Alex Lowe Peak Avalanche – 9 February 2013

Avalanche crown seen 3 days later and filled in with new snow. X shows where the avalanche was triggered. Photo: B. Vandenbos

On Saturday, February 9, 2013, two skiers (Group 2) skinned up the Blackmore trail and crossed the saddle between Elephant Mountain and Mt. Blackmore. They descended into the head of Cottonwood Creek to ski the Hellmouth Couloir on Alex Lowe Peak. They had read Friday morning's advisory which rated the avalanche danger as Moderate. Saturday morning's advisory also rated the danger as Moderate. Both advisories identified places to trigger an avalanche as areas with a snowpack less than 3 feet deep prior to the previous storm cycle. In these places facets were buried 2-3 feet deep.

They approached the East face of Alex Lowe Peak and assessed stability. The snowpack looked solid in this location. Their stability test scores were ECTN and CT21 on a layer about 1-2 feet deep. However, they said the snowpack seemed variable. There was 3 inches of new snow and minimal winds.
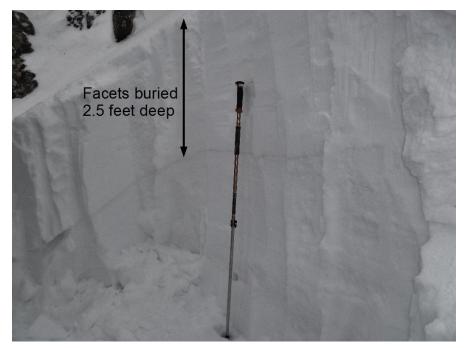
They followed another group of two (Group 1) across the east face to ascend the Southeast ridge. Group 1 experienced a collapse near the ascent ridge and reported it to Group 2. Additionally, Group 2 noticed a marked difference in the snowpack in this area as their boots penetrated the snowpack into buried facets.

Once on top, both groups descended the Hellmouth Couloir by skiing and making three rappels. At the bottom of the couloir, Group 1 followed the fall line and deeper snow into the trees. It was about 6:00 p.m. as Group 2 reached the apron below the couloir. They began traversing the apron to the east under fading daylight. As the first skier in Group 2 crossed an area with snow only 2 feet deep, the snowpack collapsed on buried depth hoar and broke about 1 foot deep. He was carried downhill about 200 vertical feet, was not buried and not injured, but lost one ski. His partner was 50-75 feet behind him and was not caught.

Overview of avalanche path. Hellmouth Couloir seen in upper right. Skers were traversing the apron along the red line and triggerd the avalanche at the X.

The avalanche broke about 300 feet wide and ran 200-400 vertical feet. The crown was 1-4 feet deep. The slab was resting on very weak depth hoar where the fracture initiated and in a few places on rocks. In most places, however, the slab was resting on a thin layer of small, faceted crystals that formed in early to mid January and was connected to the depth hoar in these thin areas. One section of slab was four feet thick and pencil hard from the accumulation of both slough debris and wind drifted snow. This section of slab produced two chunks of debris the size of a very small car.

Thin layer of small facets was easily seen in the crown face and in a nearby snowpit. Photo: GNFAC

Because it was getting dark, Group 2 spent 30 minutes looking for the lost ski with no success and began hiking out. Group 1 was far ahead but saw two moving headlamps and figured Group 2 made a safe descent. Group 2 slowly retraced their approach route out of the Cottonwood Creek drainage. With a missing ski, they were traveling very slowly. As they began climbing south facing slopes under the saddle between Elephant Mountain and Mt. Blackmore, they experienced several collapses. Slope angles in this terrain approach 30 degrees, but cliff bands on either side contain much steeper slopes. Safely ascending this terrain is possible but not easy.

Once they gained the saddle it was completely dark and they were unable to see the terrain below which lacks trees to help with depth perception at night. In daylight this terrain can be descended safely, especially since it is often scoured to bare ground. It can harbor small wind drifts in steeper sections. They decided to wait until morning to descend and ski back to the trail head and they dug a hole near an exposed rock for shelter. Unfortunately they did not have any communication devices to let their friends and family know that they were ok. A sister of one of the skiers alerted Gallatin County Search and Rescue when she did not hear from her brother. SAR teams responded at midnight and skied into the area at 5 a.m. the next morning. They met the two skiers at 7:30 a.m. as they were descending from the saddle where they spent the night.

Both skiers in Group 2 were experienced skiers and experienced in assessing stability. They had both completed level II avalanche courses. They both had avalanche rescue gear including beacons, probes, and shovels.

Lessons:
- This group was well equipped to spend the night with headlamps, warm and dry layers, water and food.
- Darkness, new snow, and poor visibilty were good reasons to wait for light the next morning.
- They had discussed bringing cell phones but did not think they would get service. Sometimes text messages are possible from high places with minimal reception. Other devices like SPOT trackers can tell friends and family that you are ok but running late.
- They were attentive to the snowpack and constantly assessing stability. In the end, they felt that they did not account for highly variable conditions.
- Even though the apron was avalanche terrain, it felt much safer relative to the extreme terrain in the Hellmouth Couloir. Only one person was caught, but they felt that they should have been spaced further apart. It was late and they wanted to get home.
- Seeing another group go first can influence decision making and make conditions feel safer.
- Lastly, they had let others know of their plan to ski Alex Lowe Peak. Informing friends and family of your plans is a critical step if you are ever injured and require evacuation.

A video of the accident investigation can be seen at:
http://www.youtube.com/watch?v=beSKvHQWkBE&list=PLXu5151nmAvT7gHqdNajDBGfGY4u5XMSL&index=1

A snowpit profile from the crown can be seen at:
http://www.mtavalanche.com/images/13/alex-lowe-peak-crown-snowpit-2-12-13?size=_original

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