

## **Bell Lake Avalanche Fatality**

4 skiers caught, 1 partially buried and injured, 1 partially buried and killed

Tobacco Root Mountains, MT

Beaverhead-Deerlodge National Forest – January 25<sup>th</sup>, 2019

### **SYNOPSIS**

On January 25, 2019 four skiers who were staying at Bell Lake Yurt in the Tobacco Root Mountains were caught in an avalanche. One skier was seriously injured and one was killed. At 1315 hours they were ascending a slope on skis with skins when they heard a loud, roaring “whumph” and looked up to see the treed slope break and avalanche. They were near the top and within one switchback of each other. Two of the skiers were able to hold onto trees, and the other two were carried through thick trees and partially buried. The two that grabbed trees began a beacon search, and quickly heard groaning and yelling from the other two skiers. They located one skier, who was unconscious, groaning and partially buried against a tree. He stopped breathing and they performed first aid/CPR, but the victim died on scene. The other skier was carried and partially buried 200’ (estimated) lower and dug himself out. He sustained serious injuries. They were able to call 911 to inform authorities of the avalanche. The injured skier was air-lifted to emergency care. The avalanche occurred at 9,000’ elevation on an east-southeast aspect with a slope angle of 36-40 degrees. It was 1-3’ deep, 400’ wide and ran 1,100’ vertical. The avalanche is classified SS-ASu-R4-D3-O.

### **GPS coordinates and elevation (datum WGS84):**

Crown: 45.54209 N, 111.99818 W (8,990’)

Victim Location (reported): 45.542171 N, 111.996024 W, (8,620’)

Debris: 45.54317 W, 111.99258 N (7,990’)

**Photos and video links are in the Appendix.**

### **WEATHER**

Snowfall and temperature data are from the Lower Twin and Albro Lake SNOTEL sites located 4 miles southeast of the accident at 7,900’, and 4 miles northwest of the site at 8,300’, respectively. The nearest wind data is from Big Sky ski resort in the Madison Range, 32 miles from the accident site. Guides at Bell Lake Yurt collect snowfall, temperature, wind and sky cover data during intermittent visits.

The region experienced high pressure and mostly dry weather during the first half of January. From January 1 to January 10 the Albro Lake and Lower Twin SNOTEL sites received 0.4” and 0.7” of snow water equivalent (SWE), respectively. From January 10 through January 16 each site received 0.1” SWE. The mountains of southwest Montana received abundant steady snowfall from January 16 through the morning of the avalanche on January 25. During this period Albro Lake recorded 1.3” SWE and Lower

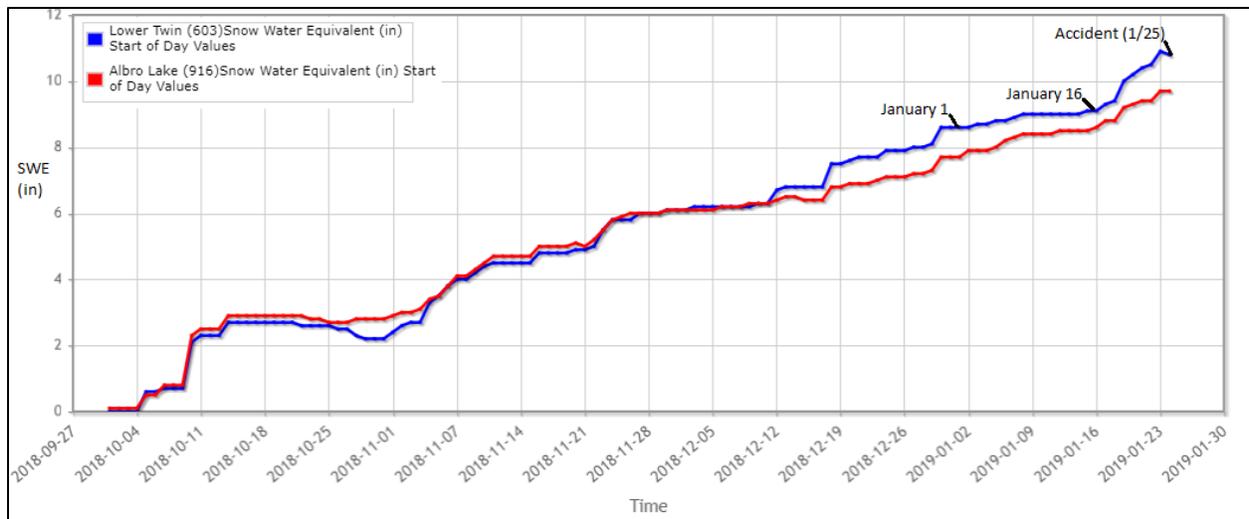


Figure 1. Daily start of day snow water equivalent values at Albro Lake and Lower Twin SNOTEL stations from October 1, 2018 to January 25, 2019

Twin recorded 1.9" SWE (Figure 1). This equals approximately 1.5-2 feet of snow. These stations notoriously record lower snow amounts than what guides find at Bell Lake Yurt. These data are best used to indicate timing of snowfall and relative load for the season, rather than exact snow amounts at the accident site.

Two days prior to the accident, wind on the 11,162' summit of Lone Peak (Big Sky Ski Resort in the northern Madison Range, 32 miles to the southeast) was west-northwest at 20-35 mph. During the 24 hours prior to the accident wind at Big Sky was northwest at 25-45 mph. Temperatures the two days prior to the accident reached high 20s F with overnight lows in the teens F. Temperature at the time of the avalanche was 28 F at Albro Lake and 29 F at Lower Twin.

### **SNOWPACK**

The avalanche occurred at 9,000' elevation on an east-southeast aspect with a starting zone slope angle of 36-40 degrees (measured with inclinometer). It was 1-3' deep, 400' wide and ran 1,100' vertical (measured on Google Earth). The avalanche is classified SS-ASu-R4-D3-O.

The Tobacco Root Mountains do not have daily avalanche and weather forecasts from an avalanche center, and regular snowpack observations are limited. The nearest daily avalanche forecasts are from the Gallatin National Forest Avalanche Center (GNFAC) for the northern Madison Range approximately 30 miles southeast of the accident. Through December and January the mountains within the GNFAC forecast area received similar snowfall patterns as the Tobacco Roots, so we assume general snowpack structure and stability are similar between the two areas.

On January 25, the avalanche danger was rated Considerable for all regions within the GNFAC forecast area. Avalanches or obvious signs of an unstable snowpack had been reported for eight consecutive days. Persistent weak layers of faceted snow buried at the bottom and middle of the snowpack were

heavily loaded by 2 feet of snow and strong wind, which made large human triggered avalanches likely and natural avalanches possible.

On January 28, two professional guides from Big Sky Backcountry Guides skied to the crown and dug three snowpits, two in the crown and one in the flank. The depth of the snow varied from 80 cm to 170 cm. The slide failed on a layer of faceted snow 70-90 cm deep and then stepped down to facets near the ground.

GNFAC Avalanche Advisory for January 25, 2019: <https://www.mtavalanche.com/forecast/19/01/25>

Snowpit Profile: <https://www.mtavalanche.com/images/19/skier-fatality-bell-lake-snowpit-profile>

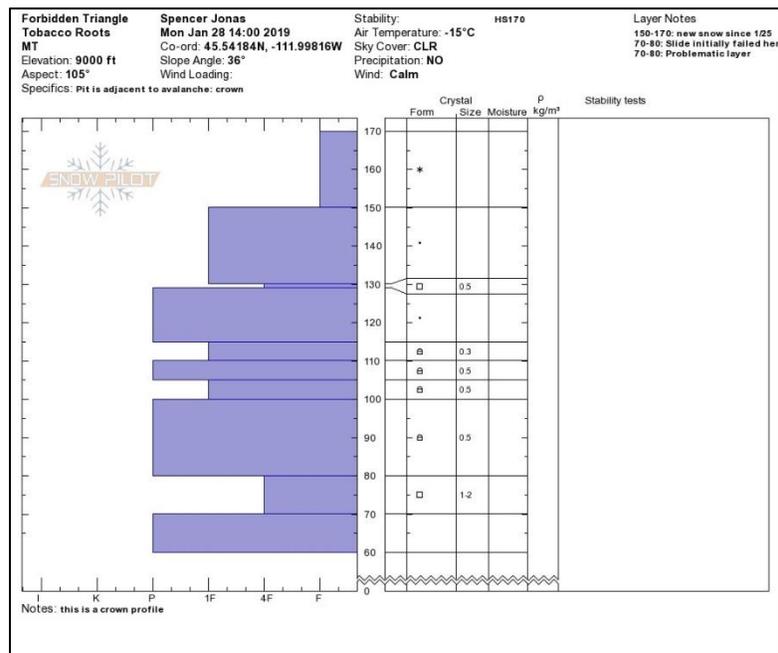


Figure 2. Snowpit profile dug two days after the accident by professional guides at Big Sky Backcountry Guides. Pit was dug on a southeast aspect at 9,000' elevation.

## **AVALANCHE**

On Thursday, January 24, four male backcountry skiers from out of state went to the Bell Lake Yurt in the Tobacco Root Mountains of southwest Montana for three nights and four days of self-guided skiing. A guide from Big Sky Backcountry Guides, the company that owns and operates the yurt, led the skiers into the yurt for an orientation and briefed them on local terrain, snowpack and weather history. After briefing and orientation the guide left for the weekend.

On the morning of Friday, January 25, the four skiers left the yurt and ascended a nearby skin track up a forested, less than 35 degree, south-southeast facing slope. During their ascent they dug quick hand pits which revealed a poor snowpack structure of weak, sugary snow below a slab of recent snow. Due to these findings, and a “whumph” and cracking of the snowpack they had experienced the day before,

they decided to seek lower angle terrain and play it safe. They gained a ridge that runs east off the summit of Long Mountain, and skied a few hundred feet down the opposite, northeast facing slope.

The skiers stopped on a low-angle bench less than halfway down the track of a large avalanche chute on the east aspect of Long Mountain. They decided to traverse back southeast and gain the ridge where their skin track came up from the yurt. They contoured a little ways, then put their skins on to ascend towards the ridge. They set switchbacks up a treed, 36-40 degree steep, east-southeast facing slope between the slope they had ascended earlier and the slope they had just skied. At approximately 1315 hours skier 1 (age 45) and skier 2 (35) were relatively high on the slope and close to each other, skier 3 (42) was one switchback behind, and skier 4 (35) was another switchback or two behind skier 3. Skiers 1 and 2 heard a loud, roaring “whumph” and looked up to see the slope above them avalanche. They were close to the top, grabbed trees and were able to hold on as the avalanche pushed by them.

The avalanche carried skiers 3 and 4 through thick trees. Skiers 1 and 2 began a beacon search, and quickly heard groaning and yelling from the other two skiers. They located skier 4, who was groaning and partially buried against a tree. Skier 1 stayed with skier 4 and performed first aid/CPR after he stopped breathing. Skier 2 continued to skier 3 who was partially buried 200' (estimated) lower than skier 4. Skier 3 had dug himself out.

Skier 4 was revived a couple times during CPR, but died on scene. Skier 3 was badly injured with broken legs and other trauma. They were able to call 911 to inform authorities of the avalanche, the critically injured status of skier 3 and death of skier 4. They were in one of few spots in the area that has a cell signal.

Each skier had an avalanche beacon, shovel and probe. Skiers 1, 2 and 3 were experienced backcountry skiers with 30-40 days per season, and each had taken a level one avalanche class. Skier 4 had less experience and some basic avalanche training.

## **RESCUE**

*Times are based on rescuer notes, the skiers' narrative and the 911 Command Log.*

The skiers called 911 at 1322 hours and notified the Madison County Sheriff office. The Sheriff contacted Drew Pogge, owner of Bell Lake Yurt, who called Doug Chabot at the Gallatin National Forest Avalanche Center (GNFAC). Doug contacted Gallatin County Search and Rescue (GCSAR). Life Flight (Butte, MT) and Two Bear Air (Whitefish, MT) were called to rescue the injured skier and survivors. Drew, Doug and Alex Marienthal from the GNFAC responded on behalf of GCSAR to assist Madison County Search and Rescue with hazard assessment and resources.

At 1730 hours, Drew, Doug and Alex arrived at the Potosi Campground up South Willow Creek, approximately 5 miles from the avalanche, and met a Forest Service L.E.O. and Madison County Sheriff Deputy. Poor weather and complex terrain restricted Life Flight from landing on scene. At 1740 Life Flight landed at Potosi campground. Two Bear Air was able to lower a rescuer to the ground and lift the

injured skier into the helicopter with a winch. At 1745, they landed at Potosi Campground and transferred the patient to Life Flight which flew him to Emergency Care in Bozeman.

The injured skier reported that the other two skiers felt unsafe returning to the yurt through potentially dangerous terrain and may need assistance from search and rescue. At 1830, Doug, Alex and Drew left Potosi Campground to locate and assist the two stranded skiers. The rescuers snowmobiled 2.5 to 3 miles up the road, then skied with skins the rest of the way in. At 1915 the rescuers made voice contact, and at 1935 met the survivors. They had no headlamps and were off route as they searched for the trail back to the yurt. The rescuers gave them food, hot drinks and hand warmers.

After their partner was air rescued, the skiers descended the debris in search of the trail back to the yurt. Unbeknownst to them, the debris covered the trail and they unintentionally walked over it into the drainage below. Once found, the rescuers led the skiers back to the yurt where the skiers stayed the night. The group arrived at the yurt at 2100. The rescuers left the yurt at 2130 and arrived back at Potosi Campground at 2220.

On Saturday, January 26, Two Bear Air returned to site and located the victim at 1024, but could not perform an extrication. Soon after, GCSAR launched a helicopter from Bozeman with Doug Chabot and 3 other GCSAR members. At 1151, after a few passes over the avalanche site the victim was spotted. The helicopter landed on an earthen dam .5 miles away and a long line was attached to Doug and one other rescuer. At 1225 the helicopter inserted them to the site while the other two rescuers waited at the dam as backup and communication relay. They packaged the victim and the helicopter brought him to authorities waiting at Potosi Campground. The two rescuers were lifted back to the earthen dam and at 1307 all 4 GCSAR members flew back to Bozeman.

During the recovery mission on January 26, Drew Pogge skied into the yurt and helped the two survivors carry the other skiers' gear back to the trailhead.

## **INVESTIGATION**

Doug Chabot and Alex Marienthal of the GNFAAC obtained details of the accident through interviews with the survivors during the initial rescue effort on January 25. On January 26, Doug Chabot conducted onsite snowpack and avalanche investigation during the body recovery efforts.

Any questions should be directed to:

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## APPENDIX

### Photos:

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-path-and-partial-burial-location>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-crown-and-path-air>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-crown-air-2>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-crown-air-2>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-partial-burial-location>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-partial-burial-location-uphill>

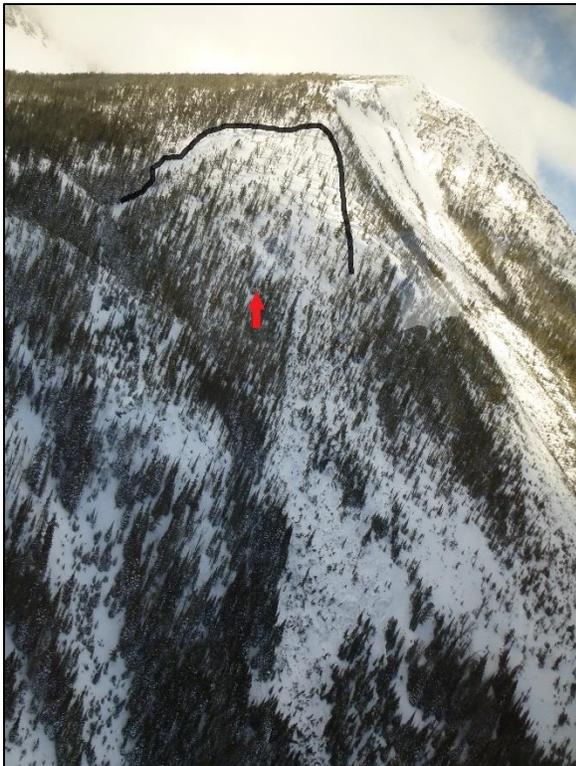
<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-partial-burial-location-downhill>

<https://www.mtavalanche.com/images/19/skier-fatalty-bell-lake-crown>

### Video:

<https://youtu.be/B6T7SQNvwsQ>

### Select Photos:



Overview of avalanche path, crown, and partial burial location of skier that was killed.



Avalanche crown from air. Taken January 26 during recovery mission.



Location of partial burial from the air.



Uphill from location of partial burial of skier that was killed.



Close up of avalanche crown from the air. Taken January 26.



Looking downhill past location of partial burial of skier that was killed.