

**Northern Madison Range, Beehive Basin**  
**Three skiers triggered avalanche, two partially buried, one injured.**  
**Gallatin National Forest**  
**16 February 2014**

SYNOPSIS

On Sunday, February 16, three skiers were ascending a west facing slope in Beehive Basin and triggered an avalanche. It released 100 vertical feet above them, buried two and injured one. The avalanche was 50 feet wide, 18-24 inches deep and 300 feet vertical. The slope angle at the trigger point was 36 degrees and 40 degrees at the crown. The debris pile was estimated to be 40 feet wide and 6-8 feet deep. The alpha angle was 30 degrees. Avalanche classification is SS-AS-O-R4-D2.

LOCATION

GPS Coordinates at the crown are:  
N45.32533 W111.38372

Elevation at crown: 9,004'  
Elevation at toe: 8,689'

Google Earth Image:

<http://www.mtavalanche.com/images/14/beehive-avalanche-location>

PHOTOS

<http://www.mtavalanche.com/images/14/beehive-looking-slope>  
<http://www.mtavalanche.com/images/14/beehive-debris-pile>  
<http://www.mtavalanche.com/images/14/beehive-looking-down-crown>  
<http://www.mtavalanche.com/images/14/beehive-trigger-point>  
<http://www.mtavalanche.com/images/14/beehive-looking-trigger-point>  
<http://www.mtavalanche.com/images/14/beehive-basin-avalanche-incident-21614>

VIDEO

<http://youtu.be/tgsXX2IfaXY>

WEATHER

At the Great Falls weather station at Big Sky Ski Area (5 miles to the southwest) winds were westerly and averaged 20-30 mph with gusts to 50 mph. Temperature was 20 degrees F. Approximately .3" of SWE fell that morning in addition to 1" of SWE that fell in the four days prior. Skies were cloudy, but clearing.

## SYNOPSIS

Three local skiers, (two males aged 37 and 40 and a female, age 35) toured up Beehive Basin. Their goal was the ridge that separates Beehive and Middle Basins. They had toured up Beehive Basin in years past but could not remember the exact route to the ridge. Previous tracks were blown clean. Without knowing it they skied a few hundred feet past the standard ascent route and made their own path to the ridge which they could see was not far away. They skinned uphill in a rising traverse and entered the avalanche path about 2/3 height. They were unaware they had entered avalanche terrain. The front skier, Male1, was followed by Male2 who was 50 feet behind. Female1 was 20-30 feet behind Male2. The lead skier felt and heard a large collapse of the snowpack and thought "this is getting sketchy". A second later he saw the avalanche coming from above. The slope angle at the trigger point was 36 degrees. The avalanche broke free 100 vertical feet above him. Male1 grabbed a tree and successfully hung on while he was pummeled by the avalanche. Male2 was swept away, tumbled and completely buried at one point, but was spit out at the last moment. He was uninjured and able to extricate himself. Female1 was near the flank and was swept downhill almost 200 vertical feet and out of sight of the other two. She injured her knee and was also mildly concussed during the ride. She came to a rest with her head out of the snow. Male1 clicked out of his skis, turned his beacon on to search and became worried when he could not get a signal as his partners were too far away. He yelled and soon got verbal confirmation from the others that they were alive. They dug out Female1 and called 911 at approximately 12:45 p.m. Big Sky Search and Rescue under the jurisdiction of the Gallatin County Sheriff's Office responded. They packaged the injured skier and brought her to a waiting ambulance. Luckily her injuries were not serious and she will fully recover.

All three had avalanche transceivers, shovels and probes. All three had taken an avalanche course (Male1 and Female1 had taken an Advanced Avalanche Awareness course at Montana State University three years prior, and Male2 took an undermined course 3-4 years ago).

## SNOWPACK

The day of the accident the avalanche danger was rated CONSIDERABLE on terrain steeper than 35 degrees and MODERATE on less steep slopes. The party had read the advisory that morning which can be found here:

<http://www.mtavalanche.com/advisory/14/02/16>

I dug a snowpit in the crown the next day. The total snow depth was 150cm. The avalanche fractured on a layer of small-grained facets (1mm, FCsf) 55cm under the surface that formed during the January 15-28 dry spell. The snow above the weak layer was mostly a one-finger hardness wind slab. This layer of faceted crystals was the primary avalanche concern since it was found on most slopes in the area.

Snowpit: <http://www.mtavalanche.com/images/14/snowpit-beehive-basin-avalanche?size=original>

## LESSONS LEARNED

During my interview with Male1 we discussed what mistakes were made. He was very open to sharing this with others.

There was one primary mistake: They failed to recognize that they were ascending an avalanche path. They did not notice the flagged trees on the slope which indicated past avalanche activity. Although the steepness increased as they skinned up, they believed the trees were close enough together to offer protection.

The avalanche site was investigated by Doug Chabot, Becky Switzer and Mason Young (BSSAR) the next day. Eric Knoff phone interviewed Male2 and Doug Chabot spoke to Male1 in person.

Any questions regarding this report should be directed to Doug Chabot.

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