Lake Dinah Avalanche Fatalities

Southern Mission Mountain Range Montana
Lolo National Forest
January 01, 2020

3 snowmobilers caught:
2 fully buried and killed
1 partially buried and no injuries

Synopsis

On January 01, 2020, at approximately 1400 hours, 3 snowmobilers were involved in an avalanche approximately one-mile NW of Lake Dinah. Lake Dinah is located in Missoula County, 12 miles NW of Seeley Lake, Montana (Figure 01).

While playing on a small, steep, open area, rider # 1 rode part way up the 30-35-degree slope and got his snowmobile stuck. Rider #2 rode up to assist digging out the snowmobile and was followed by rider #3. As rider #3 parked next to his partners the avalanche released, sweeping all three riders downslope partially burying rider #3 and fully burying riders #1 and #2.

Rider #3 was able to self-rescue and call 911. He performed a transceiver search and was able to find and dig out rider #2 in 30 minutes. He then performed CPR.

Volunteer members of the public arrived on the scene and quickly located rider #1 who did not have a transceiver with a probe strike near a tree downslope from his last seen location. Rider #1 was recovered after approximately 2 hours and 15 minutes. CPR was initiated and sustained for several minutes.

Both rider #1 and #2 perished at the scene. Rider #3 was not injured.

This avalanche is classified as:
SS-AMu-R3-D2.5-O

Events Leading up to the Avalanche and Response:
The group of 3 snowmobilers left the Westside Trailhead parking area at approximately 0900 hours and headed towards the Drift Riders Warming Hut. The plan was to ride in the trees. Rider #1 was the most familiar with the area and was the strongest rider in the group. They rode nearby terrain, played in trees, and decided to explore an area near Lake Dinah. No one in the group was familiar with this new area near Lake Dinah, nor had any of them read the avalanche forecast posted that morning. All 3 riders were equipped with an avalanche airbag, shovel, and probe. Riders #2 and #3 also had transceivers, rider #1 did not carry a transceiver. The 3 riders had little formal avalanche training.

At approximately 1400 hours, while riding on an open slope, rider #1 rode partway up the 30-35 degree slope and got his snowmobile stuck. Rider #2 rode up to help dig out the stuck snowmobile, followed by rider #3. As rider #3 parked downhill to his partners, an avalanche released, sweeping all 3 riders downslope. (Picture 04)

Rider #3 was partially buried while riders #1 and #2 were fully buried. Rider #3 was able to self-rescue and immediately called 911 (SAR was mobilized at 1415 hours). He initiated a transceiver search and quickly located rider #2, who was buried 165cm (5’5”) deep. He was able to extract rider #2 in approximately 30 minutes and immediately began preforming CPR.

Volunteer members of the public arrived on the scene and took over care of rider #2 at approximately 1600 hours. They continued to search

for rider #1, and continued CPR on rider #2. Rider #1, despite not having a transceiver, was found by a volunteer on his first probe strike. Rider #1 was located in a likely spot next to a tree downslope from his last seen location. He was buried 240cm (7.5') deep. Rider #1 was uncovered at approximately 1615 hours and was found with his avalanche airbag deployed.

Both rider #1 and #2 perished at the scene, while rider #3 was not injured. Search and Rescue teams, along with other responding agencies, brought all machines and people back to the Fawn Creek parking lot by 2215 hours. The Drift Rider Hut was used as a staging area for the rescue, and incident command was established at the Westside Trailhead parking lot.

Weather and Snowpack

The southern Missions Mountains where the incident occurred had a relatively shallow snowpack in November and December. On December 29, 2019, a layer of surface hoar was preserved from a freezing fog crust, and near-surface facets developed. A significant storm system entered the forecast area on December 30, 2019. By January 01, 2020 at the time of the accident, 3.5 inches of SWE snow water equivalent or approximately 3 feet of new snow had fallen on a weak snowpack. This rapid load produced several natural and rider triggered avalanches throughout the advisory area on January 01, 2020.

Due to the dangerous avalanche conditions, The West Central Montana Avalanche Center (WCMAC) issued an Avalanche Warning on January 01, 2020. Link to Advisory:

Snowfall and temperature data for this incident was collected from the North Fork of the Jocko SNOTEL. This SNOTEL is located 1.5 miles to the northwest of the avalanche site and at an elevation of 6330 feet (Figure 02). From Dec 29-Jan 1, the average temperature ranged from 15 to 31

degrees. It was 31 degrees at 1400 hours on the date of the accident (Figure 03). 3.5 inches of SWE was recorded from Dec 30-Jan 1 (Figure 04). Wind Speed data was collected from the Point Six Raws station at 7920 feet, located 19.6 miles southwest of the avalanche site (Figure 02). Winds were from the west and averaged 27 mph and gusted 30-35 mph (Figure 05).

Avalanche and Terrain

The Seeley Lake area in west central Montana in recent years has become a destination for snowmobiling. The Lake Dinah area accessed from the Westside Trailhead parking area is becoming quite popular for motorized users. Snowmobile use has dramatically increased, and several near misses have occurred in recent years.

The area around Lake Dinah has open terrain with larger bowls. Most avalanche paths in this area end in terrain traps (trees and rocks). There is abundant steep and open terrain pocketed with tree cover.

On January 02, 2020, two volunteers who assisted in the recovery and I, went back to the scene. We were not able to visit the crown of the avalanche due to weather conditions and exposure to avalanche hazard. Link to video

This avalanche was a soft slab avalanche triggered on an east-facing slope at 6740 feet in elevation. The average slope angle is 35 degrees and 38 degrees at the crown. A pit profile was dug on the day of the avalanche in the southern Missions at a similar elevation and aspect (Figure 06). The weak layer was surface hoar and near surface facets. The avalanche length measured 560 feet from the crown to the deposition zone (Picture 02). The crown width is 100’ and depth averages 3’ deep. The deposition averaged 6’ in depth (Picture 03).

This avalanche is classified as: SS-AMu-R3-D2.5-O

Classification as follows:
SS: Soft Slab avalanche
AMu: Artificially triggered by snow machine that was unintentional
R3: Medium size relative to its path
D2.5: Destructive force potential (D2 could bury, injure or kill a person, D3 could bury a car, damage a truck, destroy a wood frame house or break trees)
O-the avalanche released within the old snow.

Conclusion

All of the fatal avalanche accidents we investigate are tragic events. We do our best to describe each one to help both the people involved and the community to better understand them. We offer these comments in the hope that it will help people avoid future avalanche accidents. We do not intend to place blame on any of the involved parties or imply that any particular action or decision would have prevented this tragic event.

Avalanche Forecast: WCMAC issued an Avalanche warning on January 01, 2020. Rider #3 informed us that his group did not read the forecast. Reading the forecast is the first step to making informed decisions on terrain choices and forming a trip plan when choosing to recreate in the winter backcountry.

Group Travel: 3 riders were on the same slope when the avalanche released. When traveling through or recreating on avalanche terrain it is advisable to expose only one person at a time.

Avalanche Education: The riders had little formal avalanche education. Level 1 avalanche training helps guide people with a decision-making format and avalanche hazard assessment given expected and current avalanche conditions.

Companion Rescue: Multiple burial companion rescue is a tremendously challenging scenario. Rider #1 did not have a transceiver making the chances of a successful companion rescue significantly less likely.

Rescue Equipment: While avalanche air bags are intended to help people stay near the surface when caught in an avalanche, they are not as effective when a terrain trap is involved. Rider #1's, air bag was deployed, however he was pinned up against a tree under several feet of snow. Trees are terrain traps which increase the consequences of being caught in a slide by burying you deeper. Also, rider #1 did not have a beacon, slowing his recovery. Rider #2 had an air bag that was not deployed, but he was not buried as deep because he did not get caught in a terrain trap. Always carry a beacon, shovel and probe and practice using these tools.

Historical Myths: Common phrases such as "That slope never slides" or "just a freak accident" are common misconceptions. On the day of the accident the WCMAC observed 3 natural slides in the Seeley Lake area. A slope is steep enough to slide if it falls within the range of 30-50 degrees. An average slope steepness of 35 degrees is prime avalanche terrain.

Travis Craft and Jeff Carty of the West Central Montana Avalanche Center obtained information during the recovery from rescuers. Travis Craft interviewed rider #3 on the night of January 01, 2020.

Any questions should be directed to:

Travis Craft
Director
West Central Montana Avalanche Center
info@missoulaavalanche.org

Pictures and Figures

Figure 01: Location of Avalanche

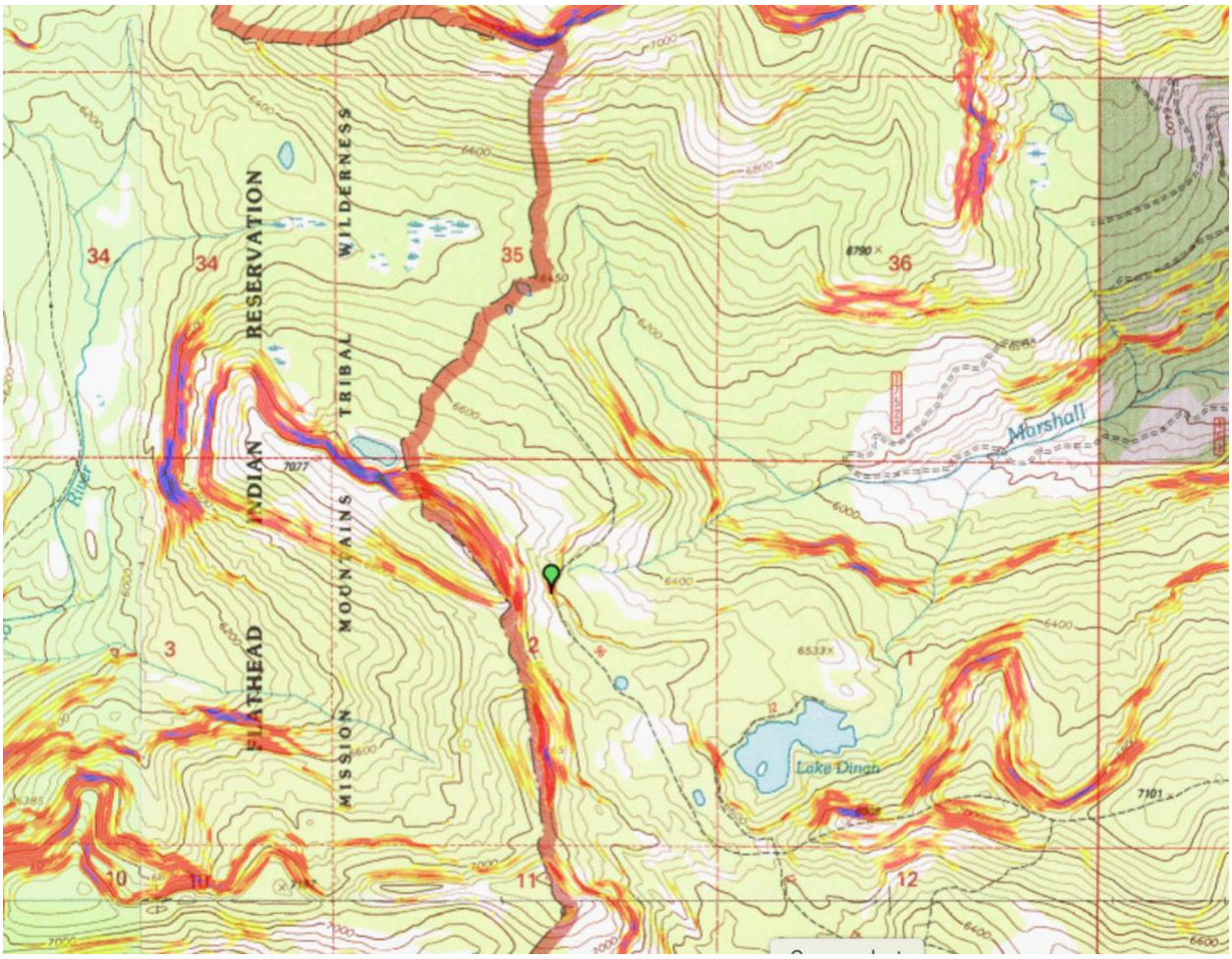


Figure 02: Location of North Fork Jocko SNOTEL and Point Six Raws Station

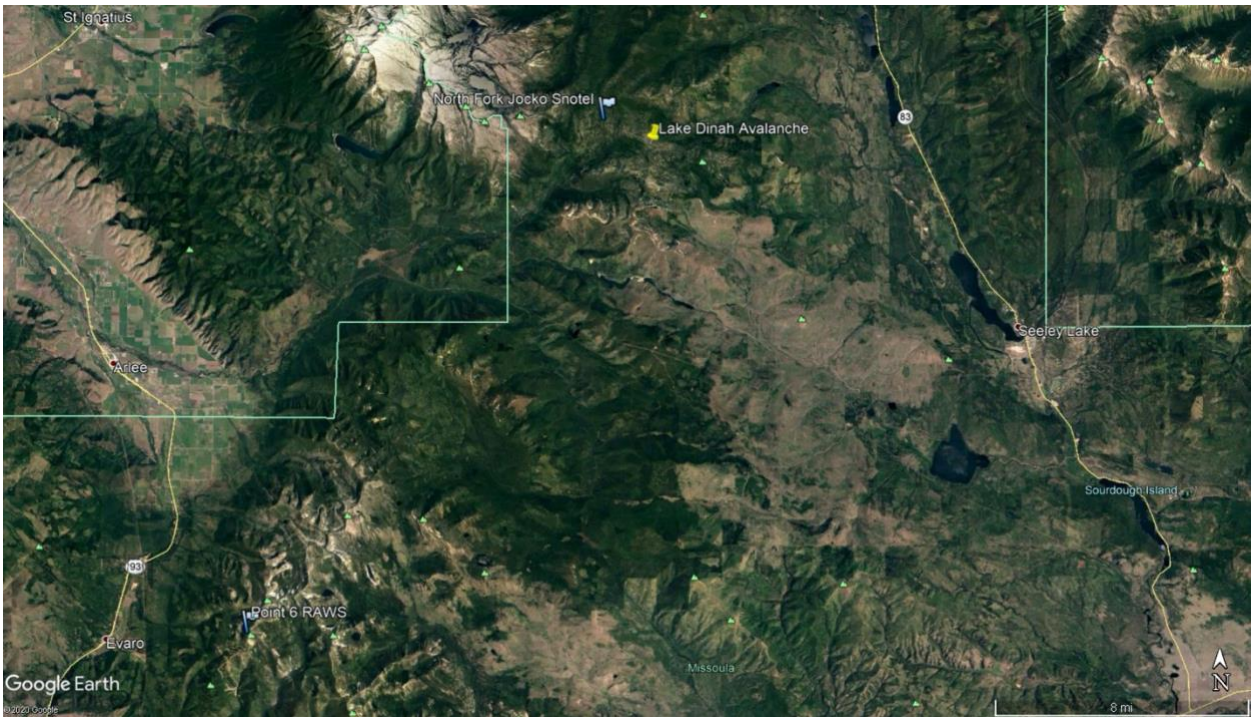


Figure 03: Air Temperature North Fork of the Jocko

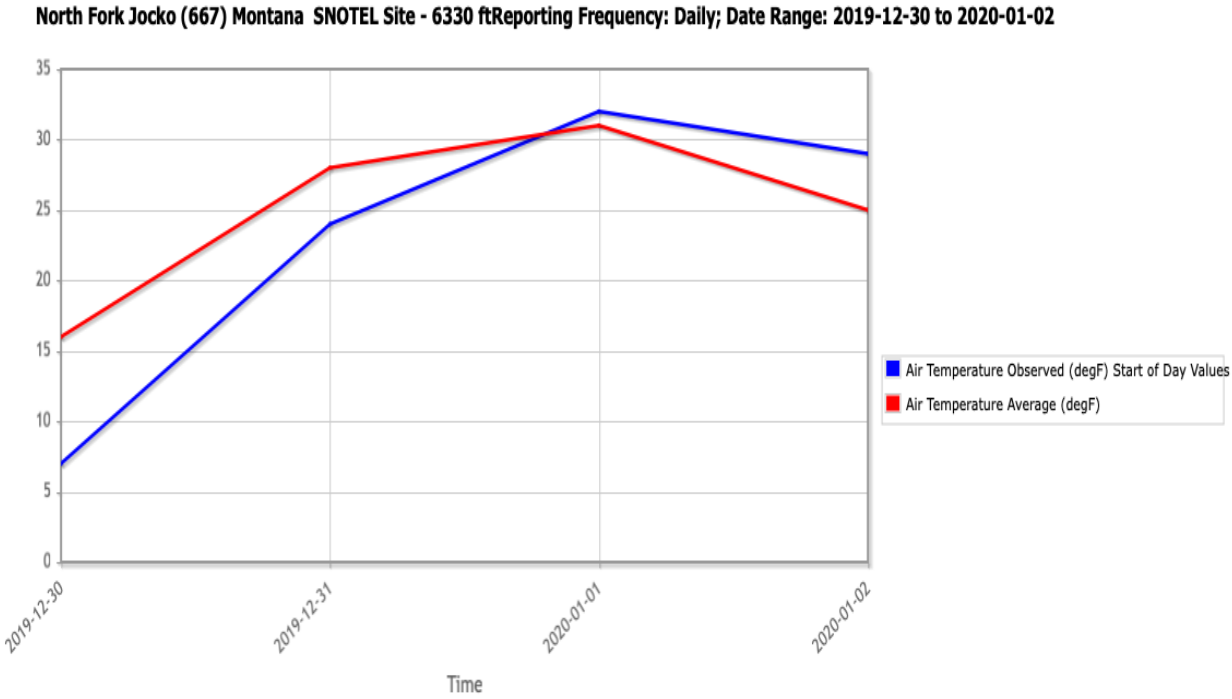


Figure 04: SWE North Fork of the Jocko

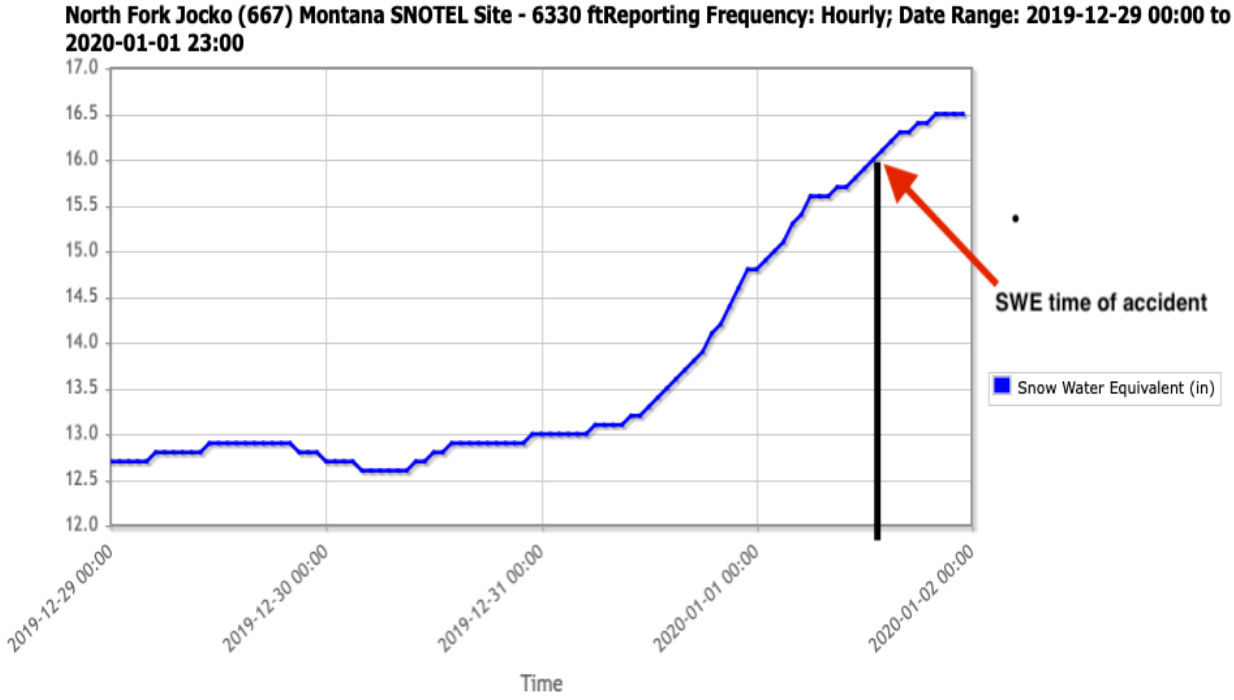


Figure 05: Wind Speed and Direction Point Six RAWS

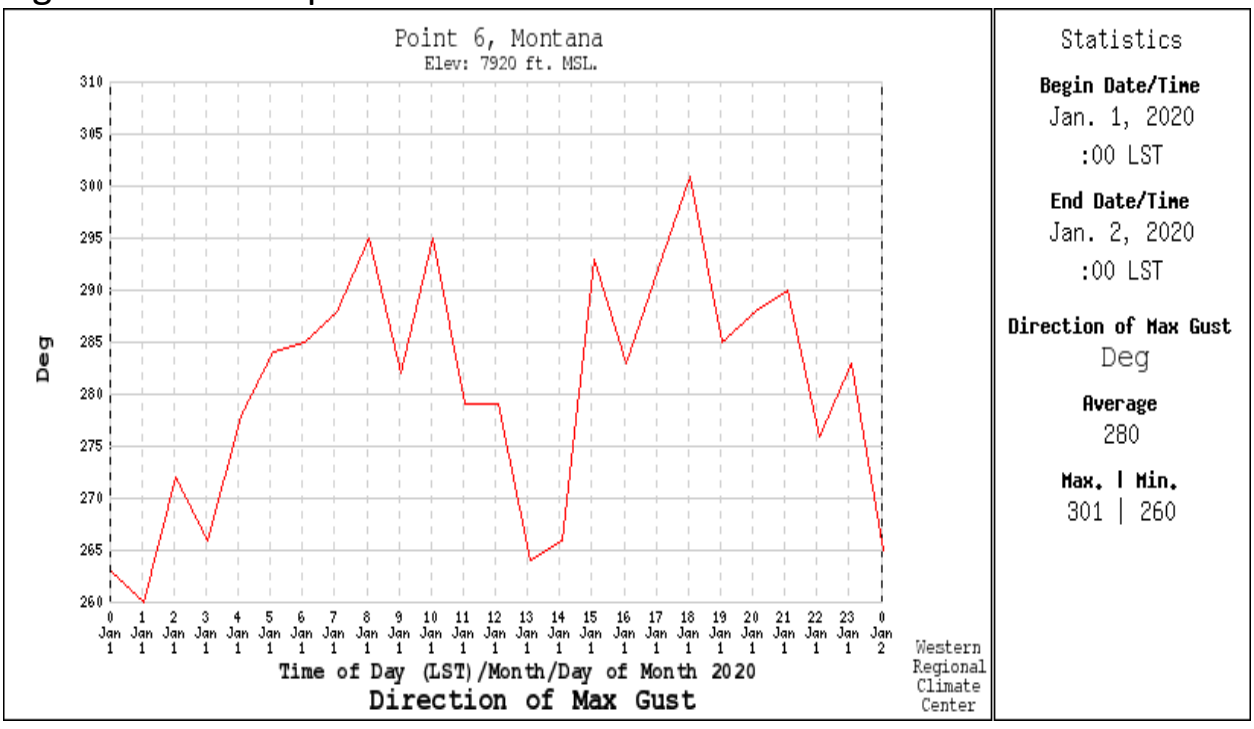
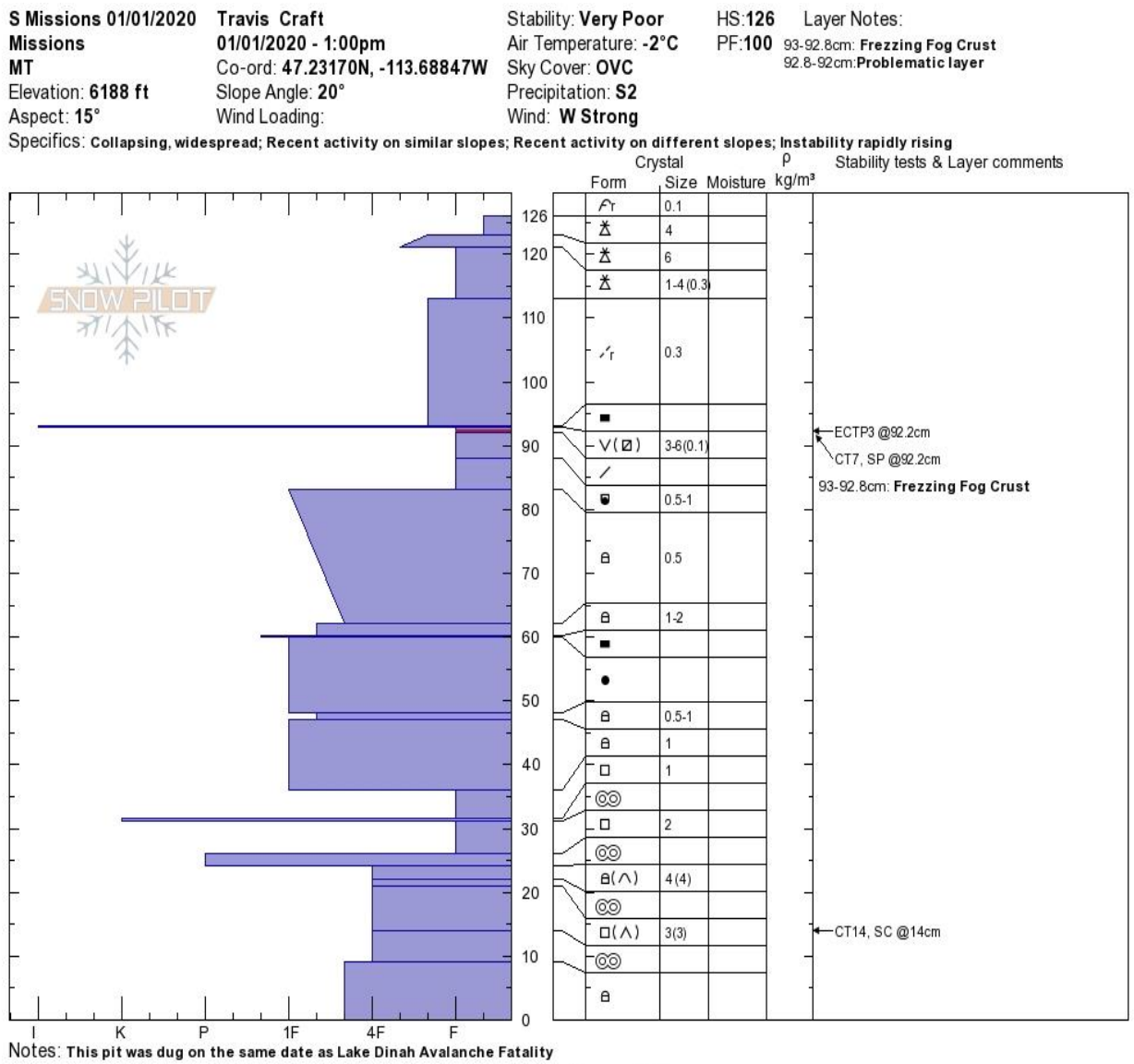
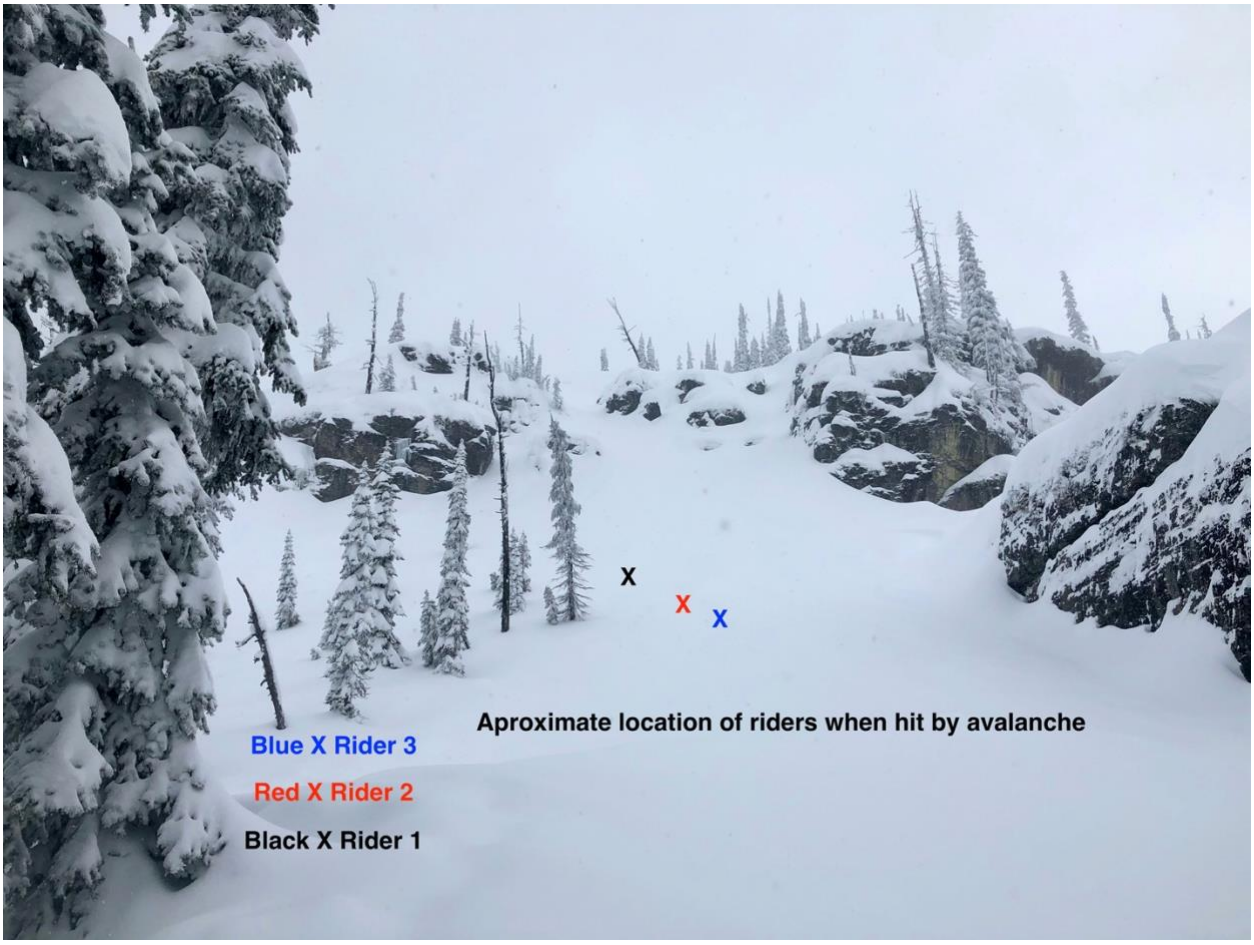


Figure 06: Snow Pit



Picture 01: View of Site

Picture 02: Riders Location at Time of Accident



Picture 03: Crown of Avalanche

Picture 04: Burial Sites