

# Point 7054 near Setting Sun Mountain Avalanche Fatality

March 4th, 2018

Report by Matt Primomo and Dennis D'Amico, Northwest Avalanche Center

## Incident snapshot

**Occurrence Time and Date:** Approximately 1:15 pm March 4, 2018.

**Time First Reported to SAR:** 1:44 pm

**Recovery/Rescue Time:** Approximately 3 minutes

**Lat/Lon:** 48.6886, -120.4458 (Burial location of victim)

**Location:** Point 7054, SE of Setting Sun Mountain, Okanogan County, Okanogan NF, WA

**Number in Party:** 4 (3 on splitboards, 1 on skis)

**Number Caught:** 1

**Number Partially Buried, Critical:** 1 (*Critical means the head was buried*)

**Duration of Burial:** 3 minutes until airway was uncovered.

**Number Injured:** 0

**Number Killed:** 1

**Avalanche Type:** Hard Slab (HS)

**Trigger (estimated):** Snowboarder (AR)

**Size:** R4 / D2.5

**Start Zone Aspect:** WNW

**Start Zone Angle:** Average 35°

**Start Zone Elevation:** 6900 ft

**Height of Crown Face:** Average 28 in (71 cm), Maximum 55 in (150 cm)

**Width of Fracture:** 230 ft (70 m)

**Vertical Fall:** 800 ft (240 m)

**Slab Characteristics:** 4F - 1F Hardness, Decomposing/Fragmented Precipitation Particles (0.5 mm)

**Weak Layer Characteristics:** 4F Hardness, Rounding Faceted Grains (1.5-2.0 mm), 20 cm thick

**Bed Surface Characteristics:** K- Hardness, Melt Freeze Crust

**Burial involved a terrain trap:** Trees

**Number of people that crossed start zone before avalanche:** 1

**Avalanche occurred during:** Descent, Fifth turn on slope.

**Location of group in relation to start zone during avalanche:** One was Lower Left of start zone, two were above.

**Avalanche Safety Gear Carried:** All carried transceivers, shovels, and probes. Airbags were not being carried on this day. The victim was not wearing a helmet.

**Avalanche Training and Experience at Activity:** Group avalanche training: Some to Advanced training. Group experience skill level: Advanced



**Signs of Instability Noted by Group:** One whumph reported from the previous day on a slope roughly four miles to the south and again during the group's exit from the incident site.

**Cause of Death:** Basal skull fracture

**Avalanche Classification:** HS-ARu-R4-D2.5-O

**NWAC Forecast Zone:** East Slopes North - Canadian Border to Lake Chelan

**Avalanche Danger Rating (Near and Below Treeline):** Considerable (NTL), Moderate (BTL)

## Avalanche and Terrain

Point 7054 is approximately 1 mile southeast of Setting Sun Mountain, drains into Weenan Creek which feeds into Lost River, and is located roughly 6.5 miles to the northwest of Mazama and 16 miles northeast of Washington Pass.

The avalanche on Point 7054 initiated on a west-northwest aspect at 6900 ft on a 34 degree sparsely treed, convex slope. The starting zone was surrounded by thicker stands of trees and the terrain rolled over and steepened to 41 degrees through a gully feature with small trees.

This was a human triggered (splitboarder) hard slab avalanche that was large in relation to the path and had the destructive force to bury, injure or kill a person. The crown face was 12 to 55 inches (30 cm to 140 cm) deep, averaging 28 inches (71 cm), and was approximately 230 ft wide. The avalanche ran approximately 800 vertical ft and broke a number of trees up to 6" in diameter, banking a left turn onto the opposite side of the drainage. The avalanche likely failed within a layer of faceted snow, and immediately stepped down to and slid on a thin crust believed to be the 2/8 rain crust.

## Snowpack and Weather Summary

The Washington Pass weather stations at 5450 ft and 6680 ft and the Mazama station at 2170 ft were graphed for this incident. The Harts Pass Snotel station was closer to the incident site, but this site does not have all the appropriate sensor data. Available wind data was not representative for the incident site.

February began warm with rain to high elevations. A light amount of precipitation fell at Mazama on the 8<sup>th</sup>, and Washington Pass picked up about 3" of snow. This was followed by a long, cold period that lasted until February 17<sup>th</sup>. 1.32" of Snow Water Equivalent (SWE) was registered from the precipitation gauge at Washington Pass and the total snow depth increased by 19". Mazama picked up 10" of snow out of the storm starting on the 17<sup>th</sup>.

A cold air mass with arctic origins brought the coldest temperatures of the year from February 19<sup>th</sup> to 23<sup>rd</sup> with highs in the 10's and lows in the single digits or colder. On February 24<sup>th</sup> a small storm brought 4" of snow at Mazama, followed by a few days of mild weather until a storm cycle occurred February 28<sup>th</sup> to March 2. This storm favored locations on the east side of the Cascades, as it came in with predominantly SE flow. 0.59" SWE with 5" of snow was recorded in Mazama. Washington Pass recorded 0.88" SWE and an increase of 9" of total snow depth during this storm. Nearby Loup Loup Ski Area reported 32" of snow from this storm. The morning of March 4<sup>th</sup> was mostly cloudy with light snowfall.

Height of snow in the area the day after the incident ranged from 51" to 63" (130 cm to 160 cm). The upper snowpack was composed of decomposing fragmented and rounded grains likely from the two storm events that began late February and ended in early March. The mid-pack was a layer of rounding



facets over a crust/facet sandwich. The crust likely formed from rain in early February while the faceting occurred during two periods of very cold temperatures. Beneath this pair of thin crusts, the lower snowpack was composed of basal facets and chains of depth hoar. Snowpack tests in a crown profile done the following day showed that cracks could propagate along the slab weak-layer interface down about 18" (45cm) from the surface, though no failures occurred on the thin crust that acted as the bed surface for the slide.

## **Accident Summary**

On Saturday 3/3, the party skied 30-33 degree terrain on the northeast shoulder of Goat Peak, (4 miles south of Setting Sun Mt). They dug 2 snow profiles on north and east aspects, looking for persistent weak layers and for recent wind slabs. They reported a Compression Test 12 on the 2/28 interface, which was small faceted grains. They did an Extended Column Test and it did not propagate. Rider A reported hearing a whumph, though Rider D stated he did not hear or feel any whumphing or collapsing this day. They had a great day out and made plans for the next day.

On Sunday 3/4, the party snowmobiled up with 4 machines toward Setting Sun Mountain. They were breaking trail by approximately 10:00 am and worked their way up the South Ridge of Point 7054. On the way up, they kicked small chunks of cornices on both sides of the ridge with minimal results. When they got to the top of the ridge, the group noticed wind drifting had occurred on both sides. They discussed their options and decided to further evaluate the Northwest facing slope below. Rider D descended approximately 20 ft into the upper part of the slope, found a location to dig a snow pit, utilized his probe to check depths, and began excavating. Skier C skied down to Rider D and they spoke about what they were finding. The snowpack where they dug their snow profile was approximately 47" (120cm) deep. They discussed finding a crust/facet sandwich down 24" (60cm) and loose facets near the ground. They performed a Compression Test with no results. Meanwhile, A and B stayed on the ridge. They did a Shovel Shear Test, and an Extended Column Test but had no results on either. They decided to ski the slope.

Rider A did a ski cut to skier's right of the open starting zone, then continued down crossing back over to skiers left. He stopped about 300 ft down on skiers left in thicker trees below the roll over. He then radioed up to send the next skier. Rider B was the second person on the slope and made approximately 4 turns before the slope fractured and slid. C and D yelled aggressively to alert Rider B of the avalanche. Rider A was waiting to the side, saw snow and trees flying above him but was able to slide out of harm's way. The avalanche occurred at approximately 1:15 pm.

## **Rescue Summary**

Rider A radioed up to Rider D confirming he was "OK", and began downhill with his beacon in search mode. C & D turned their beacons to search mode, and began searching the upper slope in parallel. Rider A got a signal, then stepped out of his board and continued following it. He found Rider B on top, partially buried headfirst after approximately 3 minutes. Rider A radioed up and alerted the rest to come down to help. Rider A dug out Rider B's face without a shovel, opened his airway, and found that he had severe head trauma. He had no pulse.

When the others arrived, they moved Rider B onto his back and did CPR for 15 minutes. They made a call to 911 at 13:44 from the accident location and texted others. They attempted to improvise a litter but realized they needed to focus more on getting themselves out safely. Rider D relayed their GPS location to the Deputy and they began their way down.



On the way out, the group experienced a large whumph. They backtracked a bit, finding a thick stand of trees to travel through. Once safely back on the lower ridge, they skied down to their snowmobiles and rode out.

Early the next morning, Sid Patterson (NCMG/NCH) and Matt Primomo (NWAC) snowmobiled and skinned up to the area. They were met by Paul Butler (NCH) who got dropped off on the peak by helicopter after making an aerial survey of the scene with the Deputy who acted as Incident Commander for the search and rescue operation. The three of them safely navigated to the bottom of the debris and found B. From there they coordinated with the helicopter pilot who lined a litter into an open area nearby. They loaded the victim, Rider B, and performed a short haul rescue via helicopter. They then climbed up the slope to further investigate the path and the crown.

## Comments

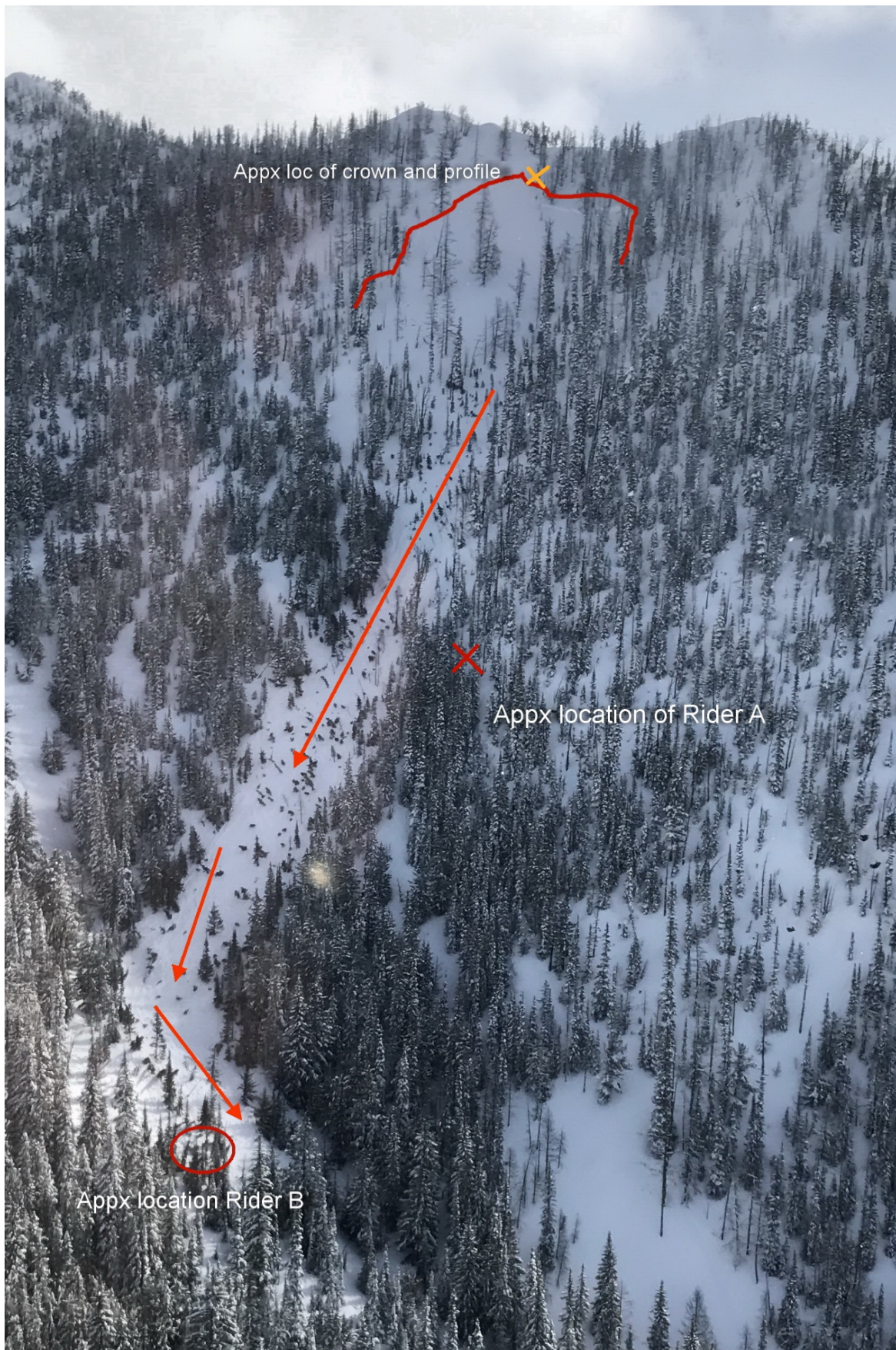
After the accident and investigation, a number of professional guides and forecasters commented how the snowpack on this slope was atypical or anomalous for the region at the time. The snowpack in this area was surprisingly thin and weak in comparison to more frequently traveled areas in the Washington Pass/Hwy 20 corridor.

The thin snowpack was likely due to its position in the range further east of the crest. The prevailing winds were from the Northwest for much of February, which tends to scour this slope near the starting zone. The arctic air that was responsible for the very cold temperatures in February likely exacerbated the faceting process on this locally shallow snowpack. The February 28th storm likely built a slab over the weaker old snow.

NWAC would like to thank all of the survivors of this tragic accident for their help on this report and to commend them on their willingness to be open with details and decision-making so that others may learn from it. We would also like to thank North Cascades Mountain Guides/North Cascade Heli, Deputy David Leeman, and the rest of the community in the Methow Valley for their continued help and support.







Avalanche path overview. Photo by David Leeman 3-5-18.





Starting zone two days after the accident. Photo by Larry Goldie 3-6-18.



Skiers Left crown. Photo by Matt Primomo 3-5-18.





Skiers Right crown with step down. Photo by Matt Primomo 3-5-18.



View from top of the steep rollover. Photo by Matt Primomo 3-5-18.





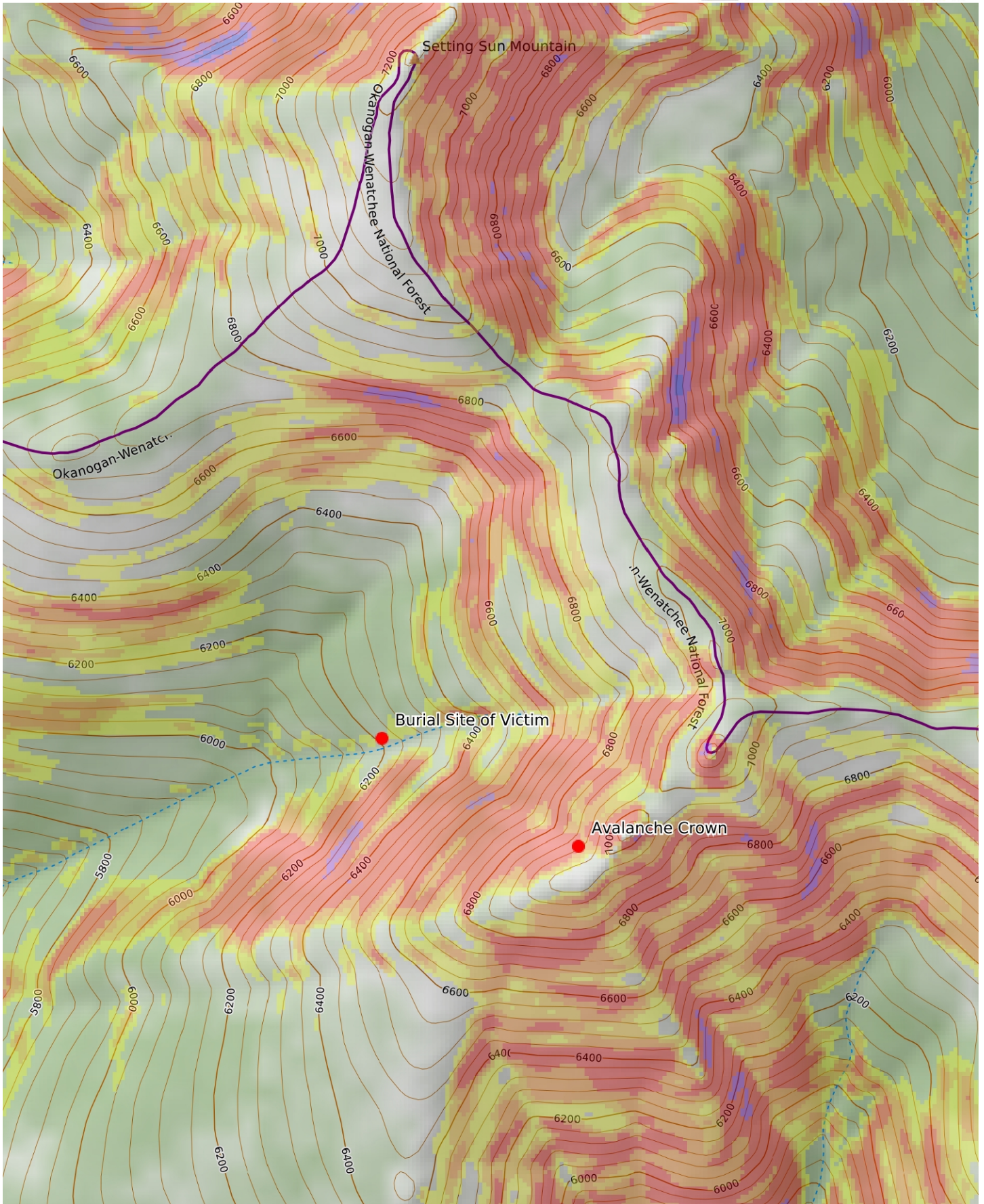
Runout zone with broken trees in debris. Photo by Matt Primomo 3-5-18.



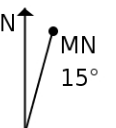
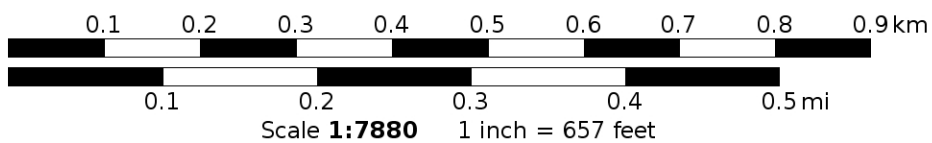
Looking up the path. Photo by Paul Butler 3-5-18.



Slope Angle Shading: 17°-29° 30°-31° 32°-34° 35°-45° 46°-50° 51°-59° 60°+



Mercator Projection  
WGS84  
USNG Zone 10UFU  
CalTopo.com



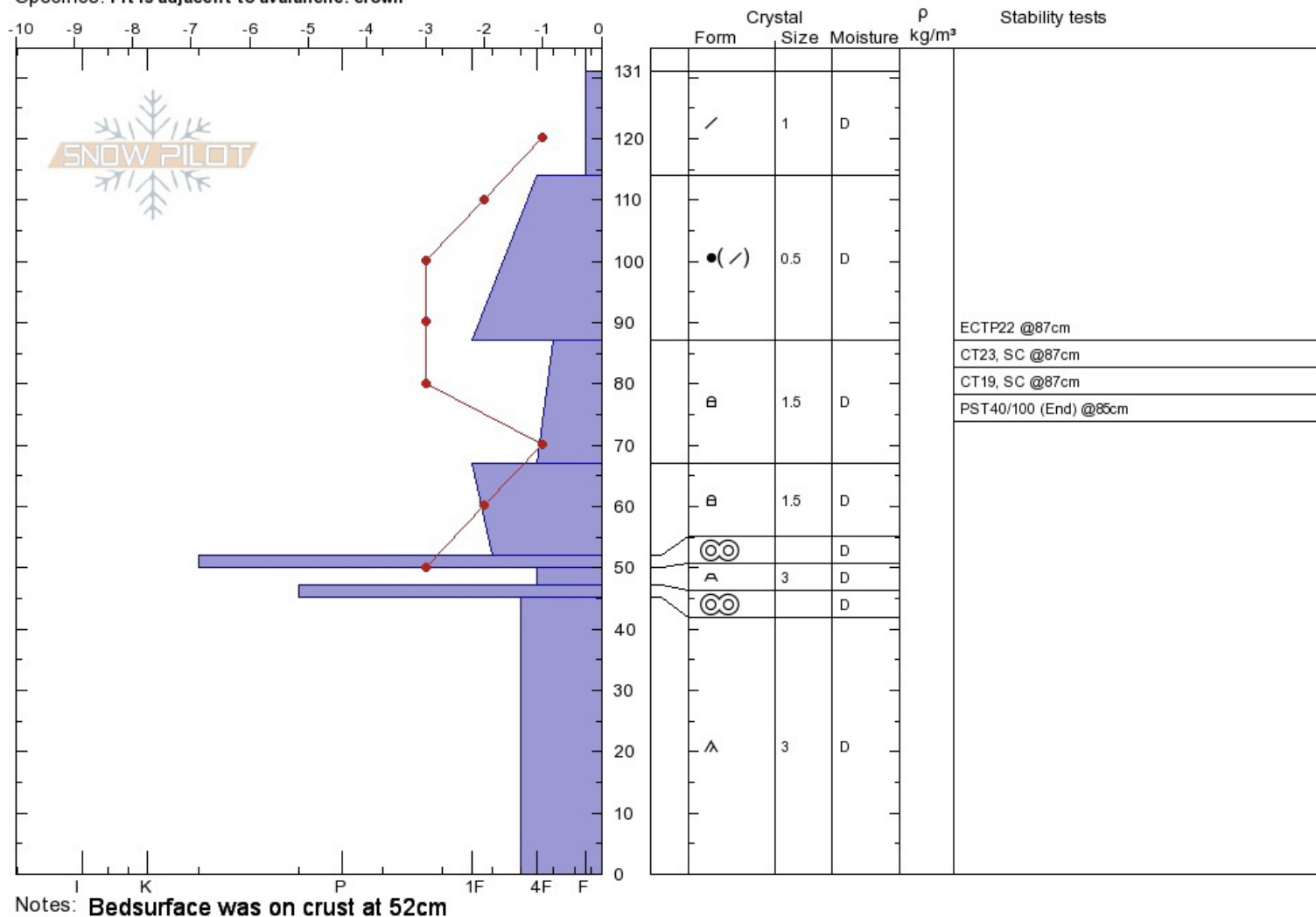
20180305 Setting Sun  
 North Cascades, East WA  
 Elevation: 6900 ft  
 Aspect: 290°  
 Specifics: Pit is adjacent to avalanche: crown

Matt Primomo  
 Mon Mar 5 14:30 2018  
 Co-ord: 48.68717N, -120.44138W  
 Slope Angle: 34°  
 Wind Loading: yes

Stability:  
 Air Temperature:  
 Sky Cover: BKN  
 Precipitation: NO  
 Wind: NW Moderate

HS131 PF60  
 Stability Test Notes

Layer Notes  
 67-87: Problematic layer  
 47-50: Some rounding  
 0-45: Signs of rounding



Avalanche Crown profile

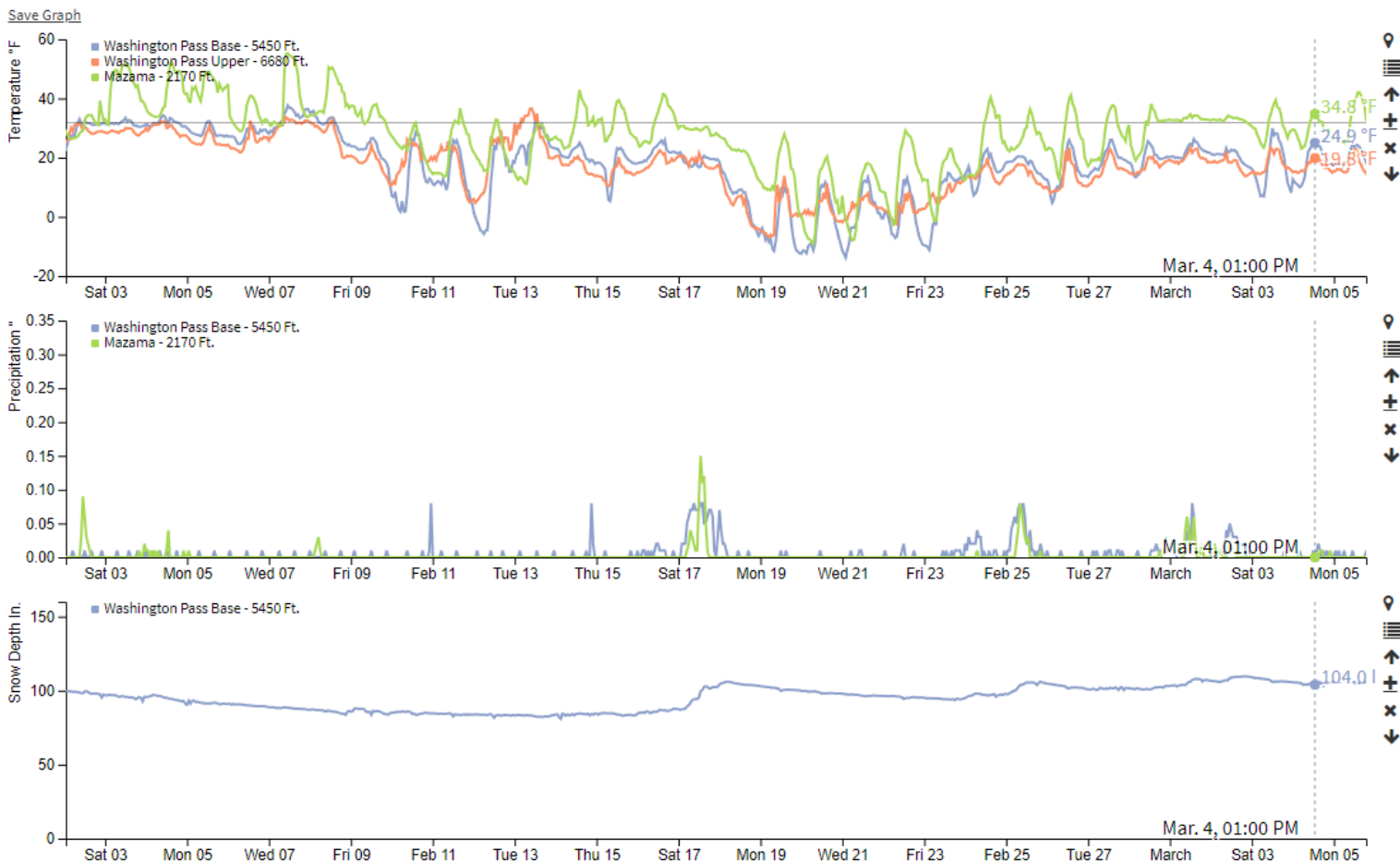


# Weather Station List — Washington Pass

Legacy Graphs

(select station)

[Click here to bookmark your custom graph](#)



NWAC

Northwest Avalanche Center [www.nwac.us](http://www.nwac.us)



Northwest  
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## East Slopes North - Canadian Border to Lake Chelan

Issued: 9:08 PM PST Saturday, March 3, 2018

by Robert Hahn

NWAC avalanche forecasts apply to backcountry avalanche terrain in the Olympics, Washington Cascades and Mt Hood area. These forecasts do not apply to developed ski areas, avalanche terrain affecting highways and higher terrain on the volcanic peaks above the Cascade crest level.

**An avalanche in the North Fork of the Teanaway resulted in 2 fatalities on Saturday. An NWAC forecaster visited the location of the avalanche and more details will be made available as soon as we have them.**

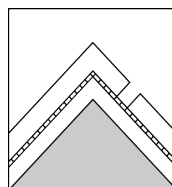
**The Bottom Line:** You can trigger Persistent Slab avalanches that could break widely over terrain features. These avalanches are difficult to predict and the consequence are life-threatening. Put a wide buffer of terrain between where you travel and open slopes over 35 degrees as well as large avalanche paths. Reduce your risk of triggering a Wind Slab avalanche by avoiding fresh wind drifts and cross-loaded features on steep slopes at upper elevations.

Elevation	Sunday		Outlook for Monday
Above Treeline	Considerable	Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	Considerable
Near Treeline	Considerable	Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	Considerable
Below Treeline	Moderate	Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify problem features.	Moderate

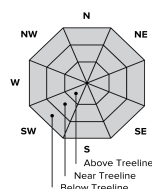
### Avalanche Problems for Sunday

#### Persistent Slab

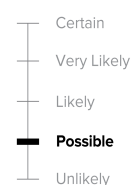
Persistent slabs can be triggered by light loads and weeks after the last storm. You can trigger them remotely and they often propagate across and beyond terrain features that would otherwise confine wind and storm slabs. Give yourself a wide safety buffer to handle the uncertainty.



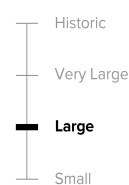
Avalanche  
Problem



Aspect/Elevation



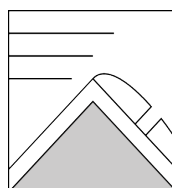
Likelihood



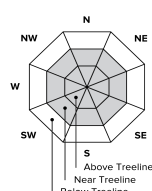
Size

#### Wind Slab

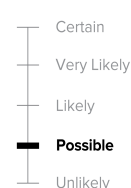
Wind slabs can take up to a week to stabilize. They are confined to lee and cross-loaded terrain features and can be avoided by sticking to sheltered or wind scoured areas.



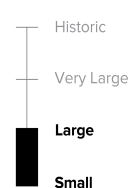
Avalanche  
Problem



Aspect/Elevation



Likelihood



Size



# Avalanche Forecast for Sunday

**An avalanche in the North Fork of the Teanaway resulted in 2 fatalities on Saturday. An NWAC forecaster visited the location of the avalanche and more details will be made available as soon as we have them.**

The snowpack on the Cascades East slopes remains complex and dangerous.

It's currently much easier to trigger dangerous Persistent Slab avalanches on the East side of the Cascades compared to the West Slopes and there are multiple weak layers to avoid. Several layers of persistent grain types that have been reactive in tests are likely to remain reactive on Sunday. Several older weak layers of facets exist in the snowpack, but are still shallow enough that you can trigger them. In many areas with a deeper snowpack, you may get little warning signs of a Persistent Slab avalanche. While these avalanches are difficult to trigger, they are also very difficult to predict. A resulting avalanche will likely be large enough kill you. Put a wide margin of terrain between you and any slopes 35 degrees and steeper where you suspect the Persistent Slab problem. Continue to be cautious and stay away from steep, open slopes connected to large avalanche paths. If you experience collapsing or audible whumphs, avoid any nearby avalanche terrain. Snow profiles and snowpack tests can help confirm the presence of a weak layer but cannot prove its absence.

You are most likely to trigger Wind Slab avalanches above treeline on Sunday. You can avoid these avalanches by staying off of recent snow drifts, deeply pillowed features, and fresh cornices on slopes 35 degrees and steeper. These areas may exist far below ridge-lines and on mid-slope cross-loaded features. In some location soft non-wind-effected snow may cover new wind slabs making them harder to identify.

## Avalanche Summary

Up to a foot of snow has fallen with variable snow totals around the East Slopes since Wednesday with up to 2' of snow during the past week. Significant accumulations were reported as far east as Mission Ridge with the moderate to strong southerly flow during the storm on Wednesday and Wednesday night. This fresh snow has fallen on a variety of snow surfaces including thin sun crust, uneven wind surfaces, and soft unconsolidated snow.

A number of potential persistent weak layers exist in the snowpack along the East Slopes of the Cascades. Two common layers that have been reported in many locations are a facet/crust combination buried on 2/23 and a facet/crust layer buried on 2/13. The exact layer and depth depend on aspect, elevation, and proximity to the Cascade crest. A high level of uncertainty remains surrounding these layers.

The upper (shallower 2/23) layer can be found 1-2 feet below the snow surface on steeper slopes that have received direct sun. Small weak facets have been found in other regions surrounding a thin sun crust formed early last week and buried during last weekend's storms.

The deeper (2/13) facet/crust combination is typically found 2-3 feet below the snow surface. This layer has been around for two weeks with two confirmed skier triggered avalanches and more recent collapsing and whumphing. With significant new snow added to the snowpack last weekend, this layer may be reactive in areas where we have not seen previous avalanche activity nor snowpack test results. These weak sugary facets are located above a firm wide spread crust buried on Feb 5th.

The persistent slab in the North Cascades is likely reactive, but quite isolated. Wind slabs were becoming less reactive by Saturday.

While several layers exist in the snowpack, there are no significant layers of concern below the 2/5 crust.

### Observations

#### North

On Saturday, NCMG traveled in the Cuthroat area and observed small wind slab avalanches in steep terrain that had run naturally on Friday. The 2/23 crust was not observed on north facing terrain above 5600'. The 2/13 layer down 3' (85 cm) at 6100' on a NNW aspect showed mixed results in tests with reactivity in deep tap tests, but not compression. Widespread collapses and a stubborn small persistent slab release was reported on Vasiliki ridge from a third party.

On Friday, observers in the Washington Pass area reported continued test results indicating the potential for triggering Persistent Slab avalanches on the 2/13 facets.

#### Central

On Friday, NWAC observers Matt Primomo and Matt Schonwald traveled in the Bean Creek area north of Cle Elum. On both south and northeast slopes, they reported large and small column tests indicating potential for human triggering on the 2/13 facets. This weak layer was 3-4 feet below the surface. They also found the 2/23 facets about 2 feet below the surface on a south aspect at 5450 ft and several reactive layers of preserved snow crystals within the upper 1.5' of the snowpack.

On Wednesday, An avalanche professional in the Chiwakum Mountains reported collapses and whumps on the 2/13 buried facet layer. Depth to the layer was highly variable (1-3 feet). Another observer triggered an avalanche [almost 3 feet](#) deep on a small steep slope near McCue Ridge.

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## Mountain Weather Synopsis for Sunday & Monday

A broad trough slides east across the intermountain west on Sunday. An upper low within the broad trough has an associated shortwave feature which crosses the Pacific Northwest late Sunday afternoon and evening from the northwest. The trough feature will bring increasing snow showers today through the evening hours with decreasing snow shower activity after midnight tonight through Monday evening. So far, Snoqualmie Pass has received significantly more snow than nearby locations with 5" since 4AM this morning. Crest-level winds will generally be light westerly, but are increasing and may become moderate Sunday night before decreasing on Monday. Little sunshine is expected Sunday and Monday, but sun breaks are likely late Monday, particularly in the south. The clearing

skies will work their way northward into the Olympics and south Cascades Monday night as high pressure gradually builds into the region. Temperatures should stay cool throughout the short-term forecast period.

24 Hour Quantitative Precipitation ending at 4 am			Snow Level/Freezing Level in feet					
Location	Mon	Tue	Day					
				Olympics	Northwest Cascades	Northeast Cascades	Central Cascades	South Cascades
Hurricane Ridge	lt .25	lt .10	Sunday Morning	2000'	2000'	2000'	2000'	2500'
Mt Baker Ski Area	lt .25	lt .10	Sunday Afternoon	2000'	2000'	2500'	2500'	3000'
Washington Pass	lt .25	lt .10	Sunday Night	500'	500'	500'	1000'	1000'
Stevens Pass	lt .25	lt .25	Monday Morning	2000'	1500'	1500'	2000'	2500'
Snoqualmie Pass	.50 - .75	.25	Monday Afternoon	2000'	2000'	2500'	2500'	3500'
Mission Ridge	lt .10	0	Monday Night	1000'	1000'	500'	500'	1000'
Crystal Mt	lt .25	0	Cascade Snow / Freezing Levels noted above refer to the north (approximately Mt Baker and Washington Pass), central (approximately Stevens to White Pass) and south (near Mt Hood). Freezing Level is when no precipitation is forecast.					
Paradise	.25	lt .25						
White Pass	lt .25	lt .25	* Note that surface snow levels are common near the passes during easterly pass flow and may result in multiple snow / freezing levels.					
Mt Hood Meadows	lt .25	lt .10						
Timberline	lt .25	lt .10						
LT = less than; WE or Water equivalent is the liquid water equivalent of melted snow in hundredths of inches. As a rough approximation 1 inch of snow = about .10 inches WE, or 10 inches of snow = about 1 inch WE.								

## USE AT YOUR OWN RISK

This Backcountry Avalanche Forecast is provided in conjunction with the US Forest Service, and is intended for personal and recreational purposes only. Safe backcountry travel requires preparation and planning, and this information may be used for planning purposes but does not provide all the information necessary for backcountry travel. Advanced avalanche education is strongly encouraged.

The user acknowledges that it is impossible to accurately predict natural events such as avalanches in every instance, and the accuracy or reliability of the data provided here is not guaranteed in any way. This forecast describes general avalanche conditions and local variations will always occur. This forecast expires 24 hours after the posted time unless noted otherwise.





# American Avalanche Association Forest Service National Avalanche Center Avalanche Incident Report: Short Form



Occurrence Date: 20180204

and Time: approx 1:15 PM

Comments: NWAC Pro-observer Matt Primomo and NCMG/NCH Guide Sid Patterson recorded the avalanche characteristics the day after the incident. They partnered with North Cascades Heli for the recovery.

## Reporting Party Name and Address:

Northwest Avalanche Center  
7600 Sandpoint Way NE  
Seattle, WA 98115

## Avalanche Characteristics:

Type: HS Aspect: 290  
Trigger: ARu Slope Angle: 35°  
Size: R 4 \ D 2.5 Elevation: 6900 ☐ m / ☒ ft  
Sliding surface (check one):  
☐ In new ☐ New / old ☒ In old ☐ G round

## Location:

State: WA County: Okanogan Forest: Okanogan  
Peak, Mtn Pass, or Drainage: Setting Sun Mt, Weenan Creek  
Site Name: Point 7054  
Lat/Lon or UTM: 48.6886, -120.4458

Group	Number of People	Time recovered	Duration of burial	Depth to Face <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft
Caught	1			
Partially Buried— Not critical			~3	2
Partially Buried-- Critical	1			
Completely Buried				
Number of people injured: 0		Number of people killed: 1		

Dimensions X m / <input type="checkbox"/> ft	Average	Maximum
Height of Crown Face	0.7	1.5
Width of Fracture	70	90
Vertical Fall	210	240

Snow	Hardness	Grain Type	Grain Size (mm)
Slab	4F -1F	RG, DF	0.5
Weak Layer	4F	FCrx	1.5-2.0
Bed Surface	K-	MF	N/A
Thickness of weak layer: 20cm <input type="checkbox"/> m m / <input checked="" type="checkbox"/> cm / <input type="checkbox"/> in			

Burial involved a terrain trap? ☐ no ☒ yes → type: Trees

Number of people that crossed start zone before the avalanche: 1

Location of group in relation to start zone during avalanche: ☒ high middle ☒ low ☐ below ☐ all ☐ unknown

Avalanche occurred during ☐ ascent ☒ descent

Subject	Name	Age	Gender	Address	Phone	Activity
1 A		26	M			Splitboard
2 B		37	M			Splitboard
3 C		38	F			Ski
4 D		29	M			Splitboard
5						

Equipment Carried					Experience at Activity					Avalanche Training						
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Transceiver	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Shovel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Novice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Probe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Some
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Airbags	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Advanced
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert

Signs of Instability Noted by Group		Injuries Sustained					Extent of Injuries or Cause of Death					
		1	2	3	4	5	1	2	3	4	5	
<input type="checkbox"/> Unknown		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> None		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First Aid	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Recent avalanches		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Doctor's care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Shooting cracks		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hospital Stay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Collapse or whumphing (prev day and during exit)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fatal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Low test scores								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
												Other:

**Damage** Number of Vehicles Caught: 0 Number Structures Destroyed: 0 Estimated Loss: \$

**Accident Summary** Include: events leading to accident, group's familiarity with location, objectives, route, hazard evaluation, etc.

On Saturday 3/3, the party skied 30-33 degree terrain on the northeast shoulder of Goat Peak, (4 miles south of Setting Sun Mt). They dug 2 snow profiles on north and east aspects, looking for persistent weak layers and for recent wind slabs. They reported a Compression Test 12 on the 2/28 interface, which was small faceted grains. They did an Extended Column Test and it did not propagate. Rider A reported hearing a whumph, though Rider D stated he did not hear or feel any whumphing or collapsing this day. They had a great day out and made plans for the next day.

On Sunday 3/4, the party snowmobiled up with 4 machines toward Setting Sun Mountain. They were breaking trail by approximately 10:00 am and worked their way up the South Ridge of Point 7054. On the way up, they kicked small chunks of cornices on both sides of the ridge with minimal results. When they got to the top of the ridge, the group noticed wind drifting had occurred on both sides. They discussed their options and decided to further evaluate the Northwest facing slope below. Rider D descended approximately 20 ft into the upper part of the slope, found a location to dig a snow pit, utilized his probe to check depths, and began excavating. Skier C skied down to Rider D and they spoke about what they were finding. The snowpack where they dug their snow profile was approximately 47" (120cm) deep. They discussed finding a crust/facet sandwich down 24" (60cm) and loose facets near the ground. They performed a Compression Test with no results. Meanwhile, A and B stayed on the ridge. They did a Shovel Shear Test, and an Extended Column Test but had no results on either. They decided to ski the slope.

Rider A did a ski cut to skier's right of the open starting zone, then continued down crossing back over to skiers left. He stopped about 300 ft down on skiers left in thicker trees below the roll over. He then radioed up to send the next skier. Rider B was the second person on the slope and made approximately 4 turns before the slope fractured and slid. C and D yelled aggressively to alert Rider B of the avalanche. Rider A was waiting to the side, saw snow and trees flying above him but was able to slide out of harm's way. The avalanche occurred at approximately 1:15 pm.

**Rescue Summary** Include: description of initial search, report of accident, organized rescue, etc.

Rider A radioed up to Rider D confirming he was "OK", and began downhill with his beacon in search mode. C & D turned their beacons to

Rescue Method					
1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Self rescue
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Transceiver
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spot probe

search mode, and began searching the upper slope in parallel. Rider A got a signal, then stepped out of his board and continued following it. He found Rider B on top, partially buried headfirst after approximately 3 minutes. Rider A radioed up and alerted the rest to come down to help. Rider A dug out Rider B's face without a shovel, opened his airway, and found that he had severe head trauma. He had no pulse.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe line
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rescue dog
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Voice
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Object
<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digging
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:

When the others arrived, they moved Rider B onto his back and did CPR for 15 minutes. They made a call to 911 at 13:44 from the accident location and texted others. They attempted to improvise a litter but realized they needed to focus more on getting themselves out safely. Rider D relayed their GPS location to the Deputy and they began their way down.

On the way out, the group experienced a large whumph. They backtracked a bit, finding a thick stand of trees to travel through. Once safely back on the lower ridge, they skied down to their snowmobiles and rode out.

Early the next morning, Sid Patterson (NCMG/NCH) and Matt Primomo (NWAC) snowmobiled and skinned up to the area. They were met by Paul Butler (NCH) who got dropped off on the peak by helicopter after making an aerial survey of the scene with the Deputy who acted as Incident Commander for the search and rescue operation. The three of them safely navigated to the bottom of the debris and found B. From there they coordinated with the helicopter pilot who lined a litter into an open area nearby. They loaded the victim, Rider B, and performed a short haul rescue via helicopter. They then climbed up the slope to further investigate the path and the crown.

**Attach additional pages as needed. Include weather history, snow profiles, reports from other agencies, diagram of site, photographs, and any other supporting information**

Please see [www.nwac.us/accidents](http://www.nwac.us/accidents) for full report.

**Please send to: CAIC; 325 Broadway WS1; Boulder CO 80305; [caic@state.co.us](mailto:caic@state.co.us) and to the nearest Avalanche Center.**