DONALDSON PEAK AVALANCHE ACCIDENT REPORT

May 10, 2024

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DEDICATION

The victim in this avalanche was a cornerstone of the central Idaho community. His name is Terry O'Connor, and he will be referred to by his name in this report. The surviving member of the party will be referred to as Skier 2 out of respect for her privacy. This report was produced as a tribute to Terry, a man who positively impacted the lives of uncountable people around the world. We are all lucky for our time spent with you, Terry, and we are missing you already.

Author's Note: The Lost River Range sits outside the boundary of any avalanche center, and does not have a daily avalanche forecast. The closest avalanche center is the Sawtooth Avalanche Center, which was listed as "closed for the season" on the day of the accident. This report was independently researched and written by Ben VandenBos, who worked at the Sawtooth Avalanche Center from winters 2016-17 through 2023-24. The author and the victim skied frequently together in the region in the weeks leading up to this accident. Details in this report come from the author's and victim's snowpack observations made prior to the accident, multiple interviews with the surviving skier, and the author's observations made while investigating the accident on the following day. A heartfelt thank you goes to everyone who contributed their time, energy, and ideas to this report. Any questions, comments, or thoughts can be directed to the author at ben.benvandenbos@gmail.com .

Summary:
On May 10, 2024, two highly experienced backcountry skiers (Terry and Skier 2) went for a spring ski tour in the Lost River Range of central Idaho. They climbed a 12,000-foot peak and were downclimbing towards their intended ski descent when they triggered a large avalanche. Terry was caught, carried, and completely buried in the avalanche. Skier 2 downclimbed and then skied to the debris where she located Terry using her beacon and then probe. She excavated Terry, finding his body buried under 5 feet of snow. She performed CPR until help arrived in the form of a rescue helicopter. Tragically, Terry did not survive this accident.

Terrain:
The Lost River Range is a 60-mile-long chain of peaks that trend NNW/SSE (Figure 1). The mountains are characterized by steep, rocky, limestone masses climbing sharply above the valleys that bound the range. The central portion of the Lost Rivers, where this accident occurred, contain the highest block of terrain in Idaho (Figure 2). Seven of the nine peaks in the state that rise above 12,000 feet are located here. The west side of the range, which these skiers used as an access point, rises over 6,000' above the valley and the town of Mackay.

Weather and Snowpack:
Weather station coverage is sparse in the region. The Hilts Creek SNOTEL, the only SNOTEL site in the range, is located 11.5 miles east and 4,000 vertical feet below the accident site. There are no weather stations in the range that record upper elevation wind speed or direction. The weather information below comes from direct observations made by the author, victim, and surviving skier in the weeks leading up to the accident, and extrapolations from regional weather station data and synoptic weather patterns.

The snowpack that produced this avalanche was established in a two-week period of unusual spring weather (Figure 3). Late in April, warm temperatures and rain produced a thick, icy crust at the surface of a largely stable snowpack. Once the snowpack refroze after this storm, this crust extended to the tops of the mountains, even on shaded slopes. Temperatures cooled and light precipitation continued on April 26th-28th, depositing 4-8 inches of dry snow on top of this crust above about 8,000 feet. This precipitation was not well recorded by weather stations but was observed in the field.

The beginning of May brought a week of below-average temperatures. Mountains saw high temperatures in the upper 20s to mid 30s F and lows in the mid teens to low 20s F with a mix of clouds and sun. This weather produced faceting in the dry snow that had fallen on top of the late-April crust.

Precipitation returned on the evening of May 4, bringing a rapid 0.9 inches of snow water equivalent (SWE) to the Hilts Creek SNOTEL. This precipitation was accompanied by strong to extreme southerly winds. Winds eased slightly and the direction shifted to blowing out of the NW by May 6. In the neighboring Lemhi Range to the east, a cycle of natural slab avalanche activity was observed by Terry and the author following this storm. The observed avalanches failed within the faceted snow that had developed above the late-April crust. Similar relatively small

slabs that appeared to have released during that storm were visible in the Lost Rivers on the day of the accident and the following day. These crowns had been partially obscured and weathered by sun and wind and were not obvious, nor particularly wide.

Temperatures remained cool through May 9, with a mix of clouds, sun, and light to moderate winds. The day of the accident started off cool, with temperatures around freezing. Clear skies the night before allowed for significant radiative cooling and the snowpack had solidly refrozen on slopes where it had melted during the previous days of intermittent sunshine. The day of the accident was significantly warmer, with temperatures climbing well into the 50s F in the mountains for the first time since the warm late-April storm.

Avalanche:
This avalanche was triggered on the E face of Donaldson Peak (12,023'), roughly 200 feet below the summit (Figures 4 and 5). The portion of the face that avalanched is steep and broad, with large panels and shallow gullies separated by subtle rock ribs. The slope angle was 37-38 degrees where the avalanche was triggered, and the slope below steepened slightly to around 40-41 degrees. The central portions of the slopes that avalanched face E. The slopes on the margins of these gullies face from NE-E-SE. The avalanche was triggered at the top of the snow-covered portion of the slope, as Terry moved down from a mix of rock and snow to a thicker, more continuous snowpack.

This was an unintentionally triggered hard slab avalanche large enough to bury and damage a vehicle (HS-AFu-R3-D2.5). The avalanche failed above the substantial, icy crust that formed at the end of April, on faceted layers of snow that developed during a period of sustained, unseasonably cool weather in early May. It broke widely, with crowns spanning three gullies on this steep face. The slabs that failed were uniform with average crown depths of just 8-10 inches (Figure 6). Isolated, wind-thickened areas near the top of the slopes that failed had crowns approaching 2 feet. The thin but dense slabs that failed contained irregular ice crusts in the upper few inches, separated by wind-packed snow. This layering appeared to have formed in the windy, cool days after the May 5 precipitation event. The crown face melted appreciably after the avalanche occurred and was covered with a thin sheet of ice when the author visited the site the next day.

Measured across the slope, the piece of terrain that avalanched is about 600-700 feet wide. Measured along each crown, a cumulative crown length of 1,500 feet is estimated here. It is unclear if all of these crowns opened simultaneously or if there was a short delay between them. Terry was carried 1,600 feet down the slope in the avalanche, an elevation drop of 1,100 vertical feet (Figure 7). A large bulb of debris in the central portion of the pile, where Terry was located, had an average depth of 6-8 feet and a width of 150-200 feet. The pile was thinner on the margins and was at least 10 feet deep in portions of the pile. Terry came to a rest 100 vertical feet above the toe of the debris, a linear distance of 300 feet.

A cycle of natural slab avalanche activity coincided with the accident (Figure 8). Avalanches failed throughout that day as solar radiation and warm air temperatures melted the snow. At

least one large, long-running slab avalanche was observed by Skier 2 as she waited for the helicopter to return. The complex interaction of warming slabs, percolating water in the snowpack, and persistent weak layers is poorly understood. Based on the amount of natural slab activity that occurred that day and the lack of a powder cloud from the triggered avalanche, the air temperature and solar radiation likely played a contributing role in this avalanche activity.

Narrative:
On May 10, 2024, Terry and Skier 2 departed their vehicle for a ski tour in the Lost River Range of central Idaho. Terry was 48 years old with 30 years of experience traveling in snow-covered mountains. Skier 2 was 30 years old on the day of the accident, with 17 years of backcountry ski experience.

The morning was cold and calm. Terry and Skier 2 walked away from their truck shortly before sunrise wearing light puffy jackets, gloves, and various approach footwear. They followed a faint trail for 2.5 miles, climbing 2,000 vertical feet before hitting the snowline, where they transitioned to traveling with skis and skins. They skinned on icy snow up to 11,200' before putting their skis on their backs and ascending the rocky W face of Donaldson Peak in boots and crampons. They experienced one snowpack collapse while climbing and stopped to dig a snowpit. They did not find a well-developed layer of facets where they dug, and they felt comfortable continuing upwards in the terrain they were in.

Terry and Skier 2 reached the summit of Donaldson Peak around 11:30 AM. Skies were clear, the wind was calm, and the air had warmed appreciably. From the summit, Terry sent a text to this author containing a rough plan for the day, and said he would check back out once down safely. Terry and Skier 2 briefly discussed their route before beginning to descend the NE ridge, still traveling using boots and crampons. They planned to downclimb on the NE ridge to about 11,750', where they could wrap around to the north side of the peak and ski a confined, rock-bound couloir into the basin below.

The NE ridge of Donaldson Peak held a mix of rock and wind-packed, sun-crusted snow. The pair traveled on both rock and snow, generally walking downslope but occasionally needing to face into the slope and downclimb short, steep, disconnected pitches of snow. At around 11,850', a steep, rocky section of the ridge forced them onto the top of the E face below. Terry was facing into the slope and downclimbing onto this face when he triggered the avalanche. Skier 2 was above Terry, facing into the slope and downclimbing when she heard snow sliding below her. She turned to look as Terry attempted to arrest himself on the bed surface. He was unable to resist the force of the avalanche and was flushed downhill with the moving snow. Skier 2 watched as he was carried over a rocky band in the middle of the face and out of sight. This was the last point he was seen.

Skier 2 immediately descended roughly 200 vertical feet of the icy bed surface to the point where Terry was last seen, still wearing boots and crampons. She activated the SOS feature on her InReach messenger device as she removed her crampons and prepared to descend on skis. This call was sent at 11:55 AM. She switched her beacon to search mode and skied down

the bed surface toward where the debris started. As she descended, she spotted and then skied down toward a ski and a pole that were visible on the surface of the debris. She did not receive a signal from Terry's beacon here and she continued searching while descending the debris.

As she descended, Skier 2 picked up a signal at the maximum range of her transceiver. This signal was quickly lost. She unsuccessfully attempted to re-establish a signal in this area before continuing down the debris. Skier 2 descended to the toe of the debris on a bench at 10,600' without receiving an additional signal. She descended an additional 20-30 feet to the top of a rollover to ensure there was no additional debris below this bench. After confirming this she quickly ascended to the toe of the debris and searched upwards.

Not far into her ascent, Skier 2's transceiver picked up a signal and she followed it to the lowest reading. She began probing and quickly had what felt like a positive probe strike. She left the probe in place and dug down to the object, finding a chunk of ice with Terry's right ski boot visible nearby. She excavated towards his upper body and head. Terry was lying on his left side with his head facing downhill, with most of his body buried under 5 feet of snow. He was unresponsive and Skier 2 could not detect a pulse. She was not able to lift him out of the deep hole, so she covered Terry with warm clothing and began CPR in place.

Two Bear Air responded to this accident, flying directly from a training in Missoula, MT. Skier 2 had her first contact with Two Bear Air via InReach at 1:57 PM, approximately 2 hours after the avalanche. Skier 2 continued performing CPR until the helicopter arrived at 3:57 PM. The Two Bear Air crew fitted Terry with a harness and lifted him directly out of the hole. He was transported to an Air Ambulance that was waiting on the valley floor where he was pronounced deceased upon arrival. The Two Bear Air helicopter returned to the site and extracted Skier 2.

Conclusion:

Fatal avalanche accidents are tragic, traumatic events with lasting consequences for all involved. They occur at the complex junction between unpredictable natural phenomena (snow and avalanches), a spatially variable landscape (terrain), and the human beings that move through it (you, me, and Terry). The facts of this accident are presented above in the hopes that readers of this report can better understand what happened. The comments made below are intended to reinforce the important details of this event.

It is uncommon to deal with lasting near-surface persistent slab instabilities in late spring. Unfortunately, the behavior of avalanches does not follow a calendar. Terry and the author had several conversations about the difficulty of stepping back from an open-season mindset at this time of year in the week before the accident. The presence of the culprit weak layer was known to Terry, and he and his partner had made plans to manage the hazard that day by skiing in more confined terrain. This avalanche was triggered as they attempted to access this terrain. The wide crowns produced by this persistent slab avalanche put a significant quantity of snow in motion, which complicated the rescue and contributed to Terry's deep burial.

Avalanche rescue is difficult and time-consuming at best, and is the last line of response when things have already gone terribly wrong. The time available for a successful rescue is very short even in the best circumstances. Due to the remote nature of mountains like these, companion rescue is generally the only option available in the event of an accident. Terry's burial depth, the large extent of the debris, and the fact that there was only one rescuer all complicated this rescue. Skier 2 performed this rescue as well as any person could hope to under similar circumstances.

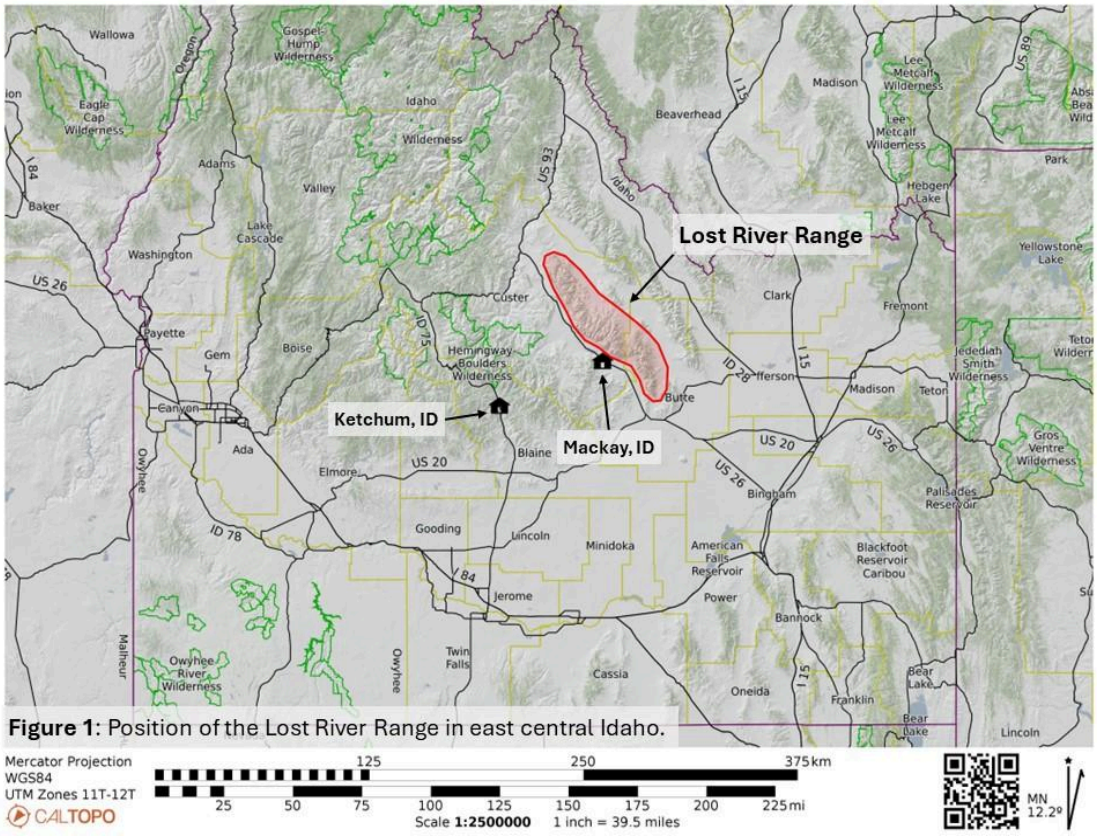

Figure 1: Position of the Lost River Range in east central Idaho.

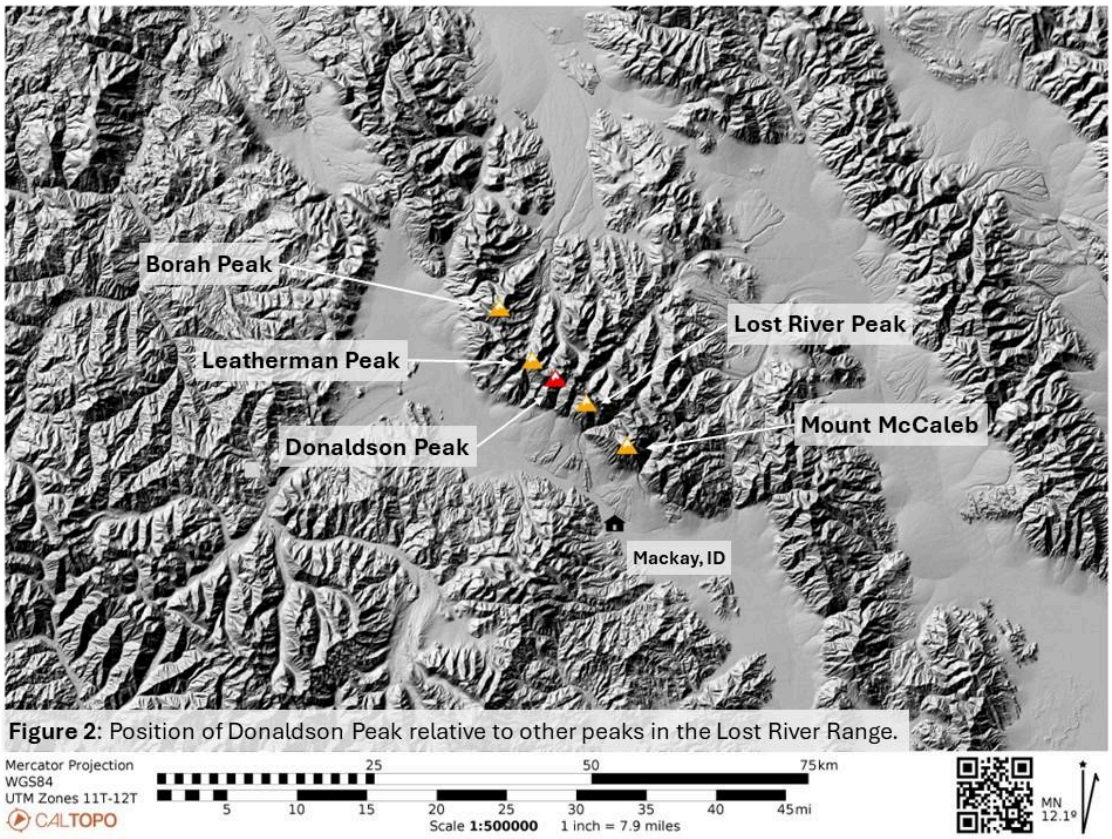

Figure 2: Position of Donaldson Peak relative to other peaks in the Lost River Range.

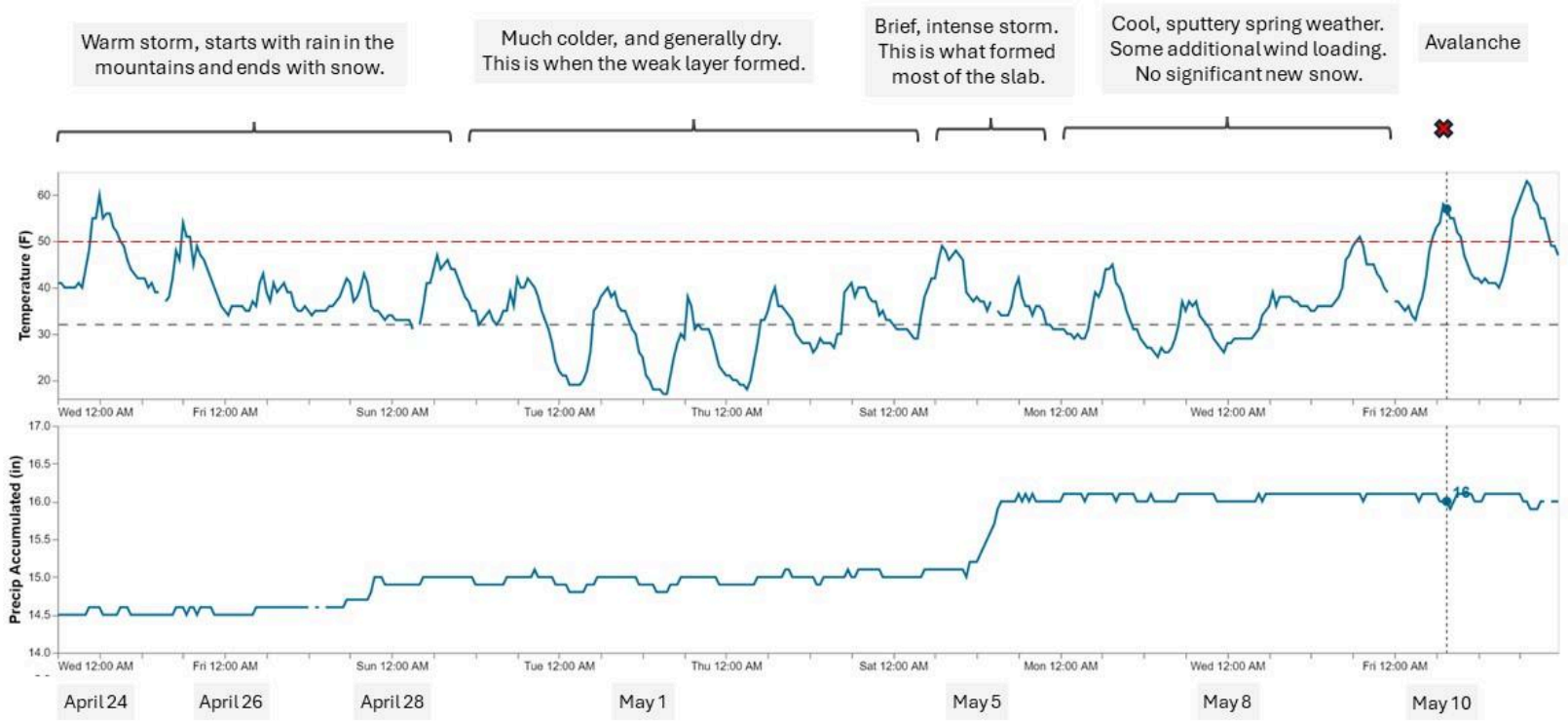

Figure 3: Data from the Hilts Creek SNOTEL (8,000') from April 24 through May 11, 2024. This station sits 11.5 miles east and 4,000' below where the avalanche was triggered. The red, horizontal dashed line is drawn at 50 degrees F, the black, horizontal dashed line is drawn at 32 degrees F. The black, vertical dashed line is drawn at 3 PM on May 10, the day of the accident.

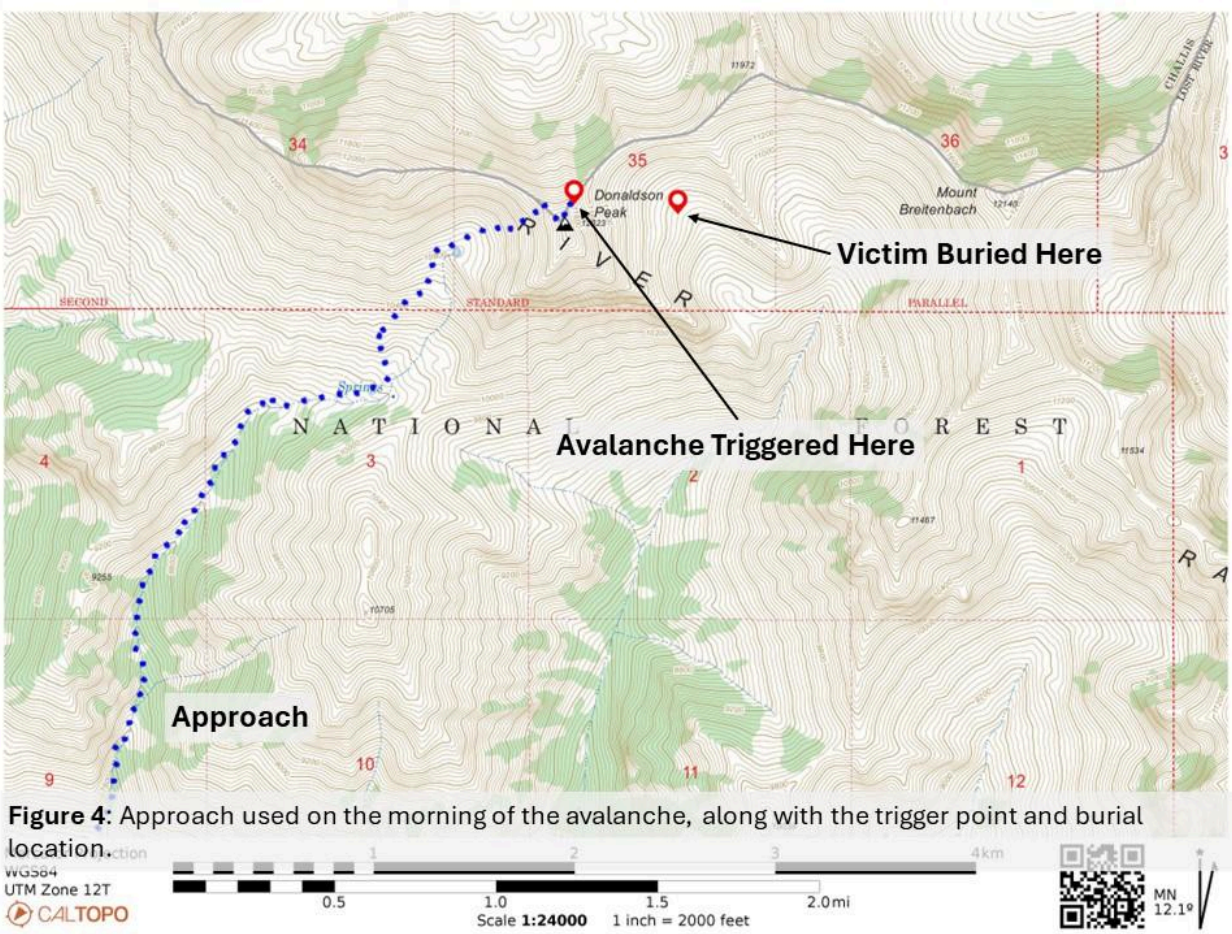

Figure 4: Approach used on the morning of the avalanche, along with the trigger point and burial location.

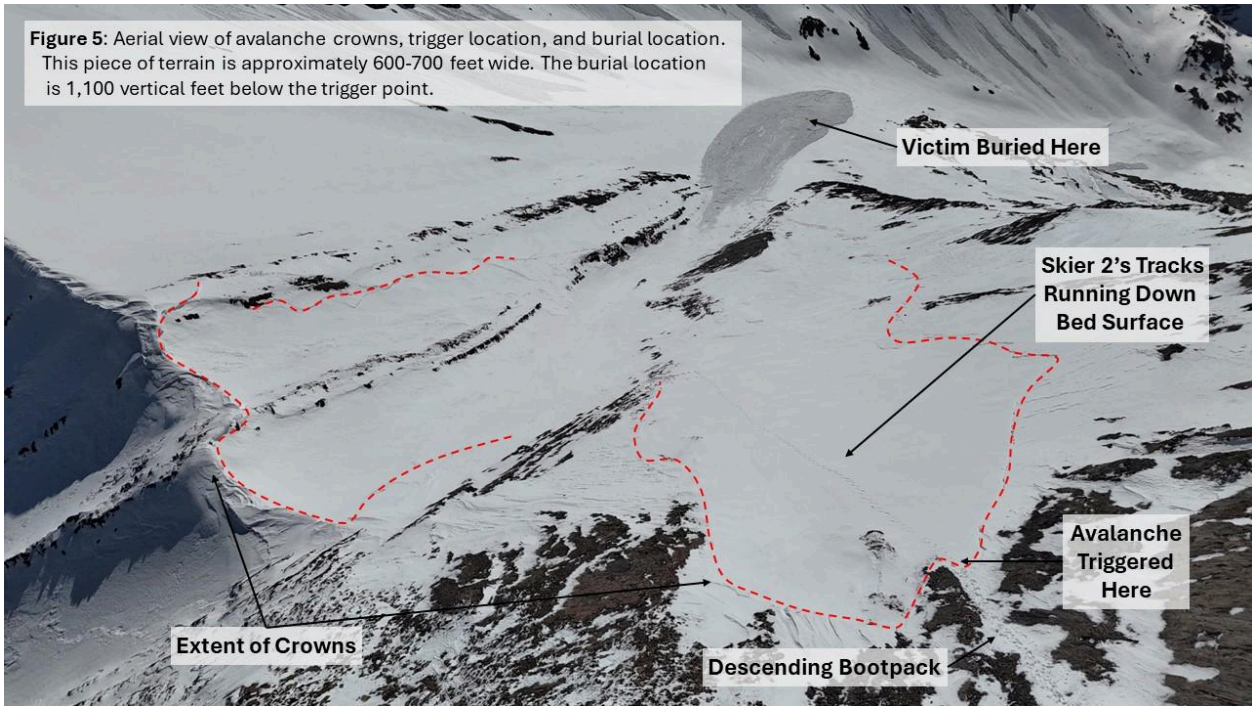

Figure 5: Aerial view of avalanche crowns, trigger location, and burial location. This piece of terrain is approximately 600-700 feet wide. The burial location is 1,100 vertical feet below the trigger point.

Figure 6: Looking across a portion of the crown and down to the debris on the day after the avalanche. This is the furthest gully to the looker's left (south) side of the slope. This crown is uniformly 8-10 inches thick.

Figure 7: Looking back up the debris on the day after the accident. The author is standing at the burial location in this photo. The author's tracks are visible on the bed surface in the gully above.

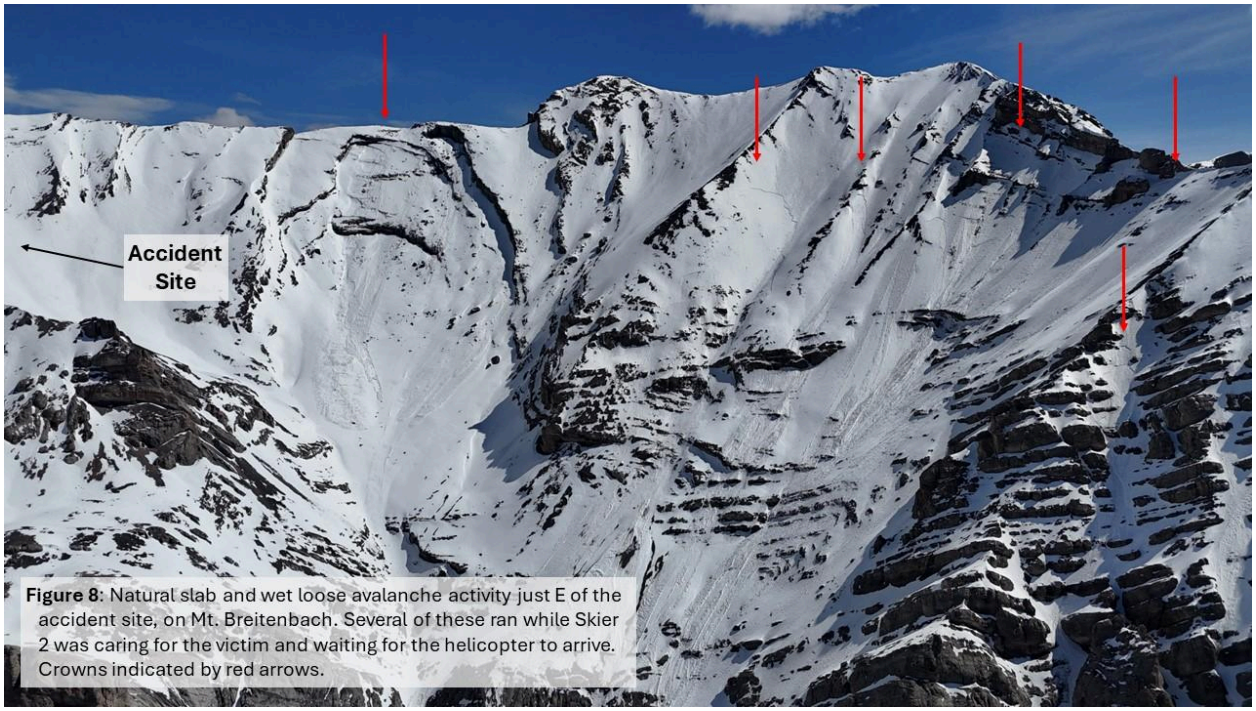

Figure 8: Natural slab and wet loose avalanche activity just E of the accident site, on Mt. Breitenbach. Several of these ran while Skier 2 was caring for the victim and waiting for the helicopter to arrive. Crowns indicated by red arrows.