

**SKYLAND AVALANCHE**  
**SATURDAY, FEBRUARY 25, 2012**  
**INCIDENT REPORT**

April 12, 2012

**Location:** (See Appendix A-1 – Maps)

Hungry Horse Ranger District  
Flathead National Forest - Region One  
Flathead County, Montana

Skyland Creek, Lewis and Clark Range  
Elev. 5900 ft., below treeline  
Lat. 48° 15' 54.30" N  
Long. 113° 20' 53.46" W  
WGS84 datum

**Report Author:**

Stan Bones, Flathead National Forest  
650 Wolfpack Way, Kalispell, MT 59911  
406-758-5284, [sbones@fs.fed.us](mailto:sbones@fs.fed.us)

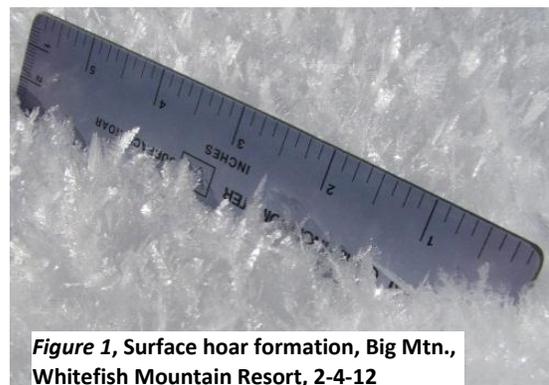
**Summary:**

- 1 Male Snow Bike Rider, Caught, Almost Completely Buried (only hand exposed), Killed  
Francis Skierka, age 23, Cut Bank, Montana
- 1 Male Snow Bike Rider, Caught, Partly Buried Not-critical
- 2 Snow Bikes, slightly damaged

**Weather:** (See Appendix A-2- Weather)

In early February a high pressure system lingered over Northwest Montana. This dry stable air mass produced mostly clear skies with variable valley clouds and fog from the 3<sup>rd</sup> of the month to the 6<sup>th</sup>. As temperature inversion conditions developed, surface hoar formed at many mountain locations.

Between February 10<sup>th</sup> and the 21<sup>st</sup> the Pike Creek Snotel (approx. 2.8 air miles N-NE of the avalanche site) recorded receiving 1.1-inches of new snow water equivalent. This snowfall was spread rather evenly over the eleven days. During the next 4 days, Tuesday, the 21<sup>st</sup>, to Saturday, the 25<sup>th</sup>, the snotel recorded another 1.1-inch of snow water equivalent as fast moving storm cells raked across the area. Accompanying the snowfall were the typical



**Figure 1, Surface hoar formation, Big Mtn.,  
Whitefish Mountain Resort, 2-4-12**

strong southwest winds common to the area. At the avalanche site at the time of the fatal incident, the February surface hoar layer was now buried under approx. 16-20-inches of mostly hard wind deposited snow.

**Avalanche Condition** (See Appendix A-3 Avalanche Advisory)

The Skyland area is within the US Forest Service Northwest Montana Backcountry Avalanche Advisory area. The day before the incident, Flathead National Forest issued its regular Friday advisory rating the avalanche danger as *considerable* between the elevations of 5,000 and 7,500 feet on all mountain ranges, trending higher Saturday and Sunday. Of special concern were:

- *Steep, open slopes and gullies lacking vegetative and terrain anchors, particularly slopes with a relatively thin snow cover and a basal layer of weakly bonded, eroding, faceted grains*
- *Unstable near surface snow poorly bonded to buried surface hoar or layers of melt-freeze ice.*

Backcountry travelers were advised that natural avalanches were possible, while human triggered avalanches were likely. The size and distribution of avalanches ranged from small in many areas, to larger in specific areas, and very large in isolated areas.

The caution emphasis was that the avalanche danger was expected to gradually increase through the weekend with the forecasted new snow. Backcountry travelers were advised to be particularly alert to new snow loading from precipitation and/or wind upon an existing buried weak layer. They were advised to:

- *Always, always, always carry and know how to use avalanche safety equipment*
- *Watch for any rapid change in weather conditions beyond forecasted amounts*
- *Check out the site specific snow stability before jumping in or on any slope that has the potential to avalanche*
- *Don't die this weekend doing something stupid*

**Snow bike Party Information:** (See Appendix A-1 Maps)

On Saturday, 2-25-12, the Cutbank snowmobile club, the Summit Snowgoers, was hosting a club outing in the Skyland-Challenge–Morrison Creek areas. Consequently more riders than usual were in the area where the club grooms a number of snowmobile trails, primarily on developed Forest Service access roads. Riding Timbersled Mountain Horse motorized dirt bike conversion snow bikes (<http://www.timbersled.com/snowbikeinfo.htm>), Francis Skierka and his companion began their day in the East Fork Skyland Creek area. Riding both on and off the groomed trails and roads, they were working their way cross-country southward, back toward the main groomed route on Skyland Road, NFSR # 569. They were in familiar terrain, having ridden both snowbikes and snowmobiles there for a number of years. On this day they were finding a significant amount of new, soft snow and agreed to “ride low,” remaining in the valley and avoiding the big, steep slopes of Mule and Patrol Ridges, the Puzzle Hills, and the Continental Divide.

By 10:15 AM they had crossed from the East Fork into the West Fork of Skyland Creek. They had entered the recovering clear cut unit sandwiched between the creek and the east-west elongated ridge forming the divide between the Skyland and Challenge Creek

drainages. The companion had snowmobiled in this area near the terminus of Forest Service Road # 9604 numerous times with his family, both before and after the fires had altered the area. He said that since the fires he and others had noticed a significant change in the general snow conditions found throughout the burned areas. The cutting unit had escaped the latest Skyland fire, while all the mature timber around the perimeter burned. This left a doughnut hole of small reproduction pine surrounded by an open stand of fire killed, spire-like snags. After the snow biking pair had stopped to free Skierka's mired bike, the companion rode west on the road as it cuts along the break between the steeper north facing ridge above and the flatter slope of the old clearcut below.

At the point where he could see the ridge above was beginning to dip and the steep north face starting to flatten, the companion left the road and began an ascending side hill climb into the relatively open stand of fire killed snags. Compared to snowmobiles, motorized snow bikes are far more adept at side hilling. After traveling only a short distance he felt the snow collapse and saw the steep slope above him breaking. A wave of snow soon hit and threw him from his machine, at which point he swam and fought to stay on the surface. Luckily he missed colliding with any of the snags. When the moving snow came to a stop, he was facing downhill, somewhat on his stomach, head out of the snow, buried mostly up to his chest. Looking around he expected to see Skierka riding up, thinking that Francis was some distance behind. Instead he could see or hear nothing of his friend.

While digging himself out, the companion said he then noticed Skierka's snow bike was 50-70 feet above him, lying on its side above a snag. Suddenly a hand popped out of the snow a short distance above and east of the companion's position. The companion struggled to free himself, digging at the snow with his hands. Since beginning to ride snow bikes he said he seldom carried a shovel. In addition to being blocky, the avalanche debris was dense, icy, and set hard, "like concrete." After considerable struggle and quite some time the companion was able to free himself. Using his cell phone he called 911 and rushed to Skierka's position and again began digging with his hands. He said that the protruding hand that earlier had been moving was now motionless. When finally uncovered by a recovery party, Skierka was reportedly buried face down.

### **Avalanche Characteristics:**

Tony Willits, Joy Sather, Derek Milner, and Stan Bones, Flathead National Forest, visited the scene at approx. 1200 hours, Monday, February 27, two days following the avalanche release. They were accompanied by Forest Service law enforcement officers and a Forest Service employee who was in the area on Saturday and became involved in the incident response and body recovery.

On the snowmobile ride to the avalanche site, they observed no other obvious signs of snow instability. Five to eight inches of new snow had fallen in the area since the time of the fatal avalanche on Saturday.

- *Avalanche type*, HS, hard slab avalanche
- *Avalanche trigger*, AVu, unintentionally triggered by motorized snow bike and rider
- *Destructive force*, D2, could bury, injure, or kill a person
- *Size relative to the path*, R4, large
- *Sliding surface*, old snow layer

- *Distance from trigger to crown face*, approx. 200 ft. horizontal, 225 ft. slope distance, (map measured)
- *Height of crown face, (observed)*
  - Minimum, 30 cm (≈20 inches)
  - Average, 40 cm (≈16 inches)
  - Maximum, 60 cm (≈24 inches)
  - Measured, 40 cm (≈16 inches)
- *Width (map measured)*
  - Minimum, 540 ft.
  - Typical, 550 ft.
  - Maximum, 575 ft.
- *Vertical Fall*, 150 ft., (map measured)
- *Slab snow*, F fist and P pencil hardness, (observed)
- *Weak layer*, Buried surface hoar and rounding faceted particles, 4F, 4 finger hardness, 2 cm thick layer, (observed)
- *Bed surface*, O, released within the old snow, P, pencil harness, (observed)
- *Elevation at highest portion of the crown fracture*, approx. 5,860 ft., (map measured)
- *Average slope angle at the highest portion of the crown*, 37-degrees (observed)
- *Central aspect of the avalanche*, N20E (NNE) (map measured)
- *Ground cover at start zone*, grass & low brush beneath moderately dense burned-over forest snag overstory
- *Location of crown face*, ridge convex roll (observed)
- *Snow moisture*, D, dry (observed)
- *Track*, open slope, burned-over forest, moderately dense snag overstory (observed)
- *Elevation at toe of the runout*, approx. 5,710 ft. (map measured)
- *Debris type*, fine-blocky mix, very hard (observed)
- *Total crown to toe slope distance*, approx. 355 ft. (map measured)
- *Total crown to toe horizontal length of slide*, approx. 320 ft. (map measured)
- *Alpha angle individual*, approx. 25.0-degrees (calculated)
- *Avalanche reportedly released* at approx. 1030 hours, MST, Saturday, February 25, 2012

### **Emergency Response:**

The fatal avalanche was estimated to have occurred at 1030 hours. The initial reports were confusing. Even though the location is in Flathead County, the 911 call was routed through the cell phone system to Pondera County, Conrad, Montana. The county boundary is less than 2 air miles to the east of the avalanche site. Pondera forwarded the call to Glacier County, Cutbank, Montana whose county boundary is less than 3.5 miles to the northeast. Glacier County has the closest regular law enforcement presence. Glacier in turn relayed the call to Flathead County, who has actual authority.

When Glacier County Office of Emergency Services initially received the call it was thought a vehicle on Highway 2 had been hit by an avalanche. Even once that was cleared, there was confusion about what are snow bikes.



Figure 2 Timbersled Mtn Horse Fit Kit, Kootenai, Idaho

Approximate response timeline:

<u>Time</u>	<u>Activity</u>
1155 hours	Call received by Flathead County Dispatch
1205 hours	North Valley Search and Rescue, Glacier Park, and US Forest Service paged
1205 hours	Flathead Dispatch establishes phone contact with avalanche survivor
1215 hours	Dispatch establishes location, survivor walking out to Skyland Road
1235 hours	Flathead Emergency Aviation Resources helicopter enroute
1320 hours	Helicopter on scene
1435 hours	North Valley SAR leaving scene with victim's body

Official cause of death was asphyxiation.

### **Lessons Learned / Reaffirmed:**

Avalanche incidents are always tragic events that often have a human cause. Nature frequently provides obvious clues and signals, warning us when conditions are hazardous. It is imperative that we take the time to learn and interrupt the warning signs. Seldom do situations unfold as swiftly, brutally, and unforgiving as this and the Lost Johnny avalanche five days prior. Francis Skierka and his companion recognized the potential hazard associated with the recent snowfall. They were confining their riding to the more gentle terrain of the low valley bottom, avoiding the steep slopes of the bigger mountains around.

Their biggest problem was not recognizing that even within a simple landscape there lie obscure, isolated pockets of potentially hazardous avalanche terrain. Combine one of these pockets with a snowpack possessing a significant degree of instability, i.e. buried surface hoar, and the results can spell disaster.

- **Realize that in a mountainous environment, avalanches are always a serious threat.** People need to understand that anytime they are travelling in mountain terrain they potentially face a life threatening avalanche risk. Recognize that the risk can be managed and reduced however, even possibly eliminated, by becoming avalanche safety trained and making wise conscious decisions. Being avalanche safe doesn't require giving up the activity that draws us to the mountains. But it does require us to be responsible and undertake efforts to manage the risk we face. For our lives and wellbeing we owe the effort to ourselves and our loved ones.
- **Buried surface hoar layers always demand respect.** These layers pose the greatest avalanche risk to be found in Western Montana. They are killers, accounting for the vast majority of avalanche deaths in the region. The conditions under which they form are often obvious, not obscure and hidden. With minimal effort one can easily track these weak layers as they become buried within the snowpack where they can persist for long periods of time.

Buried surface hoar should always be taken very seriously. A steep slope with a significant layer of buried surface hoar is like a loaded rifle with a hair trigger and the

safety catch off. It can be an awesome and swift killer. It is also important to realize that buried surface hoar avalanches can be remotely triggered from flatter nearby terrain. A collapse of these fragile and persisting crystals at one point can send an outwardly radiating shock wave within the layer, sometimes sympathetically releasing avalanches hundreds of feet away on adjoining and/or adjacent slopes.

- *As much as possible be prepared for and anticipate the unexpected.* One should never plan for just a casual experience in the backcountry, especially in winter. At best these are semi-wilderness endeavors, not “walks in the park.” When leaving the trailhead, people need to be prepared mentally and physically and equipped to deal with whatever situation they may encounter. An experience can, in the blink of an eye, turn from the expectant casual into a struggle between life and death.

All three fatal avalanches occurring in NW Montana this season involved some equipment shortfall. Earlier decisions were made and expectations were imagined that later proved inadequate. Vital pieces of safety equipment (cell phones, transceivers, or shovels) were left behind. Having this equipment may not have altered the final outcome in these instances, but because the items were absent, one will never know for certain. As much as possible, always plan and prepare for the worst. Realize also that only a small shift of a single situational dynamic can produce an entirely different event, requiring a completely different response. We should always be asking ourselves, “Am I prepared?”

- *Expose only one person to a potential hazard at a time.* Strive to anticipate all potential hazards, recognizing that one will likely never be 100% successful. Knowing that whatever befalls one in a closely grouped party will likely befall the others, always provide some separation between group members. Remain within sight, ready to react. Realize also that each additional person on a slope at the same time multiplies the stress.

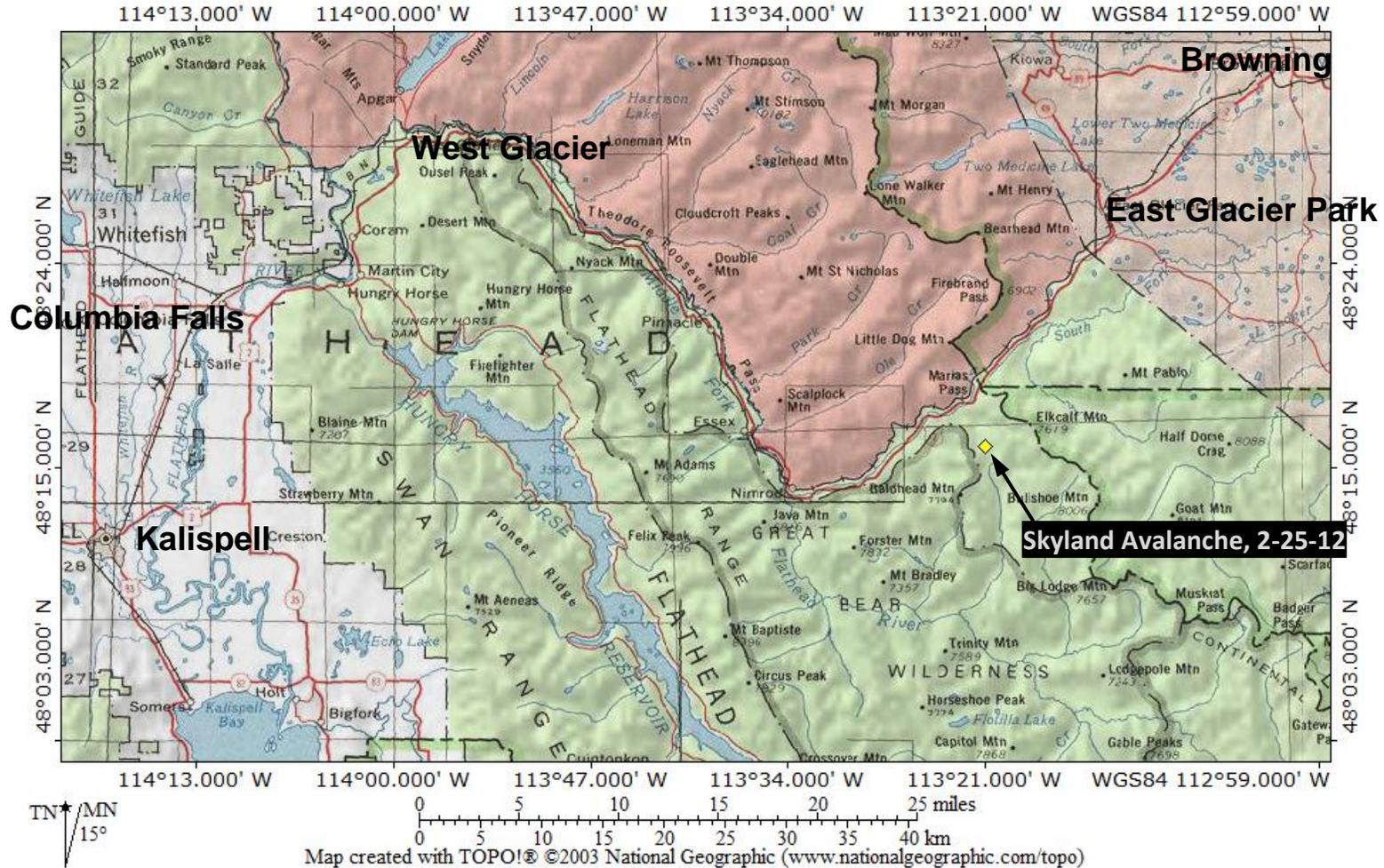
### **Appreciation:**

We very much appreciate the assistance of Francis Skierka’s riding companion and Flathead County Sheriff’s Office and Forest Service personnel who shared with us information that make this report possible. We hold everyone involved in this incident and especially Francis Skierka’s wife and unborn child in our prayers during this tragic and difficult time of loss.

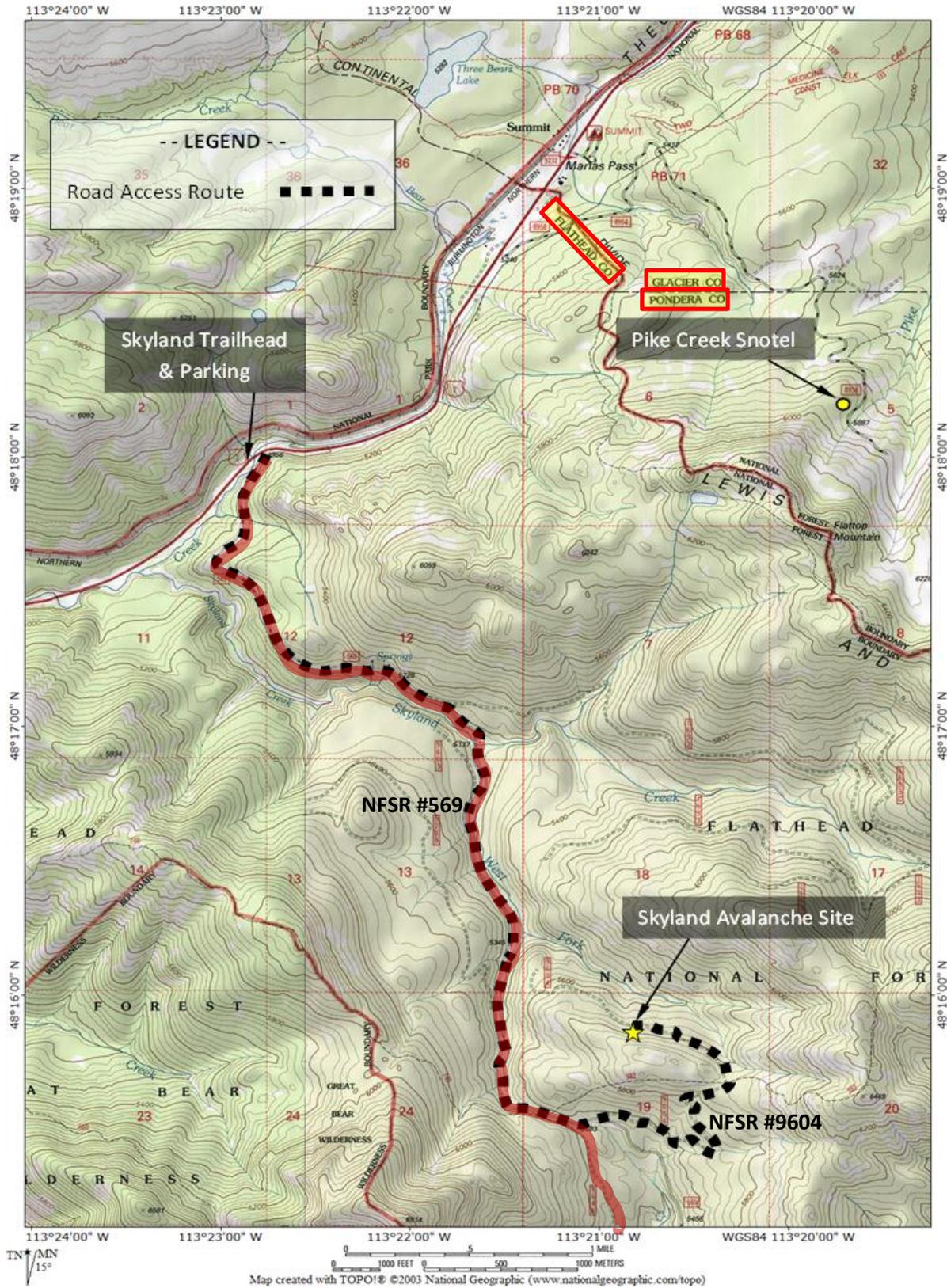
*Stan Bones, Flathead National Forest  
April 10, 2012*

# INCIDENT VICINITY MAP

TOPO! map printed on 03/27/12 from "Untitled.tpo"



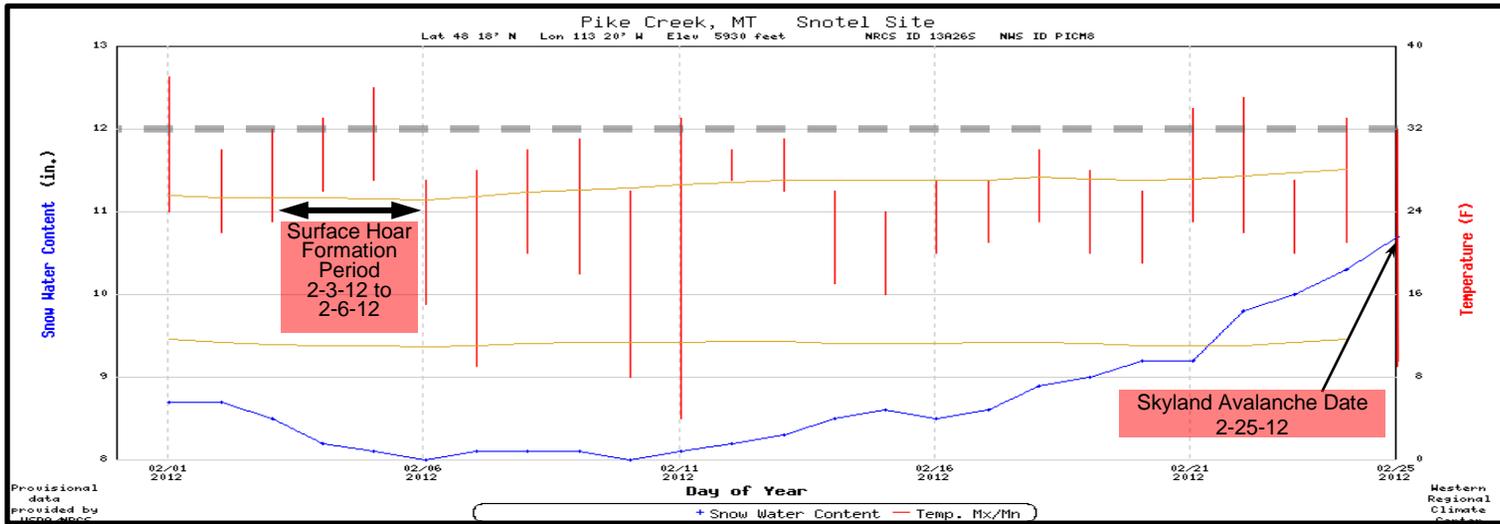
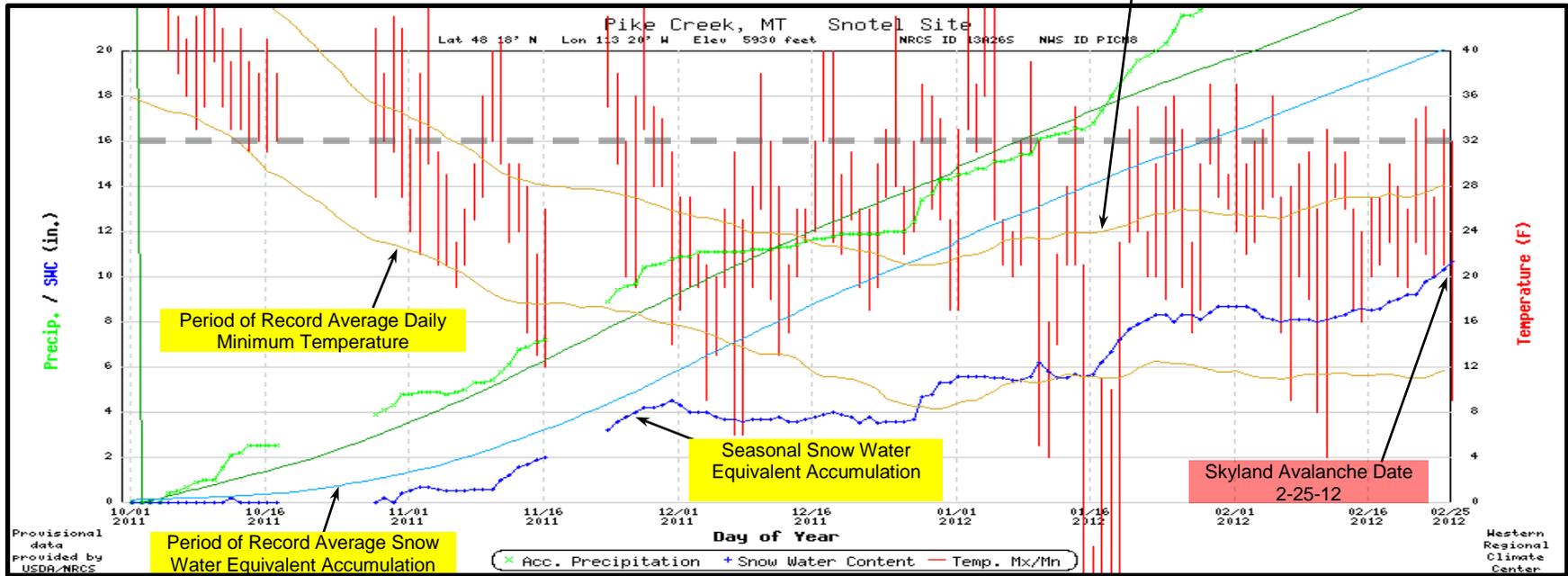
# INCIDENT SITE MAP







# Appendix A-2 Weather



## Appendix A-3 Avalanche Advisory



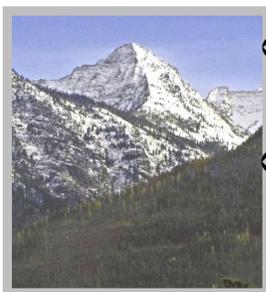
FOR THE GLACIER PARK AND FLATHEAD & KOOTENAI NATIONAL FOREST AREAS

*Avalanche advisory does not apply to developed ski areas*

**Issue Date:** 6:00 AM, Friday, February 24, 2012  
**Valid Until:** Midnight, Friday, February 24, 2012  
**Next Update:** Tuesday, February 28, 2012  
**Issued by:** Stan Bones

This advisory is a product of the US Forest Service, US Dept. of Agriculture. Along with other snow and avalanche information, it is originally posted at <http://www.fs.usda.gov/flathead>. An audio summary is available via telephone at 406-257-8402

### All Mountain Ranges



7,500 ft. elevation



5,000 ft.



**Avalanche Danger Summary**

**3 - Considerable : 5,000 to 7,500 ft. elevation on steep, open slopes and gullies**

**2 - Mod : below 5,000**

### Avalanche Danger Trend

Trending higher Saturday and Sunday

### AVALANCHE – INSTABILITY DESCRIPTION



All Mountain Ranges - 5,000 to 7,500 ft. elevation

<b>Danger Level</b>	<b>3 - CONSIDERABLE</b>
<b>Confidence</b>	Good
<b>Travel Advice</b>	<ul style="list-style-type: none"> <li>Dangerous avalanche conditions</li> <li>Careful snowpack evaluation, cautious route-finding, and conservative decision-making essential</li> </ul>
<b>Likelihood of Avalanches</b>	<ul style="list-style-type: none"> <li>Natural avalanche <i>possible</i></li> <li>Human triggered avalanches <i>likely</i></li> <li>Small avalanches in many areas</li> <li>Larger avalanches in specific areas</li> <li>Very large avalanches in isolated areas</li> </ul>
<b>Avalanche Size &amp; Distribution</b>	<ul style="list-style-type: none"> <li><b>Concern is steep, open slopes and gullies lacking vegetative and terrain anchors, particularly slopes with a relatively thin snow cover and a basal layer of weakly bonded, eroding, faceted grains</b></li> <li><b>Concern also with unstable near surface snow poorly bonded to buried surface hoar or layers of melt-freeze ice</b></li> </ul>

**AVALANCHE – INSTABILITY DESCRIPTION**



**All Mountain Ranges – below 5,000 ft. elevation**

<b>Danger Level</b>	<b>2 - MODERATE</b>
<b>Confidence</b>	Good
<b>Travel Advice</b>	<ul style="list-style-type: none"> <li>• Heightened avalanche conditions on steep, open slopes and gullies, particularly those that recently received significant new snowfall</li> <li>• Evaluate snow and terrain carefully</li> </ul>
<b>Likelihood of Avalanches</b>	<ul style="list-style-type: none"> <li>• Natural avalanche <i>unlikely</i></li> <li>• Human triggered avalanches <i>possible</i></li> </ul>
<b>Avalanche Size &amp; Distribution</b>	<ul style="list-style-type: none"> <li>• Small avalanches in specific areas</li> <li>• Larger avalanches in isolated areas</li> </ul>

*Because of the general nature of this advisory message, each backcountry party will always need to make their own time and site specific avalanche hazard evaluations. This advisory best describes conditions at the time of its issuance. As time passes avalanche and snow conditions may change, sometimes quite rapidly. Elevation and geographic distinctions used are approximate and transition zones between hazards exist.*

**Recent Mountain Weather**

<b>Summary</b>	<ul style="list-style-type: none"> <li>• A strong Pacific storm system swept over the region Sunday through Wednesday</li> </ul>
<b>Precipitation</b>	<ul style="list-style-type: none"> <li>• Moist heavy snowfall in the mtns.,             <ul style="list-style-type: none"> <li>○ Heaviest in southern Mission and northern Swan Ranges on the Flathead Approx. 4.8- inches total of snow water equivalent over the 4-day period, Sunday to Wednesday</li> <li>○ Kootenai and other mtns on the Flathead saw lesser amounts New snow water equivalent amounts varied from approx. 1.5 to 3.00-inches over the four days</li> </ul> </li> <li>• Rain/Snow mix in the valleys</li> </ul>
<b>Temperature</b>	<ul style="list-style-type: none"> <li>• Temperatures mostly mild             <ul style="list-style-type: none"> <li>○ <u>Tuesday and Wednesday</u> Mountain average daily temps near 30° F</li> <li>○ <u>Thursday</u> Mountain average daily temps cooled into the low 20's°F</li> </ul> </li> </ul>
<b>Wind</b>	<ul style="list-style-type: none"> <li>• Moderate to strong winds generally from the W</li> </ul>

**Field Observation Locations**

Thursday, 2-23-12	<ul style="list-style-type: none"> <li>• Bear Mtn, W Cabinet Range, SW of Troy</li> <li>• Doris Creek – Jenny Lake area, N Swan Range, SW of Hungry Horse</li> </ul>
Tuesday, 2-21-12	<ul style="list-style-type: none"> <li>• Snowslip area of John Stevens Canyon, S'ern edge of Glacier Park, Hwy 2, west of Marias Pass</li> </ul>

**Observer Report Locations**

	None received
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<b>Avalanches Observed</b>	<ul style="list-style-type: none"> <li>• Numerous triggered and natural slab avalanches Monday through Wednesday</li> </ul>
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Instability Concern / Avalanche Problem	Level of Concern	Most ★★★    Less★★    Least ★		
New Storm or Near Surface Snow	★★★	<ul style="list-style-type: none"> <li>N'erly &amp; E'erly Aspects New snowfall has increased the loading upon the surface hoar layer developed during cold clear nights at the beginning of February</li> <li>S'erly &amp; W'erly Aspects New snow deposited upon melt-freeze ice crusts and layers formed during times of solar warming</li> <li>On all aspects the recent storm surface snow layer often contains weak deposits of mostly graupel pellets</li> <li>Shear tests continue to be reactive on, in, or beneath each of these weak layers when present</li> </ul>		
Wind Loading	★★★	<ul style="list-style-type: none"> <li>Recent winds have been intermittently strong, generally W'erly</li> <li>Significant cornice building along ridges and on peaks with wind loading onto leeward slopes and aspects</li> </ul>		
Recent or Persistent Buried Weak Layer	★★★	<ul style="list-style-type: none"> <li>Concern with the buried surface hoar, buried melt-freeze ice crusts and buried graupel dominated layers <ul style="list-style-type: none"> <li><b>Buried surface hoar was the failing layer in many of the natural avalanches observed in the N Swan Range and the fatal avalanche that killed there a Washington snowmobiler on Monday. This layer continued to produce collapsing and settlement whumping on Thursday</b></li> <li>All these weak layers when present continue to fail with little to moderate force in shear tests</li> </ul> </li> <li>Concern also remains with basal depth hoar found beneath shallow snow covers <ul style="list-style-type: none"> <li>Found along the East Front and near the Continental Divide</li> <li>Also found further west on wind scoured slopes and areas like Jewel Basin where overall snowfall has been below normal</li> </ul> </li> </ul>		
Spring Wet Snow or Melt-Freeze	★	<ul style="list-style-type: none"> <li>Not applicable currently with reestablished cloud cover</li> <li>Can occur rapidly however with even just short clearing periods following a new snowfall</li> </ul>		
Rain-on-Snow		Not applicable		
Loose Snow	★	<ul style="list-style-type: none"> <li>Mild temperatures generally promoting surface snow consolidation</li> </ul>		
Other Concerns				

**Weather Forecast**

[Current NWS Backcountry Forecast](#)

<b>Summary</b>	<ul style="list-style-type: none"> <li>Next Pacific storm system forecasted to impact the region beginning Friday night and through the weekend</li> </ul>
<b>Precipitation</b>	<ul style="list-style-type: none"> <li><u>Friday daytime</u> <ul style="list-style-type: none"> <li>Light snow showers over the high terrain</li> </ul> </li> <li><u>Friday night through Sunday night</u> <ul style="list-style-type: none"> <li>New snow accumulation over the period likely to be measured in feet, not inches</li> </ul> </li> </ul>
<b>Temperature</b>	<ul style="list-style-type: none"> <li>General cooling trend over the period</li> <li>Daytime temps remaining mild in the high 20's to mid 30's° F</li> <li>Nighttime lows 15-25 ° F throughout the period</li> </ul>
<b>Wind</b>	<ul style="list-style-type: none"> <li>Moderate and generally SW'erly</li> <li>Shifting to more E'erly on Sunday</li> </ul>

## Avalanche Outlook

<b>Trend</b>	<ul style="list-style-type: none"><li>• Through the weekend we expect the avalanche danger to gradually increase with the new storm activity</li></ul>
<b>Concern</b>	<ul style="list-style-type: none"><li>• <b>Be particularly alert to new snow loading either from precipitation or wind upon an existing buried weak layer</b></li></ul>
<b>Comment</b>	<ul style="list-style-type: none"><li>• <b><i>Always, always, always</i> carry and know how to use your avalanche safety equipment</b><ul style="list-style-type: none"><li>○ <i>Transceiver</i></li><li>○ <i>Probe</i></li><li>○ <i>Shovel</i></li></ul></li><li>• <b><i>Watch for any rapid changes in weather conditions beyond forecast amounts</i></b></li><li>• <b><i>Check out the site specific snow stability before jumping in or on any slope that has the potential to avalanche</i></b></li><li>• <b><i>Don't die doing something stupid</i></b></li></ul>

**Appendix A-4 Photographs** (All photos by USFS, Flathead Nat'l Forest, Stan Bones)

Skyland Avalanche, 2-27-12 (two days after fatal incident)





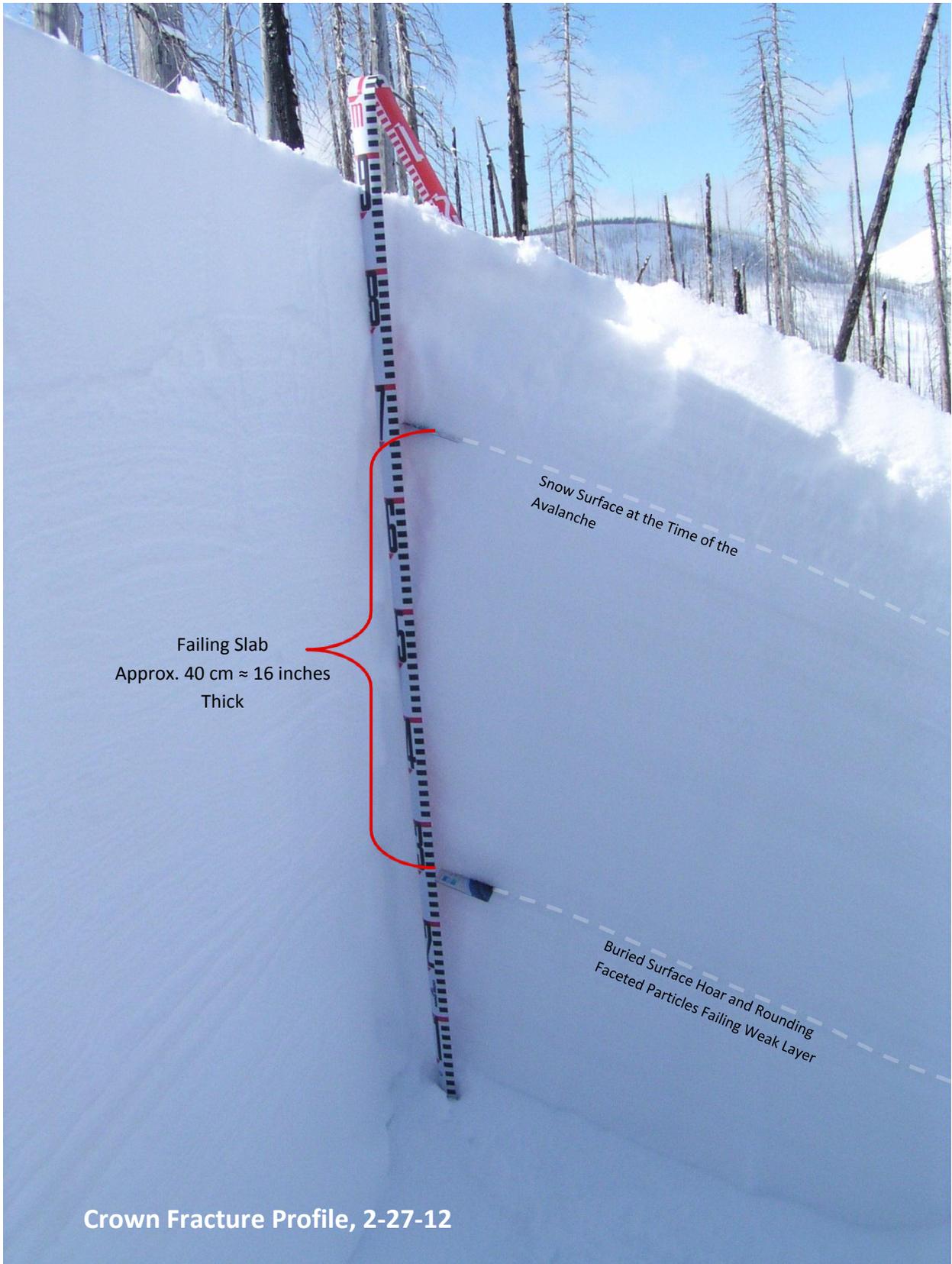
-- LEGEND --

Victims entrance lines *	
Impacted point *	
Travel line after impact *	
Victim's burial points *	

\*Approximated



**View from above the crown fracture showing victim's entrance line on the far side of the hard blocky debris**



Crown Fracture Profile, 2-27-12

# Snow Profile

Reference: SKYLAND AVALANCHE

Date: 2-27-12 Time: 1230 hrs Observers: T.Willits, J.Sather, D.Milner

Location: Skyland Creek, Lat. 48°15.860' N, Long. 113°20.917' W

Elev: 5908 ft. Aspect: 16° az Slope Angle: 37° Precip:        Sky:        Wind Dir:        Speed:        G

Wind Loading? Y N PREV Ski Pen:        cm in Boot Pen:        cm in Profile Type: Fracture Profile

