#### **Avalanche Comments**

On Friday, February 9, 2024, at approximately 1:30pm two snowmobilers remotely triggered an avalanche while riding beneath a steep, rocky, east-facing and wind-loaded slope at 9,800' in an area locally known as Avalanche Alley, one and a half miles southwest of Bridger Mountain (*Fig 1*). The avalanche was a very large, hard slab that broke near the ground in old snow (HS-AMu-R3/D2-O). The avalanche broke one to seven feet deep, 2100' wide but fell only 300-400 before partially but critically burying a 34-year-old male while the other rider rode out of the moving debris (*Map Fig 2*). The second rider circled back to the scene to begin the rescue but was unable to uncover the buried rider before asphyxiation ocurred.

#### **Backcountry Avalanche Forecast**

There is no avalanche forecast available in this area. Local riders often extrapolate information from the forecast produced by the Colorado Avalanche Information Center for the adjacent zone or zones. The edge of the nearest forecast zone is twelve miles to the south. The danger rating in that zone was Considerable the day of the accident with Persistent Slabs listed as likely to produce large to very large avalanches. The forecast that day provided the following information:

The wind loading on these slopes is creating the slab for avalanches. However, the weak layer these slabs will slide on are near-surface facets, crusts, or surface hoar....Avalanches on these weak layers can be triggered remotely and from below and will wrap terrain features. They are much less predictable than Wind Slab avalanches, which are more restrained by terrain. Therefore, these are Persistent Slab avalanches with a slab created by wind drifting. Trying to manage a Wind Slab avalanche without considering the persistent weak layer below would be a dangerous game.

Additional information became available to recreationists in the Sierra Madre, Snowy and Big Horn Ranges this year when an avalanche observation and weather information website was created by the National Avalanche Center in collaboration with the Bridger-Teton Avalanche Center. The <u>Eastern Wyoming Avalanche Information website</u> had received 5 observations this season prior to this avalanche with one observation of conditions a few miles from the site of the fatal avalanche submitted the day prior by an off-duty CAIC forecasting recreating in the zone *(See Fig 3)*. The observation contained the following information:

Lots of signs of instability 18"+ of new snow in the past 3 days Upper cow creek/Bridger peak. East, north/east facing slope. 10800 ft. Natural slide from 2/8 in the A.M. No one caught Avalanche size was around 75x75 yards Crown size was around 12"-16" This same face slid around the 23rd of January (See photo 2)

Weather and Snowpack Summary

The Sierra Madre Range experienced periodic drought through the late fall and winter like much of the northern Rockies. Local reports indicate that various weak layers existed in the form of buried surface hoar, crusts and faceted snow. On February 7th, the National Weather upgraded a winter storm watch to a warning when confidence improved that the approaching surge of Pacific moisture would impact the area with high winds and heavy snowfall. The storm delivered 1.5" of snow water equivalent and around ~18" of new snow in the 72-hour period prior to the accident. No wind station exists within a reasonable distance of this area to approximate wind speed and direction, but the cornices overhanging the slope below which they rode indicate wind of a sufficient velocity and duration to transport large amounts of snow. The NWS forecasted westerly winds up to 50 mph in wound prone areas.

#### **Accident Summary**

The deceased, a local 34-year-old man, was riding with a regular companion who owned a vacation home in nearby Encampment. The pair had ridden together regularly. The two had discussed avalanche concerns and had chosen to stay off steep slopes, especially slopes in the alpine areas nearby. During the morning, they had ridden on lower angled, treed slopes and observed no signs of instability like cracking in the snow surface. The two rode slowly to avoid rocks and small trees in the wide, low angle drainage bottom and soon regrouped. After rider one started riding downhill about ten feet away, rider two noticed the failure of the slope. He immediately hit the throttle but was captured briefly by the debris and able to remain upright. Meanwhile, the lead rider was knocked off his snowmachine before the debris stopped moving about 20' past his track. The second rider circled back and parked his machine at the edge of the debris about 30 feet away. He shouted out to his buried companion who managed to kick his foot above the snow. Rider two walked and crawled through the debris and began to dig with hands. He soon uncovered a waving hand which he tried to pull, first with his hands then he dug down further to lock elbows for better pruchase and pulled again. At this point, he realized he would need to dig with a shovel and returned to his machine, where his shovel was strapped to a bag on the top of his tunnel bag. He broke away the accumulated ice and pried off his frozen shovel and again crawled over the loose and blocky debris to his friend. Digging quickly to his friend's face, he discovered that he had stopped breathing and was pulseless. He dug further to expose enough of him that he could pull him out of the snow to begin CPR. He began CPR but was unable to revive his companion. He then used his SPOT device to summon help. (Fig 4, 5)

#### Comments

All of the fatal avalanche accidents we investigate are tragic events. We do our best to describe each one to help the people involved and the community better understand them. We offer these comments in the hope that they will help people avoid future avalanche accidents.

The two riders intended to avoid avalanche terrain on this day as they understood conditions to be dangerous due to the recent heavy snow and wind. Unfortunately, the pair were riding too close to the base of the slope during a period when a very weak layer of snow made it possible to trigger an avalanche remotely. They had correctly identified the danger of the heavily corniced, wind-loaded 38-degree slope above them but did not maintain adequate distance between themselves and the potential track of the avalanche. Had the pair ridden 10-20' east of

their line they would not have been hit by the debris. This avalanche deposited debris up to nine feet deep in places. *(Fig 6)* 

The most regrettable decision shared by rider two was the location of his rescue gear. He had taken several avalanche fundamental courses over the years and knew that gear should be carried in a backpack, but the weight of the gear was bothersome, and their intention was the same on this outing as every other; to stay out of dangerous avalanche terrain. The location of the shovel slowed the rescue to some degree though it's unclear whether the extra minute or two saved would have made a difference. Carrying a beacon, shovel and probe in a backpack is the best practice when riding anywhere near avalanche terrain, but this gear is not a magic bullet. This incident is a reminder that even short duration shallow burials can have a bad outcome, regardless of the speed of the rescue. Careful assessment of potential avalanche runouts is an even better defense.

While this area lacks an avalanche forecast, riders in the area frequently share information on avalanche and riding conditions in various social media groups. This area now has a more durable resource for sharing this information that is not subject to the whims and algorithms of social media platforms. The area is data sparse in terms of weather data but more active use of the <u>Eastern Wyoming Avalanche Information Exchange</u> could help alert riders to elevated avalanche danger. The day prior to this accident, an observation was made of a natural avalanche near the scene of this accident. Recent avalanches are a very strong indicator of the potential for more avalanches.

Bridger-Teton Avalanche Center staff would like to thank the Carbon County Sheriff's Department, especially Sargent Pat Patterson, and the Department's SAR team for escorting CAIC staff to the scene. We would also like to thank the survivor for openly sharing information about this tragic incident.



Figure 1 Overview map. The site of the burial is marked by the red pin.



*Figure 2 The scene of the accident with the dimensions of the avalanche in red.* 



Figure 3 This avalanche was observed the day prior and show similar characteristics as the avalanche which caused the fatality.



Figure 4 The buried riders snowmachine can be seen just left the two other riders. The photo was taken when Carbon County rescuers and the CAIC accident investigator went to the scene the day following the accident.



*Figure 5 Looking up valley towards the scene. Note that the crown of the avalanche follows the entire ridgeline.* 



Notes: In some places, the avalanche stepped down into the basal weak layer around 63cm.

Figure 6 Crown profile of the avalanche.