

Excelsior Pass Avalanche Accident

January 1, 2008

Accident Summary

Time: 1 January 2008, approximately 13:00 hrs

Location: Near Excelsior Pass to east of Church Mt, Northern Washington Cascades WA

Activity: Snowmobiling (high marking)

Caught: 5

Buried: 3: 1 partly buried, 2 completely buried

Injured: 1

Killed: 2

Preliminary Accident Narrative:

(Narrative prepared by Mark Moore, NWAC, based on information provided by Justin Mitchell, Bellingham Mountain Rescue and various news media reports):

The Incident: A group of five snowmobilers were out riding and high marking on New Year's Day in the steep, mountainous terrain of the northern Washington Cascades to the north of Mt Baker and about 5 miles east of Church Mountain (see Figures 1 and 2). Reaching the Excelsior Pass area about 1 PM, they proceeded to high mark a west facing, 35-45 degree slope at about the 5400 ft level. While in the process of high marking a large slab averaging 5 to 7 feet deep by about 100 yards wide released, catching all five riders. The slab, tentatively classified as a SS-AM-R4-D3-O (see Figure 3 below), ran quickly downhill an estimated 700 vertical feet, sweeping some of the victims through trees near the base of the path. When the slide came to rest, 1 rider was partly buried and injured (leg injury) and two riders were completely buried, while two other riders managed to escape either to the side or bottom of the slide. From reports of the rescue team, apparently two of the group had and were wearing beacons, including one of the totally buried riders. As one of those not caught also had a beacon, this allowed for the remaining members of the party to locate and uncover victim #1. Unfortunately, by the time extrication of the victim was completed from under 5 to 6 feet of snow about two hours later (around 3 PM), the victim had expired. Unable to locate the other remaining rider by visual clues (no beacon), the remaining members of the party departed for help. Bellingham Mountain Rescue responded and arrived on scene around 8 PM that evening.

The Rescue: The rescue team used lights from snow machines and from the Homeland Security helicopter to determine safe zones below the slope, initiating a wide transceiver search for victim #2. They located victim #2's mangled snowmachine and pieces of the snowmachine a couple of hundred feet down slope in trees, marking these locations via flags and GPS. During this time they also noted several scars on the trees where the snowmachine had apparently flown through the air, striking trees in its journey downslope. Faced with darkness, fatigue, and no further clues, rescuers performed spot probes along this fall line until about 11 PM, whereupon they prepared victim #1 for transport and headed back to base until resuming search the next morning. Upon returning the following morning, the rescue team(s) established a probe line using about 25 volunteers above the fall line of "clues"

(while also having several volunteers above in a safe zone with transceivers). With special attention given to tree bases, the probe line team struck the victim #2 at about 12 noon on the 2nd, near the base of the tree about 3 feet under the surface. This final victim was subsequently prepared for transport with rescue teams returning to base that afternoon.

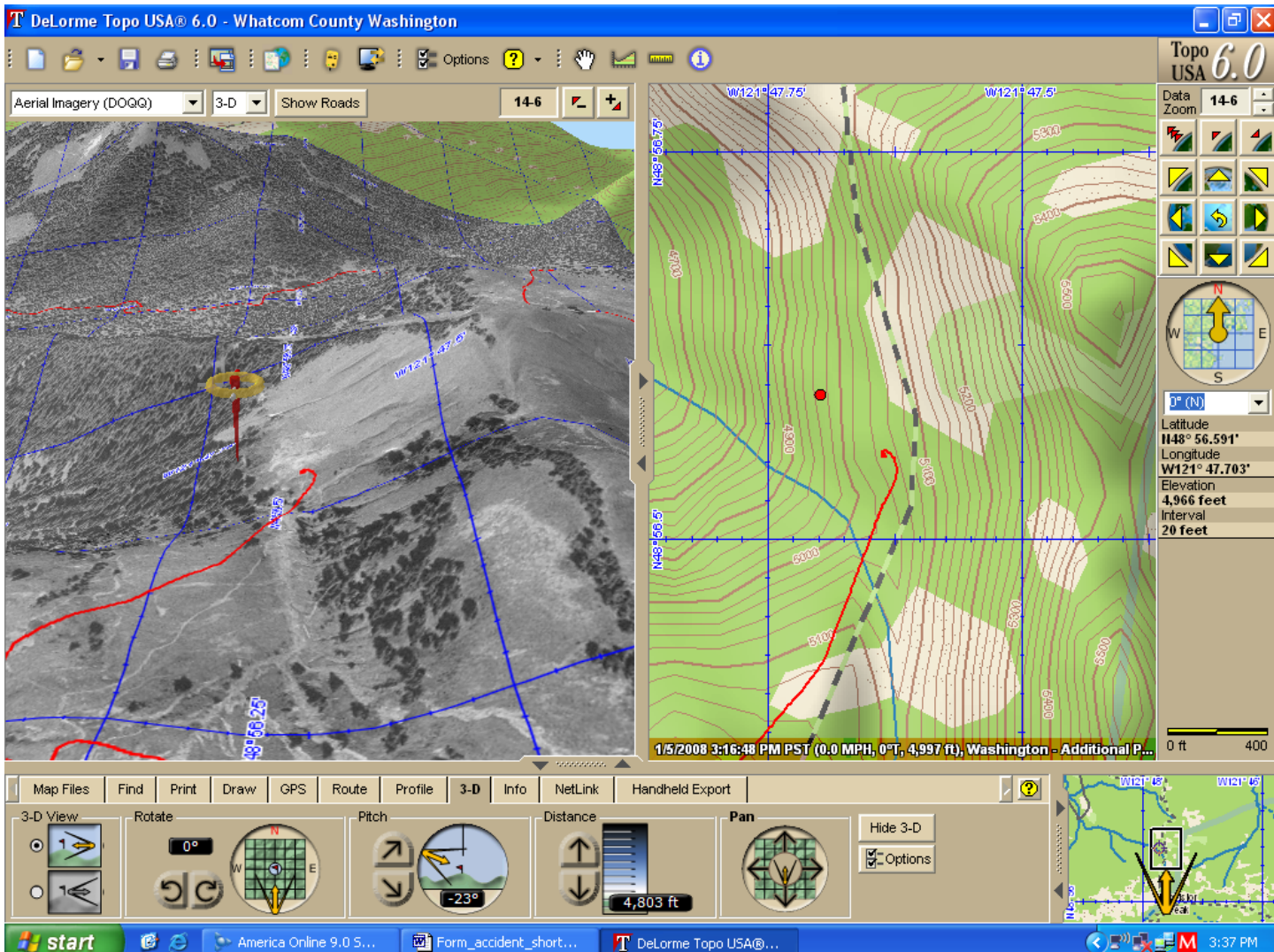


Figure 1. Topo and aerial photography of location. Subjects were approx just north of where red track line ends when avalanche hit. (Figure courtesy Bellingham Mountain Rescue)



Figure 2. View of avalanche area toward the southeast, with Mt. Shuksan (L) and Mt Baker (R) in the background.



Figure 3. View upslope from some of deposition zone looking toward the east. (Photo courtesy Bellingham Mountain Rescue)

Ancillary Weather and Snowpack Information:

As indicated in the avalanche forecasts below, a considerable avalanche danger was forecast at the time of the incident, with greatest danger on north through west exposures as a result of increasingly dense wind slab deposited over lower density snow by moderate to strong southeasterly winds (January 1st forecast):

“This is likely to transport recent snow and build new potential denser surface wind slab layers on new lee slopes. This should especially be on west to north aspects near and west of the Cascade crest but could occur on other aspects or on cross loaded slopes. Do not be lulled by the fair weather seen Monday into thinking that the avalanche danger at higher elevations is over.”

While a recent avalanche warning for much of the Northwest had just been dropped on the 31st, the special statement included the following:

“The recent avalanche warning for the Olympics, Washington Cascades and Mt Hood area has ended. But significant avalanche dangers are still expected in back country areas.”

Also the associated mountain weather forecast issued on December 31st indicated increasing southeasterly winds of 20-30 mph along with a substantial rise in freezing levels (from 3,000 to 6,000 ft) in the northern WA Cascades, both of which no doubt contributed to the instability seen on January 1st. Of further note is the continued concern over some deeper slabs which could release to the faceted Christmas eve crust, especially with the weight of snowmobiles.

“Note that crust layers from about Christmas and early December are still reported deeper in the snow pack. Triggered avalanches in recent snow may still step to these layers. This is most likely at higher elevations on slopes that have previously avalanched or in response to heavier triggers such as snowmobiles.”

With the depth of the release for this incident being reported as 5 to 7 feet deep, it is probable that this slide released on facets near the Christmas eve crust.

NWAC Avalanche Forecast for Dec 31st , 2007:

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON
CASCADES AND MT HOOD AREA
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
900 AM PST MON DEC 31 2007

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-ORZ011-011700-

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ZONE AVALANCHE FORECASTS

* OLYMPICS, WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
Considerable avalanche danger below 7000 feet slightly decreasing Monday. Considerable avalanche danger below 7000 feet slightly increasing Tuesday.

* EAST SLOPES WASHINGTON CASCADES-

Considerable avalanche danger above 4000 feet and moderate below slightly decreasing Monday. Considerable avalanche danger above 4000 feet and moderate below slightly increasing Tuesday.

* MT HOOD AREA-

Considerable avalanche danger below 7000 feet slightly decreasing Monday. Considerable avalanche danger below 7000 feet slightly increasing Tuesday.

SNOWPACK ANALYSIS

Strong west winds and heavy snow continued through the weekend. New snow for the 24 hours ending Monday morning ranges from about 6-18 inches at sites near and west of the crest. This brings snowfall totals since mid December to 10-15 feet at sites near and west of the crest!

Plenty of new storm cycle soft slab and wind slab conditions should still be present on lee slopes Monday morning. This should be mainly on steeper north to southeast slopes at higher elevations. The ski areas reported extensive 6-12 inches avalanches in the recent snow on Sunday. Lots of wind effects such as deep drifting were also noted so the slab conditions are not a surprise. Some propagating cracks were reported the past couple days on the FOAC web site. Deep powder snow conditions were reported on sheltered lower angle slopes such as on the TAY web site for Saturday. Crust layers from about Christmas and early December are still reported deeper in the snow pack. Triggered avalanches in recent snow may still step to these layers. This is most likely at higher elevations on slopes that have previously avalanched or in response to heavier triggers such as snowmobiles.

Remember that terrain features such as tree wells can be dangerous if you fall in and no one is available to help you out. So always travel with at least a nearby partner who can assist if necessary.

MONDAY

Winds should decrease and snow showers should end on Monday. This should give recent heavy snow amounts a chance to partly stabilize. Recent storm cycle soft and wind slab layers are most likely to linger on lee slopes at higher elevations. This should continue to be mainly north to southeast slopes at higher elevations. We recommend great caution, periodic stability evaluation, and safe back country travel routes on Monday. Partial stabilizing should continue Monday night.

TUESDAY

Increasing strong southeast ridge and mountain top winds are expected Tuesday and Tuesday night with a warming trend. This is likely to transport snow and build new potential denser wind slab layers on different lee slopes. This should especially be on steep west to north aspects near and west of the Cascade crest. Do not be lulled by the fair weather on Monday into thinking that the recent avalanche danger is over. We continue to recommend

great caution and safe travel routes on Tuesday and Tuesday night especially in areas with new wind transported snow at higher elevations.

NWAC Avalanche Forecast from Jan 1st, 2008:

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON
CASCADES AND MT HOOD AREA
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
900 AM PST TUE JAN 1 2008

NWAC Program administered by:
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with cooperative funding and support from:
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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-ORZ011-021700-

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ZONE AVALANCHE FORECASTS

* OLYMPICS, WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
Considerable avalanche danger above about 4000 feet and moderate below Tuesday and Wednesday.

* EAST SLOPES WASHINGTON CASCADES-
Considerable avalanche danger above about 5000 feet and moderate below Tuesday and Wednesday.

* MT HOOD AREA-
Considerable avalanche danger above about 5000 feet and moderate below Tuesday and Wednesday.

SNOWPACK ANALYSIS

Strong west winds and heavy snow continued through the weekend. New snow for the 24 hours ending Monday morning ranged from about 6-18 inches at sites near and west of the crest. This brought snowfall totals for the second half of December to 10-15 feet at sites near and west of the crest! Some large natural avalanches and signs of instability were seen over the weekend while skiers on lower angle sheltered slopes reported deep powder conditions.

A break in the active weather pattern was seen Monday. However new storm cycle soft slab and wind slab conditions were still present on Monday on lee slopes. The ski patrol at Alpentel reported a couple of deep natural slab avalanches on northeast slopes at about 5000 feet above the back country high traverse on Monday. The Crystal Mountain ski patrol reported several skier triggered 2-3 foot slab releases on north to southeast slopes at about 6700-6800 feet in their back country areas. Bed surfaces for these avalanches are reported to be the crust from a day or so before Christmas.

The break in the weather Monday also allowed for several inches of snowpack consolidation and stabilizing. A skier on the FOAC web site for near Stevens Pass on Monday reported unconsolidated powder conditions on shaded slopes and no avalanches. Sun exposed slopes developed a surface sun crust. So some deep powder snow conditions should still be found on shaded slopes.

Note that crust layers from about Christmas and early December are still reported deeper in the snow pack. Triggered avalanches in recent snow may still step to these layers. This is most likely at higher elevations on slopes that have previously avalanched or in response to heavier triggers such as snowmobiles.

Remember that terrain features such as tree wells can be dangerous if you fall in and no one is available to help you out. So always travel with at least a nearby partner who can assist if necessary.

TUESDAY

Increasing southeast ridge and mountain top winds are expected Tuesday with a warming trend. This is likely to transport recent snow and build new potential denser surface wind slab layers on new lee slopes. This should especially be on west to north aspects near and west of the Cascade crest but could occur on other aspects or on cross loaded slopes. Do not be lulled by the fair weather seen Monday into thinking that the avalanche danger at higher elevations is over. We recommend caution and safe travel routes on Tuesday and Tuesday night especially in areas with new wind transported snow at higher elevations.

WEDNESDAY

A front should cross the Olympics Wednesday early morning and the Cascades late morning. This should be accompanied by a change to southwest winds at crest levels, moderate to heavy snow mainly in the Olympics and volcanic peaks, less snow in the Cascade passes and lowering snow levels. This may build some new potential storm cycle wind or soft slab layers on north to east facing lee slopes at higher elevations. Note that the weather Tuesday and Wednesday may create slab layers on a variety or more than the usual aspects. So be sure to pay attention to snow conditions on Wednesday. We continue to recommend caution and safe travel routes on Wednesday at higher elevations. This would be

near lee slopes with new potential soft or wind slab layers or near slopes with wind transported snow from Tuesday. With a little luck more stable powder snow should continue to be found on sheltered and shaded slopes. Decreasing wind and decreasing light snow showers should be seen Wednesday night. This should lead to some stabilizing and a slightly decrease in the avalanche danger.