



AAC Publications

Persistent Weak Layer — Various Human Factors

Wyoming, Teton Range, Game Creek

A party of eight had been staying at the Plummer Canyon Yurt for several days. On March 17, 2022, five of the members skied a couple of low-angle runs and some trees on nearby Mt. Wow (10,262 feet), with no signs of instability except for one collapse or whumpf on low-angle terrain.

In midafternoon, one of the more experienced group members led the party toward a north-facing slope (Danford's Bowl) dropping toward Game Creek. The intent was to ski in pitches to reach a bench above a terrain funnel and then exit skier's left to skin back toward the yurt. The first skier planned to descend near trees on the skier's right side of the bowl, and warned the others to stay to the right of two tracks laid by skiers one hour earlier. He skied the pitch to a safe zone near the trees, and the rest of the party skied the pitch one at a time and gathered below dense trees.

Skier 1 left the safe zone first. He stopped just above the team's planned exit on skier's left and directly in the avalanche path. Skier 2 continued past Skier 1 and onto the bench. Skier 3 then stopped near Skier 1 and sat down in the snow. Finally, Skier 4 dropped in and rode close to the left boundary made by the previous pair of tracks. As he skied by the leader of the first pitch, still watching from the trees, the slope released. Skier 4 turned safely out of the path, but Skiers 1 and 3 were carried downslope into the narrow confines of the exit gully and out into the fan of debris, for a total vertical distance of 525 feet.

After identifying the point where the two skiers were last seen, the remaining skiers switched their avalanche beacons to search and side-slipped into the tight gully below. As they neared the fanned-out debris, they noticed a hand or article of clothing in the snow. As Skier 4 continued following the other beacon signal, the remaining skiers began to dig out the buried victim. They soon reached Skier 3's face, which had a bluish tinge from early cyanosis. After receiving rescue breaths, the buried Skier 3 regained respiratory drive.

Meanwhile, a little higher in the debris, Skier 4 pinpointed Skier 1, who was detected 0.8 meters beneath the surface, and began to dig. Shortly afterward, two local skiers who had witnessed the avalanche arrived on the scene and began to help. After approximately 15 minutes of digging, the rescuers began CPR on Skier 1 (age 61) and continued for 30 minutes without success.

ANALYSIS

During an interview following the incident, one of the more experienced members of the group related that the team had seen "a whole lot of green" in the avalanche forecast in the days leading up to the accident. While this is true, these Low danger ratings were for the middle and lower elevation bands of the forecast area, while the upper elevation band—starting just 200 vertical feet above the slide's start zone at 8,800 feet—had the higher hazard rating of Moderate.

This hard slab avalanche occurred on a north-northeast-facing slope with an average angle at the crown of about 42°. The slab slid on a 1cm layer of faceted snow over a hard melt-freeze crust, a layer likely formed after a widespread avalanche cycle in early January. Local guides who had skied this same slope and professional avalanche workers all were surprised when this layer reactivated in the Tetons forecast zone, where the snowpack generally was deep. However, the snow where this

avalanche occurred was much shallower than would be expected in the Tetons. Several other human-triggered avalanches occurred during this period in areas with a relatively thin snowpack or on the old bed surface of prior avalanches.

It's important to recognize that elevation bands and forecast zones exist as aids to understanding where the danger may be found, not as an absolute guide to the extent of the danger. Referring to information in adjacent forecast zones and elevation bands can shed light on potential avalanche problems and aid in route planning and decision-making.

This accident seems particularly tragic since more disciplined safe-travel techniques likely would have led to a different outcome. This group skied one at a time on this line and at first used an island of safety at the edge of the path as they descended. The first skier instructed the team to avoid the steep and potentially wind-loaded left side of the gully. Despite these efforts at careful route-planning at the beginning of the run, the deceased Skier 1 stopped in the middle of the avalanche path and Skier 3 chose to stop next to Skier 1. Perhaps fatigue led to these decisions or they were simply a reaction to negative feedback gained from seeing no recent avalanche activity and only one clear sign of unstable snow (the collapse heard earlier in the day). Many human factors may be at play with a large group, which is more challenging to manage effectively in such constricted and consequential terrain. A discussion on human factors and group dynamics is always worthwhile when entering avalanche terrain, especially with a large group. (Source: Bridger-Teton Avalanche Center.)

Read the avalanche center report.

Five skiers dropped in to this north-facing slope one at a time near point A, planning to exit to skier's left (arrow). The group's second pitch began where Skier 5 waited and watched. Skiers 1 and 3 stopped in the middle of the slide path, while Skier 2 continued to the bench to skier's left. Skier 4's run then triggered an avalanche that swept Skiers 1 and 3 down the gully. The skier buried at point B died in the incident, while the skier at point C was saved.

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