

Avalanche Accident on Red Mountain, central Washington Cascades

2/1/2011

[just north of Snoqualmie Pass, Washington]

Report submitted 2011/02/13

by Bram Thrift

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(BARK)

Accident Summary

- **Location:** Red Mountain, just north of Snoqualmie Pass, Washington
- **State:** Washington
- **Date:** February 1, 2011
- **Time:** Unknown
- **Coordinates:** 47° 27.367' N, 121° 23.354 W
- **Elevation:** 5880 ft, NE aspect
- **Avalanche Type:** AC(AF-Su)-R1D2 [Cornice collapse by foot penetration of skier w/o skis; collapse carried victim down cliff band and triggered subsequent WL]
- **Summary Description:** 1 skier on foot caught, buried and killed by cornice collapse, subsequent fall and loose slide; death most likely due to trauma suffered during the fall
- **Primary Activity:** Backcountry Skier

Avalanche Site Comments

The summit of Red Mountain sits atop a steep narrow northwest/southeast oriented ridge. On the east side of the ridge/summit a 600 foot, nearly vertical cliff falls to the slope below. The prevailing west to southwest storm track often builds a large over hanging cornice above the cliff on the lee (east side) of the summit ridge. The cornice impact triggered a loose snow avalanche that ran about 400 vertical feet. An impact crater from a large piece of cornice (6'x6'x8') was observed below the cliff at ~5200 feet. No crown or other evidence of a slab release was observed. The snow on similar aspects and elevations nearby was cold, dry and loose on the day of the incident.

Weather Summary

January 25, 2011 saw 1.75" of rain recorded at nearby Alpentel Ski Area study plot (3200') that reached the top of the highest peaks around Snoqualmie Pass. Three days of dry warm weather

followed. The maximum and minimum temperatures recorded at the Alpental Ski Area upper mountain weather station (5400') for the 26th-28th were 40/30, 43/38 and 47/37. January 29th saw 1.12" of precipitation which produced 7" of new snow at 5400' and max/min temperatures of 34/29. On January 30th an additional 8" of snow fell at 5400' with temperatures of 37/27. Moderate WSW winds accompanied the snowfall on the 29th and 30th. The weather on January 31st was cool with clearing. February 1st was cold and clear with light west winds and 27/7 max/min temperatures recorded at 5400'....although the midday sun did warm the snow surface on sun exposed terrain enough to cause a thin sun crust to form that night.

Snowpack Summary

The snow pack summary is based on observations taken from nearby Alpental Ski Area on NE aspects from 5000' to 5400' on February 1st. The new snow from the weekend was fairly dry and unconsolidated with an average depth of 12". Hand hardness was fist with a slight density increase near the new/old snow interface. The new snow was well bonded to the old snow surface. A slight crust was observed in a few places below the new snow, otherwise the old snow consisted of moist four finger to one finger round grains. Compression tests failed to produce any failures in the top meter of the snow pack. Ski cuts produced little more than loose surface snow movement without any entrainment of additional snow. The Northwest Weather and Avalanche Center rated the avalanche danger as moderate above 5000 feet on north, east and south slopes and low below 5000 feet for both January 31st and February 1st. It should be noted that new snow accumulation below 5000' was limited by temperatures during precipitation, and very little snow accumulated below 4500'.

Accident Summary

The victim was reported by friends and family to have gone on a solo ski tour to Red Mountain on Tuesday February 1st. It is presumed that the victim triggered the cornice fall while walking/standing on the summit. The victim and cornice fell about 600' to the slope below. A small loose avalanche (R1-D2) was triggered from the cornice fall. This slide ran about 400 vertical feet. The victim was found buried under 30cm of snow about 100' up from the debris toe.

Rescue Summary

The King Country Sheriff's Department was alerted on February 2nd when a group of ski tourers found the victims' backpack, skis and other gear on the summit. The county dispatched a helicopter to do an air recon of the site. The helicopter did a transceiver search of the site with no results. Two ground teams went in to the site that night. The two teams searched the site through the early morning hours. Both transceiver and Recco searches were performed. Spot probing and some organized probe lines in likely deposition areas were also performed. Several clues were found on or near the surface, however probing around these articles did not yield a find either. Poor weather including freezing rain and rain prevented the helicopter insertion of dog teams to the site on the morning of February 3rd. A number of Search and Rescue teams, as well as two dog teams attempted to reach the site by ground on February 3rd. Increasing avalanche hazard eventually forced all teams back out of the mountains late that day. Poor weather further

postponed the search effort on February 4th. Early morning on February 5th a team of five searchers and two dogs skied into the site; they would eventually be joined by four friends of the victim. Several days of heavy rain and several inches of new snow hindered the search to the point that in many areas the debris field was hard to identify. After four plus hours of searching with dogs, Recco and probes the victim was found by searchers disturbing the snow surface. The victim was found deceased under approximately 30 centimeters of snow after an estimated burial time of 120 hours; however the coroner's report indicates that death was most likely a result of trauma suffered during the fall.

Ancillary Avalanche Information:

The NWAC avalanche forecast for the day of the accident is shown below for the area in question. While the forecast danger at the elevation and location of the incident was rated as moderate, this means that "human-triggered avalanches are possible". However whatever the danger rating, cornices have long been known to present extra challenges for back country travelers, and no matter what the danger, cornice overhangs must always be approached with caution.

Northwest Weather and Avalanche Center Seattle Washington

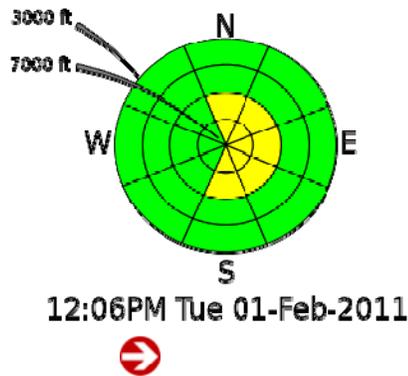
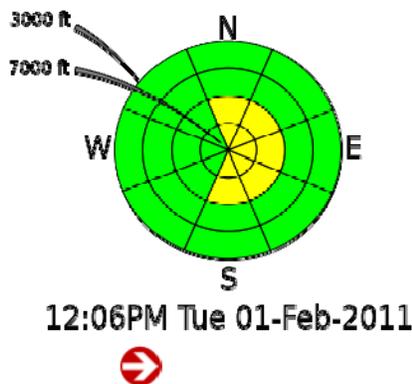
1206 PM PST Tue Feb 01 2011

Zone Avalanche Forecasts

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 Tuesday

Danger Rose for Wednesday



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

Forecast

Tuesday and Wednesday: Generally moderate avalanche danger above 5000 feet and low below. Avalanche danger slightly decreasing night time hours.

Snowpack Analysis

Generally about 4 to 12 inches of snow has accumulated over the past four days during a cooling trend. The new snow amounts are generally highly dependent upon elevation as much of the recent precipitation fell as rain at mid and lower elevations. The recent snow overlies one or more strong and stable crust layers from mid and late January. Professional avalanche field personnel and other back country skiers yesterday have reported generally stable conditions except for some isolated shallow unstable layers mainly in steep exposed areas at higher elevations where strong winds had transported some loose surface snow. Otherwise, variable amounts of settling snow, either dry or damp depending upon elevation, overlies a firm base. Several recent trip reports indicate nice touring conditions in this long awaited recent snow, mainly at higher elevations.

Detailed Forecasts

Tuesday and Tuesday night

Daytime sunshine and a mostly clear night with cool temperatures and light winds are expected Tuesday. This should not cause a significant change in snow conditions, though any previous unstable layers should continue to slowly stabilize. There may remain some isolated unstable wind slab layers on steep lee slopes at higher elevations. Continue to evaluate snow and terrain carefully on Tuesday at higher elevations.

Wednesday and Wednesday night

Mostly sunny with variable high clouds and a warming trend is expected Wednesday with continued light winds. The sun effects and warming may cause a slight increase in danger on sun exposed terrain, otherwise little change is expected in current snow pack conditions.

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