

## January 15th, 2020 - Idaho - Baker Creek, Smoky Mountains

Published by the USFS Sawtooth Avalanche Center

### Location:

Place Baker Creek Drainage, Smoky Mountains  
State Idaho  
Date 1/15/2020  
Time Approximately 2:00 PM  
Summary 2 snowmobilers caught, 1 snowmobiler completely buried and killed

### Number:

Caught 2  
Fully Buried 1  
Injured 0  
Killed 1

### Avalanche Details:

Type SS  
Trigger AM  
Subcode u  
Size - Relative R3  
Size - D Scale D2  
Weak Layer Depth Hoar  
Sliding Surface O - Within Old Snow  
Aspect S  
Elevation 9130 feet  
Slope Angle 33-35 degree start zone, 35-37 degrees in track, 24 degree alpha angle  
Width Approximately 200 feet  
Depth 2-3 feet  
Vertical 650 feet  
Terrain Planar start zone becoming confined in the track; shallow gully in runout zone

### Incident Summary:

Two experienced male snowmobilers rode up the Baker Creek Road to the Apollo Creek drainage. They ascended Apollo Creek, crossed into Brodie Gulch, climbed to a high saddle near the head of the gulch, and then descended into the Baker Lake area (Fig. 1). They did not observe any avalanches or obvious signs of instability and were avoiding large avalanche paths they knew had claimed lives in past years. About 0.5 miles NE of Baker Lake, Rider 1 (age 59) turned around and stopped while sidehilling to take a photo (Fig. 2, Position A). Rider 2 (age 49) was lower in the drainage, caught up to him, and was riding on the slope below him.

At approximately 2:00 PM, one or both of the riders triggered an avalanche from well below the crown (Fig. 2). Rider 1 was briefly caught, turned his machine downhill, and rode off to the side of the slide while the avalanche was occurring (Fig. 2, Position B). He reported that the slide was extremely quiet, that it "barely even whispered when it swooshed by me." After escaping the slide, Rider 1 became stuck near some dead trees to the side of the debris (Fig. 2, Position C). He dug out his machine, rode to the edge of the debris, and did not see his partner. He

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switched his transceiver to search, got an initial signal of 14 meters, and followed the signal to Rider 2 who was completely buried.

He located Rider 2 with a probe and began digging. He first uncovered Rider 2's foot and continued digging to clear snow from around his head. Rider 2 was buried in a prone position approximately 3 feet deep, head downhill and face down. Rider 1 removed Rider 2's helmet and determined he did not have snow in his mouth and was not breathing. Rider 1 estimated 40 minutes had passed since the avalanche released.

Rider 1 left the scene and returned to the trailhead approximately 10 miles away to report an avalanche death and get assistance. Bystanders at the trailhead notified emergency services via an inReach satellite communication device at 3:30 PM. Professional rescuers and medical personnel flew to the scene by helicopter (Fig. 2), arriving at 4:43 PM. Local search and rescue personnel arrived shortly thereafter via snowmobile. They fully excavated Rider 2, but life support efforts failed to resuscitate him.

### **Avalanche and Terrain:**

The Baker Creek drainage in central Idaho's Smoky Mountains is a popular snowmobiling area accessed by riding 10 miles up a frequently groomed road (Fig. 1). The incident took place in a small draw just north of Baker Creek. This draw is often used to access Brodie Gulch and Apollo Creek, both minor tributaries to the north of Baker Creek, and the sites of avalanche fatalities. Since 2004, there have been five avalanche accidents in the Baker Creek drainage, resulting in four fatalities and one serious injury that required a helicopter evacuation. Many of the avalanche paths in this area end in gullies and abrupt transitions or terrain traps, increasing the likelihood of burials.

The persistent slab avalanche was classified as SS-AMu-D2-O. It released on a south-facing slope at 9130 feet, fractured 2-3 feet deep and approximately 200 feet wide, and ran 650 vertical feet (Fig. 3). The slope angle of the start zone was 33-35 degrees. The slope angle increased below the crown to an estimated 35-37 degrees. The start zone is an open, planar, grass and sage-covered slope (Fig. 5). There are a few stands of trees along the margins of the track and in the runout zone. The slope becomes confined mid-track as it leads into a shallow gully. The south-facing and open nature of the terrain exposes it to winds blowing from a variety of directions.

The debris averaged 3-5 feet deep but piled up to around 8 feet deep along a shallow gully near the bottom third of the slope. The victim was buried downhill of the deepest portion of the debris, and the terrain trap is considered a contributing factor in this fatality (Fig. 4). The victim's sled was completely buried and was recovered two days later approximately 20 feet directly downslope of the victim (Fig. 8).

The day after the incident, USFS Sawtooth Avalanche Center staff visited the site. A summary of this initial visit can be viewed on [YouTube](#).

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### Snowpack and Weather:

Through December 31st, snowfall was well below-average. September and October storms deposited enough snow in this area to cover local variations in the ground cover. An extended fall dry spell led to widespread faceting, depth hoar, and crust formation. Late-November and December brought intermittent storms and periods of high pressure. By the end of 2019, several prominent weak layers existed in the lower snowpack. While many slopes in the SAC forecast area harbored a significant surface hoar layer that was buried on December 7th, that layer did not appear to play a role in this fatality.

Consistent snowfall began on January 1st, with some measurable precipitation nearly every day leading up to the day of the incident. Snowfall and wind intensified significantly during the period of January 10th-14th, and temperatures were generally in the teens F. The nearest representative SNOTEL sites are Dollarhide and Galena Summit (6 miles to the south and 6 miles to the north-northwest), which recorded 1.6 and 1.3 inches of SWE during this four day period. In addition to the snowfall, the wind at nearby weather stations averaged 10-15 mph for the duration of this storm cycle, with gusts to 50 mph. These wind speeds, though not dramatic, were optimal for sustained wind transport of the low-density storm snow.

The new and wind-transported snow overloaded the weak, early-season snowpack in many portions of the SAC forecast area. This was the case at the site of this avalanche, thanks to the weak, shallow snowpack and the south-facing, wind-exposed nature of the slope. SAC staff were not able to safely access the crown the day after the accident, but they experienced significant collapsing in lower-angled terrain near the incident site. SAC staff returned a week later on January 22nd to investigate the crown (Fig. 6). The snowpack consisted of 60cm (2 foot) of multiple generations of wind slab (1F hardness) over a thin layer of large-grained depth hoar (F hardness) - see Fig. 7.

The day of the incident, skies were clearing as a multi-day storm ended. Temperatures were in the single digits to low teens F, and winds were light at the accident site.

### Discussion:

All of the fatal avalanche accidents we investigate are tragic events. We do our best to describe each one to help both the people involved and the community as a whole to better understand them. We offer these comments in the hope that it will help people avoid future avalanche accidents. We do not intend to place blame on any of the involved parties or imply that any particular action or decision would have prevented this tragic event.

- **Avalanche Forecast:** The Forecast rated the Avalanche Danger as CONSIDERABLE (Level 3 out of 5) for the middle-upper elevation terrain where the incident took place. The *Bottom Line* read: *“Avoid wind-loaded slopes to reduce the chances of triggering large avalanches. You could trigger slides involving just the fresher drifts or very large avalanches that fail on weak layers deep in the snowpack. Sheltered slopes are less likely to slide, but do not assume they are safe.”* Rider 1 stated they did not read the forecast that day: *“I don’t know why, because we usually do.”*

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- **Remote triggering:** This avalanche was triggered from gentler terrain hundreds of feet below the crown. Until someone experiences a remotely triggered avalanche, it is very difficult for them to envision triggering a slide from flatter terrain below an avalanche starting zone.
- **Companion rescue:** Single rescuer, companion rescue is a tremendously challenging scenario. Professional rescuers noted the bottomless nature of both the snowpack and much of the debris; they reported sinking up to their waists when they stepped off their skis or sleds. The difficult travel conditions undoubtedly cost Rider 1 precious time locating the victim. Shoveling is usually the most time-consuming portion of an avalanche rescue. A strategic shoveling approach ([video](#)) can reduce the time spent digging, especially for people buried 3 feet or more deep.
- **Airbags:** The victim was wearing an airbag pack but did not deploy it. We do not know if the victim attempted to deploy his airbag. The quiet nature of this avalanche and the fact both riders were wearing snowmobile helmets all but eliminated the chances of the riders hearing the avalanche before it struck them. When deployed, airbags increase the chances of a person staying on the surface or being buried underneath less snow, resulting in better survival rates.
- **Professional rescue:** Companion rescue offers the best chance for live recovery of a person buried in an avalanche. Poor or non-existent cellular phone coverage over much of the Sawtooth National Forest delays many emergency rescue responses. In this instance, Rider 1 rode out to the trailhead (approximately 10 miles from the accident site) to find assistance after locating his partner and clearing snow from around his face. Two-way, non-cellular communication devices (satellite phones, inReach, SPOTx, hand-held radios, etc.) allow for more immediate communication with emergency personnel. Weather permitting, this area is served by multiple helicopter operations that can relatively quickly transport trained rescuers or emergency medical personnel to remote locations.

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Attachments:

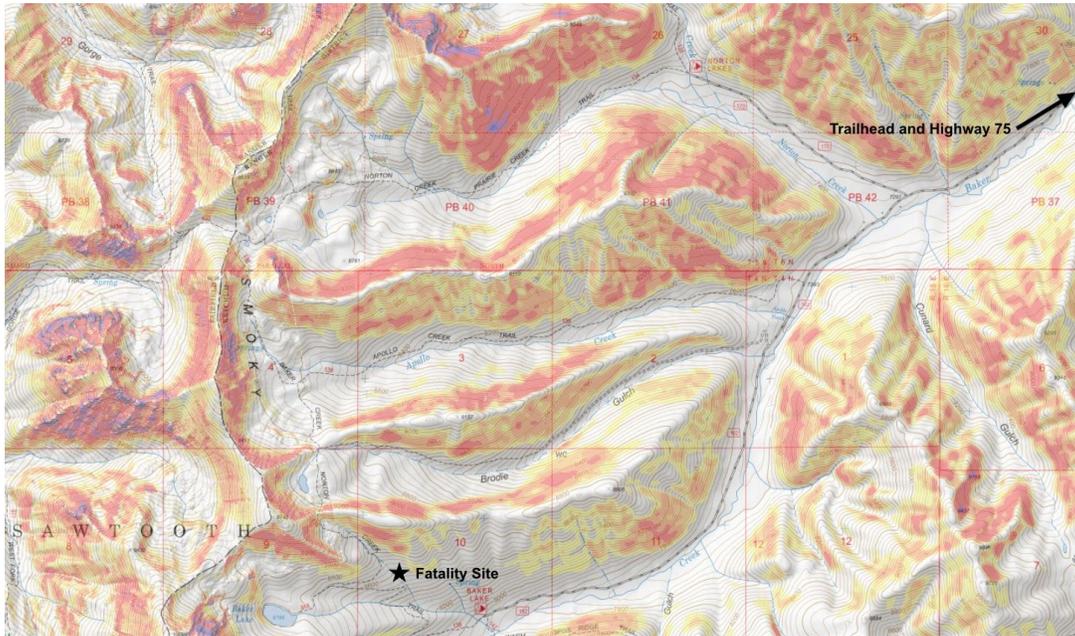


Figure 1. Avalanche fatality site location in the Baker Creek drainage.

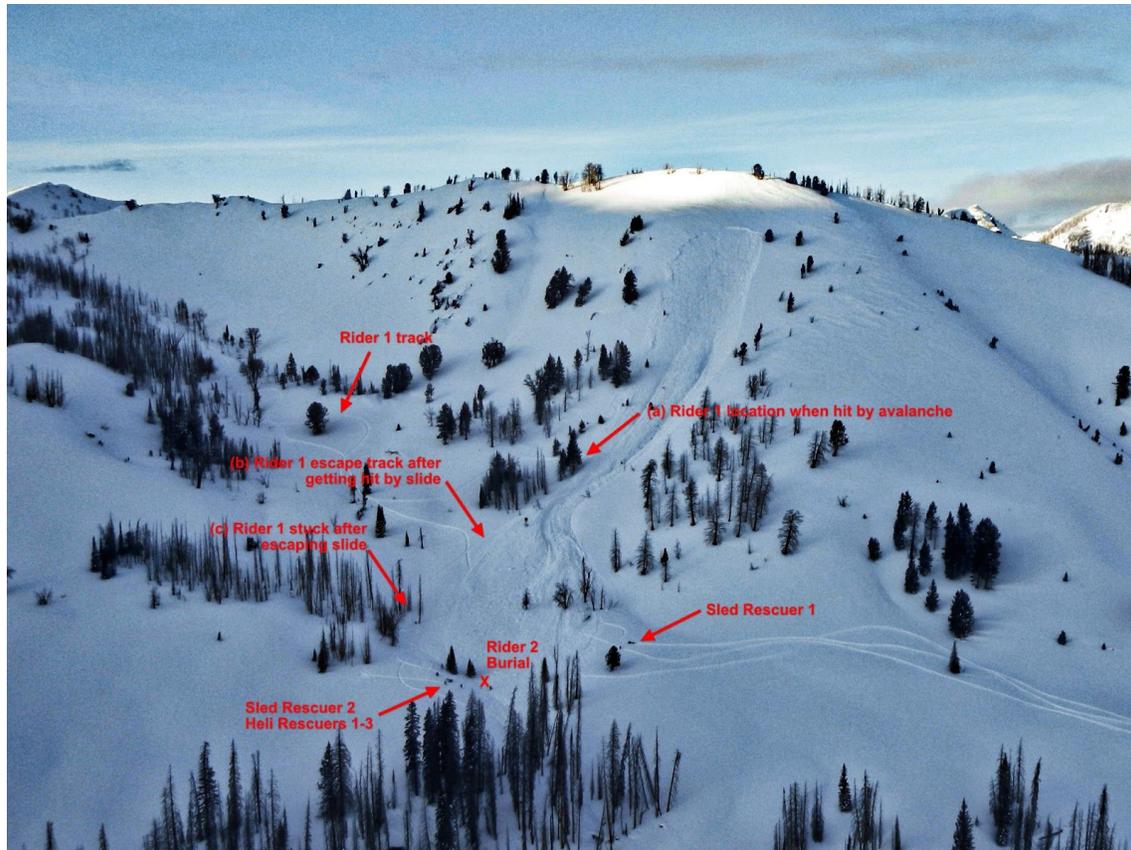


Figure 2. Overview of avalanche and Rider 1's location.

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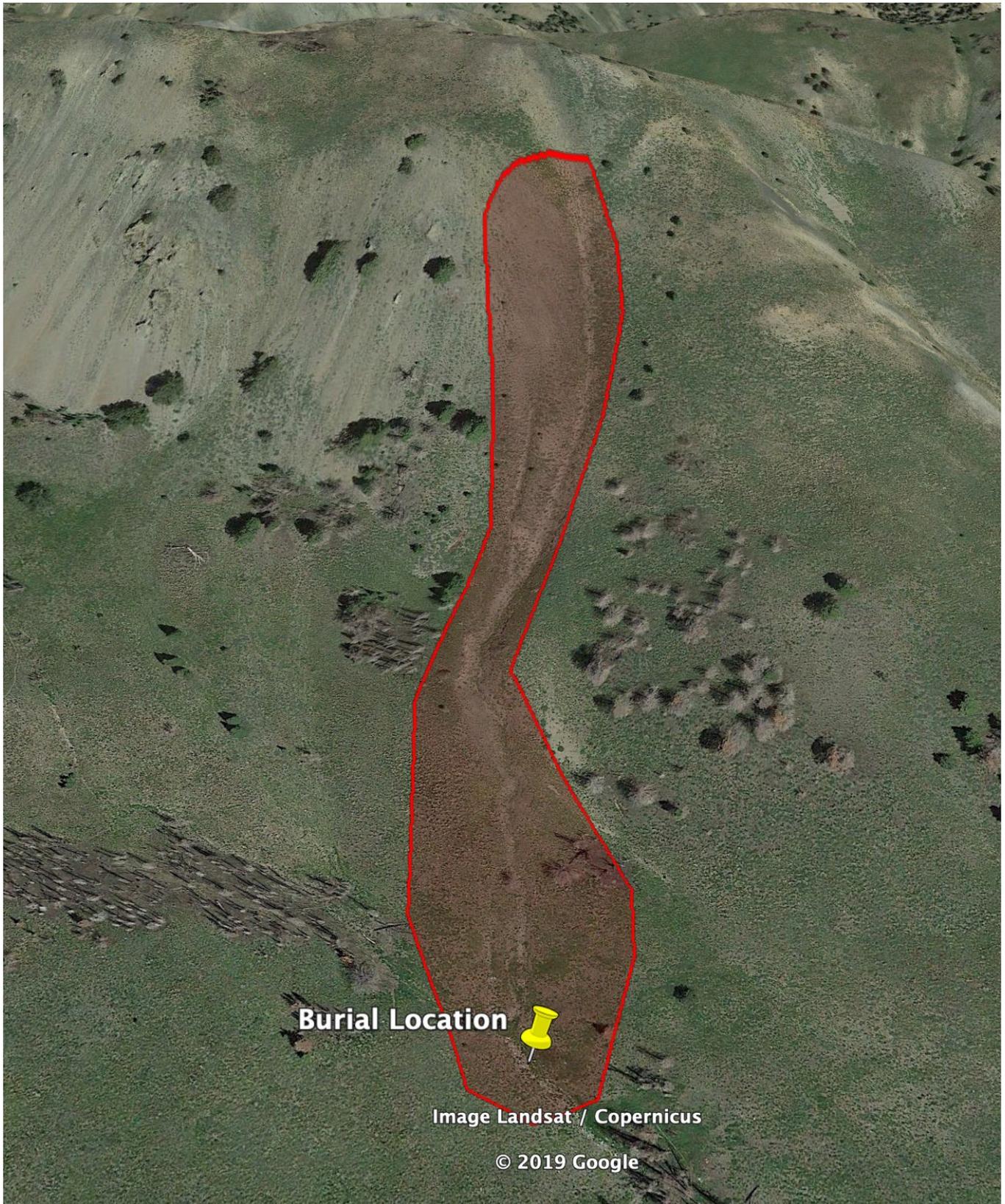


**Figure 3.** View of avalanche starting zone from the runout. Photo: Blaine County SAR.



**Figure 4.** Burial location of the victim. Note the shallow gully terrain trap where the debris piled up around 8 feet deep. Photo: Blaine County SAR.

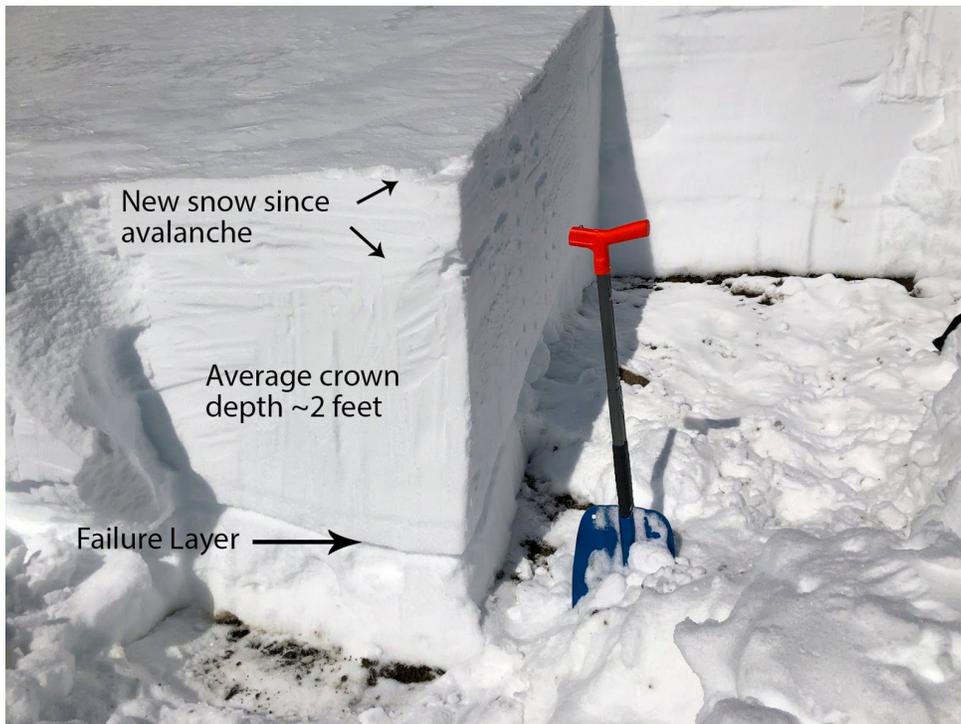
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**Figure 5.** Google Earth overview of the incident and terrain characteristics.

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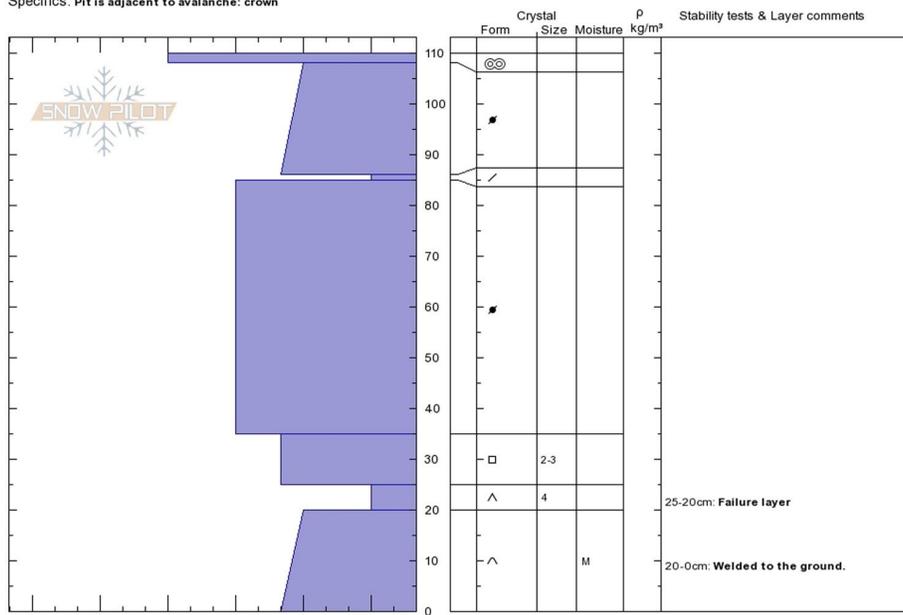


**Baker Ck Incident**  
**Smoky**  
**ID**  
 Elevation: 9130 ft  
 Aspect: 190°  
 Specifics: Pit is adjacent to avalanche: crown

**Ethan Davis**  
 01/22/2020 - 12:00pm  
 Co-ord: 43.69714N, -114.66478W  
 Slope Angle: 35°  
 Wind Loading: yes

Stability:  
 Air Temperature:  
 Sky Cover: FEW  
 Precipitation: NO  
 Wind: NW Light Breeze

**HS-110** Layer Notes:  
 25-20cm: Failure layer  
 20-0cm: Welded to the ground.



NOTES: The day after the incident we experienced large collapses on an adjacent ridge. We did not approach the crown on this day.

This profile was completed a week after the incident. From the surface to 86 cm is new and wind-blown snow since the avalanche occurred. The profile was done in the center-right portion of the crown. The average crown depths near this section of the crown were ~55 cm. Stability test scores on this day were ECTX (x2) and PST 30 and 33/100 end @ 22 cm.

**Figures 6 & 7.** Crown profile performed 7 days after the accident. The snowpack consisted of approximately 2 feet of new and wind transported snow over weak, early season depth hoar.



**Figure 8.** Victim's sled (larger hole in the photo) was found about 20 feet downhill of the victim's location (smaller hole above snowmobiles).