Comment from NWAC: We appreciate Jonathan taking the time to document his accident so we can all learn from his experience. Attached at the bottom is the avalanche forecast in effect for the day of the accident and a map.

Date and Time: 3/22/14, 630 PM
Location: Colchuck Peak, North Buttress Couloir (NBC) http://www.summitpost.org/north-buttress-couloir/162206
Number in Party: 1
Number in Party hurt: 1 climber
Start Zone Elevation: approx 8000 ft
Start Zone Aspect: NE
Start Zone slope angle: approx 40 deg
Avalanche type: Wind slab
Trigger: Climber (AF)
Width of fracture: 15-20 ft
Height of crown face: 18 inches
Vertical fall: 1000 feet
Injuries: Self rescue, went to emergency room; 37 stiches in right glute, black eye and scrapes
NWAC Forecast zone: East slopes WA Cascades - between Stevens and Snoqualmie Pass
NWAC Avalanche Danger Rating in effect for start zone (above treeline): Moderate

Accident summary by solo climber Jonathan Pobst:

The couloir was holding about 6-10” of snow in most areas. Some fluting was deeper and some of the steeper areas were swept clean and either crusted or styrofoam. The snow seemed pretty well settled to the harder layer below and was cold powder in consistency. The top where the fracture happened was wind loaded and perhaps 18” deep.

The fracture started just ahead of me and about 10’ below the col. Classic wind loaded slab below the col with a north south ridgeline. The col is concave with higher rock formations on both sides creating a “doorway” about 30’ wide at the top of the NBC.

I attempted to self-arrest and had the pick in the layer below with a good grip but the pick just ripped through and then I got twisted away from the axe and began to roll, then bounce down the couloir in the avalanche. Snow filled my mouth repeatedly while I tried to breath. Then the slide slowed and stopped and I was amazed to find myself right on top in the middle of the debris field. The debris fan was approximately 100’ wide and about 2-3’ deep. The debris was homogenous and smooth.

Self-Rescue

I walked down to Colchuck lake and made contact with another group of climbers both to let them know of the conditions and to have them evaluate me. I then walked out to the trail head, snowmobiled to Icicle road and drove myself to the E.R.
X = approx start zone
East slopes WA Cascades - between Stevens and Snoqualmie Pass

Issued: 6:00 PM Friday, March 21, 2014  by Kenny Kramer

NWAC avalanche forecasts apply to backcountry avalanche terrain in the Olympics, Washington Cascades and Mt Hood area. These forecasts do not apply to developed ski areas, avalanche terrain affecting highways and higher terrain on the volcanic peaks above the Cascade crest level.

Detailed Forecast for Saturday:

Increasing mid and high clouds with sun and filtered sun are expected Saturday along with continued cool temperatures and light winds. This should allow for slow stabilization of any recent wind and storm slabs that will be most likely found on lee north to east slopes near and above treeline. Watch for cracking or firmer wind transported snow in steep exposed terrain.

Most shorter lived storm slab concerns should have mostly stabilized by Saturday, but continue to watch for such instabilities being possible on a wider variety of slopes mainly near and above treeline.

The equinox has passed and we've officially moved into spring, so despite the cool temperatures and low snow levels wet loose avalanches may be possible on Sun exposed terrain, especially mid and lower elevations. Watch for wet surface snow deeper than a few inches, pinwheels, and natural wet loose releases that usually precede more major wet loose snow avalanches.

Increasing and lowering clouds late Saturday may bring a few isolated showers in the extreme north part, however little accumulation is expected.

Snowpack Analysis:

Past Weather and Avalanches

A deep persistent layer at the late January crust/February faceted snow interface and faceted snow at the base of the snow pack were both an extensive problem until recently east of the crest. But the extent and sensitivity of these layers appears to have been decreasing in the past couple weeks as the faceted snow crystals transition to rounded grains and become less reactive.
A report from NWAC Tom Curtis from 13 March indicated that these layers were still present between the Blewett Pass to Mission Ridge area on north to east slopes holding 1.5 meters of snow. On these slopes the facet snow crystals were still large and weak but getting unlikely to react to a human trigger. On the same day the Mission Ridge ski patrol reported the faceted snow at the base of the snow pack was still a concern at higher elevations but becoming rounded and less of a concern at lower elevations.

NWAC observer Jeff Ward and forecaster Dennis D’Amico found the January crust/February faceted snow interface to be non-reactive to PST’s in a pit near 7000 ft on a south aspect near Washington Pass on 9 March and this layer was also not reported as involved in the Washington Pass area during the most recent natural avalanche cycle.

**Recent Weather and Avalanches**

We are shifting avalanche concerns to more recent storm related layers and are moving away from deep snowpack concerns at least for the short term.

The last strong and moist frontal boundary stalled across the Olympics and extended across the north Cascades Saturday afternoon before finally sagging south on Sunday. This system produced some rain west of the crest with moist snow in the NE Cascades before changing to colder snow in a north and shifting south across the area. A favorable temperature trend of gradual cooling occurred with this storm. New snow at NWAC and Snotel sites east of the crest ranged from light amounts to about 11 inches from late Saturday through Monday with more likely at higher elevations that cooled sooner. NWAC observer Jeff Ward at Harts Pass reported 18 inches of new snow on Sunday morning.

The most recent front crossed the Northwest late Wednesday, causing a period of increased winds, snow and a cooling trend. Only a few inches of new snow were received at sites east of the crest as of Thursday morning with limited showers through the day Thursday likely not adding much new beyond that.

NWAC observer Jeff Ward near Washington Pass Thursday 3/20 reported good and mostly stable powder skiing with ski penetration of 15-20cm. The bond between the old snow and the newest storm snow appeared to be a good as the temperatures trended from warm to cold during deposition. There was no evidence of anything other than a few isolated shallow soft and storm slabs encountered, including Cedar, Silver Star, Varden and Willow terrain.

**The Bottom Line:** Expect possible recent wind and storm slab layers on Saturday as well as possible small wet loose avalanches on direct sun exposed slopes, especially in local areas that received the most significant recent snow this week.
<table>
<thead>
<tr>
<th>Elevation</th>
<th>Saturday</th>
<th>Sunday</th>
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<tbody>
<tr>
<td>Above Treeline</td>
<td>Moderate</td>
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<tr>
<td></td>
<td>Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern.</td>
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<tr>
<td>Near Treeline</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern.</td>
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<tr>
<td>Below Treeline</td>
<td>Low</td>
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<td>Generally safe, watch for unstable snow on isolated terrain features.</td>
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**Danger Scale**

- No Rating
- Low
- Moderate
- Considerable High
- Extreme
Avalanche Concerns

Wind Slab

Wind slabs can take up to a week to stabilize. They are confined to lee and cross-loaded terrain features and can be avoided by sticking to sheltered or wind scoured areas.

Avalanche Concerns

Storm Slabs

Storm slabs usually stabilize within a few days, and release at or below the trigger point. They exist throughout the terrain, and can be avoided by waiting for the storm snow to stabilize.
Loose wet avalanches occur where water is running through the snowpack, and release at or below the trigger point. Avoid terrain traps such as cliffs, gullies, or tree wells. Exit avalanche terrain when you see pinwheels, roller balls, a slushy surface, or during rain-on-snow events.

<table>
<thead>
<tr>
<th>Avalanche Concern</th>
<th>Aspect/Elevation</th>
<th>Likelihood</th>
<th>Size</th>
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<tr>
<td></td>
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<td>Certain</td>
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<td>Unlikely</td>
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