

Alpental, WA Avalanche Incident

—January 21, 2012

Date: 1/21/2012

Location: Alpental Ski Area BC, Alpental, WA—central WA Cascades

Summary: Three skiers caught and partially buried by slide; all victims able to self-extricate with no injuries reported (some lost equipment)

Narrative: The following incident narrative/report was prepared by a member of the party—in the hope that it may provide a positive learning experience for others. Many thanks to Patrick Brewer and his group for sharing this experience, their thoughts, the lessons and the resulting positive outcome—Mark Moore, NWAC.

Patrick Brewer

Saturday Jan. 21, 2012

A Humbling Lesson

Narrative

Well, it was an interesting day in the mountains. John and I were touring in the Snoqualmie area and decided on the Phantom. Visibility was poor, so we figured the trees would be a good choice. It is also a predominantly south aspect with lots of options in the trees. NWAC avy forecast was considerable to high. High on the east aspects above 5000ft. We knew that the conditions were not great and that we would need to be especially cautious. Lots of new snow over the last week with lots of wind and a generally warming trend.

We left the trailhead around 9am and headed up the standard route. As we climbed, there were many of the classic red flag warnings present: collapsing snow, shooting cracks, slabs breaking loose on the kick-turns, etc. At 3800 ft, we did a quick ECT with results of a ECT6 Q1 at 20cm depth. Appeared to be the most recent storm sliding on the accumulation from the days before. ECT18 Q2 at 60cm depth. Aspect was SSE ~150deg. We didn't measure the slope angle, but I would guess around 25deg.

At 4300ft, we decided to transition. The propagation was seeming to get worse, and we didn't want to expose ourselves unnecessarily to the open slopes above the tree line. Out of curiosity, we did another quick test. ECT1 Q1 at 20cm depth. ECT11 Q2 at 60cm depth. CT2 Q1 at the 20cm layer. Aspect was SSW ~200deg. Slope angle was roughly 30deg.

Knowing well how unstable the snow pack was, we discussed our strategy before starting our descent: ski safe spot to safe spot, expect it to slide, always have exits planned, avoid convexities, eyes on, communicate, etc. Interestingly, the ski down was great and barely a thing moved.

Success! We were able to use our heads and manage the conditions....but we didn't get much skiing in. The idea of skinning back up was considered, but we didn't really want to press our luck too much. Hmmm...wonder if Andy or anyone we know is on duty at Alpentel? Sure enough.

We meet up with Andy and another patroller and take a run down Rock something or other in the Alpy backcountry. Skiing was great, so we hopped back on the chair to take one more run. This time, we dropped into the backcountry through the Elevator gate and skied the Meadow, traversing under Elevator Shaft. Just before the Shaft exit, we all gathered. Above us (skier's right) was a short steep slope that lead up to a rock band roughly 15yards above. Where we stood, it was relatively flat with several trees running across the slope. Below the trees was a very steep drop off.

The fourth person to come across the traverse continued along the existing ski track that ran adjacent the trees. Meanwhile, Andy, John, and I saw this pristine snow above us that could probably provide one extra turn on the exit. Wanting to cash in on that extra turn, we start side-stepping up and across the short slope--all at the same time and probably no more than 15-20ft between the first and last person.

Over the radio, there is talk of near surface instabilities and John and I joke sarcastically about what we were hearing, since we had just skied the Phantom and had seen the instabilities first hand. Seconds later, fractures shot across the slope above us.

In the blink of an eye, I found myself partially wrapped around a tree, skis uphill, and buried up to my shoulders.

Realizing that I wasn't going to be getting out of my predicament quickly, I hollered at the others praying that no one was fully buried. To my relief, both Andy and John responded, but the fourth patroller did not. I knew that she had gone ahead on the ski track, but I did not know how far and if she was caught in the slide.

To cut a long story short, Andy heard her on the radio, though, we still did a quick beacon check to sooth our minds. All three of us were partially buried, but ultimately were able to self-rescue. I had one arm out above my head and the other arm was close enough to the surface that I was able to move it and start digging out. It took probably 5min for us just to dig ourselves out. Nobody was injured and all but one pole was recovered.

The Debrief

We were idiots. We allowed ourselves to become complacent as soon as we set foot in the resort. Our avalanche minds were turned off and we were thinking of only the skiing--even though we were no longer within the ski area boundary. We never should have put ourselves into this scenario. We all knew better.

Thoughts:

These thoughts are listed in no particular order. Just writing down what comes to mind as I think back through the day's events.

- Shut our brains off
- Knew the danger level well
- Knew that all aspects were generally bad. North aspects expected to be even worse.
- When I left home, I had it in my mind that I would not be skiing on north aspects that day.
- Knew that the instabilities were propagating easily. ECT1 during a prior test that day.
- Lots of people out there skiing. We followed the trend.
- The slope was an ideal slope to slide: Steep, short, against a rock face. We undercut it. Compressive support makes a difference on small slopes.
- There was an existing ski track that we chose to veer off of
- **Everybody was in danger at the same time (3 people buried!)**
- Because we were all involved, there was no one available to do an immediate rescue should it have been required.
- Happened extremely fast
- Leashes--to wear or not to wear. That morning on the Phantom, I did not attach them, because of the danger level. They were attached when buried and, consequently, even once I was able to release my bindings, I was unable to move because my leashes were short and kept me attached to my skis that had become bomber anchors in the snow.
- The leash/no leash debate is still valid, but a long leash would have certainly been better than short leashes. I will be changing mine.
- In this scenario, the trees served as a collection point and may well have prevented us from going over the ledge below.
- Even a small amount of snow is extremely powerful
- To grab a tree or not. I was very near a tree (~5ft below me) and felt that holding the tree would allow most of the snow to pass by. The snow tended to flow between the trees (duh) and I was not able to get a strong hold on the tree as I fell towards it. I ended up against the tree but between it and the adjacent tree since the snow pulled me through the gap. Had I had body parts on either side of the tree, I very well could have been snapped around it. That said, any snow that moves past you is snow that can't bury you. Given this particular situation, I don't feel that going for the tree was a bad idea and would do the same thing again.
- Crown fracture propagated far. To have been in a safe place to watch during the crossing would have required being quite a long ways from the slope.
- Shit, I may have just won myself an award

- What we did is embarrassing. That said, it turned out very well and was a very cheap lesson. I am a safer person because of it, and I hope that others will learn from our mistakes.

Take home points

There are many lessons that can be learned from our experience: from group dynamics, to snowpack, to terrain management. However, of all of these lessons, there is really only one that I want to emphasize here:

Never ever expose more than one person at a time. Period.

In this particular situation, yeah, we probably should have known better than to have even triggered the slide, but the biggest mistake we made was having three people exposed to danger at the same time. There was no one available for an immediate rescue should any of us have been fully buried. We were extremely lucky. As you are being buried, it is a very discomfoting feeling knowing that both of your partners are also caught in the avalanche. Don't find yourself in this position. Never expose more than one person at a time.

Snow & Weather Observation

Exported from MAST <http://www.ulrlabs.com>

Date/Time: Jan 21, 2012 14:10

Observer: andy hill

Location: Elevator shaft, hard ride below ice funnel,...

Lat/Lon: 47.5181/-122.0565

Elevation: 3040ft Aspect: N

Slope Angle: 44

Precip: Moderate Snow

Sky: Overcast

Wind: Strong

Stability Tests:

-Extended Column Fracture propagates across the full column 10 taps articulating from wrist at 30cm Q1

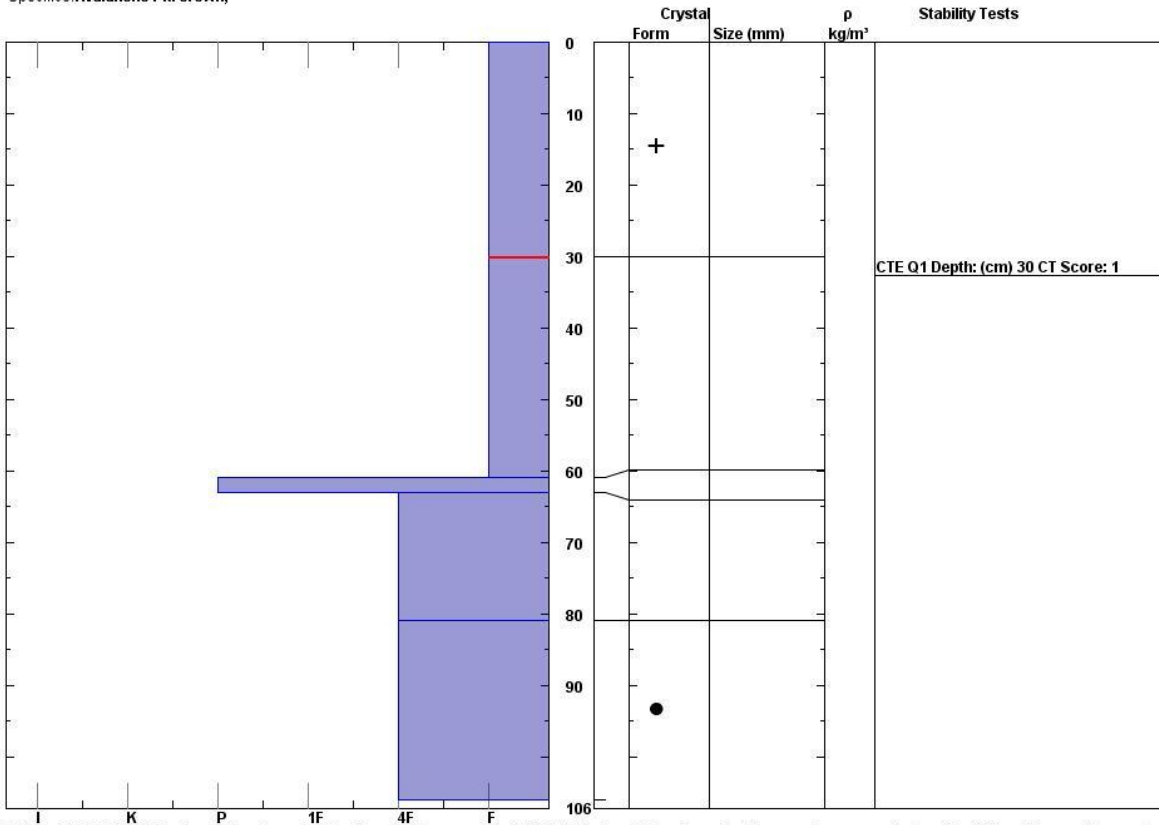
-Compression 1 taps articulating from wrist at 30cm Q1



Figure 1: 20120121 SS-ASu-R2-D2-I



Snow Pit Profile Observer: **Patrick Brewer** Stability on similar slopes: **Very Poor** **PS40 HS106** Layer notes:
Alpental BC **Sat Jan 21 14:00:00 PST 2012** Air Temperature: **29 C** Stability Test Notes: **0-30: Problematic Layer**
Cascades, WA Co-ord: **47.4458 N 121.4348 W** Sky Cover: **sky 8/8 covered**
 Elevation (m) **1124** Slope: **48** Precipitation: **Snow < 0.5 cm/hr** **30-61: Old snow**
 Aspect: **41** Wind loading:
 Specifics: **Avalanche Pit: crown;** Wind: **Calm**



Notes: SS-ASu-R2-D2-1. Crown fracture ~20-30m long. Wide spread instability that day. Collapsing, shooting cracks, propogated easily. This slide was triggered unintentionally by undercutting a short steep slope immediately below a cliff band.

Figure 2: Rough crown profile. Depth measurements were in units of hand lengths and converted later.

Detailed Avalanche Forecast

Northwest Weather and Avalanche Center Seattle Washington

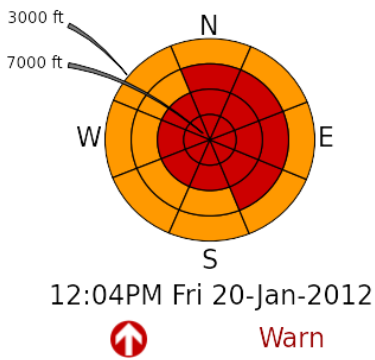
1204 PM PST Fri Jan 20 2012

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

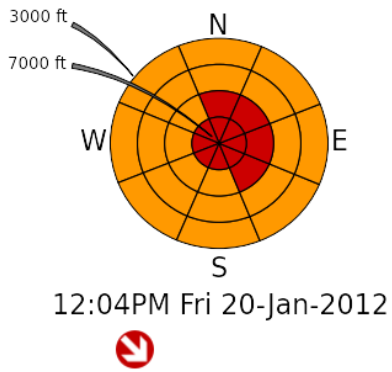
Zone Avalanche Forecasts

- Olympics, Stevens Pass, Snoqualmie Pass, White Pass, WA Cascades near and west of crest**
- north of Stevens Pass, WA Cascades near and west of crest**
- between Stevens and Snoqualmie Pass, WA Cascades near and west of crest**
- between Snoqualmie and White Pass, WA Cascades near and west of crest**
- south of White Pass**

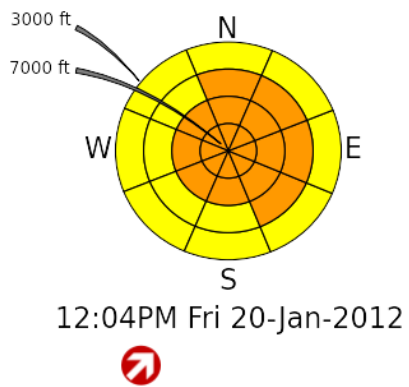
Danger Rose for Friday



Danger Rose for Saturday



Danger Rose for Sunday



Click [here](#) for complete definitions of the avalanche danger scale.

Forecast

AVALANCHE WARNING FRIDAY AFTERNOON AND NIGHT

Friday: Less danger Friday morning. But increasing high danger above 4000 feet and considerable below Friday afternoon and night.

Saturday: High danger above 5000 feet and considerable below Saturday morning gradually decreasing Saturday afternoon and night.

Sunday Outlook: Less danger Sunday morning. But increasing considerable danger above 4000 feet and moderate below by Sunday afternoon. Danger further increasing Sunday night.

Snowpack Analysis

Dry mild weather was generally seen in mid-January. This helped crust layers to form in most areas.

Moderate but cold storms began to cross the Northwest last weekend. This generally allowed low density snow layers to build over the previous crusts.

Storms with increasing southwest winds, increasing very heavy snowfall and warming temperatures began to cross the Northwest this week. Snowfall for the past 4 days ranges from about 2.5-4.5 feet near and west of the crest in the Washington Cascades. The warming trend generally caused heavier damp or wet snow to accumulate over the lighter snow and crusts. By Thursday this caused avalanche conditions in most areas. Little information is available for the back country but extensive avalanches were reported by avalanche control crews at Stevens and Snoqualmie on Thursday.

Detailed Forecasts

Friday

A break between the storms and less avalanche danger is expected on Friday morning. This should allow recent layers to partly stabilize. Caution and careful decision making should still be a good plan on Friday morning.

The next front should cross the Northwest Friday afternoon and night. This should cause a period of strong southeast to southwest winds, increasing moderate to heavy rain or snow and warming temperatures. This should further build or re-develop soft or wind slab layers especially on lee slopes. Back country travel at higher elevations is not recommended Friday afternoon and night.

It is possible there will be less avalanche danger in areas that experience freezing rain such as Snoqualmie due to new stabilizing surface crusts.

Saturday

Decreasing winds, gradually decreasing snow showers and cooler temperatures are expected on Saturday. Potential new soft or wind slab layers are likely to linger on some lee slopes especially through the morning hours. Back country travel in avalanche terrain at higher elevations is not recommended Saturday morning. But good safer snow conditions seem likely on sheltered or lower angle slopes by Saturday afternoon.

Sunday Outlook

Another relative break should be seen Saturday night to Sunday morning. Soft slab layers should mostly stabilize but potential wind slab layers may linger on lee slopes. Careful snowpack evaluation should still be essential on Sunday morning. Another front should approach Sunday afternoon and cross the Northwest on Sunday night. This should begin to cause increasing winds and increasing snow Sunday afternoon. So watch for changing conditions on Sunday afternoon. An increasing avalanche danger should be seen by Sunday night.

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.