksan Arm after the accident, releasing on April 21 or 22, 2006. Shuksan Arm is a northwest to southeast oriented ridge (within the Mt Baker Wilderness) leading from the upper part of the ski area toward Mt Shuksan.

Ancillary Weather, Snowpack and Avalanche Information

In reconstructing the weather and its influence at the time of the incident, it appears mostly likely that the group arrived at the top of the east-northeast facing Stoneman's chute under mostly sunny and very slowly warming skies (temperatures remained at or below freezing at the nearby NWAC weather station through 10 AM—see the hourly weather data table below). At that time of the morning, the sun may have impacted some of the slope briefly, although it is not known if the sun was on the slope at the time of the event. Hence it is not known if the temperature trend contributed to the instability as it was still relatively early in the morning and the freezing levels that morning were still low—the NWS radiosonde station at Forks, Washington reported a 3100 ft freezing level on the 4 AM sounding that rose to 4500 ft by the 4 PM sounding).

From the incident narrative, the party had preformed some ski cuts near the top of the slope and had tried to kick off a portion of the small cornice near the top of Stoneman's to test stability on the slope below. As mentioned in the report, these tests were all negative. However, many human triggered slabs had been released along nearby Shuksan Arm Ridge (which lies immediately east of the ski area) during the three to four days prior to the incident (Saturday through Monday)—all resulting from the 3 feet plus of snow received late the previous week. It is likely that the group was at least aware of these slide occurrences. The Mt Baker ski area

reported 41 inches of new snow from Thursday through Sunday morning, the 13th-15th of April while the automated weather station recorded 44 inches from the 13th -16th. See the 6-day temperature & snow table below for a chronology of the weather leading up to the event as recorded by the automated weather station at the base of the nearby ski area.

Several large slabs were also reported on the 21st or 22nd following the incident. Some of these subsequent avalanche releases on nearby Shuksan Arm are shown in Figure 4 above.

NWAC hourly telemetry information from 0500, 4/18/2006

4-19-2006

Northwest Weather and Avalanche Center

Mt Baker Ski Area, Washington

MM/DD	Hour PST	Temp F 4220'	RH % 4220'	Hour Prec. 4220'	Total Prec. 4220'	24 Hr Snow 4220'	Total Snow 4220'
4 18	500	28	98	0	0	2	205
4 18	600	28	97	0	0	2	205
4 18	700	29	94	0	0	1	205
4 18	800	29	91	0	0	2	204
4 18	900	30	87	0	0	2	205
4 18	1000	32	85	0	0	2	204
4 18	1100	35	76	0	0	2	203
4 18	1200	35	74	0	0	2	203
4 18	1300	39	60	0	0	1	203
4 18	1400	39	55	0	0	1	202
4 18	1500	39	59	0	0	1	201
4 18	1600	39	58	0	0	0	201
4 18	1700	37	62	0	0	1	202
4 18	1800	38	61	0	0	1	201
4 18	1900	36	66	0	0	1	202
4 18	2000	38	62	0	0	1	201
4 18	2100	39	62	0	0	1	201
4 18	2200	38	65	0	0	0	201
4 18	2300	39	65	0	0	1	201
4 19	0	38	68	0	0	1	201
4 19	100	38	65	0	0	1	200
4 19	200	38	60	0	0	1	201
4 19	300	38	59	0	0	1	200
4 19	400	38	55	0	0	1	200

6-day Weather Summary from the NWAC Mt Baker Weather Station

(located at nearby Heather Meadows)

Tmax = Maximum temperatures (deg F) for 24 hours preceding 4 AM observation on indicated day

Tmin = Minimum temperatures (deg F) for 24 hours preceding 4 AM observation on indicated day

HN24 = New snowfall (inches of snow) for 24 hours preceding 4 AM observation on indicated day

HN24W = Water equivalent of snowfall (inches of WE) for 24 hours preceding 4 AM observation on indicated day

HS = Height of snowpack (total depth in inches)

Date	4-14-06	4-15-06	4-16-06	4-17-06	4-18-06	4-19-06
Day	Fri	Sat	Sun	Mon	Tues	Wed
Tmax	32	32	34	30	35	39
Tmin	28	24	24	24	27	29
HN24	15	15	11	3	0	0
HN24W	1.19	1.31	.61	.26	.03	0
HS	193	206	211	209	205	200

NWAC Back Country Avalanche Forecasts

During the week prior to the incident, the Avalanche Center had issued avalanche warnings for two days (the 13th and 14th), specifically highlighting the northern Washington Cascades). Although the large amounts of new snow from the unseasonably cool and strong spring storm had begun to settle, as indicated in the avalanche forecasts below (issued on the morning of the 17th and 18th), a considerable danger was still expected from the recent storm as substantial clouds and continuing low freezing levels and cool temperatures from the 15th-17th had limited recent snowpack stabilization.

Avalanche forecast issued on April 17th

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS, WASHINGTON
 CASCADES AND MT HOOD AREA
 NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
 0845 AM PDT MON APR 17 2006

NWAC Program administered by:
 USDA-Forest Service
 with cooperative funding and support from:
 Washington State Department of Transportation
 National Weather Service
 National Park Service
 Washington State Parks and Recreation Commission
 Pacific Northwest Ski Area Association
 Friends of the Avalanche Center
 and other private organizations.

This forecast applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

WAZ513-518-519-019-042-501-502-ORZ011-181700-

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ZONE AVALANCHE FORECASTS

WASHINGTON CASCADES NEAR AND WEST OF THE CREST NORTH OF STEVENS PASS-

CONSIDERABLE avalanche danger above 4 to 5000 feet and MODERATE below increasing later Monday morning and afternoon and becoming CONSIDERABLE below 7000 feet except locally HIGH on sun exposed terrain. Danger decreasing Monday night but increasing again later Tuesday morning and afternoon and becoming CONSIDERABLE on sun exposed terrain and on north through east exposures above 5000 feet and MODERATE elsewhere. Gradually decreasing danger Tuesday night, becoming CONSIDERABLE above 5 to 6000 feet and MODERATE below.

WASHINGTON CASCADES FROM STEVENS PASS SOUTHWARD- EAST SLOPES WASHINGTON CASCADES- MT HOOD AREA-

CONSIDERABLE avalanche danger above 5 to 6000 feet and MODERATE below increasing later Monday morning and afternoon and becoming CONSIDERABLE above 4 to 5000 feet and MODERATE below, with greatest danger on sun exposed terrain. Danger decreasing Monday night but increasing again later Tuesday morning and afternoon and becoming CONSIDERABLE on sun exposed terrain and on north through east exposures above 5000 feet and MODERATE elsewhere. Danger decreasing Tuesday night and becoming MODERATE above 4 to 5000 feet and LOW below.

OLYMPICS-

CONSIDERABLE avalanche danger above 5 to 6000 feet and MODERATE below increasing later Monday morning and afternoon and becoming CONSIDERABLE above 4 to 5000 feet and MODERATE below, with greatest danger on sun exposed terrain. Danger decreasing Monday night but increasing again later Tuesday morning and afternoon and becoming CONSIDERABLE on sun exposed terrain and on north through east exposures above 5000 feet and MODERATE elsewhere. Slightly decreasing danger Tuesday night with slowly increasing danger expected early Wednesday.

SNOWPACK ANALYSIS

Generally light amounts of new snowfall were received in most areas during showers on Sunday, along with decreasing winds and some sun breaks. While this weather allowed the recent heavier snowfall amounts received last Thursday through Saturday to begin settling and stabilizing, sun breaks and daytime warming also produced some loose and wet loose slide activity during the late morning and afternoon hours Sunday along with more isolated wind and wet slab slides. Most of the recent wind slabs have been reported releasing on steeper north through east facing slopes, with fractures ranging from 6 up to 12 to 18 inches. These slabs have been both natural and ski triggered, with most running on the old crust from early to mid last week. A skier triggered wet slab was also reported around the 5000 ft level on a NE exposure wind sheltered bowl near Mt Hood—apparently releasing during a sun break on Sunday. Recent and any new snowfall from this unseasonably cool spring storm should continue to warm, melt and weaken during any sun breaks between showers Monday and Tuesday, and further natural and human

triggered slides should become probable during the later morning and afternoon hours, especially on any slopes receiving sunshine or filtered sunshine.

MONDAY, MONDAY NIGHT-

Continued low freezing levels and partly to mostly cloudy skies early Monday should be followed by increasing clouds later Monday morning and light to occasionally moderate showers mid-day and Monday afternoon along with a chance of an isolated thundershower. Although no significant snow accumulations are expected, further sun breaks likely between showers should combine with daytime warming to once again increase the danger, especially on slopes receiving sunshine. Recent new snow should quickly melt, weaken and become unstable under the influence of strong spring sunshine, especially on wind sheltered sun exposed bowls where melt should be maximized. Natural loose or wet loose slides should become probable during the heat of the day, and skiers, snowboarders, snowshoers, snowmobilers or other recreationists should be able to easily initiate loose or wet loose slides which may be difficult to escape from and which may in turn trigger slabs or wet slabs. As a result, back country travelers should exercise significant caution on steeper wind loaded slopes or slopes receiving sunshine Monday, especially slopes showing no evidence of recent avalanche activity. Decreasing clouds and showers Monday night should allow for decreasing danger as previously wet near surface snow refreezes and strengthens and creates an increasing crust, especially on slopes that received sunshine on Monday. This weather should also allow further settlement of recent wind slabs which should slowly increase their bond to the old crust.

TUESDAY, TUESDAY NIGHT-

Partly to mostly sunny skies are expected in most areas Tuesday morning with increasing mid and high clouds Tuesday afternoon in the Olympics and north Cascades and variable high clouds elsewhere along with considerable sunshine or filtered sunshine. Along with relatively light winds and rising freezing levels, this weather should once again produce an increase in the danger during the later morning and afternoon. Recent snow melting from trees, rocks and cliffs may drop onto and initiate loose, wet loose or isolated slabs or wet slabs on the slopes below and travel on such steeper terrain during sun breaks and daytime warming is not recommended. Even relatively small slides may be dangerous if they carry an unwary victim into or over terrain traps such as rocks, cliffs, trees, gulleys or creeks. Finally recent large cornices should also be strongly affected by daytime warming and sunshine, and travel near or beneath such overhangs should be avoided as they may easily collapse and produce avalanching on the slopes below. Although settlement and/or refreezing of recent or surface snow in most areas Tuesday night should produce generally decreasing danger, increased clouds with some light rain late Tuesday night or early Wednesday should produce a slight increase in the danger in the Olympics where areas of wet weak near surface snow should continue.

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Backcountry travelers should be aware that elevation and geographic distinctions are approximate and that a transition zone between dangers exists. Remember there are avalanche safe areas in the mountains during all levels of avalanche danger. Contact local authorities in your area of interest for further information.

NWAC weather data and forecasts are also available by calling 206-526-6677 for Washington, 503-808-2400 for the Mt Hood area, or by visiting our Web site at www.nwac.us.

Moore/Northwest Weather and Avalanche Center

Avalanche forecast issued on April 18th

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON
CASCADES AND MT HOOD AREA
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
9 AM PDT TUE APR 18 2006

NWAC Program administered by:
USDA-Forest Service
with cooperative funding and support from:
Washington State Department of Transportation
National Weather Service
National Park Service
Washington State Parks and Recreation Commission
Pacific Northwest Ski Area Association
Friends of the Avalanche Center
and other private organizations.

This forecast applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

WAZ513-518-519-019-042-501-502-ORZ011-191700-

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ZONE AVALANCHE FORECASTS

WASHINGTON CASCADES- OLYMPICS- MT HOOD AREA-

Increasing danger both Tuesday and Wednesday during the late mornings and afternoons becoming CONSIDERABLE on sun exposed terrain and on north through east exposures above 5 to 6000 feet and MODERATE elsewhere. Gradually decreasing danger night and morning hours Tuesday and Wednesday, becoming MODERATE below 7000 feet.

SNOWPACK ANALYSIS

Generally light amounts of new snowfall were received in most areas during showers both Sunday and Monday, along with decreasing winds and some sun breaks. Most areas received 1 to 3 inches each day. The substantial snowfall of 1 to 2 feet received Thursday through Saturday has settled considerably over the past few days. The main wind slab activity from this strong cool spring storm was confined to the period during and directly after the storm, mainly Friday and Saturday when numerous triggered slabs of 6 up to 12 to 18 inches occurred with most

running on the old crust from earlier in the week. An isolated skier triggered wet slab was also reported around the 5000 ft level on a NE exposure wind sheltered bowl near Mt Hood— apparently releasing during a sun break on Sunday. Sunshine and daytime warming produced surface melting and wet loose slide activity on Monday on many sun exposed slopes.

TUESDAY AND WEDNESDAY-

Partly to mostly sunny skies with variable high clouds and warming temperatures both days and generally light winds. This should allow for an increasing danger both Tuesday and especially Wednesday during the warmest part of the day as recent new snow melts and weakens, mainly on steep southeast through southwest facing slopes. Triggered wet loose or isolated wet slab releases are probable both days during the late mornings and afternoons. Remember that even relatively small slides may be dangerous if they carry you into or over terrain traps such as rocks, cliffs, trees, gullies or creeks. Also be noteworthy of the recent large cornices that likely built along ridges. These cornices should be strongly affected by daytime warming and sunshine, and travel near or beneath such overhangs should be avoided as they may collapse and produce avalanches on the slopes below. Overnight refreezing of surface snow should lead to a decreased danger overnight and early morning hours.

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Kramer/Northwest Weather and Avalanche Center