BEEHIVE BASIN AVALANCHE FATALITY
20 JANUARY 2008

SYNOPSIS:

Two skiers were touring in Beehive Basin, located north of Big Sky, MT in the northern Madison Range, when they triggered an avalanche. One was caught, buried and died of head trauma at the scene. The avalanche released on a southwest facing, wind-loaded slope. The slope angle was approximately 40+ degrees with the crown face 1 ½ to 3 feet deep. The avalanche was estimated to be 600 feet wide, 500 feet vertical and to have a runout angle of 25 degrees. US Classification of the avalanche is SS-AS-D3-R4-O.

GPS Coordinates for the slope is
N 45.3224
W 111.3828
Elevation of crown is approximately 9,000 feet.

PHOTOS:

Aerial photo of the path-marked: http://www.mtavalanche.com/images/08/beehive-aerial
Aerial photo of the path: http://www.mtavalanche.com/images/08/beehive-avalanche1
Photo of the crown: http://www.mtavalanche.com/images/08/beehive-crown
Photo from toe: http://www.mtavalanche.com/images/08/beehive-avalanche
Photo near burial site: http://www.mtavalanche.com/images/08/beehive-avalanche6

WEATHER:

The weather data for this incident is from the Yellowstone Club and Big Sky Ski areas approximately 5 miles southwest of the avalanche.

Sunday, January 20th was a cold, cloudy day with daytime temperatures of -6F at 9,000 feet. Since Tuesday, January 15th, the mountains got snow every day which totaled 35 inches the morning of the accident. Winds were westerly the 15th through the 19th at 15-30 mph. The early morning of the 20th they blew from the northeast at 10 mph.

AVALANCHE:

The victim, TS (20), and LK skied into Beehive Basin for a tour. Beehive Basin is a very popular backcountry area because of its varied terrain and close proximity to a trailhead. They knew the avalanche danger was rated CONSIDERABLE and had no agenda about skiing particular slopes. They wanted to tour around and dig a few snowpits. They were avid backcountry skiers, had taken a Level 1 avalanche class and carried the appropriate rescue gear. They were concerned about the avalanche danger and talked about it openly among themselves and others.

They accessed the ridge between Beehive and Bear Basins via subdivision roads. They dug 2 snowpits, one of which was near the ridgetop on the Beehive side. They found faceted snow near the ground, but their stability tests were unimpressive and LK mentioned to me that maybe the pits weren't dug in great spots.

From the top of the Beehive/Bear ridge they could see an open slope below them and a rib leading into Beehive Basin. This rib borders the slope to the west and is where most people skin uphill in order to access the ridge. While on the ridge TS and LK watched 4 skiers punch the "skiers-right side" of the hill—all at once. TS and LK then moved down the ridge, pulled off their skis and met J and his girlfriend D.

TS and LK were "genuinely concerned about the snow stability" according to both D and J. They wanted to descend the slope into Beehive Basin. They asked J and D about it (stability) and after a brief conversation J told them to head down the ridge but not go too far left where there's a gulley.

LK and TS headed downhill and found themselves slightly left of where they wanted to be. They were on a shallow angled slope with a small rib 10 feet to their right they wanted to reach. TS skied out first when he triggered only 4 feet away from LK. The snow where LK was standing cracked and moved a few inches, but not avalanche. TS disappeared down the slope.

A few minutes later J was 3 turns down the rib when he saw the 2 foot crown. He yelled up to D to put her transceiver on "receive" and then proceeded down the slope searching. He saw LK booting uphill since he missed TS on his first pass. They found TS with a part of his pack exposed. He was face down, head first in a V notch of a tree. Pulseless and obviously dead from massive trauma a call was placed to 911.

SEARCH AND RESCUE:

The avalanche happened at approximately 1530. J reached TS within 2 minutes of starting his search, and he and LK extricated TS within 10 minutes. His pack was barely visible at the surface. After the initial 911 call Big Sky Search and Rescue (BSSR) was dispatched. Over the next 4 hours BSSR got a team of skiers and snowmobilers to the site, packaged up the victim and brought him to the trailhead.

SNOWPACK:

Scott Schmidt, avalanche forecaster at the GNFAC, went to the avalanche the next day to conduct an investigation. He found the snowpack at the crown to be thin, faceted and unstable. The avalanche was 18" to 36" deep, 600 feet wide, 500 feet vertical and ran a slope distance of 1,500 feet. At the crown the slope was 40+ degrees steep. The slope faced 220 degrees (SW) and was loaded from westerly winds cross-loading the slope as well as recent northeast winds the day of the slide. J and D noted active wind-loading during the day of the avalanche.

At the crown line Scott found the snow to easily fracture on a 3 cm thick layer of 5mm facets. He dug another pit on the ridge where the group of skiers descended and found the snow to be 3 feet deeper and much stronger. D noted that all the new snow from the last 5 days made the slope below look uniform in depth, when in fact it wasn't.

The avalanche danger in the northern Madison Range this day was rated CONSIDERABLE on all wind-loaded slopes as well as any slope steeper than 35 degrees.
Snowpit profile in Crown: http://mtavalanche.com/data/images/1201461711.jpg
Snowpit in Flank: http://mtavalanche.com/data/images/1201461589.jpg

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