



## Twin Peaks – Near Miss Report

### Turnagain Pass, Kenai Mountains, Alaska

**Location:** East Face, Twin Peaks

Lat/Lon: 60.71343N, -149.38205E

**Date:** February 3, 2018, **Time:** 3:50 pm

**Report by:** Chugach National Forest Avalanche Center Staff

**Contact:** [staff@chugachavalanche.org](mailto:staff@chugachavalanche.org), website: [cnfaic.org](http://cnfaic.org)

**Synopsis:** Two skiers triggered a large avalanche while skinning up the East Face of Twin Peaks. This was their second lap ascending the route and they were the 9<sup>th</sup> and 10<sup>th</sup> people on the skin track. The avalanche was triggered in a very thin area of the snowpack (20" deep) just below the person in the lead. The second person was able to arrest into the bed surface just below the crown. The debris funneled through two separate gullies on either side of the bench below them and ran a total of 2400 vertical feet to the valley bottom. This is considered a near miss due to the size and potential consequences of the avalanche triggered.

#### **Avalanche Details:**

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

Avalanche Code: HS-ASu-R3-D2.5-O

Trigger – ASu

Aspect – East

Angle – 37 degrees

Elevation - 3400'

Crown Depth – 2'-4', average 2.5'

Width – 1400'

Vertical Fall – 2400'

Length of Path Run – 4600'

Alpha Angle from bottom of debris – 30 degrees

Weak Layer – surface hoar and near surface facets

Debris depth ~15+' in deepest spot at bottom of gully used to ascend route

#### **Accident Summary:**

On February 3<sup>rd</sup>, 2018, a party of 5 people (4 skiers, 1 split boarder) ascended an East facing aspect of Twin Peaks. They were the first group of the season to put in a skin track in this area. When the first party was roughly three quarters of the way to the ridge they observed a second party of 3 following behind on the skin track. When the first party reached the ridge, they chose to descend a slope further North on the same aspect, to avoid skiing above the second group. All five descended one at a time to their skin track on a bench below and regrouped at around 2400'. Two of the five members decided to do another lap, while the other three descend a nearby gully and exited the area.

At around 3:50 pm as the two skiers skinned back up the East face, they heard and felt a loud collapse and the slope released. The slab released between the two skiers and the second person was able to dig into the bed surface to avoid being caught. They triggered the avalanche at 3400', about 400 feet below the ridge. Debris covered the bench below and funneled through two gullies. Because the group had split up, it was unknown if the returning three were caught. The two skiers began a beacon search and after some time were able to confirm no one was caught. Their friends had seen the crown as they returned to the road and made a plan to initiate a search and notify 911 as the safety of the two skiers on the slope was unknown. **Please see the detailed account of some of their experiences is at the end of this report.**

Meanwhile, the second party was on their way to the South Summit along the ridge when they noticed debris below. They changed their objective, turned around and descended the same slope as the group of five. At the bottom of the lowest gully they made contact with the other party and confirmed no one was buried or injured.

All members of both groups each carried avalanche rescue equipment and were experienced backcountry travelers. One member of the first group was carrying an InReach. The first group reported, *"All of us had read the forecast today. Seems like four or all of us read and understood the Summit Advisory even though we were thinking of going to the core Turnagain area prior to meeting up."* The second group reported: *One had read the Turnagain report but not the Summit report. That group member didn't think the other two had read either but they had been skiing earlier that week.*

### **Snowpack and Weather History:**

Twin Peaks is a challenging location to get accurate precipitation and wind data because of its position between Turnagain Pass and Summit Lake. This area sees less precipitation than Turnagain, a bit more than Summit, and wind is channeled through terrain differently than Turnagain or Summit. Mile Post 45 weather station in Summit Lake does not accurately capture the strength of ridge top winds, and Seattle Ridge and Sunburst weather station don't correlate wind direction for this area. There are some general trends from both locations that play into the weather history for the site, but in general Twin Peaks area is known to have a thin snowpack with more wind effect.

The weak layer combination of buried surface hoar and near surface facets in this avalanche formed during a period of cold, clear weather from December 25<sup>th</sup> through the 29<sup>th</sup>. On December 29<sup>th</sup> we noted surface hoar (5mm-2cm) widespread across the region on all aspects and elevations. This formed over 1 inch of weak facets, which in the alpine, sat over hard snow surfaces due to a significant wind event on December 22-23. On Dec 23<sup>rd</sup>, Easterly winds averaged 40-50 mph, while Sunburst had a max gust of 93 mph. An inch of snow fell after the wind event and became faceted over the following week of cold and clear weather. During this time, surface hoar was forming. On December 30<sup>th</sup>, the New Year's Storm started burying the weak snow, giving this layer the name, "NY buried surface hoar." This storm brought 30" of snow (2.5" SWE,) and strong Easterly winds to Turnagain Pass. However, the NY surface hoar was buried before the winds, leaving the surface hoar and near surface facets sandwiched intact between two harder layers of snow. This was the weak layer in the avalanche cycle observed across the advisory area between December 31<sup>st</sup> and January 2<sup>nd</sup>. Another layer of surface hoar formed during the clear weather after the storm ended. This was buried on Jan. 11<sup>th</sup>, as the next storm brought snow and rain to the advisory area. Rain was observed falling above 3000'. The heavy snow and rain initiated an avalanche cycle on the Jan 11<sup>th</sup> buried surface hoar layer. Some avalanches were stepping down to the NY buried surface hoar. We suspect this included the large to very large (D3) avalanches observed in Summit Lake along the road corridor, with starting zones at 3000'-4000'. The NY buried surface hoar was also the weak layer in the notable very large avalanche (D3) on Sunburst on January 16<sup>th</sup>. That was the last avalanche recorded to have run on the NY buried surface hoar.

Eighteen days later the Twin Peaks avalanche occurred on February 3<sup>rd</sup>, a sunny day with light easterly winds. Temperatures were in the single digits in the valley bottoms, and mid to high teens on ridgetops. The last

significant snowfall was 9 days prior on January 25<sup>th</sup>, with Turnagain receiving 19" of low-density snow (0.5 SWE). The same storm deposited 7" of snow at Summit Lake (0.3 SWE) on top of yet another layer of surface hoar. There had been avalanche activity on the most recent buried layer of surface hoar (mostly small slabs) the week leading up to the Twin Peaks avalanche, but no avalanches observed failing in deeper layers in the snowpack. Also noteworthy, there were no reported human triggered avalanches prior to the incident in nearby Summit Lake, or the heavily traveled Lynx Creek area just to the East. Cold, clear weather had been the overall pattern for the 8 days prior to the avalanche due to a persistent high pressure over the region.

### **Avalanche Danger:**

Saturday, February 3<sup>rd</sup> was the first day the avalanche danger had been at LOW in the alpine (above 2500') this season in Turnagain Pass. The bottom line read:

*"A generally **LOW** avalanche danger exists in the mountains surrounding Turnagain Pass. Although triggering an avalanche large enough to bury a person is unlikely, isolated slabs 1-2' deep can still be found in very steep or wind loaded terrain. **LOW danger does not mean No Danger** and evaluating the consequences of the terrain will be important before committing to a slope. Additionally watch for cornices or triggering loose surface snow that can be fast moving and knock a person over. In the periphery zones of Girdwood to Portage Valley, and Johnson Pass more caution is advised where a slab could be larger and more connected."*

The Primary Avalanche Problem for February 3<sup>rd</sup> was Persistent Slab.

*We like to think of the danger scale on a continuum and we have inched our way towards LOW in Turnagain Pass. Slope testers (skiers and riders) have been in full force over the last week pushing further into the mountains. There have been a handful of slabs triggered without incident this week and it's not impossible to find unstable snow. These slabs have been in places where the snow has been stiffed by wind and are failing on buried surface hoar about 1-2' deep. Most of the activity has been relatively small, but big enough to take someone for an undesirable ride over a cliff or sweep them into a terrain trap.*

*In the periphery areas of Girdwood, Placer Valley and Johnson Pass more caution is advised due to slightly deeper (recent) snow depths, more sustained winds, and the possibility of a larger slab.*

*Triggering a Deep Persistent Slab is unlikely at this time and has become an outlier. Due to poor structure (basal facets) that can still be found near the ground in the upper reaches of our terrain 3000'-5000' its worth keeping in the back of your mind.*

Advisory link: <http://www.cnfaic.org/advisories/current.php?id=1611>

The Summit Lake Summary also had Persistent Slab as the primary concern and discussed the thin snowpack and several weak layers including weak snow near the ground.

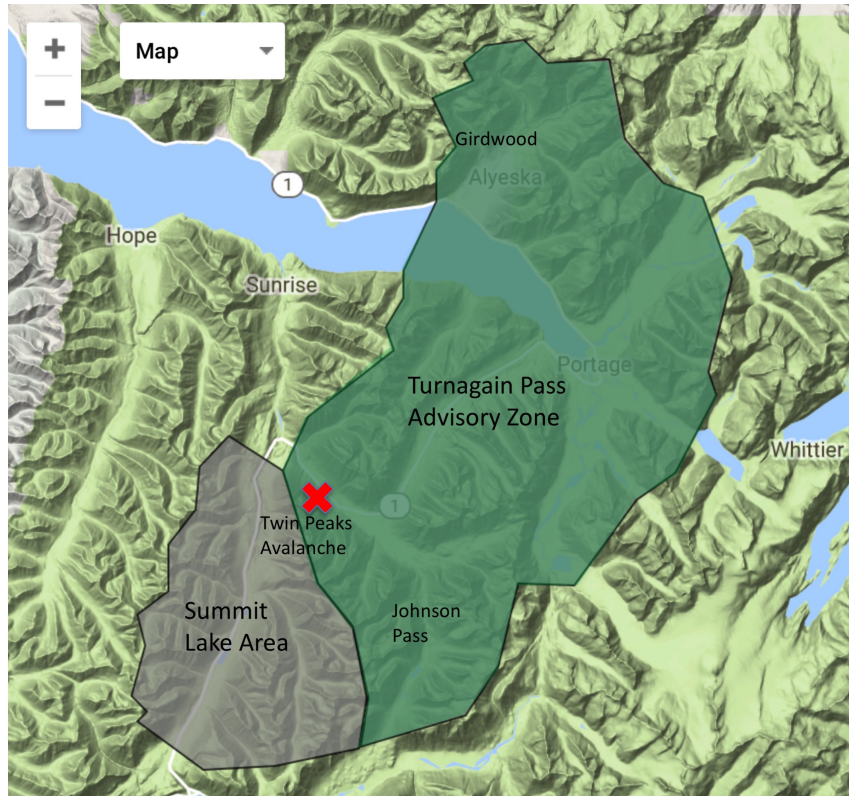
*"Several natural avalanches occurred in sync with the snow and wind on January 26<sup>th</sup>, over a week ago. These avalanches were all relegated to the storm snow and did not appear to step down into deeper weak layers in the snowpack. Since then, there have been no observed or reported natural or human triggered avalanches"*

*"Looking ahead at the work week, temperatures should warm back up to the teens with a chance for snow starting Monday night. Any new significant snow amounts will fall onto a very weak surface, and a very weak snowpack in general with several buried persistent weak layers."*

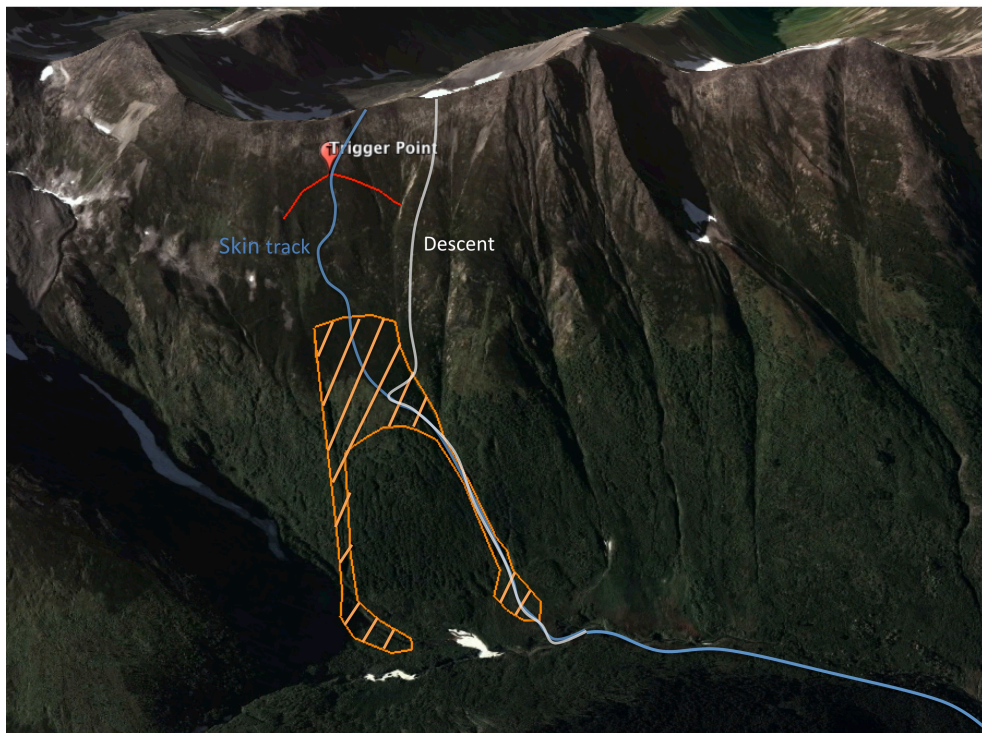
*"Its is also good to remember that the base of the snowpack at the upper elevations, weak basal facets persist. While triggering an avalanche that breaks near the ground is unlikely, it is not out of the question on high elevation steep and rocky slopes (above 3,000')"*

Summary link: [http://www.cnfaic.org/advisories/current\\_summit.php?id=148](http://www.cnfaic.org/advisories/current_summit.php?id=148)

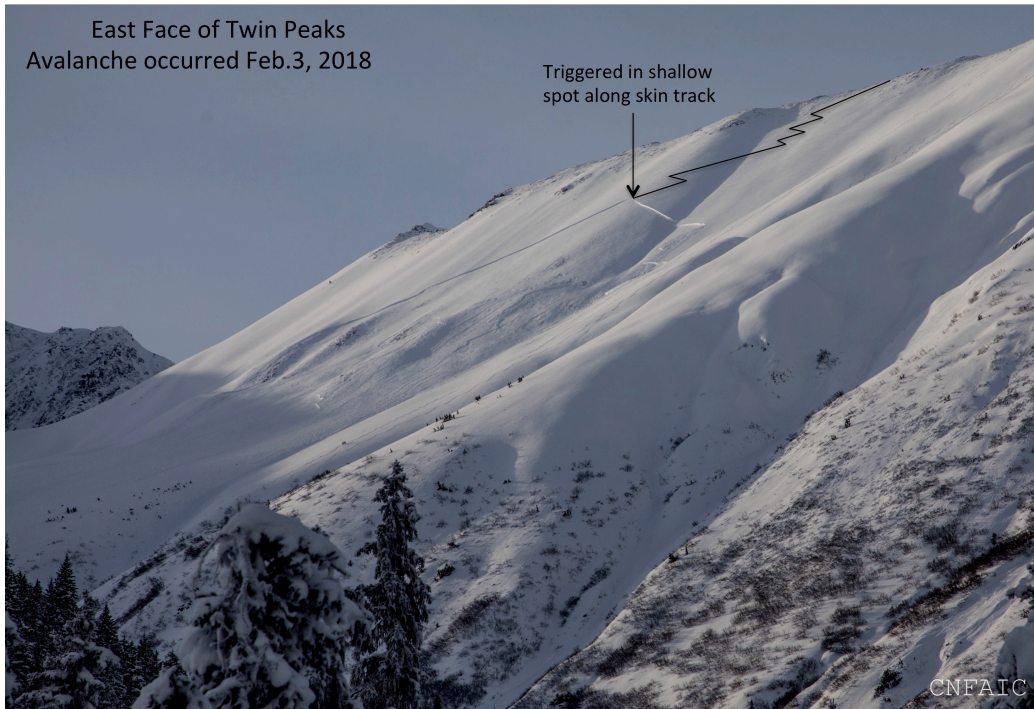
## Avalanche location and overview of the Advisory Area



## Twin Peaks Avalanche – Crown (Red), Debris (Orange) and Route



**Photo of avalanche taken on Feb.5, 2018**

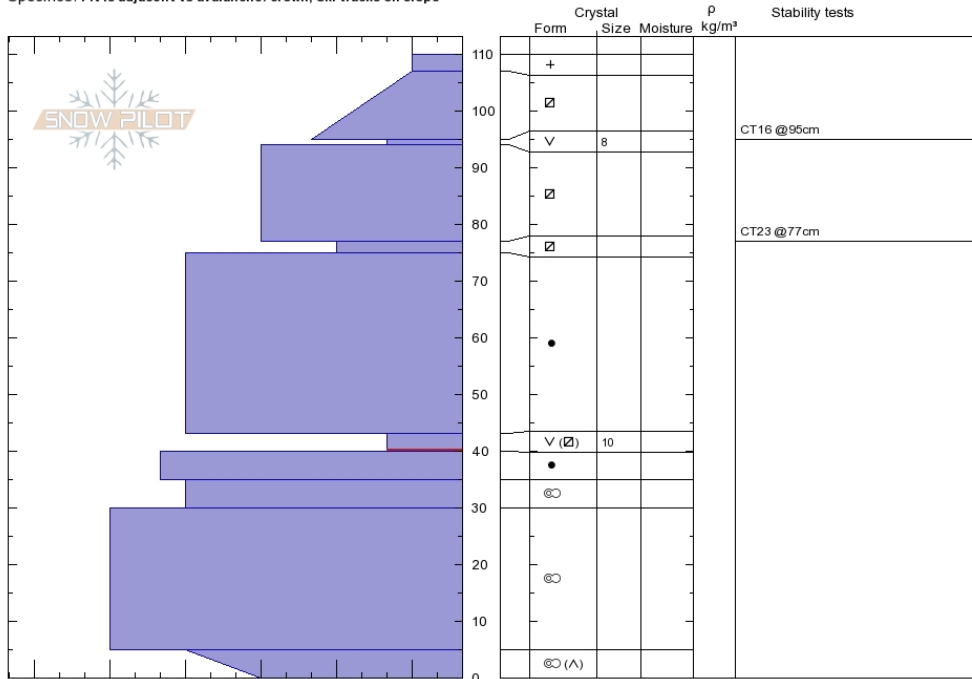


**Party of five on their initial ascent - very close to the fracture location. The avalanche was triggered on second ascent. Photo taken by separate party of three.**



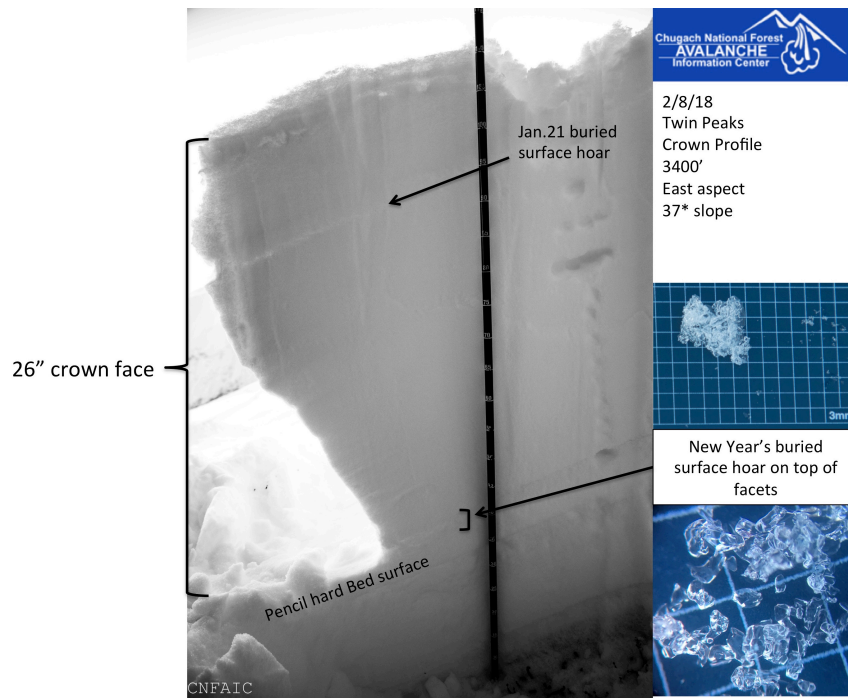
# One of three crown profile's found New Year Surface hoar and facets to be the weak layer.

**Twin Peaks**      **Heather Thamm**      **Stability: Good**      **HS110**      **Layer Notes**  
**Kenai Mountains**      **Thu Feb 8 15:00 2018**      **Air Temperature: 15°F**      **Stability Test Notes**      **40-43: BSH=10mm, Facets=1m**  
**AK**      **Co-ord: 60.71343N, -149.38205E**      **Sky Cover: CLR**      **40-43: Problematic layer**  
**Elevation: 3400 ft**      **Slope Angle: 37°**      **Precipitation: NO**  
**Aspect: E**      **Wind Loading:**      **Wind: Calm**  
**Specifics: Pit is adjacent to avalanche: crown; Ski tracks on slope**



Notes: Crown profile location was 30' from the trigger point. Weak layer involved was a combination of surface hoar and near surface facets buried by a storm over New Year's. This avalanche was triggered on Feb.3 on the skin track by the 9th and 10th people to ascend the route. No one caught or injured.

## Photo diagram of the crown profile above



**Debris at the bottom of the gully used to access the slope above. Notice the crown in upper portion of photo.**



**Several areas on the bed surface were scoured down to rocks where the snow pack was thinner**



**Ski tracks from party of three are on looker's right. The party of 5 descended looker's left gully and traversed to an area that was later covered with debris.**



**Debris at valley bottom, under one of the gullies, was ~15' deep.**





*Forecaster Note:*

*We'd like to recognize all the things that these individuals did right. They all knew there were weak layers in the snowpack, discussed this, had rescue equipment. They managed their terrain and the other group in the area well. Deciding to enter large terrain with large consequences was done with thought. Eight people traveled up the same skin track earlier in the day and no signs of instability were observed prior to the avalanche. Hand pits were dug to assess the upper weak layers (no concerning results, the weak layer was further below). It had not snowed for 8 days and it had been over two weeks since there was avalanche activity in the weak layer responsible for this slide. All this points to a low probability, high consequence scenario and illustrates one of the most challenging forecasting problems. This large of an avalanche was unexpected, even in our periphery zones. This begs the question: What do we do when it seems we do everything right, and still something bad happens – or in this case, something bad could have happened? At the end of the day, anytime we expose ourselves to committing avalanche terrain, especially with weak layers in the snowpack, even though they may be dormant, we are taking on some risk. However unlikely it may be to trigger a destructive avalanche, the uncertainty will always be there.*

\*Thanks to the party involved and their willingness to share the details of the incident publicly. We also want to acknowledge the separate party of three who witnessed the event and submitted an avalanche observation with photos to CNFAIC.org.

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Detailed account of incident from members of the first party

*We (4 skiers and 1 splitboarder) left the Twin Peaks parking lot at about 11am on Saturday, Feb 3. The initial approach (on an un-maintained road) had numerous skin tracks leading towards the slopes looker's right of the main peaks. We continued up the road, following a set of exit tracks that descended from a run on a west facing slope directly opposite the intended run. From the point we crossed the creek to access the approach to the broad slope lookers left of the main peaks, there was no evidence of previous skiers. No obvious signs of instability were observed and the approach gully contained boot top unconsolidated powder on a very firm (icy) crust. We discussed the fact that the terrain was high consequence due to the size, slope angle, and numerous terrain traps, but decided the apparent stability made the approach safe enough to travel on.*

*Avoiding the alders of the lower approach, we ascended the terrain trap gully, booting up most of it on the firm crust. After exiting the gully at the top of the alders, we switched back to skinning and regrouped. Small test pits were dug, looking for buried surface hoar at the crust interface. A shovel shear test revealed potential weak layers, but the overlying snow appeared uncohesive and unreactive. We again discussed the unforgiving terrain, but felt good about the stability and continued skinning, switchbacking up a slightly convex buttress feature. The upper face increases in angle gradually (from mid 20s to 37 or 38 degrees) until the narrow-corniced ridge at the top of the run. I dug 2 more small hand pits while skinning the upper face looking for a change in the interface or hardening of the overlying slab. Other members of the group performed similar informal tests and no one found anything that changed our thinking. About 3/4 of the way to the ridge I looked down and another party of 3 appeared above the low alders, following our skin track.*

*Once our party of 5 made it to the ridge, we discussed descent options. Not wanting to ski directly above the party of 3 following behind, we chose a line skiers left of the uptrack. We skied one at a time to a small stand of trees just above the lower alder slopes. The snow skied great and we marveled at the fortune of finding this face in such good condition. Three of us (me included) called it a day and continued through the alders to the out-track, while 2 in the party decided to skin back up for a shorter second run. After thrashing through the alders we made it to the un-maintained road and began double poling the gentle downhill to the lot. Where the road makes a sharp right, only a few hundred yards from the car, I looked back at the East face and saw a large crown that appeared to originate from a switchback in our very own skintrack. The party of 3 was still visible near the left summit of Twin Peaks, but we could not see the 2 skiers from our group. We quickly realized the seriousness of the situation, looking at the size of the crown and knowing the lower terrain was a mix of gully traps and steep alders. The splitboarder took a radio and continued to the car to find cell service and alert the Troopers. Myself and the remaining skier turned around and skinned back toward the face.*

*We nearly made it to the base of the debris pile, which looked deep and large, when I noticed a skier moving in the alder slope. The slide had partially washed over our meeting spot near the stand of trees, flushing the entire lower alder slope, and partially*

got funneled into the approach gully. We started shouting to make contact, and heard a response from someone just over a small rise, only a 100 yards away. It was our party, who quickly met us and confirmed they were uninjured and together. The alder skier was a member of the party of 3, who were all now slowly picking their way through the slide debris. We exhaled a deep sigh of relief, shocked at the event and the fact all skiers were somehow accounted for and uninjured, then turned back to call off the Troopers. A patrol car was already at the lot when we exited. The slide occurred on the 10th skier to pass the trigger spot on the skin track.

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After skiing the first lap, Skier #1 and I began skinning for a second lap while the other three in our group headed for their car. We were ascending quickly as the skin track was set, and were planning on stopping in a safe area just below the ridge. I was having a conversation with Skier #1 who was 10-15 feet ahead of me when the slab broke somewhere in the distance between us. When I felt the snow collapse around me I used my hands to claw at and kicked my skis into the bed surface, as a small amount of soft slab passed by. I traveled probably only ~5-8ft downhill. I realized the severity of the avalanche as I watched it zipper across the slope to the East. I assured Skier #1 I was OK as we watched the powder cloud cross the valley below. Skier #1 stepped gently off the crown onto the bed surface.

Initially, it was difficult to comprehend how long we had been skinning for compared to how long it would have taken the party of three to descend out of the furthest extent of the debris (turns out they were almost to the car). We quickly put on an insulating top layer, transitioned to ski mode, and descended to the point we had left them. Skier #1 and I split up to descend through the debris with our beacons in search mode. We were able to see what looked like ski tracks leaving the area (~1,000 feet below) but were only relieved once we skied past the toe of the debris (without a beacon signal) and confirmed they were their tracks.

I had initially suspected the slab had fractured at the old/new snow interface, but could not imagine it propagating as far as it did. I was able to revisit the crown later in the week with the CNFAIC forecasters.

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After our first run, our party of five split into a group of two who ascended the slope for a second run and a group of three (of which I was a part) descended back down the mining road back to the vehicles. Because I was on the split board I tossed my skins back on for the road out while my partners on skis began double poling. I caught up to my partners in a clearing just before the parking lot where they had noticed the large slide. From our vantage point, we saw no trace of our previous ski partners and no tracks out of the slide. We quickly made a plan for the two to ascend while I went to alert authorities. I gave most of my extra gear and food to the ascending party including my extra jackets. I also took one of my partner's cell phones who had a different service provider than me (just in case coverage differed between providers). We did a quick radio check and parted ways. Almost immediately I realized that my keys were in my jacket that I had given to help aid in any recovery. I was in radio contact with the other two but remembered we had driven two cars, and the other driver had shown us where his extra keys were on his vehicle. I decided not to delay and that I would take his vehicle. I began down the road where there were a large number of people at the Sunburst lot. I pulled over and asked a small group if they had any cell service. They told me no but that there was a car accident down the pass and there was a Trooper on site. I left the lot toward the north end of the pass. I decided to pull into the motorized lot to look for either the forecasters or the Forest Service Law Enforcement. I did not see them so I quickly resumed north. I found the lone trooper working the accident scene. He indicated that he was unable to assist due to the accident and advised me to drive to the inlet where I would get cell service. I found coverage and dialed 911. I was connected to Anchorage then transferred to Soldotna Emergency Services. I tried my best to describe where the accident had taken place. The operator asked me if I had the access coordinates. I did not, but from now on I will be noting the coordinates to all trailheads where I recreate as that would have saved a lot of time and confusion. The 911 operator asked me to return to the parking area and wait for help. I gave the description of the vehicle I was in and alerted them I would park near the shoulder by the parking area. As I drove back towards Twin Peaks I saw the Forest Service Law Enforcement in the Sunburst lot. I pulled in and made contact. He then followed me to the Twin Peaks parking area. Upon arrival, the officer was in his vehicle (I am assuming calling in the location), once he got out of his vehicle and I began giving him the details of what happened, who was on the mountain, and where I last saw all of them (including the group of three, members of a different party, that had continued to the summit). I had just completed my description to the officer when I saw the party of two (that had ascended and were feared caught in the slide). They were followed up quickly by all others that had been on the mountain. The officer called in the "all clear", we all thanked him, and he took all of names and ID's for his report. Grateful that everyone was ok, we packed up the car and left for home.