Raven Headwall – Near Miss Report
Chugach Mountains, Alaska

**Location:** Raven headwall, Raven Glacier
Lat/Lon: N 61.06348 W 149.05140

**Date:** February 11th, 2017
**Report by:** Chugach National Forest Avalanche Center Staff
**Contact:** staff@chugachavalanche.org, website: cnfaic.org

**Synopsis:** One skier was caught and carried 300’ in a hard, but shallow, slab avalanche that broke 20’ above them. Skier came to a rest on top of the debris, uninjured and no gear was lost. The avalanche occurred on the last day of a 5-day traverse (Eklutna Traverse).

**Avalanche Details:**

*Photos of avalanche and snowpack profile are at the end of this report*

Avalanche Code: HS-ASu-D2-R2-I
Trigger: Skier
Aspect: SSW
Angle: 40 degrees
Elevation: 5800’
Crown Depth: 4’ to 1’, 6’ average
Width: 200’
Vertical Fall: 600’
Weak Layer: Decomposing fragments
Debris depth: Estimated at 2-3’

**Accident Summary:**
Account provided by group members:

Eklutna traverse. Two members of the group of 4 began the traverse on 2/6 from the parking lot at Eklutna Lake and traveled to Pichler's Perch (all using alpine touring gear). On 2/7 we toured the west fork of the Eklutna Glacier. On 2/8 we traveled to Hans' Hut. On 2/9 we climbed and skied Insignificant and Whiteout Peaks. On 2/10 we had a rest/weather day and met up at Hans' Hut with the other two in the party who started on 2/9 from the Eklutna Lake parking lot. On 2/11 we traveled out from Han's Hut via Raven Headwall to Crow Creek road. At the end of the tour we noted considerable cross-loading/shooting cracks on fresh wind slabs below the Jewel Glacier en route to the trailhead. Weather was forecasted to deteriorate with additional snow en route on 2/12.

Once we decided to exit to Girdwood, our options were of limited quality. The right call would have been to use the clear, windy weather on 2/11 to return to Serenity Falls hut from Hans' hut, and then ski to the car through deteriorating weather on 2/12. Instead, our plan was to ski to the
raven headwall on 2/11 from Han's hut, evaluate safety, and if need be, ski back down to Rosie's Roost. We discussed ways to protect the entry, including creating an anchor for a belayed ski cut. In the end we felt like the time and exposure required to build a proper deadman, let it set, and belay the skier from that point were too high. This is another indication that we should have exited by a different route. The slab did seem soft enough from the pit position that the slab would fail underfoot if it did fail. Obviously this did not turn out to be the case.

Encouraged by ECT results without propagation at the top of the headwall (see below), each of us decided that we were comfortable to ski the slope, one at a time. We noted that there was a possibility the top layer (wind slab) would slide because of the poor interface between the wind slab and the sun crust. However, we thought the consequences would be moderated by what we assessed a low chance of a step-down avalanche, and the likelihood that the slab would break at the skier’s feet and not above them. Besides the decision-making flaws centering around a fixed notion of finishing the trip in the Girdwood direction despite changing conditions, another major takeaway was the deconstruction of the notion: "if X top layer goes, it won’t be of Y unacceptable consequence." That we recognized that any portion of this snowpack could fail represents that it was unacceptable for us to ski the slope. Another major red flag was that I’m sure all four of us would have walked away from that slope and gone back the way we came if we encountered it on a normal ski touring day where it didn’t represent the portal to overall safety and the end of a trip whose safety profile was deteriorating.

Skier #1 gently skied approximately 50 vertical feet below our pit location. Mostly side slipping. Each of us noted that the slab changed density as he descended and sounded harder (and more hollow). The slab shattered beneath his skis and the crown broke approximately 20 vertical feet above his position, propagating across the entire width of the slope. Skier #1 lost one ski instantly in the collapse and both poles (no leashes). All in the party had beacons, on and confirmed in transmit mode, shovels and probes. No airbags worn on account of the week-long traverse. Three in party had a level II avalanche course. Skiers 2-4 watched for signs of skier #1, visual contact was lost when the power cloud arose. Skier #1 was then seen tumbling behind the mass of debris and came to a stop on top of the snow, approximately 400 vertical feet below us, 2/3 of the way down the slope. The debris ran the length of the headwall and onto the glacier (see photo). Both skis released. A ski and two poles came to rest in close proximity to skier #1, who signaled he was not severely injured, stepped into his ski and skied down to find his other ski in the debris pile. Skier #2 skied down and made contact with #1. Skiers #3 and 4 followed without incident and the teams re-roped in groups of 2 after the debris pile to resume roped travel down the Raven Glacier.

Re: "Recent avalanches": There were two small natural slough point releases from the bottom portion of the headwall. No witnessed slab activity, including on the surrounding terrain on our tour that day from Han’s Hut to the top of the headwall.

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Weather:
There were 4 days of relatively clear, relatively windless weather. 2/10 was windy (gusts ~40 mph at Han’s hut) and it snowed lightly, on and off, for 24 hours from 20:00 on 2/9 - 20:00 on 2/10. Difficult to find undisturbed area to estimate depth of new snowfall, estimated at 4”.

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Snow surface:
Predominately soft wind slab. This transitioned to hard slab at the area of maximal loading, where the slide was triggered. Active loading noted, including on attached picture, from northerly winds transporting/digesting snow from 2/10.

- Pit depth: 40 inches.
- Location: skier's left at the top of the headwall, above the convexity.
- Slope angle of pit: 20-25 degrees.
- Profile from top to bottom:
  - top 5 inches: wind slab, 1 finger hardness
  - sun crust/melt freeze crust, .25 inch, pencil or knife hardness
  - next 18 inches, homogenous, 4 finger hardness
  - well bonded interface between storm snow
  - next 17 inches, homogenous 1-4 finger hardness
  - ECT N17; 5 inch wind slab collapsed directly beneath the shovel at #17 (from the elbow), no lateral propagation, no "cash registering." No additional failure through #30.

**Snowpack and Weather History (by CNFAIC staff):**

The avalanche occurred on a mostly sunny day with moderate to strong winds out of a Northerly direction. Late in the day on Feb 9th a small storm moved in and by the morning of Feb 11th 6-8" of new low-density snow had accumulated to the South of the Raven Headwall in the Girdwood Valley. Ridgetop winds were from the East at the beginning of the storm and shifted to a Northerly direction on Feb 10th. The closest weather stations to this area (Penguin Pk and Maxes Mt) reported wind speeds in the 10-20mph range with gusts to 30mph. The Raven headwall likely experience much stronger winds than the weather stations. Temperatures were in the teens at the beginning of the storm at 4,000’ then cooled with the North flow down into the single digits by Feb 11th.

There is little known of the snowpack in this area and at the elevation of the avalanche, 5,800’. What is known is the total snowpack depth is roughly half of normal for this time of the season. In the Girdwood Valley at lower elevations (2,000’-3,000’), the snowpack generally consisted of a strong slab (2-5’ thick) over faceted snow of varying strengths near the ground (1-2’ thick). Sunny and warm weather from February 2nd till the 7th formed sun crusts on many high elevation Southerly aspects in the region, including this slope. The wind slab that was triggered was composed of the Feb 10th snow that had been affected by winds, forming a soft wind slab at the top portion of the slope (where the snow pit was dug) and a hard slab lower on the slope.

**Avalanche Danger:**

The Raven Headwall sits just a few miles to the North of the CNFAIC forecast boundary. The danger in the forecast zone was rated MODERATE.


*We appreciate the skiers involved in this near miss for sharing their experience and photos for others to learn from.*
View of avalanche from top of Raven Headwall

Looking up at avalanche from Raven Glacier
Looking South from the top of the Raven Headwall