

Hogsback Ridge Avalanche Accident—2-25-2009

Preliminary Report

Time: 25 February 2009

Location: N facing flank of Hogsback Ridge, ~6000 ft, south of White Pass, southern Washington Cascades; slope angle ~35 degrees

Avalanche size/type: SS-AS-R3-D2; 16 inch crown x 100 ft wide, ran ~ 400 ft vertical; slide was reported to have released on buried crust

Activity: Skiing

Caught: 1

Buried: 1 completely buried, located and recovered alive by beacon, probe and shovel within ~10 minutes

Injured: 1 (cuts and bruises)

Killed: 0

Incident Narrative 1: from the perspective of the partner and rescuer Lumpy (pseudonyms have been used)

“Ok, here’s my story. My partner Krusty and I were touring in the Central Washington Cascades last Wednesday when after skiing an east aspect we decided to move on to another area with north facing slopes in the hope of finding better snow. After climbing to the top of a short 400 ft slope of about 35 degrees we picked an open area with trees 200 ft below us to ski . Krusty went first while I watched until losing sight of him as he entered the trees. It was at this time that I saw the slope to our left break loose and run out of my sight. I was pretty sure it didn’t involve Krusty however after giving a yell and getting no response then several more yells I gingerly skied to the trees where I last saw him. At this point I activated my beacon and moved left into the slide path. It was approximately 100 wide 400 long and a 16 inch crown. At this point I remember having the feeling of absolute disbelief that this was really happening, in fact the reality of the situation didn’t set in until after I picked up his transceiver signal. I also vividly remember the sense of quiet and being very very alone. There was no sign of him on the slope but not wanting to get below him and have to climb back up I started zigzagging down the path. I use a Tracker and didn’t get a signal until I was pretty close to a large debris field with no visible clues to his whereabouts. It turns out that he was hit from above just as he was finishing his run so pretty much the whole hill came down on top of him. I have heard all the arguments concerning the Trackers lack of range but I really don’t feel that this was an issue, at least in this situation. In fact it worked flawlessly. After locking on to his signal I pretty much went straight to the minimum reading of 3.4 feet. After assembling my shovel and probe I struck his pack on the 3rd or 4th attempt, then after determining where his head might be I began digging and clearing snow away only to discover he was face down and stuck tighter than you can imagine. My only option was to try and open an air space to his face until I could dig him out enough to move him. Up to this point everything had been going textbook perfect. I would estimate that his face was cleared of snow within 10 minutes of seeing the slide however with the removal of the snow beside his head I was confronted by a sight I will never ever forget, my partner and best friend lying there not breathing with his face the worst purple and gray color that you can imagine. With air to his face I began excavating which was made more difficult by the fact that loose snow would keep moving to the low spot and cover his mouth again but by alternately digging and brushing snow away I was making pretty good progress. It was around this time that I started hearing weird breathing noises and he slowly started regaining consciousness. Later he told me that he thought he went out in maybe a minute or 2 as there was no air pocket. After freeing him from the hole and getting him into a warm jacket we spent an hour looking for a missing ski with no luck so then the fun really began. He had to posthole through a blinding snowstorm and into the dark for 4 ½ hours back to the car all the while suffering from nausea. Because of binding incompatibility we couldn’t take turns. The recreation ended at close to 8 in the evening. He is tough.”

“The moral to the story: I am absolutely convinced that the reason Krusty is alive today has much less to do with my actions that day but instead because of my previous practice. Participation in SFB’s practice sessions (thanks Man, more than you will ever know) and having previously set up rescue scenarios that included all

the aspects involved that day made the difference. I was so focused on making every second count that instead of taking the time to put my beacon away I held it by the cord in my teeth in order to shovel. Instead of reaching over a couple of feet to grab my gloves I spent that time shoveling barehanded. Go through this and you will have a whole new appreciation of the value of a second. Ask yourself, "How much extra time do I want to spend farting around to get my rescue gear deployed, how many extra minutes do I want to spend digging an inefficient hole or why did I leave some needed gear so far away that I need to waste valuable seconds to retrieve it?" Practice, be safe and have fun"

Incident Narrative 2: from the perspective of the victim Krusty (pseudonyms have been used)

"I read Lumpy's avalanche report that he sent to you, with which I concur except on one point...he is much too modest about his skill level and training in matters pertaining to avalanche rescue. I have skied with Lumpy for more than twenty years and in that time, I have never met anyone -- professional patrollers and ski guides included -- who understands what it takes to perform a successful rescue better than he. I'm not talking about theoretical knowledge here: I'm referring to systematic planning and level-headed know-how on what to do in a crisis situation combined with speed and expertise. I am very lucky that I was skiing with Lumpy that day because I don't know how long I had to live under the dense snowpack and fortunately, he knew precisely what to do when time was of the essence.

Earlier in the day, we had conducted extensive testing of an east-facing slope in the Hogback Basin that has been our standard procedure for determining avalanche conditions in the area for two decades. We approached the slope from a windward (ie, westerly) direction, cut the cornice, then ski-cut the upper slope, and finally proceeded to ski the line by leap-frogging from one safe zone to another. We have seen extensive avalanching in this area in the past and made adjustments to our plans accordingly. On this particular day, the slope was quite stable.

The north facing area that did avalanche, however, has been considered a safe uphill route to chutes and bowls further out in the area for as long as I can remember (I have been backcountry skiing in the central Cascades since the mid-60s). In discussions with other skiers who also utilize the Hogback region, there has been unanimous disbelief that this slope slid -- in fact, this entire north-facing area has been a go-to place for many of us when the avalanche report is 'moderate.'

As Lumpy stated, the avalanche was sympathetic -- that is, it did not break away from underneath my skis. Rather, it came down from behind me and from my left. When it hit me, I had perhaps three or four more turns at the bottom of the slope as it transitioned into a flat bench. I had been skiing down a crowned knoll among some trees, cut to my left about 10 feet and was decelerating into the flats when I was engulfed by a wall of snow that hit my legs, back, neck and head all at once. There were no visual or aural clues -- just upright one second and pitched forward onto my face the next. I have gone down in an avalanche before -- my experience then was being rolled under the snow then popped back up onto the surface. However, this time, there was no forward momentum because the snow was slowing as it hit the flat terrain. After I had been thrown forward, the snow forced my skis up with my knees bent; my arms were pinned backwards as the snow hit me; and my face twisted to the right as the force crossed from the left over my shoulder. Extricating myself from this position was completely out of the question because the weight of the snow was forcing me further under as the slide decelerated. I knew from previous training that a victim should get his or her hands in front of the face to form an air pocket, but the snow had instantly become like plaster of paris as it was coming to a stop and I could not move even a finger. The sensation was that of sliding slowly down and forward while immobilized in a full body cast. I knew in that instant that I was in deep trouble. When I came to a full stop, I tried to move my right hand up to break the surface but that was impossible; I then tried to move my legs up because I could tell they were closer to the surface but that was impossible as well. I tried to yell, but the sound was completely muffled by the snow. At this point I had a moment of panic because I realized that I was not going to be able to help myself -- in addition, I realized that snow was still piling up over me, inching over my face and nose. I could also tell that my air supply was closing off and that I didn't have many breaths left. From previous training I knew that it was imperative to remain calm and not struggle in order to conserve air. I also recollect remembering (either from reading or hearsay) that the body shuts down in such a situation as a defense mechanism and that you shouldn't fight the feeling of passing out. As I said in an e-mail to a well-

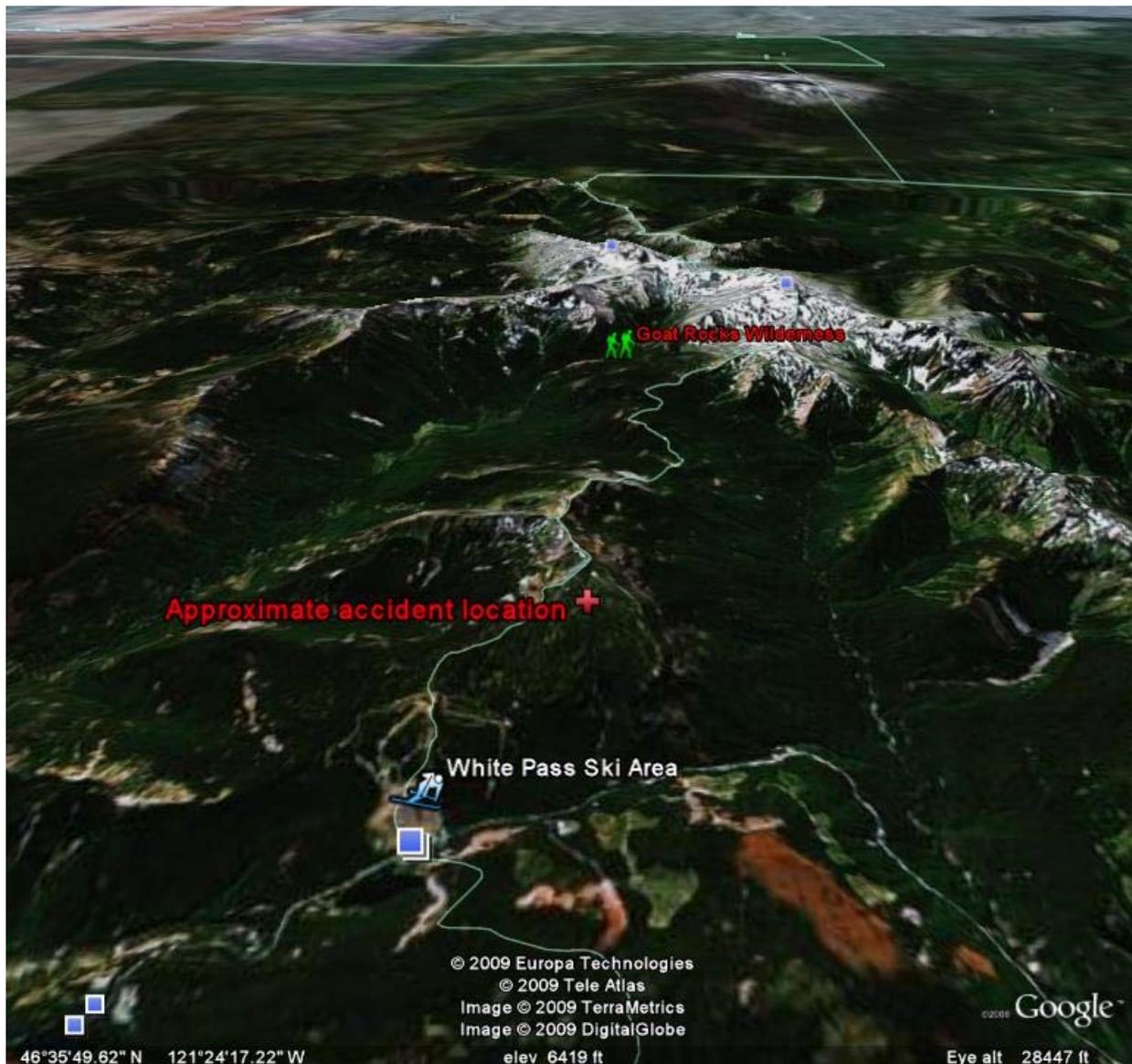
wisher last week:

<when i was buried and realized that i was immobilized and losing my airspace (from snow which continued to avalanche over me) what kept me calm was the knowledge that i had worked with Lumpy over two decades on avalanche rescue, watched him perform those beacon searches flawlessly in canada, and had every confidence in his skill level...as i lost conciousness my very last perception was one of absolute certainty that Lumpy would find me and get me out...you cannot believe how important that feeling was...>

In my opinion, full-dress rehearsals -- not just beacon practice -- are absolutely crucial for just such a scenario. By which I mean, bury a transceiver in a pack down deep on a slope, destroy all visual clues, then go to the top of the hill and ski down with pack on doing a grid search; locate the beacon; assemble probe and shovel out of your pack; dig a hole so that it doesn't cave back in; look for clues by pack orientation where the head might be located and dig that way first -- Lumpy and I have done this on numerous occasions over the last twenty years, watching each other and making suggestions on how to do things more efficiently and faster...and I am convinced it is this training that saved my life that day.

Ancillary Information:

A Google Earth map of the approximate accident location is shown below:



Avalanche forecasts:

The forecast issued by the NWAC for the preceding day and for the day of the accident are given below. While the avalanche warnings issued and noted below were confined to the Mt Hood area, an increasing and considerable avalanche danger was also forecast for the southern Washington Cascades above 4000 feet on Tuesday and above 4 to 5000 feet on Wednesday. The weak layer that the wind slab released on was probably the recent melt-freeze crust referenced in the forecast, and the fact that the slide released after the first skier had descended and that it released from an adjacent slope may be an indicator that it involved some very sensitive weak layers such as facets or surface hoar.

Forecast issued on 2-24-09

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON CASCADES AND MT HOOD AREA
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
845 AM PST TUE FEB 24 2009

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

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ZONE AVALANCHE FORECASTS

- * OLYMPICS-
- * WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
- * CASCADE PASSES, INCLUDING STEVENS, SNOQUALMIE AND WHITE PASSES-

Tuesday: considerable avalanche danger above 5000 feet gradually increasing and becoming considerable above 4 to 5000 feet and moderate below

Tuesday night and Wednesday: further gradually increasing danger becoming considerable above 4000 feet and moderate below

Wednesday night: little change in the danger

- * EAST SLOPES WASHINGTON CASCADES-

Tuesday: considerable avalanche danger above 6000 feet slightly increasing

Tuesday night through Wednesday night: further slowly increasing danger becoming considerable above 5 to 6000 feet and moderate below

- * MT HOOD AREA-

Tuesday: considerable avalanche danger above 6000 feet gradually increasing and becoming considerable above 5 to 6000 feet and moderate below

Tuesday night through Wednesday night: further gradually increasing danger becoming considerable above 5000 feet and moderate below

SNOWPACK ANALYSIS

Moderate new snowfall amounts during the past 24 hours have ranged from a few inches up to 10-12 inches. Along with moderate winds this has produced generally increasing avalanche danger at higher elevations, especially on northwest to north through east facing slopes above 5 to 6000 feet where slabs of 6 to 16 inches are probable. The danger increase above 5 to 6000 feet has resulted from increasing density wind slabs that have been deposited over either an old crust from last week or multiple layers of buried facets and buried surface hoar which have sporadically developed during the past several weeks of dry weather. Although the slowly lowering freezing levels and gradual cooling during precipitation are generally favorable stability trends (right side up snowpack), the pre-existing weak layers combined with the increased winds have allowed for the danger increase. However, at lower elevations the cooling trend and a change from rain to snow has helped to limit the danger increase as less new snow was received along with a better bond of new snow to the old refreezing snow surface.

DETAILED FORECASTS

TUESDAY

Moderate to occasionally heavy rain or snow Tuesday morning should be followed by gradually decreasing and more showery precipitation Tuesday afternoon. However, moderate winds should combine with the expected new snow and further slow cooling to allow a further increasing considerable danger to spread to gradually lower elevations. The gradually increasing load on the variety of buried weak layers should allow for some sensitive slabs to develop on previously shaded and higher elevation wind loaded terrain where significant layers of faceted snow or buried surface hoar may exist under the developing slabs. Whumphs or surface cracking should be key indicators that potentially dangerous problems exist that may require good route finding skills. Expected wind directions on Tuesday should favor north through east aspects as the primary lee slopes receiving wind transport. However, whatever the aspect, strength and stability tests or slope cuts of smaller slopes are strongly encouraged prior to venturing onto adjacent larger open bowls or chutes. Shovels and probes are excellent tools for helping determine if weak layers exist on your slope of interest, while stability and shear quality results can help produce an informed decision about whether or not the risk is worth taking.

TUESDAY NIGHT, WEDNESDAY

Increasing snow in the northern WA Cascades and Olympics Tuesday night should slowly spread southward Wednesday morning with increasing moderate snow likely developing in most areas mid-day and Wednesday afternoon. Along with further cooling and continued moderate to locally strong ridgetop winds, this weather should continue to produce a gradual increase in the danger, especially on lee slopes above 4 to 5000 feet. By Wednesday, an additional 6 to 12 inches or more of new snow should be expected over the recent snowfall on Monday. As a result, wind slabs ranging from about a foot up to three feet may be expected on some more heavily wind loaded terrain...primarily north through east exposures...and back country travelers should use increasing caution on steeper lee slopes showing evidence of wind transport.

WEDNESDAY NIGHT

Gradually decreasing precipitation and winds are expected in the northern WA Cascades and Olympics late Wednesday and in the central WA Cascades later Wednesday night and early Thursday. However, with continued low freezing levels, further showers in the north and central Cascades and Olympics and light to moderate snow in the south, this weather should help to maintain or slightly increase existing avalanche danger.

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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. Also note that field snowpack information is often available on the FOAC website at www.avalanchenw.org, and weather and avalanche glossaries for commonly used terms in the forecasts can be found on the NWAC education page.

Moore/Northwest Weather and Avalanche Center

Forecast issued on 2-25-09

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON CASCADES AND MT HOOD AREA
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON
830 AM PST WED FEB 25 2009

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

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ZONE AVALANCHE FORECASTS

- * OLYMPICS-
- * WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
- * CASCADE PASSES, INCLUDING STEVENS, SNOQUALMIE AND WHITE PASSES-

Wednesday and Wednesday night: considerable avalanche danger above 4 to 5000 feet and moderate below increasing and becoming considerable above 4000 feet and moderate below

Thursday and Thursday night: slowly decreasing danger, becoming considerable above 5 to 6000 feet and moderate below

* EAST SLOPES WASHINGTON CASCADES-

Wednesday and Wednesday night: considerable avalanche danger above 6000 feet and moderate below slowly increasing and becoming considerable above 5 to 6000 feet and moderate below Thursday and Thursday night: slowly decreasing danger, becoming moderate below 7000 feet

* MT HOOD AREA-

...AVALANCHE WARNING...

Wednesday and Wednesday night: high avalanche danger above 6000 feet and considerable below increasing and becoming high above 5000 feet and considerable below

Thursday morning: little change in the danger

Thursday afternoon and night: slowly decreasing danger becoming considerable below 7000 feet

SNOWPACK ANALYSIS

The combination of recent moderate to heavy snowfall, lowering freezing levels and moderate to locally strong winds Monday and Tuesday has spread increasing load over a multitude of buried weak layers along with generally increasing avalanche danger, especially on north through east exposures. This has produced an increasingly challenging snowpack structure to safely negotiate, with increasing reports of cracking, whumpfs and sensitive wind slabs received during the past 12-24 hours. A variety of ski areas including Mt Hood Meadows, Alpental and Crystal Mt indicated that initially small but increasing soft wind slabs have been easily triggered by either explosives, skiers or boarders Tuesday and early Wednesday, with slab depths ranging up to about 1 foot at Alpental, and up to 1 to 2 feet at Crystal and Meadows, along with shooting tracks and some remote triggering. An off-duty ski patroller at Crystal Mt was also caught and mostly buried by a small loose slide released from above his position by another skier; fortunately no injuries resulted.

In general, this danger increase above 4 to 5000 feet has resulted from increasing density wind slabs deposited over either an old crust from last week, a lower density snow layer during lighter winds on Monday, or multiple layers of buried facets and buried surface hoar which have sporadically developed during the past several weeks of dry weather prior to this week. Although the slowly lowering freezing levels and gradual cooling during precipitation are normally associated with favorable stability trends (right side up snowpack), the pre-existing weak layers combined with some intense loading and the increased winds have allowed for the danger increase.

Below 4 to 5000 feet the cooling trend and a change from rain to snow initially helped limit the danger increase Monday into early Tuesday as some rain and less new snow was received along with a better bond of new snow to the old refreezing snow surface. However, additional loading has combined with some weak layers within the new snow to produce a gradual increase in a generally moderate danger, especially on north through east aspects.

DETAILED FORECASTS

WEDNESDAY

Increasing snow is expected to spread southward from the northern WA Cascades and Olympics on Wednesday from a developing northern trough sliding slowly southward along the Washington coast. Associated circulation around this incoming upper trough should also allow increasing moisture to move over the Mt Hood area in the form of moderate to heavy snow. As the new front merges with the enhanced snowfall in the south, this should result in increasing moderate snow likely developing in most areas mid-day and Wednesday afternoon. Along with further cooling and continued moderate to locally strong ridgetop winds, this weather should continue to increase the danger, especially on lee slopes above 4 to 5000 feet where considerable to high danger is expected, especially near Mt Hood. By late Wednesday, an additional 6 to 12 inches or more of new snow should be expected over the recent snowfall received Monday and Tuesday. As a result, wind slabs ranging from about a foot up to three feet should be expected on some more heavily wind loaded terrain...primarily north through east exposures in the south and northwest through north exposures in the north. Although it has been a long time since deep powder conditions have been enjoyed in the Northwest, this is not a time to become complacent. Back country travelers are urged to use increasing caution on all steeper lee terrain showing evidence of wind transport as sensitive slabs are probable. Whumphs or surface cracking should be key indicators of potentially dangerous problems that may require good route finding skills to mitigate.

WEDNESDAY NIGHT, THURSDAY MORNING

Gradually decreasing precipitation and winds are expected in the northern WA Cascades and Olympics Wednesday night and in the central WA Cascades later Wednesday night and early Thursday. However, with continued low freezing levels, light to moderate showers in the north and central Cascades and Olympics and further moderate to locally heavy snow continuing in the south through Thursday morning, this weather should maintain or slightly increase existing avalanche danger. Expected wind

directions should continue to favor northwest through northeast exposures in the north and north through east aspects in most other areas as the primary lee slopes receiving wind transport. However, whatever the aspect, strength and stability tests or slope cuts of smaller and safer slopes are strongly encouraged prior to venturing onto adjacent larger open bowls or chutes. Shovels and probes are excellent tools for helping determine if weak layers exist on your slope of interest, while stability and shear quality results can help produce an informed decision about whether or not the risk is worth taking. In any case, ride with a partner, wear beacons and know how to use them.

THURSDAY AFTERNOON AND NIGHT

Showers should slowly decrease from the north mid-late Thursday with some slow clearing expected overnight. Along with generally decreasing winds but increasingly cold temperatures this should allow for a slow decrease in the danger as new wind slabs begin to settle and gradually strengthen.

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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.

Moore/Northwest Weather and Avalanche Center