Lake 22 Trail Avalanche Accident
January 4, 2008

Preliminary Report

Accident Summary
Time: January 4th, 2008, approximately 14:30 PST
Location: Lake 22 trail below Mt Pilchuck, WA
Activity: Snow Hiking
Caught: 4
Buried: 3 completely buried, 1 partly buried and able to self extricate
Injured: 4
Killed: 1

Preliminary Accident Narrative:
(Narrative prepared by Mark Moore, NWAC—compiled from information provided either by Everett Mountain Rescue, Oyvind Henningsen and various news reports; all maps and photos courtesy Oyvind Henningsen):

A party of 7 (one adult and six youth aged 12-16) departed on a hike on the morning of the 4th of January with the goal of reaching Lake 22. While this relatively low elevation lake (approximately 2400 ft elevation) is normally accessible by hiking even during the winter, a long period of unusually large amounts of low elevation snowfall (from about early December) had created a trail of increasing snowdepth with elevation after the group departed the trailhead around the 1100 ft level. At the time of the accident, a decision had already been made to turn around due to both deteriorating trail (deepening snow and no snowshoes) and weather conditions (increasing rain) encountered before reaching the lake. Descending along a snow trail to about the 2400 ft level between points 20 and 21 in Figure 1 below, the group was crossing a ravine (see Figure 2 and 3) when a natural avalanche struck (also see the topographic map in Figure 4). Although it is unknown whether the slide that caught them was a slab or wet loose, it most probably released by cornice fall and/or melting snow from the cliff bands toward the top of the narrow 30-35 degree, N-NE facing gully that stretched as much as 600 to 800 vertical feet above them (see Figure 5). In any case the slide (roughly classified as WS-R3D2-NC?) caught four of the group (see Figure 4) and swept them several hundred feet down the ravine toward Twenty-two Creek (Figure 6). When coming to rest, three of those caught were completely buried with one partly buried and able to self extricate. With the aid of the remaining party members who immediately descended the path to the debris, two of those completely buried were found quickly by spot probing with ski poles. Unfortunately after an hour or more of unsuccessful probing for the last member of the party, the group made the decision to leave, return to their car and report the accident. They subsequently drove to the nearby ranger station to receive first aid for scrapes and bruises and called 911 around 16:45 PST.
Figure 1. Approximate location of accident—see narrow gully between points 20 and 21.
Figure 2. Terrain prior to crossing gully
Figure 3. Trail crossing gully
Figure 4. Topographic map of accident site, approximate location
Figure 5. Looking down gully from trail and initial contact with avalanche.
The Rescue:
Everett Mountain Rescue responded to the rescue request, leaving the rescue base around 1815 PST and arriving at the trailhead at incident command at 1900. The first field team departed the trailhead around 19:30 and arrived on the accident scene at 2030. In order to ensure safety of the rescue party during the search, they hiked up another 4 to 500 vertical feet from where the injured party was initially struck by the avalanche (see Figure 7). Although they were not able to reach the crown, they noticed several large hard blocks on snow approximately 1.5 x 1.5 x 1.5 m, and it is believed that these might have been from a cornice failure further up slope. No slope dimensions or snow property observations were made due to exposure of the rescue party, poor weather conditions and darkness. After this initial reconnaissance, two rescuers descended the slide path and two descended the flank. Rescuers spot probed possible areas of deposition in the gully with depth of probing to ground varying from 50 cm to over 3 m. A possible positive probe strike at the 1.45 m depth was indicated on the uphill side of a tree about 2-300 vertical feet from where the group was hit by the slide. The site was excavated and the victim uncovered around 2130 PST, with the location in line with the other two previously buried but surviving victims, about 20 feet from the closest victim. The victim’s further movement downslope was halted by the tree which also caused a deeper burial than the other two victims.
Figure 7. Looking up the avalanche path toward potential starting zone near upper trees, where avalanche may have started due to cornice collapse or wind pillow release by rain

Ancillary Weather and Snowpack Information

This is indeed an unfortunate accident that occurred at a low elevation area not known for instability or avalanche problems. It is possible that the low elevation and perhaps previous familiarity with the terrain in more benign conditions may have produced a false sense of safety. Other similar incidents have involved victims who were “just out for a hike in the mountains” and unaware of any associated avalanche danger. However, it cannot be overemphasized that whether hiker or climber, snowshoer or skier—no matter what the time of year or the elevation or previous good experiences in the same area—steep snow covered terrain can be deadly under the right conditions. In this case the right conditions were increasing rain and warming temperatures negatively affecting snow stability.

While it is unknown if any of the party had avalanche training, or whether they were aware of either the mountain weather or avalanche forecast, such awareness can be vital in the decision making process, especially as regarding route selection and travel techniques when crossing avalanche paths or steep gulleys. Applicable portions of the mountain weather and avalanche forecasts issued for January 4, 2008 by the NWAC are provided below:
WEATHER SYNOPSIS FOR FRIDAY AND SATURDAY

The early winter of 2008 continues to be dominated by an intermittently strong south to southwesterly flow around a deep upper low about 500 miles west of the central Oregon coast. While strongest associated flow, driven by a 200 knot jetstream, continues to be directed toward California, slightly weaker northern parts of associated frontal systems continue to rotate over the Northwest. The most recent frontal system is moving onshore over Oregon and southwest Washington early Friday, with an associated weak warm front already spreading increasing winds and light rain or snow northward along with slightly and briefly rising freezing levels. The following cold front should quickly sweep over the area later Friday morning and early afternoon, bringing increasing moderate snowfall in most areas along with strong winds...southerly near higher ridges and easterly across the Cascade passes. While there is some brief warming aloft, the cold easterly surface flow across the Cascades should maintain all precipitation there as snow, with any rain primarily confined to lower elevations along the west slopes of the Cascades and Olympics. With a primarily southerly flow aloft with the front, heaviest precipitation should be along the southern slopes of the volcanoes and areas channeling a southerly flow, with generally less precipitation likely near the Cascade passes.

WEATHER FORECAST FOR FRIDAY AND SATURDAY

* WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
Windy with light showers north and light to moderate showers south early Friday morning. Light to moderate rain or snow developing south early-mid morning and spreading northward. Continued windy with moderate to occasionally heavy rain or snow later Friday morning and early afternoon, heaviest near the volcanoes and areas channeling a southerly flow. Rain or snow decreasing and becoming more showery mid-late afternoon. Light to moderate showers increasing and becoming moderate snow or snow showers Friday night. Periods of moderate to occasionally heavy snow on Saturday with chance isolated thundershowers. Moderate snow or snow showers gradually decreasing Saturday night.

Avalanche Forecast issued 0830 AM, Friday, January 4, 2008 (applicable parts only)

ZONE AVALANCHE FORECASTS

* OLYMPICS, WASHINGTON CASCADES NEAR AND WEST OF THE CREST-
Considerable avalanche danger above 4000 feet and moderate below increasing Friday and becoming high above 5 to 6000 feet and considerable below, with greatest danger on northwest through northeast exposures near higher ridges and west facing slopes near the passes. Little change in the danger expected Friday night and Saturday with greatest danger shifting onto northeast and east exposures.

SNOWPACK ANALYSIS
In most areas, the upper part of the deepening Northwest snowpack consists of small to moderate amounts of new slightly heavier and higher density snow from Thursday that were deposited over earlier wind slab and some generally weaker low density snow that were created in some areas on
Wednesday. This is helping to maintain a considerable avalanche danger above 4 to 5000 feet, especially on northwest through northeast facing slopes receiving most recent wind transport. At lower elevations, more recent settlement is producing a slightly lower and moderate danger, although small wind slabs are still probable on steeper wind loaded terrain.

The most recent new snow was also deposited over previous large amounts...ranging up to 3 to 6 feet...of slowly settling older snow received late last month that lies over the faceting Christmas crust. Finally, all of this snow lies over some 4 to 6 feet of snow sandwiched between the weakening Christmas Eve crust and the old faceted early December crust which exists relatively close to the ground. While slow settlement and gradual strengthening of the snowpack between the two crusts has slowly diminished the possibility for deeper slides reaching the old early December crust, some isolated natural slides reaching this crust were reported as recently as early this week, with fracture depths up to 8 to 12 feet. More frequent and slightly smaller natural slides releasing on the Christmas crust have also been reported, and this may have been the sliding surface for the 5 to 6 ft slab that resulted in the recent snowmobiler accident in the northern Washington Cascades.

These deeper weak layers are typically most easily triggered by larger loads, such as snowmobilers or larger groups...hence such travelers should be extremely cautious in avalanche terrain. However, primary slide activity in most areas is much smaller, involving only the most recently deposited snow with mostly 6 to 18 inch fractures in wind loaded terrain. Of further interest to back country travelers are recent reports of relatively high quality powder in wind protected terrain, although this enjoyment requires careful route selection and good terrain management skills, as well as frequent updates as to slope stability and snow structure.

DETAILED FORECASTS

FRIDAY
Increasing light to moderate snow should spread to most areas Friday morning, along with increasingly strong winds and a brief warming trend. Although moderate rain or snow should decrease and become more showery during the afternoon, moderate to strong winds should continue in most areas. This weather should produce generally increasing danger on Friday as new denser wind slabs are deposited over weaker snow layers and some recent wind slabs, with slabs up to 2 to 3 feet or more likely developing on wind loaded terrain, especially northwest through northeast facing slopes near higher ridges and west exposures near the Cascade passes. As a result of the increasing danger, back country travel is not recommended in steeper wind loaded avalanche terrain where deepening wind slabs should become increasingly likely.