Avalanche Fatality, Brodie Gulch 4/1/2005
Sawtooth National Forest Avalanche Center Report
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Events Leading up to the Accident:
Riders #1 and #2 were riding the Apollo Loop in the Baker Creek drainage, a popular backcountry snowmobile route that traverses several high mountain basins. Rider #1 was an advanced rider who had highmarked before. Rider #2 claimed to be an intermediate snowmobiler and did not consider himself a hill climber. Neither of the riders were wearing an avalanche transceiver or carrying a probe or shovel. It is unknown if they had checked the avalanche advisory prior to their outing.

The two riders had began the loop by riding up Norton Creek, crossing a small notch into the head of Apollo Creek, and then continuing south over another pass into Brodie Gulch. There had been a large avalanche in Apollo Creek approximately 1 week prior, but it was mostly filled in and not obvious. A couple of recent but small sluffs were plainly visible in Apollo Creek. It is unknown if the riders had noticed any avalanche activity or whether they had considered the snow stability.

In the basin at the head of Brodie Gulch, Rider #2 was riding in a low angle area in the runout zone. Meanwhile, Rider #1 was highmarking on the slopes above. He was climbing on a slope that faced ESE and descending on an ENE aspect. Rider #1 had completed at least four highmarks before triggering an avalanche during his descent of the ENE aspect. His uphill tracks were still visible on the ESE facing portion which did not slide.

Rider #2 did not hear anything but felt the ground rumbling and turned to watch the powder cloud descending from the slope. He was worried about being engulfed by the slide and snowmobiled to a safe area. He did not see Rider #1 trigger the slide nor did he see him being carried in the avalanche. The avalanche occurred at 1400 hours.

My Involvement with the Accident:
Around 1200 on the day of the accident, I was investigating a large avalanche at the head of Baker Creek. The avalanche appeared to have been triggered by snowmobilers a day or two prior although there was no indication that anyone had been caught or buried. At approximately 1330, I left the head of Baker Creek, and snowmobiled to Brodie Gulch. I knew that Brodie Gulch had not avalanched recently, and wondered if anyone had triggered a slide in that basin over the past few days.

Arriving in Brodie Gulch, I rode to a safe knoll with a good view of the basin, and immediately noticed a large avalanche had taken place. I assumed it had occurred within the last several days, but immediately after turning off my engine I heard a shout for help. I saw a lone person with a snowmobile in some trees at the base of the avalanche.

Rider #2 said his friend had been buried by the avalanche about 15 minutes prior. The time was 1415. I asked Rider #2 if he or the Rider #1 were wearing avalanche rescue beacons, and he responded no. I asked him if he had witnessed his friend triggering the slide, and he said no. He said he had no avalanche rescue gear such as a probe or shovel.

I was carrying a satellite phone, and I called Janet Kellam, Director of the Sawtooth NF Avalanche Center. I knew she was familiar with the location of the incident and could activate the appropriate emergency services. I made this initial call about 1420.

Search and Rescue Component:
The avalanche debris covered approximately six acres, and there was no last seen point. Based on the snowmobile tracks heading into the avalanche, I made a guess at the probable trajectory of the victim and we focused our search efforts on that region. I instructed Rider #2 to look for surface clues as that would

be our best chance of finding the victim. I then searched the probable area for surface clues and found none. I probed likely locations, such as uphill of trees, where the victim may have got hung up.

At approximately 1530, I called Kellam to check in. I was told that a rescue party was assembling at the trailhead but they were unsure of how to access the avalanche site. I knew the route to the site was confusing so I made the decision to leave the scene and head to the trailhead to ensure the rescue party could find the avalanche. I told Rider #2 my plan and he said that was okay. Based on his mental status and attitude I felt comfortable leaving him alone.

I arrived at the trailhead at approximately 1600, and began leading a snowmobile rescue group back to the accident site. When we reached the point where the SAR snowmobile and trailer could go no further, we heard over the radio that a helicopter with a dog team was attempting to find the avalanche site. At this point, myself and Ketchum Ranger District Rec Specialist Jeff Halligan continued alone on high performance snowmobiles with a GPS and radio, in order to guide the helicopter in.

We arrived at the avalanche site at approximately 1645. The Life Flight helicopter had found the slide, and Sun Valley Heli Ski owner Mark Baumgardner and his avalanche dog were already searching. As we got off our snowmobiles, Baumgardner yelled he had a find and we responded with shovels. Rider #1 was dug out at 1700 and loaded him into the helicopter. He had been buried approximately 3 hours.

The victim was buried in a lobe of the avalanche debris a substantial distance laterally from my estimated line of trajectory. This indicates that the victim may have felt the slope avalanching, and tried to gun his snowmobile to the side of the slide. His foot was less than a foot deep, and his head was approximately 2 feet deep. He was buried 8 feet from his snowmobile. A very small portion of the snowmobile ski was visible near the surface.

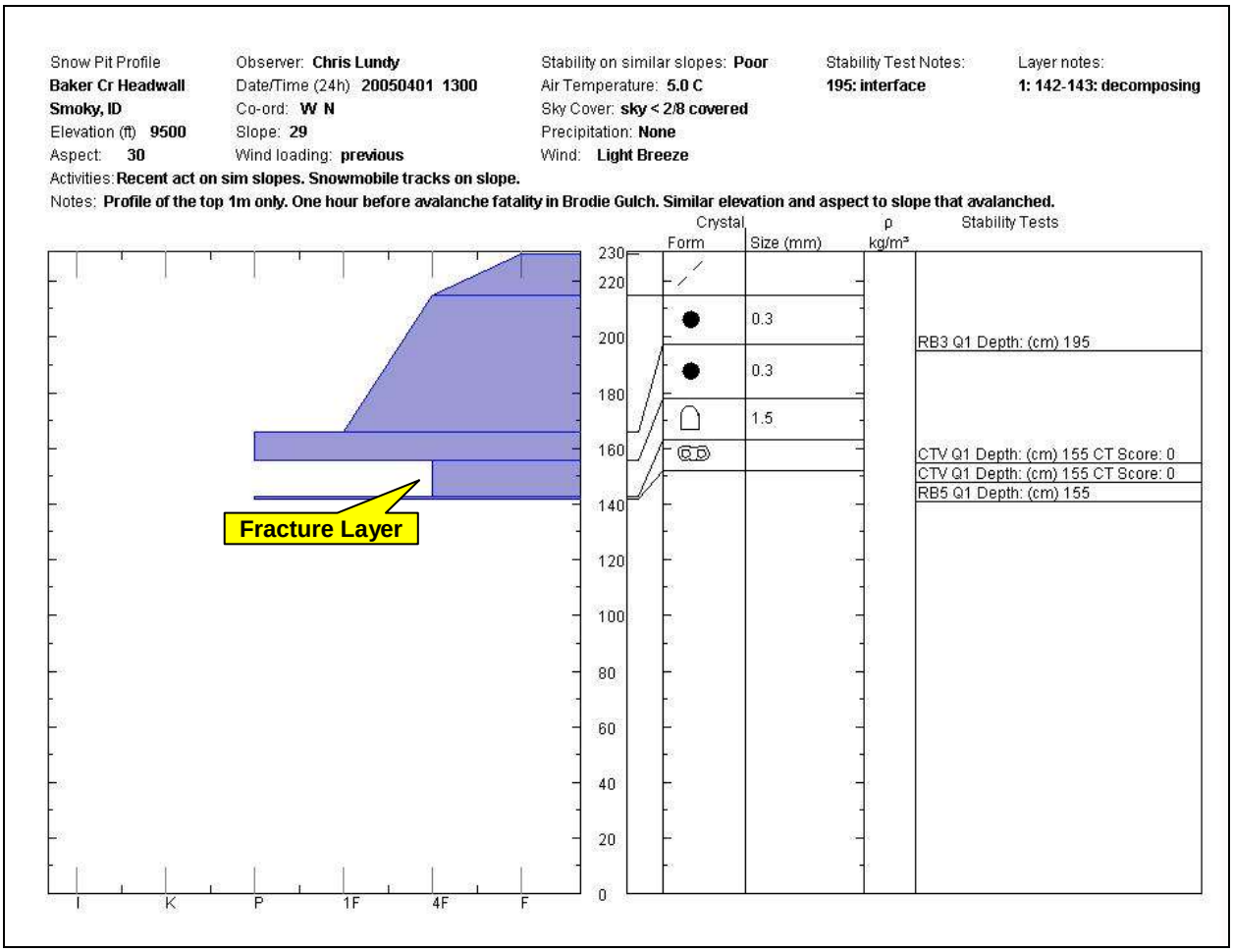
Blaine County Sheriff, Blaine County Search and Rescue, Galena Backcountry Patrol, Sun Valley Heli-Ski, The Sawtooth NF Avalanche Center, Ketchum Sun Valley Fire Departments and Sun Valley Ski Patrol were all involved in the fast and efficient response that staged out of the Baker Creek trailhead north of Ketchum.

Avalanche Description:
The avalanche was classified as a SS-AMu-R4-D3.5-O. The avalanche was triggered on an east facing slope and propagated across the basin into northeasterly terrain. It was approximately 1000 feet across, 2-3 feet deep, and ran 400 to 500 feet vertically. The debris covered approximately 6 acres and was up to 15 feet deep. The starting zone was 30 to 40 degrees in steepness and consisted of rocky, alpine terrain interspersed with subalpine fir. It is unknown if the avalanche was triggered in a shallower area or in a region that might be considered a weak zone.

Snowpack Conditions:
Based on a snow profile performed the same day on a nearby slope of similar aspect and elevation, the 2-3 foot deep slab was fist hard snow at the surface, pencil hard at the base and consisted of newer snow that had fallen since mid March. The weak layer and underlying snowpack consisted primarily of rounded but weak (four finger hardness) facets that develop during an extremely dry snow year (50-60% of average) with very little snowfall since January 9th. The profile demonstrated classic signs of deep slab instability, with column tests failing during isolation but high Rutschblock scores. During all tests the shears were very clean (Q1).

In the week prior to the accident, the Avalanche Center observed two other human triggered avalanches around 1000 feet in width. I was investigating one of these the day of the fatality. Our concern for the propagation potential of the snowpack layering was growing, and in the avalanche advisory we began warning of deep slab instability and the risk of triggering large, destructive avalanches. Exactly a week earlier, a backcountry skier had been caught in a smaller but similar avalanche and survived with a crushed pelvis, two broken femurs, a broken tib-fib and lower arm fracture. Only days earlier, on the Payette Forest north of Boise, a snowmobiler had survived an 8½ foot burial in a massive slide without injuries.

Fatal avalanche in Brodie Gulch. Highmarks entering the avalanche are visible on the right side of the photo. The victim was found near the people in the lower left.



Profile performed in an adjacent drainage one hour prior to the fatal avalanche. The pit was done next to a large avalanche from a day or two prior, and had a similar elevation, aspect, and snowpack to the slope that buried the snowmobiler.