

TUNNEL CREEK AVALANCHE ACCIDENTS—01-20-2002

Informational report on two avalanche accidents in the Tunnel Creek area near Stevens Pass, WA—01-21-2002. Report prepared by Evan Woods, Stevens Pass Professional Ski Patrol

Incident Description: Time and Date—Monday afternoon, 1/21/02, at approx. 15:00 hrs. Five snowboarders were involved in two avalanches that were possibly connected. One incident involved two snowboarders, one cutting a soft slab that caught a second below him. The second incident involved three snowboarders being caught in an avalanche in the same terrain feature above a creek drainage.

Location: The south side of Cowboy Mt. going into the Tunnel Creek drainage. S-SW face slope @ approx. 4600' elevation. Access to Tunnel Creek is via hiking route off of Seventh Heaven chair lift located in Stevens Pass Ski Area. Tunnel Creek is a backcountry run and not part of the ski area. The Avalanches happened at the lower end of the main glade, falline from the high point of Cowboy. The glade funnels into a steep creek with very tight trees on both sides of the creek. The right side of the creek has open convex slopes 35-40 degrees rolling into the creek, the left side has some ribs and small chutes feeding into the top of the creek. These features create a gully type terrain trap that is approx. 100-150 meters across.

Synopsis: A group of approx. 7 snowboarders descended from the top of Cowboy down the main high point glade. Where this glade feeds into the creek drainage two of them traversed to the left. One of the snowboards came over a steep roll and released an SS-AS-2-0 approx.30-40cm deep and 30-40 meters wide. This slide caught a snowboarder below him and took him for a short ride until he was stopped by a small tree. He had a minor injury to his Rt. hip but was able to continue to ride. At approx. the same time (because all of the riders had ridden down the upper glade together) three snowboarders were caught in a slide on the right side of the gully area. I only talked to two of the riders involved in this slide so details are a little sketchy. One snowboarder (rider #1) riding into the top of the creek from the left when he saw another rider above and to his right, then he saw snow fracture across from him and above and behind him, he was caught in the slide and taken down the slope a short distance. The exact distance not know but probably less than 100 meters because at that point he would have entered the steep creek drainage below. This rider was OK when he came to a stop. He looked around and saw two other riders that had been caught in the same slide. One of the riders (rider #2) appeared to OK but shaken up with cuts and bruises. He said he was 2 or 3 turns into to the gully when he got hit from behind. The third rider (rider #3) was not moving and appeared to be injured. Rider #1 went over to him and saw that one of his feet had been pulled out of his boot and his boot was still attached to his snowboard; his gloves were also gone. He appeared to have an unstable upper arm fracture and possible leg fracture; he was alert but disoriented. At this point rider #2 went down to the highway to get help while rider #1 carried the injured rider down the steep creek sideslipping on his board approx. 1000 vertical feet where the creek opens up. When they came out into the opening at the bottom of the creek they were seen by some other skiers and snowboarders who improvised a sled with snowboards and hauled the injured victim out approx. one mile to the highway where an ambulance was waiting.

Snowpack and Slide Details: A crown profile was not done on the slide as none of the Ski Patrollers that went to the area the following day felt that it was safe or wise to enter that area with the instability present, hang fire and additional loading of 20-30cm of new snow overnight. A quick look at the snowpack on a similar aspect and elevation showed a slab structure consisting of 4F snow 40cm deep sitting on top of 25cm of 1F snow on top of the rain crust. The upper 4F slab sheared very easy on 1-1.5 mm surface faceted snow on top of the 1F layer. This coincides well with statements made by involved parties the bed surface of the slide was soft and he didn't feel any hard or icy layers.

The crown from the slide on the right side of the creek was observed from a distance, it appeared to have pulled out two open convex rolls into the creek drainage that were 30-40 meters across SS-AS-2-0 approx 35-40 cm deep. Slope angles were approx. 35-38 degrees. Debris from the slide was visible approx. 1000 vertical feet lower where the creek feeds out into the open. This debris had two fingers approx. 10-20 meters wide and up to 5 meters deep. The crown from the slide released on the left side of the creek was not visible from the location of observation.

Summary: The possible connection might be that the slide released by the snowboarder on the left side of the may have triggered the slide on the right as they were all in the same area at the same time. Statements from the injured party that was helped out were not available, so the trigger of the slide he was involved in was not determined. Of the five riders involved one had a shovel and transceiver, the others did not. All five of the riders were familiar with the terrain, all five had ridden the area at least once that day, and three of the five had some formal Avalanche Awareness training.

-----Evan Woods Stevens Pro Patrol-----

Ancillary Weather and Snow pack Information provided by Northwest Weather and Avalanche Center

Since some travelers leave for their destination prior to issuance of the morning forecast , avalanche forecasts issued by the Avalanche Center for both the day of the accident and the day before the accident are provided below. In summary, the Avalanche Center had issued an avalanche warning for Sunday, the 20th with danger expected to slowly decrease to considerable below 7000 feet on Monday, the 21st. However, both forecasts warned of the instabilities initially encountered by the snowboarding group and subsequently verified by the Stevens Pass Pro Patrollers who journeyed to the site on the following day.

FORECAST ISSUED ON SUNDAY MORNING, JANUARY 20TH, 2002

ZCZC SEASABSEA
TTAA00 KSEA DDHHMM
WAZ012-017-018-019-025-042-ORZ011-211700-

NORTHWEST WEATHER AND AVALANCHE CENTER

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
(including Snowmobile and Snowpark Programs)
Pacific Northwest Ski Area Association
and other private organizations

**BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS, WASHINGTON
CASCADES AND MT HOOD AREA**

These forecasts apply to back country avalanche terrain below 7000 feet. They do not apply to highways or operating ski areas.

9 AM PST SUNDAY 20 JANUARY 2002

ZONE AVALANCHE FORECASTS.....

WEST OLYMPICS... WASHINGTON CASCADES NEAR AND WEST OF THE CREST... MT HOOD AREA...

.....**AVALANCHE WARNING.....**

High avalanche danger below 7000 feet Sunday and Sunday night. Avalanche danger gradually decreasing Monday, becoming considerable below 7000 feet. Avalanche danger further gradually decreasing Monday night.

EAST OLYMPICS AND HURRICANE RIDGE... WASHINGTON CASCADES EAST OF THE CREST...

Considerable avalanche danger above 5000 feet and moderate below Sunday and Sunday night. Avalanche danger gradually decreasing Monday, becoming considerable above 6000 feet and moderate below. Avalanche danger further gradually decreasing Monday night.

SNOWPACK ANALYSIS....

The latest storm and heavy snow began on Saturday night. About 10 to 14 inches of new snow is reported on Sunday morning near and west of the Cascade crest, with less at Hurricane Ridge and east of the Cascade crest. Very strong west winds also began on Saturday night. By Sunday morning, wind gusts of 80 to over 100 mph are being seen at NWAC mountain top sites such as Mission Ridge, White Pass, and Timberline. This should have caused new storm cycle slab layers to have developed in deep new snow on some lee slopes. This should be mainly northeast to southeast aspects due to the west winds, but cross loading on other aspects is also possible. Natural or easily triggered avalanches in the new layers should already be likely in many areas by Sunday morning. Avalanches of new slab layers may step to deeper layers of buried hoar frost that developed last week at moderate and lower elevations, and slide longer than usual distances on the hard buried crust from earlier this month. The greatest danger by Sunday morning should be in areas that accumulate the most snow, which is expected to be the west Olympics and near and west of the Cascade crest. Generally smaller or shallower, but easily triggered slab avalanches are also probable Sunday morning in the other areas as well.

SUNDAY.....

Very strong west winds and heavy snow are expected to continue on Sunday, especially over the west Olympics and near and west of the Cascade crest, at slightly warmer temperatures. This should continue to cause new slab layers to develop in deep new snow on some steep slopes. This should continue to be mainly northeast to southeast aspects due to the west winds, but cross loading on other aspects is also possible. Natural or easily triggered avalanches in the new layers should continue to be likely in many areas, and may step to deeper layers, and slide longer than usual distances on the hard buried crust from earlier this month. The greatest danger should be in areas that accumulate the most snow, which is expected to be the west Olympics and near and west of the Cascade crest. Generally shallower, but easily triggered avalanches are also probable on some steep slopes in the other areas as well. Backcountry travel near avalanche terrain is not recommended on Sunday.

MONDAY.....

The west winds and snow should gradually decrease on Monday at cooler temperatures. Orographic effects and convergence may allow snow showers to persist the most along the west slopes of the north and central Cascades. By Monday, avalanches on some slopes and settlement on other slopes should diminish the avalanche danger in snow from Sunday. The cooler temperatures should generally favor more stable profiles in new snow layers that accumulate Monday. But slab layers from Sunday should also persist on some steep lee slopes. Local new slab surface layers may also continue to form on some steep lee slopes through at least Monday morning. This should continue to be mainly northeast to southeast aspects. Human triggered avalanches should remain probable on steep lee slopes at higher elevations Monday. Backcountry travelers who might choose to venture out near avalanche terrain so soon after the strong storm should use a lot of caution. Periodic snow stability evaluation should be very worthwhile, especially due to uncertainties regarding snow stability so soon after the storm. Further decreasing winds and snowfall, and further settlement should allow the avalanche danger to further gradually decrease Monday night.

Backcountry travelers should be aware that elevation and geographic distinctions are approximate and 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 Mountain Weather Forecasts and mountain weather data are also available by visiting our Web site at www.nwac.noaa.gov.

Ferber/Forest Service Northwest Weather and Avalanche Center

FORECAST ISSUED ON MONDAY MORNING, JANUARY 21ST, 2002

ZCZC SEASABSEA

TTAA00 KSEA DDHHMM

WAZ012-017-018-019-025-042-ORZ011-221700-

NORTHWEST WEATHER AND AVALANCHE CENTER

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
(including Snowmobile and Snowpark Programs)
Pacific Northwest Ski Area Association
and other private organizations

**BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS, WASHINGTON
CASCADES AND MT HOOD AREA**

These forecasts apply to back country avalanche terrain below 7000 feet. They do not apply to highways or operating ski areas.

9 AM PST Monday, January 21, 2002

ZONE AVALANCHE FORECASTS.....

WEST OLYMPICS... WASHINGTON CASCADES NEAR AND WEST OF THE CREST...

Considerable avalanche danger below 7000 feet Monday, slightly decreasing. Further slowly decreasing danger Monday night, becoming considerable above 4 to 5000 feet and moderate below. Avalanche danger slightly increasing Tuesday becoming considerable above 3 to 4000 feet and moderate below. Avalanche danger gradually decreasing Tuesday night.

MT HOOD AREA....

Considerable avalanche danger below 7000 feet Monday, slightly decreasing. Further slowly decreasing danger Monday night, becoming considerable above 5000 feet and moderate below. Avalanche danger slightly increasing Tuesday becoming considerable above 4000 feet and moderate below. Avalanche danger gradually decreasing Tuesday night.

EAST OLYMPICS AND HURRICANE RIDGE... WASHINGTON CASCADES EAST OF THE CREST...

Considerable avalanche danger above 6000 feet and moderate below Monday, slightly decreasing. Further slowly decreasing avalanche danger Monday night. Slightly increasing avalanche danger Tuesday remaining considerable above about 6000 feet and moderate below. Avalanche danger gradually decreasing Tuesday night.

SNOWPACK ANALYSIS....

Another 6 to 14 inches of new snow fell over the last 24 hours near and west of the Cascade crest with some 2 to 5 inches along the east slopes. Over the last three days west side snowfall has ranged from about 18 to over 30 inches and over 40 inches over the Mt Hood area with significantly less along the east slopes of the Cascades. The most recent snow fell at cooling temperatures with strong winds Sunday, with westerly ridge top winds averaging 25 to 40 mph with several sites recording gusts over 100 mph. This is likely to have deposited significant wind slabs on lee slopes, mainly northeast to southeast with some other cross loaded slopes as well. Also, due to the strength of the winds, many slopes may have wind deposits and unstable slab formation much lower down the leeward slopes. On wind exposed slopes, new snow is likely to be scoured to older harder wind deposits or possibly to the old hard rain crust formed earlier this month, thus limiting the danger on these aspects. Slides beginning in near surface weaknesses may trigger more deeply buried weak layers of buried surface hoar or faceted snow just above the old crust, now buried 2 to 4 feet below the surface. This is maintaining the possibility of some deeper releases of up to 5 feet or more. The greatest present danger is likely on mainly steeper northeast through southeast facing slopes where natural slabs avalanches are possible and triggered releases likely.

MONDAY.....

Gradually decreasing west winds with light to moderate snow showers at low freezing levels should allow for a slightly decreasing danger. However, on steeper wind loaded slopes mostly unstable snow should persist with triggered soft slabs likely, especially at higher elevations where stronger winds have occurred. The strong winds have likely scoured recent snow from many windward westerly-facing slopes, limiting the danger on these aspects exposed to the strong winds. Some new deposits of shallow surface wind slabs may develop on mainly easterly facing slopes, especially where more significant new snow falls, such as the north central Washington Cascade west slopes in a convergence zone. Decreasing snow showers Monday night should allow for gradual settlement and a slightly decreasing danger.

TUESDAY...

Increasing snow showers and slightly increasing northwest winds should cause a gradually increasing danger as new areas of wind slab layers form on lee slopes, especially at mid and higher elevations and those areas receiving the heaviest showers, mainly the central Washington Cascade west slopes in convergence. Backcountry travelers should exercise extreme caution and avoid slopes of questionable stability. Some shallow slides may trigger more deeply buried layers resulting large deposits of debris.

Backcountry travelers should be aware that elevation and geographic distinctions are approximate and 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 Mountain Weather Forecasts and mountain weather data are also available by visiting our Web site at www.nwac.noaa.gov.

Kramer/Forest Service Northwest Weather and Avalanche Center