IDAHO PANHANDLE AVALANCHE CENTER

Avalanche Details

- Location: Lone Lake Drainage, Stevens Peak, Bitterroot Mtns
- State: Idaho
- Date: 2024/01/11
- Time: 2:00 PM
- Summary Description: 1 skier caught, fully buried, and killed. 1 skier caught, buried and injured.
- Primary Activity: Ski
- Primary Travel Mode: Ski
- Location Setting: Backcountry

Number

- Caught: 2
- Partially Buried, Non-Critical: 0
- Partially Buried, Critical: 0
- Fully Buried: 1
- Injured: 1
- Killed: 1

Avalanche

- Type: HS
- Trigger: AS
- Trigger (subcode): u
- Size - Relative to Path: R4
- Size - Destructive Force: D3
- Sliding Surface: I

Site

- Slope Aspect: ESE
- Site Elevation: 6160 ft
- Slope Angle: 39 °
- Slope Characteristic: --

Avalanche Details:

Classification for this avalanche is HS-AS(u)-R4-D3-O

The avalanche was reported as initiating in soft slab within the new snow and stepped down to the old snow/new snow interface which was a rain crust.

Avalanche Crown slope angle: 39 degrees

Avalanche Aspect: ESE (110 degrees)

Avalanche Elevation: 6160 feet

Avalanche width: 400 feet

Avalanche length (max): 1,000 feet/510 feet vertical drop.

Alpha angle: 37 degrees

Terrain: Broken with rock bands and trees

Incident Summary:

Three skiers left from the Stevens Lake Winter Trailhead on FS Road 8008 at 8:14 AM, aiming to ascend into the Lone Lake drainage below Stevens Peak to execute ski descents on the east-facing side of the area. The trio made plans the evening prior through a Zoom video call, emphasizing the objective of the day was to seek out safe skiing options. On the morning of the incident, while in route to the Trailhead, they reviewed the IPAC avalanche forecast and decided to ski conservative terrain.

Upon reaching the Trailhead, the group encountered an IPAC Avalanche Forecaster preparing for a day in the field. A brief discussion about conditions took place. All three skiers were equipped with suitable gear for winter mountain travel, including beacons, shovels, probes, airbags, and the knowledge of their operation. They had checked and practiced with their avalanche equipment earlier in the season. Additionally, each skier had undergone avalanche training, possessed familiarity with the terrain, and were experienced backcountry skiers. Departing from the trailhead at 3,500 feet, the group ascended the lower Lone Lake drainage, establishing a skin track on the west side to reach the west ridge, just south of West Willow Peak (6,302 feet). At 12:14 PM, they descended their first run off the ridge on the east-facing slope adjacent to their up track. Following the initial lap, they continued up the ridge to the south, intending to ski further up the drainage with a similar slope angle, aspect, and elevation.

On their second descent, the skiers chose a slope with varying angles and intermittent islands of trees. The initial 200 vertical feet was approximately 27-degrees steep. Negotiating this section, the trio regrouped above a pitch where the slope angle increased. Adhering to standard safety practices, they descended one at a time. Skier 1 descended approximately 400 vertical feet then radioed from a presumed safe location to skier 2 that they were clear to begin their decent. During Skier 2's descent at 2:00 PM, a small, localized avalanche, around a foot deep, was triggered. This quickly stepped down approximately 2.5ft to a buried facet/crust combo, approximately 6inches from ground, that propagated extensively to the sides and above. The avalanche fully buried Skiers 1 and 2, with Skier 3 witnessing the event from above and promptly initiating a search.

Utilizing a beacon search, Skier 3 located Skier 2, whose airbag was deployed and visible on the surface. Skier 2 was found in the trees, fall line from his last seen point. Skier 3 dug out Skier 2, finding Skier 2’s body pinned against a tree, cleared his airway, but found no signs of life. Skier 1 was carried in the avalanche debris and came to rest near the avalanche's toe. Skier 1 successfully deployed his airbag while being carried by the slide. Managing to extricate himself, Skier 1 identified a broken forearm. Skier 1 communicated verbally with Skier 3 and, at 2:18 PM, sent an SOS message using a Garmin InReach which was relayed to the Shoshone County Sheriff’s office and the Shoshone County Search & Rescue team. Skiers 1 and 3 initially attempted to build a shelter to get warm, however, facing cold temperatures, they decided to move towards the trailhead. The route out was complicated by deep, cohesionless snow, and Skier 1's loss of skis and poles in the avalanche.

Rescue, Recovery and Investigation:

The Shoshone County Sheriff's office was alerted shortly after the SOS call sent out from Skier 1's Garmin InReach device at 2:18 PM. A sheriff's deputy first responded to the trailhead at West Willow, where he identified the victim's car and met Church and Davis, the two IPAC forecasters who had been collecting observations in the area. Shoshone County Sheriff's office then notified the Shoshone County and Kootenai County Search and Rescue teams, members of the Silver Mountain Ski Patrol, and members of the Northern Rockies Avalanche Canine team. Skier 1 and 3 were in contact via their GPS InReach device and were advised by the Shoshone County Sheriff's office to stay where they were in hopes that a helicopter rescue could be arranged. Two Bear Air was contacted but unable to travel due to weather. Both Army and Fairchild Airforce made attempts, but were stymied by gusty winds and poor visibility. After waiting over 2hrs Skier 1 and 3 were advised to begin hiking out. They had covered more than half the distance to the trailhead post holing when they were met by members of the Silver Mountain Ski Patrol who assisted them for a half a mile until Kootenai County Search and Rescue transported Skier 1 and 3 the last mile out by a tracked ATV. An ambulance was waiting at the trailhead.

On Friday the 12th, Spokane SAR air support unit, Rescue 3, was dispatched to recover the body of Skier 2. The helicopter made multiple passes over the avalanche, not able to locate the body or burial site that was concealed in the trees. In the meantime, Shoshone SAR began to prepare a ground team to enter the area in case the helicopter was unable to retrieve the body. After refueling Rescue 3 returned to the area and was able to spot Skier 2's deployed red airbag. A paramedic and another rescuer repelled into the site and successfully recovered the body.
Due to dangerously cold weather on Friday and Saturday, IPAC personnel were not able to visit the avalanche location until Sunday the 14th. Jeff Thompson, Ben Bernall, Mikey Church and Izzy Davis participated in the investigation; gathering data that included crown and snowpack profiles, crown and path measurements, photos and GPS points.

Weather and Snowpack Summary:
The 2023-24 season was slow to start. A late November storm allowed some local ski areas to open briefly before warm temperatures and rain in early December reversed those gains. The first week of December saw unseasonably warm temperatures and significant rain events at all elevations. Mild temperatures and small amounts of mixed precipitation throughout the rest of December stacked a snowpack with a layer of buried surface hoar and multiple melt/freeze crusts. By the end of December, the Silver Valley area snowpack was just over 50% of annual average snow water equivalent (Photo 1).

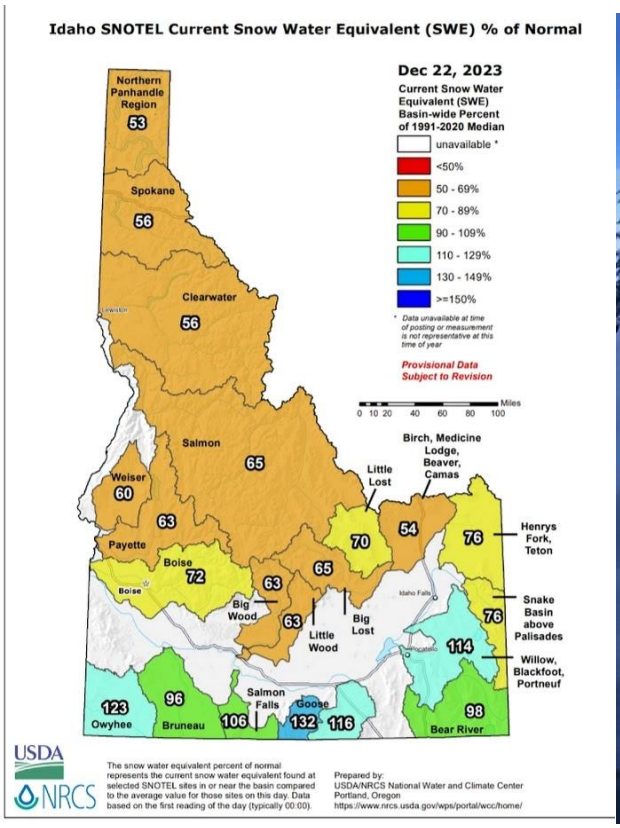

Photo 1. December SWE, NRCS.

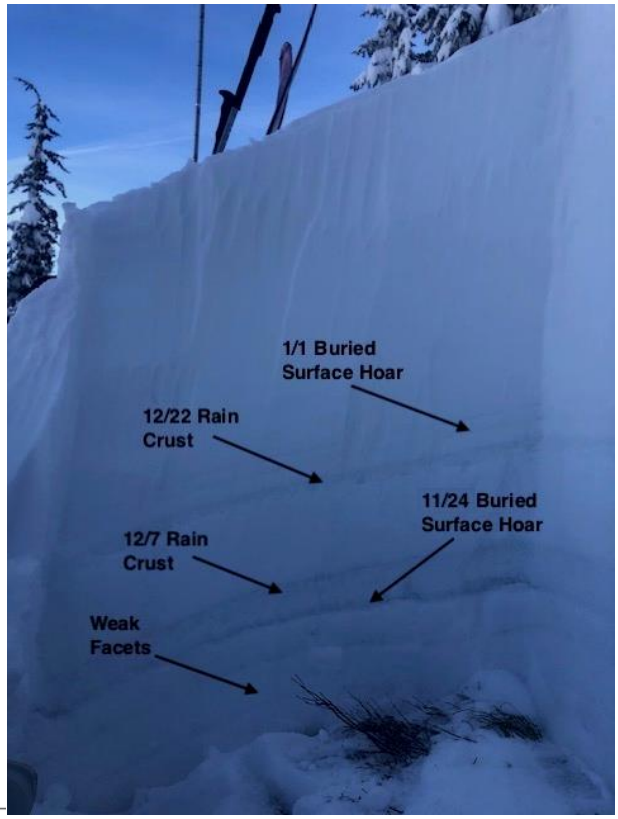

Photo 2. Season's snowpack, 1/15/24.

Winter finally arrived with the new year. On January 11th, the day of the accident, snow totals from a nearby weather station at Silver Mountain recorded 29.7" of new snow since January 3rd, which doubled the depth of the snowpack in most locations. Strong winds accompanied the storm cycle with sustained winds in the 20-30mph range, and gusts 45-60mph, from January 8th through the 11th.

The avalanche forecast published on Tuesday, January 9th rated avalanche danger as High at upper elevations (7,500'-6,500'), Considerable at mid-elevation (6,500'-5,500'), and Moderate at low elevation (5,500' and below'), with wind slabs and persistant weak layers identified as the primary avalanche problems. The Avalanche Warning continued through Wednesday the 10th and expired at 0700 on the 11th.

From Tuesday's Forecast, republished as part of Wednesday's Avalanche Warning:

> *At mid to upper elevations, we've got double header Avalanche problems: strong winds out of the Southwest and persistent weak layers. IPAC has issued an avalanche warning as avalanche danger is likely to rise between publication of this forecast and by the time it expires.*

IDAHO PANHANDLE AVALANCHE CENTER

IPAC issues regular forecasts twice a week, Tuesdays and Fridays, so an avalanche forecast was not issued on Thursday January 11th. However, a General Information bulletin was issued after the Warning expired which read:

> *Recent snowfall and winds have created slabs of unstable snow at tree line and above. Human triggered avalanches remain likely on terrain steeper than 30 degrees. Terrain below ridgelines facing north and east has been loaded by winds, slabs will be more dangerous and likely to be triggered in those locations.*
>
> *On Thursday the "avalanche warning" that was present Tuesday through Wednesday is being discontinued. It is important to know that conditions remain dangerous out there for backcountry riders. Although we do not meet criteria for HIGH avalanche danger, it is strongly advised that you avoid riding in steep terrain today, especially in locations that are loaded in by the recent winds.*

Wednesday night into Thursday saw continued snowfall that carried on intermittently throughout the day as temperatures dropped. Low hanging clouds limited visibility to a couple thousand feet. By Thursday afternoon approximately one foot of new very low-density snow was sitting on top of two feet of progressively denser storm snow.

On January 11th, the same day as the avalanche accident, IPAC Forecasters Mikey Church and Izzy Davis dug a snow pit on a similar aspect and elevation to the accident, approximately 1mile to the north (Photo 3). They found a generally stable snowpack, as measured by compression tests and extended column tests. Notable were the two layers of comparatively weak facets below the two December melt/freeze crusts. These were now buried over 3ft from the surface. Within the storm snow, approximately one foot from surface, was a thin layer of well-preserved stellar dendrites and graupel. New/old snow interface appeared stable.

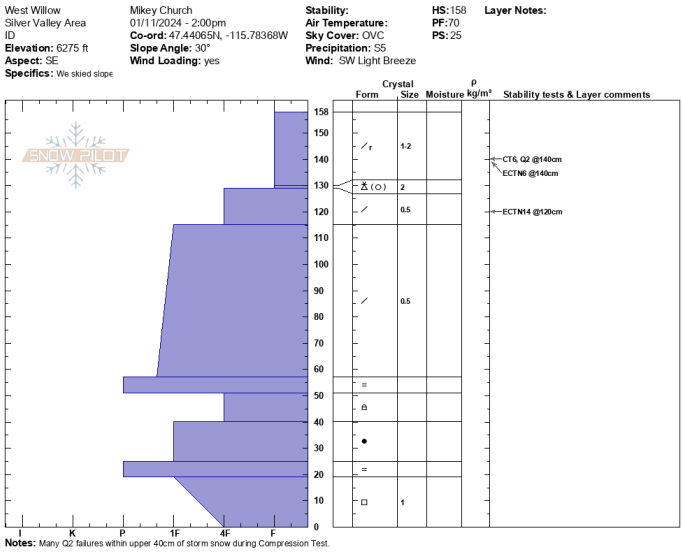

Photo 3. Pit profile from data collected on West Willow Peak, 1/11/24.

Discussion:

This accident was the fifth avalanche fatality in the Silver Valley within the past four years: 3 were inbounds skiers, and the 4th was a snowmobile fatality. Every one of these accidents is a tragedy that reverberates through our communities. The number of recent accidents underscores the inherent danger of recreating in avalanche terrain and the continued need to inform the public about avalanche hazards and safety. To that end, this report has been compiled by IPAC, with full cooperation from the accident survivors, with the intended purpose of understanding the events that lead to this tragedy, learning from the event, and sharing the conclusions with the wider community.

In an honest assessment, hard truths must be faced. The party did many things right: they had the appropriate avalanche safety gear and knew how to use it, they had recently practiced with their beacons, and when the time came used them correctly. They had also reviewed the avalanche forecast, acknowledged the risk and agreed to ski conservative terrain. The group's planned route minimized exposure, but did so by threading adjacent avalanche terrain. When in avalanche terrain, they did follow best practices for travel in avalanche terrain.

Significant recent storm loading, strong winds, and reports of recent avalanches in the forecast zone were the red flags for the day. On the ground there were few, if any, readily apparent signs of instability observed by the group. Low hanging clouds, and at times heavy snowfall, obscured views of adjacent slopes, which was a likely factor in the group deviating from their planned route into steeper and more consequential terrain than they had planned to ski (See Photo 4).

Photo 4. Yellow arrow was the group's intended route. Orange arrow is groups actual route. Red dot is location Skier 2's burial.

The chain of events that led to this accident underscores the fine margins of safety we as backcountry users navigate regularly, whether wittingly or not. Faced with unexpectedly complex terrain, the group was faced with difficult decisions on how to proceed. They mitigated their exposure by traveling one at a time to identified safe zones, but they underestimated the destructive power of a potential avalanche.

The avalanche occurred on a slope angled 35 to 39 degrees. A small avalanche initially broke within the upper snowpack, likely the new/old snow interface, but stepped down to a weak layer near the base of the snowpack. Based on the report from the survivors and the site visit, it appears the initial avalanche was a triggered from a point between protruding rocks where the snow may have been shallower and weaker than expected.

While the group had discussed having a conservative mindset heading out that day, one cannot help but think heuristic traps, or human factors, may have played a part in the accident. Up until the storm event that delivered upwards of two feet of snow, the ski season had been somewhat of a bust with disappointingly warm weather and low snowpack. Pent-up excitement over the first big storm of the year may have pushed the skiers into the mountains despite heightened avalanche hazards. And having already successfully skied a line that day the group may have felt more comfortable stepping out into steeper, more exposed terrain, when faced with challenging route finding.

Other takeaways from this accident have to do with the rescue, and include points reminiscent to similar past events. All three skiers in the party were experienced backcountry travelers prepared with gear in case of an emergency event. The Garmin InReach they carried enabled them to communicate with the outside world; however, the device's limitations should be acknowledged. Communication was limited to text exchanges with the Garmin SOS dispatch services every 30-60min, who then relayed information to local resources. Text exchanges with local authorities were limited to once every one to two hours. The rescue effort was further delayed by the time needed to muster personnel and equipment, and by concerns over safety of rescue personnel entering avalanche terrain in the dark during a period of dangerously cold weather. Low hanging clouds, darkness and strong winds prevented helicopters from reaching the party. Ultimately, the survivors traveled most of the way out of the mountains on their own, only meeting rescuers about a mile and half from the trailhead. These two points illustrate the limitations of technology and outside search and rescue resources. Backcountry travelers need to be self-sufficient and are likely their own best resource for rescue.

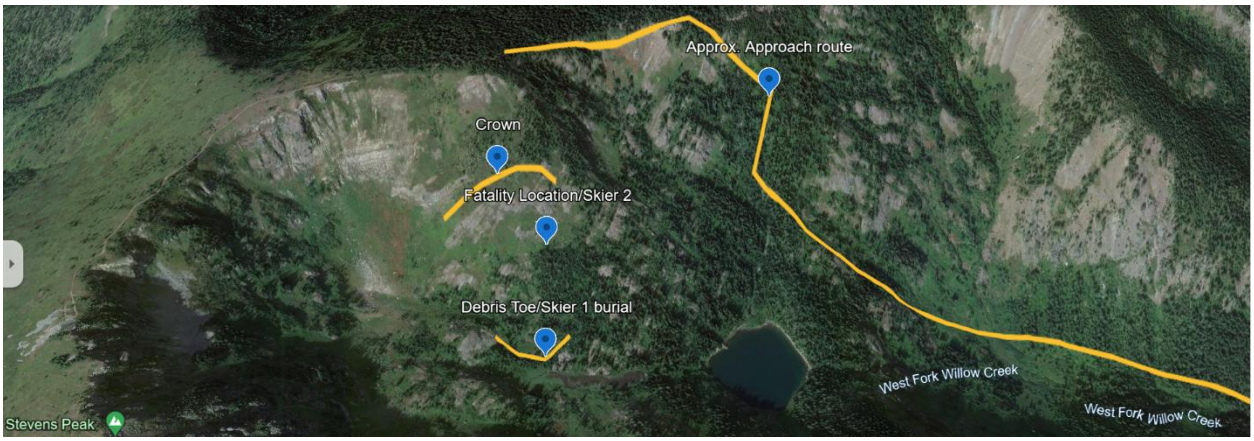

Photo 4. Google Earth image with approximate locations of up track, crown, toe and burial sites.

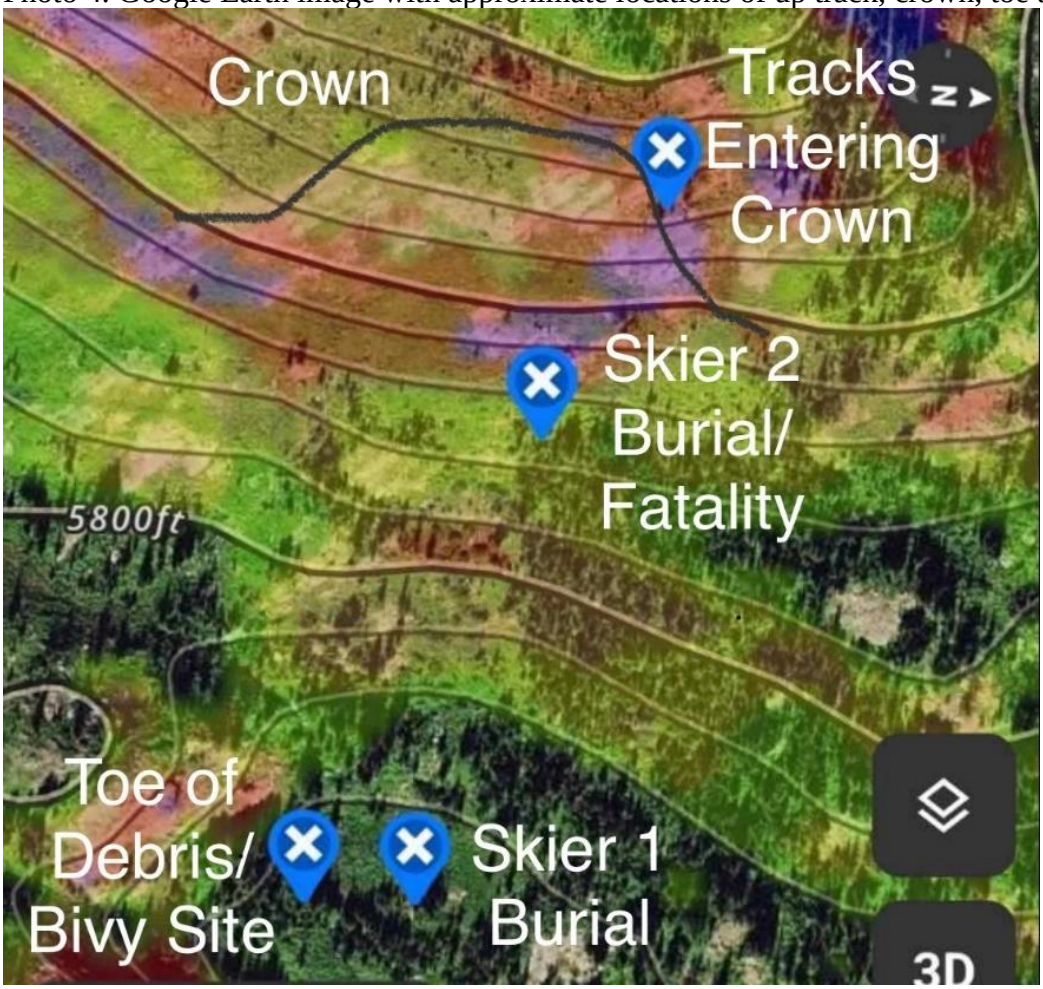

Photo 5. OnX screen shot with slope shading.

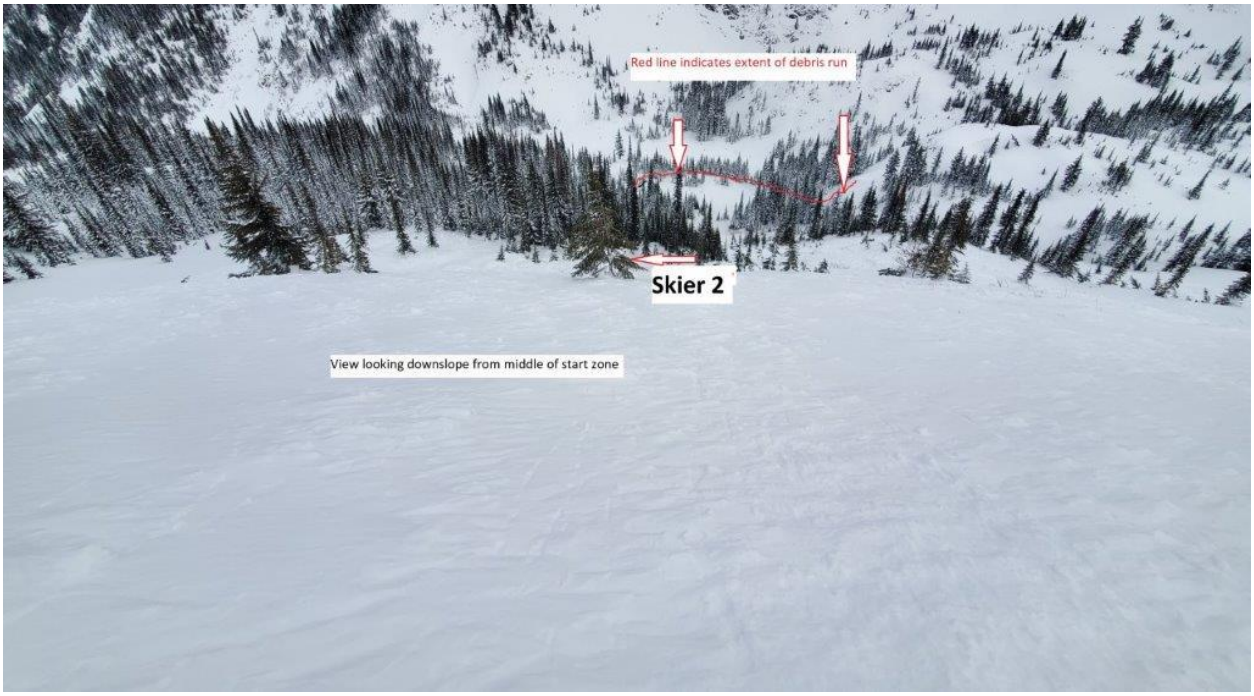

Photo 6. View from helicopter. Red dot is fatality burial location. 1/12/24

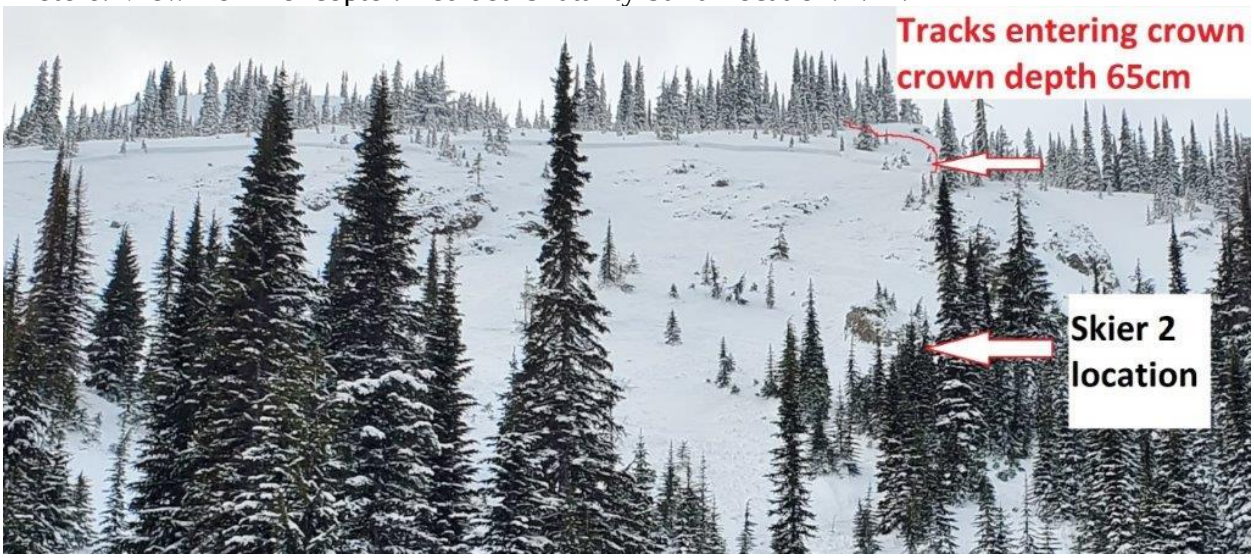

Photo 7. View upslope. 1/14/24

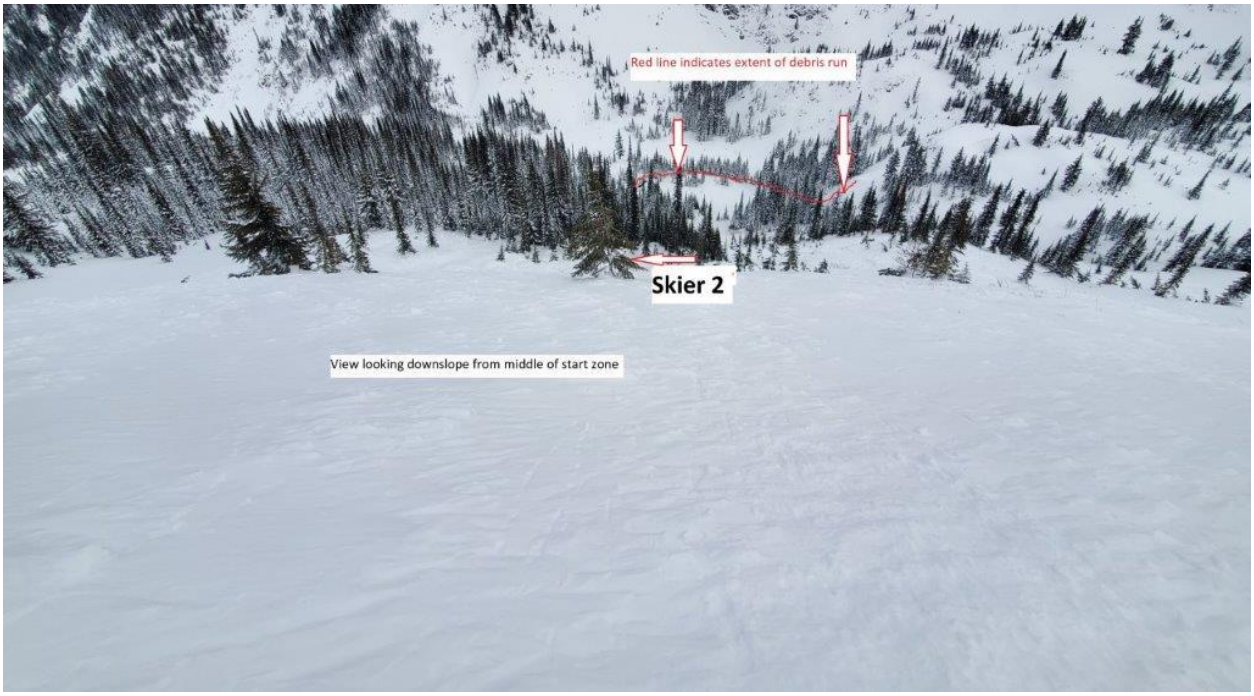

Photo 8. View downslope from crown. 1/14/24

Photo 10. Crown profile investigation. 1/14/24

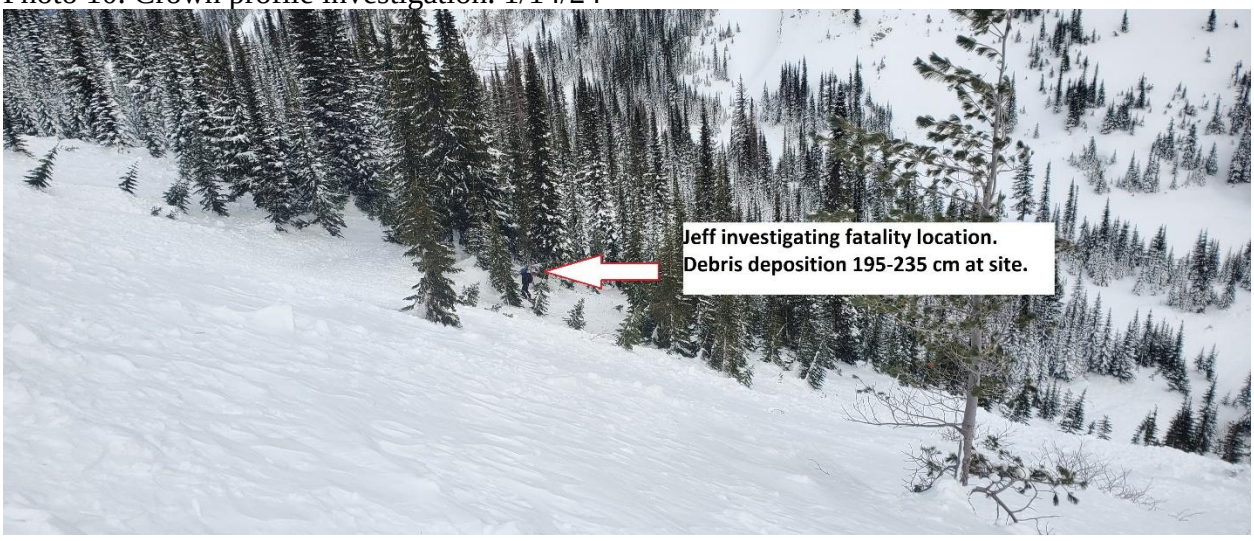

Photo 11. IPAC forecaster investigating fatality location. 1/14/24

Photo 12. Nearby avalanche crowns that may have released sympathetically or within same time-period. 1/14/24

Photo 13. Looking uphill from fatality/burial location. 1/14/24

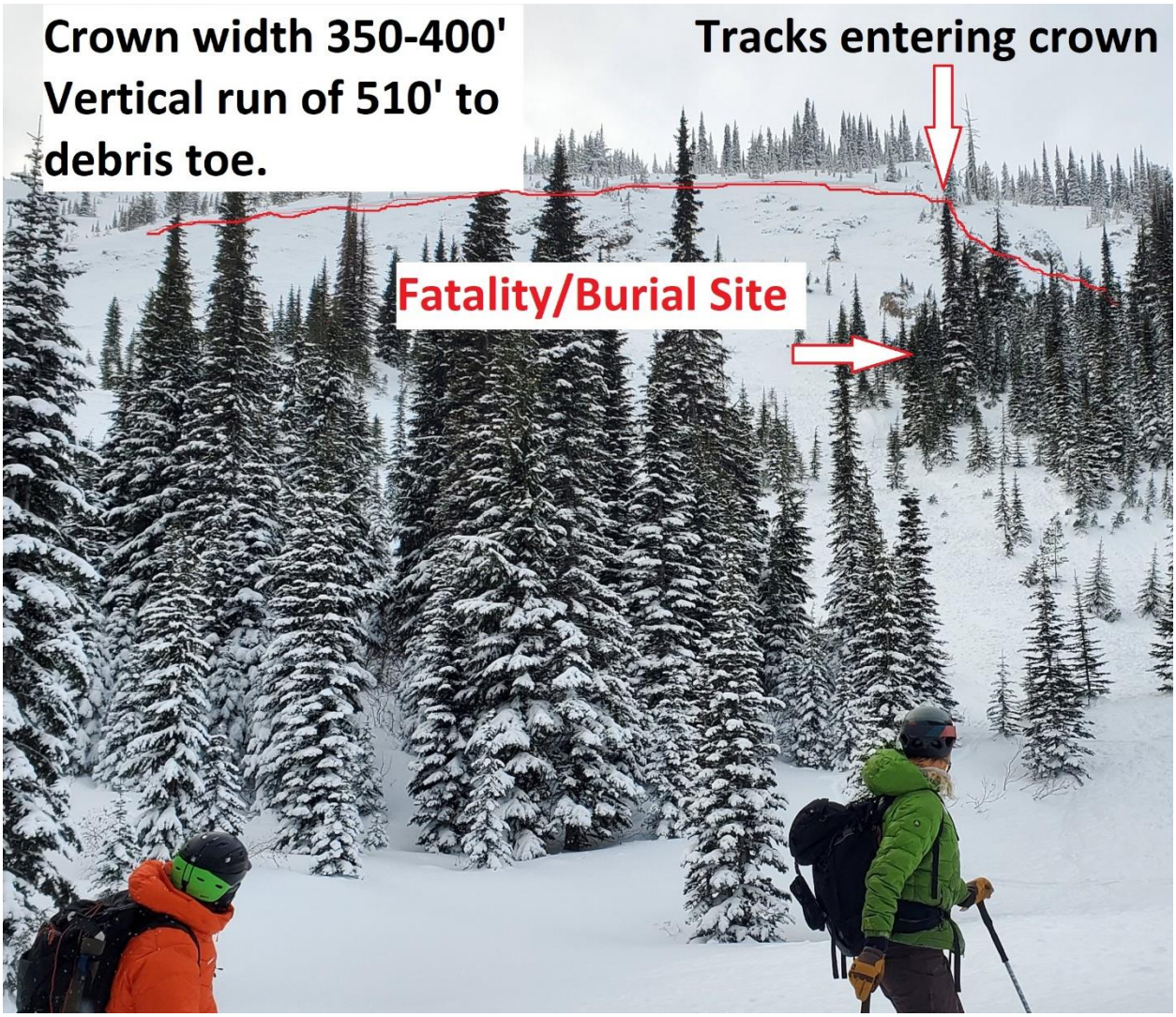

Photo 14. View from toe of debris pile. 1/14/24