

Hayden Creek Avalanche Fatality
1 skier caught, buried, killed
Gallatin National Forest Avalanche Center, MT
Accident: Shoshone National Forest, WY
31 December 2011

SYNOPSIS

Two backcountry skiers toured out of Cooke City, MT to the south, up Hayden Creek. They crossed into Wyoming after two miles and entered the Shoshone National Forest. They continued up the wide valley for another mile and turned east up a side creek which leads to terrain underneath Index Peak. Approximately .25 miles up the drainage the two skiers made a hard right into the bottom of a narrow avalanche path. They ascended the path and triggered the slide which caught and buried one skier. He was dug out approximately nine hours later by Cooke City Search and Rescue. The slope angle averaged 35° in the starting zone with the steepest part measuring over 40°. The alpha angle was 24°. The crown face was 1-4 feet deep and 800 feet wide and ran 250 feet vertical. The starting zone wrapped from 330° to 40° aspect with the average being 340°. The debris was split between two paths. The one the skiers were in was 50 feet wide. The debris in the creek bottom was 10-12 feet deep. US Classification of the avalanche is SS-AS-D2.5-R3.

GPS Coordinates:

Crown: N 44.98812, W109.90028

Victim: N 44.98931, W 109.90099

Toe of Debris: Approximately 30 feet lower than the victim's location.

Elevation of Crown: 9,275 feet

PHOTOS

Crown: <http://www.mtavalanche.com/images/12/haydencrown>

Path: <http://www.mtavalanche.com/images/12/haydenlooking-path-creek>

Path: <http://www.mtavalanche.com/images/12/haydenlooking-down-path>

Path: <http://www.mtavalanche.com/images/12/hayden-avalanche-wide-angle>

Map: <http://www.mtavalanche.com/images/12/hayden-creek-avalanche-location>

VIDEOS

<http://www.youtube.com/watch?v=5c2Ycu86IY>

<http://www.youtube.com/watch?v=DfMbUsVULts>

WEATHER

Snowfall and temperature data for this incident are from the Fisher Creek Snotel Site located 5.3 miles north of the accident site. Wind data is from the GNFAAC weather station at Lulu Pass approximately 6.3 miles north of the accident site.

During the 72 hours of stormy weather prior to the avalanche incident, Fisher Creek Snotel Site recorded four inches of SWE (snow water equivalent) totaling three feet of snow. Winds averaged 30-40 mph out of the WNW with gusts on the 29th and 30th hitting 60-70 mph. Temperatures ranged from 18 to 25° F. At the time of the accident, the temperature was 8° F, the winds were blowing 10-15 mph out of the NW and skies were clear.

AVALANCHE

Late Friday afternoon, December 30th, the victim (aka. A1), his wife (aka.B2), and dog Ole, drove to Cooke City (7,600') for a backcountry ski tour the next day. According to a friend they were aware the GNFAAC had issued an Avalanche Warning that denoted all slopes had a High danger in the Cooke City area. Saturday morning, on telemark skis, they climbed a marked trail along Woody Creek out of town following a set of ski tracks broken by local BZ and his partner.

Approximately 1.5 mile into the ski A1 and B2 ran into BZ who was retreating because of the High avalanche danger. BZ and his partner had triggered a slide on a steep 50 foot hill next to the creek which buried his partner to the waist. They continued onward through open meadows, but turned around at the Wyoming border because of the danger. They spoke to A1 first with B2 arriving half way through the conversation. According to BZ, they told the couple about the avalanche they triggered and the reason they were heading out. A1 and B2 continued a half mile further to the end of BZ's tracks at the border, at which point they turned on their avalanche transceivers. A1 was wearing a digital Ortovox Patroller while B2 had a dual frequency F2 Ortovox with earpiece powered by rechargeable batteries. The F2 was last made in 1989. After turning on the F2, A1 told B2 that the battery power was not great.

A1 was intent on following a route described in the ski guidebook, Nine Months of Winter, now out of print. They broke trail up Hayden Creek for another mile through the flat meadow. B2 does not remember seeing the avalanche BZ and his partner triggered, but she does remember widespread collapsing as they skied. They were both nervous about it. Per the guidebook, they veered to the east up a side drainage leading towards Index Peak. The terrain changed quickly from open fields to a 20 foot wide canyon bordered by 50 foot rock walls. They entered the narrow canyon and skied another half mile. It was cold and windy and they wanted to eat lunch. A1 made a hard right turn (south) through a break in the gully, an avalanche path, in search of a more comfortable spot. B2 followed a few minutes behind. A1's decision to go to the right might have been influenced by the guidebook he was referencing. From their position in the creek with regards to avalanche danger, "to avoid slopes

fraught with more imminent peril...you can play it smart and ski into the trees on the right and make your way up to the Basin in them.”

They went no more than a few hundred feet up the path when A1 saw a small avalanche and yelled a warning to B2. They were both ascending the left side of the 50 foot wide path. She grabbed a tree. She could not see A1, but assumed he did the same. The collapse propagated uphill and released a larger avalanche above them. The avalanche fully buried A1 and just missed B2. The time was 1420.

B2 skied uphill expecting to find A1, but soon realized he was buried. She turned her avalanche transceiver on “receive”, put her earpiece in and started searching. She could only get a signal when the volume was on its highest setting making it impossible to pin-point. Weak batteries were likely the cause of this malfunction. B2 searched the debris and dug multiple holes in the snow. She spent until approximately 1700 on the scene looking for A1. Getting dark she headed back to town solo. The dog was buried too.

In town, Cooke City SAR was already mobilized from another avalanche fatality involving a snowmobiler earlier that afternoon. When B2 arrived she gave the SAR coordinators information on the avalanche. Three snowmobilers headed into the scene that night, located A1 and extricated him back to town.

For this report I interviewed B2 on Monday, January 4, 2012 while Eric Knoff interviewed B2 the night of the avalanche. We also got many more details from the family in the days after the avalanche.

A1 had 22 years experience backcountry skiing and B2 a few years. In the early 1990's A1 took an Introduction to Avalanches with Field Course offered by the GNFAAC at MSU. B2's avalanche training was informal. The day of the accident both A1 and B2 carried avalanche transceivers and shovels.

SNOWPACK

During the 72 hour period leading up to the accident the mountains around Cooke City received three feet of snow totaling four inches of SWE (snow water equivalent). The rapid and heavy load was deposited on top of weak, faceted grains at or near the ground, creating highly unstable conditions. To exacerbate the problem, strong winds out of WNW blew during the storm, additionally loading leeward slopes.

The weak layer was 1-2 mm of faceted grains of fist hardness. In some spots the avalanche broke to the ground where 2-4 mm of depth hoar was present. The snow from surface to the weak layer (1-4 feet) was mostly a 1-finger harness slab of rounded grains and broken precipitation particles.

Eric Knoff, GNFAAC avalanche specialist, was in the areas assessing the snow stability on Friday and Saturday. He got very low stability test scores, ECTPV to ECTP 11 during the morning of the accident. He also remotely triggered a large slide from 30 feet away.

An Avalanche Warning was issued the afternoon before the accident and was continued the day of the avalanche. The avalanche danger was officially rated HIGH on all slopes in the Cooke City area the day of the accident.

Avalanche Advisory - <http://www.mtavalanche.com/advisory/11/12/31>

Snowpit Profile - http://www.mtavalanche.com/images/12/hayden-creek-avalanche-crown?size=_original

ADDITIONAL INFORMATION

On Wednesday, January 4th 2012, the dog Ole walked into town and was found outside the door of the hotel room that A1 and B2 rented December 30th. Ole is a Welsh Corgi.

Direct any questions regarding this report to dchabot@fs.fed.us or by calling 406-587-6984.

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5 January 2012