

# Cottonwood Lake Avalanche Fatality

February, 25th 2018

Report by Josh Hirshberg and Dennis D'Amico, Northwest Avalanche Center

## Incident snapshot

**Occurrence Time and Date:** Approximately 12:00pm Feb 25, 2017

**Time First Reported to SAR:** Estimate 12:30pm

**Recovery/Rescue Time:** Unknown

**Lat/Lon:** 47.351997, -121.436305 (burial location of victim)

**Location:** Cottonwood Lake, Point 4902 near Tinkham Pk, Kittitas Co, Okanogan-Wenatchee NF, WA

**Number in Party:** 5 (4 on snowmobiles, 1 on snow bike)

**Number Caught:** 5

**Number Partially Buried, Critical or Not-critical:** 3 partially buried, not-critical. 1 partial burial, critical (*Not-critical means the head was exposed, Critical means the head was buried*)

**Number Completely Buried:** 1 complete burial

**Duration of Burial:** 15 minutes for survivor, burial time of fatality estimated less than 15 minutes

**Number Injured:** 2

**Number Killed:** 1

**Avalanche Type:** Soft Slab (SS)

**Trigger (estimated):** Snow Bike (AV)

**Size:** R3 / D2

**Start Zone Aspect:** SSE

**Start Zone Angle:** Avg 35°, Maximum 40°

**Start Zone Elevation:** 4680 ft

**Height of Crown Face:** Average 16 in (40 cm), Maximum 28 in (70 cm)

**Width of Fracture:** 450 ft (135 m)

**Vertical Fall:** 580 ft (175 m)

**Slab Characteristics:** 4F - 1F+ Hardness, Decomposing/Fragmented Precipitation Particles (0.5 mm-2.0 mm)

**Weak Layer Characteristics:** 4F Hardness (estimated), Precipitation Particles (1.0-2.0 mm) and Rounding Faceted Particles (0.5 mm), Thickness less than 1 cm

**Bed Surface Characteristics:** P Hardness, Melt Freeze Crust

**Burial involved a terrain trap:** Trees

**Number of people that crossed start zone before avalanche:** Roughly 6 tracks

**Avalanche occurred during (Estimated):** Descent, low in start zone (est 4300 ft)

**Location of group in relation to start zone during avalanche:** Runout, at toe of path (est 4200 ft)



**Avalanche Safety Gear Carried:** All carried transceivers, shovels, and probes. Airbags were carried by at least some in the party. The deceased deployed an airbag.

**Avalanche Training and Experience at Activity:** Group avalanche training: Awareness level. Group riding skill level: Advanced

**Signs of Instability Noted by Group:** None reported

**Extent of Injuries or Cause of Death:** Deceased: Basal skull fracture. Others: Minor Injuries

**Number of Vehicles Caught and Damaged:** 5

**Avalanche Classification:** SS-AVu-R3-D2-I

**NWAC Forecast Zone:** Snoqualmie Pass

**Avalanche Danger Rating (Near Treeline):** High (Avalanche Warning for High Danger was in effect for all elevations in the Snoqualmie Pass Zone)

## **Snowpack and Weather**

In the week leading up to the avalanche incident, calm cold weather prevailed across the West Slopes of the Cascades including the Snoqualmie Pass area. From February 18-23rd colder than normal temperatures and trace amounts of snow with occasionally clear skies allowed weak layers to develop at the surface of the snowpack. On steep, sun-exposed, southerly slopes a sun crust formed just below the surface along with a very thin layer of small facets at the snow surface. This persistent weak layer was buried on February 23rd at the beginning of a period of heavier snowfall. By February 26<sup>th</sup>, roughly 2 ft (65 cm) of settled storm snow had accumulated near the site of the incident in sheltered areas.

On February 24th and especially on the 25<sup>th</sup>, new snow and wind alone were enough to produce slab avalanches. The February 23rd facet/crust combination was the weak layer identified in both the Cottonwood Lake and the nearby Snow Lake Divide avalanche fatalities on Feb 25th. It's worth noting that seven people were killed in five different avalanches throughout the Cascades under a three week span from late Feb through early March. All of these avalanches involved persistent weak layers.

## **Avalanche and Terrain**

The area where the avalanche fatality occurred is immediately NW of Cottonwood Lake, 0.7 miles NE of Tinkham Peak and roughly 5 miles SSW of Snoqualmie Pass. The area can be accessed by snowmobile via mostly groomed trails from the Crystal Springs Sno-park on the east side of Snoqualmie Pass in Kittitas County. The avalanche path is on a short but broad and somewhat planar SSE facing slope. While the terrain is well situated in the below treeline elevation band, the slope is open and mostly free of trees except for near the toe of the slope. Cottonwood Lake and nearby Mirror Lake are common areas for snowmobile recreation.



NWAC Forecaster Josh Hirshberg and Pro-observer Jeff Ward traveled to the incident site on February 26th. They made observations about the avalanche and dug snow profiles at the crown of the avalanche as well as in a sheltered location nearby. The avalanche ran 580 vertical ft down slope and broke about 450 feet wide. It ran from the top of the ridge to well into the trees at the toe of the slope. It was rated medium in size relative to the path. What was notable about the avalanche was how widely the crown propagated for an avalanche path of relatively short vertical fall. Also notable was the extent of the debris which averaged 6 ft deep. Evidence of moving debris or airblast was observed on tree trunks in the runout of the path another 6 ft above the surface of the debris.

Crown profiles showed that the weak layer was a layer of small facets (0.5mm) at the February 23rd interface overlying a thin crust. It was difficult to identify these grains as they were small, mixed in with new snow and the layer was very thin. Both small and large column snowpack tests at the crown did show a potential for propagation at 1 out of 4 crown profile locations. Also of note, NWAC staff observed two natural slab avalanches of the same age at similar aspect and elevation 1.2 miles away on Silver Peak.

## **Accident Summary**

The morning of Saturday, February 25<sup>th</sup>, a group of five people convened at the Crystal Springs Sno-Park trailhead just east of Snoqualmie Pass. The group was comprised of four people on snowmobiles and one person on a snow bike. The members of the group had been in the area before and they knew each other through a local motorsports store. They spent the morning riding trails and exploring terrain. They travelled by machine on trails northwest of the trailhead past Lost Lake. At around 11:45 am they started riding a southeast facing slope between Cottonwood Lake, Point 4902 and Tinkham Peak. The slope topped out at a broad ridge around 4650 ft. After about a half-dozen passes on the slope, Riders 1-4 were stationary, parked in a roughly 15 foot radius. They were near the toe of the slope around 4200 ft and were near or on their machines. Rider 5, had climbed the slope on snow bike, and was descending at about 4300 ft when the avalanche released. One of the riders yelled, "Avalanche!" All five riders were caught and carried by the avalanche. Rider 1 and 2 were parked near to each other. Rider 1 was carried downslope less than 100ft and partially buried with head and arms exposed. Rider 2 was carried less than 100 vertical feet, through a small stand of mature trees and completely buried. Riders 3 and 4 were carried over 100 vertical feet to the lowest positions on the slope. Rider 4 was partially buried with her head and an arm above the surface. Rider 3 was partially but critically buried, face down with only his airbag backpack visible above the snow. Rider 5 was carried downhill and was partially buried at the furthest east position of all the riders.

## **Rescue summary**

Rider 1 was uninjured and able to dig himself out of the snow. He walked downhill to Rider 4, who was the lowest on the slope and partially buried, but unable to self-extricate. Rider 1 made sure Rider 4's airway was clear of snow and then went immediately uphill to Rider 3, whose avalanche airbag pack was deployed and visible on the surface, but was otherwise buried and positioned face-down.



Rider 1 shoveled snow away from Rider 3 reaching his airway. Rider 3 was unconscious. Rider 1 realized he would need the help of the other group members. Rider 1 fully extricated Rider 4. Meanwhile, Rider 5 had self-extricated and joined Riders 1 and 3. They focused their efforts on Rider 3. After performing chest compressions on Rider 3, he did not regain consciousness. Riders 1, 4, and 5 used beacons and probes to search for Rider 2. Rider 2 was positioned just uphill of a stand of small trees and buried roughly 5 feet (1.5 meters). He was buried for approximately 15 minutes and was unconscious, but breathing when he was extricated by Riders 1, 4, and 5. Rider 2 regained consciousness on his own after being dug out of the snow. The group called 911/Kittitas County dispatch around 12:30 pm. Kittitas County Sheriff responded with Search and Rescue teams who recovered the body of Rider 3 and assisted the rest of the group back to the trailhead. Rider 2 was assessed by Emergency Medical Services on site and released. Riders 2 and 5 sought treatment at a local hospital and were released with minor injuries.



Avalanche Crown visible on slope





Fracture line from a distance



Looking upslope at the crown





Burial location of Rider 2; burial depth around 5 feet (estimated)



Forecaster Josh Hirschberg measuring the airblast against a tree in the avalanche path

# SNOW PROFILE

Organization: --

Location: Tinkham Peak, WA

Date: 2018-02-27

Snowpit depth: 115 cm

Lat/Lng: 47.35384, -121.43755

Observer: Josh Hirshberg

Snowpack depth: 167 cm

Elevation: 4,600 ft

Wind: Light, 28° NNE

Slope: 40°

Blowing snow: Previous, --

Aspect: 157° SSE

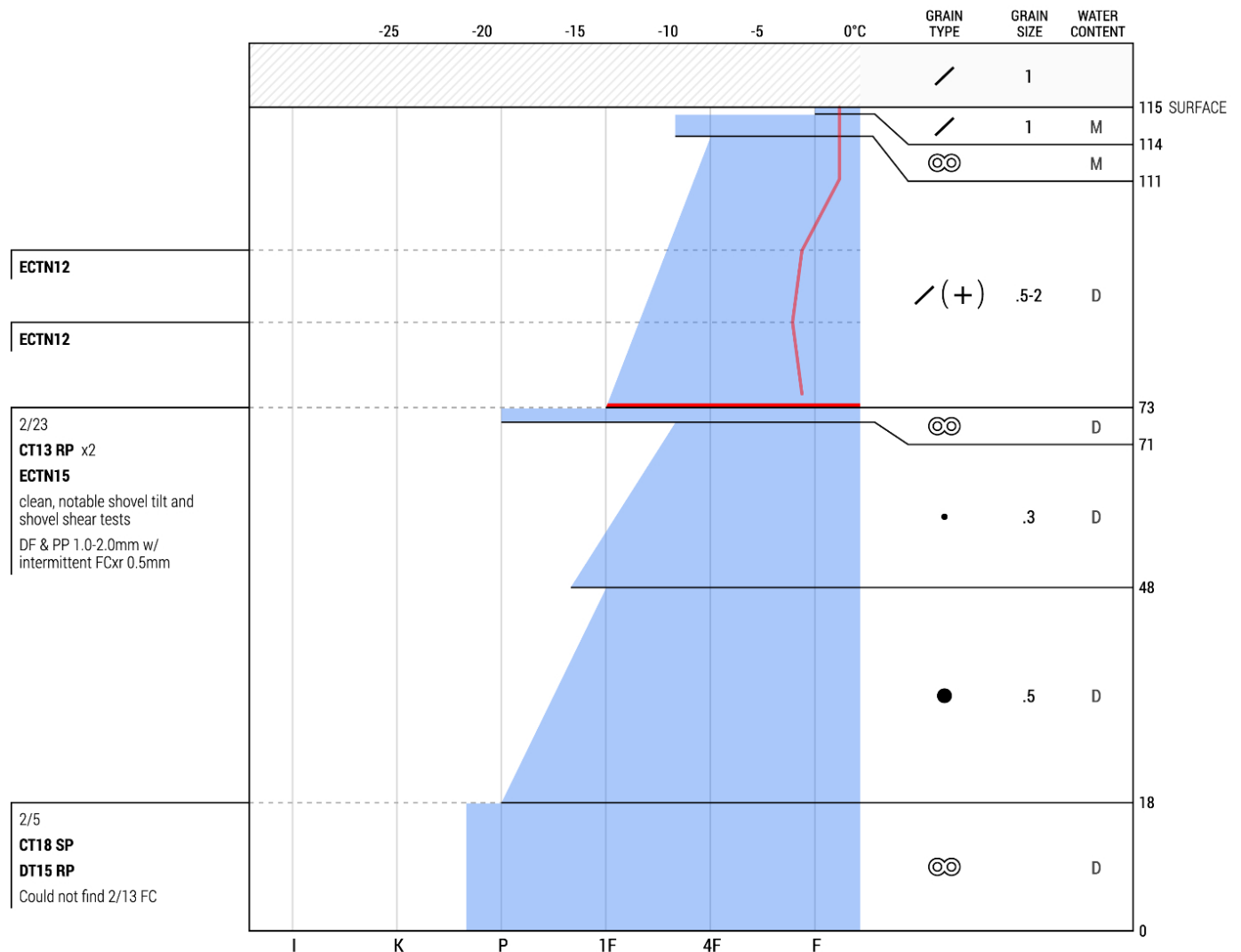
Precipitation: No Precipitation

Air temp.: --

Foot Pen. (PF): 40 cm

Sky: ☁ Broken

Ski Pen. (PS): --



5A95C614C0DF2310008710A3

Powered by AVATECH

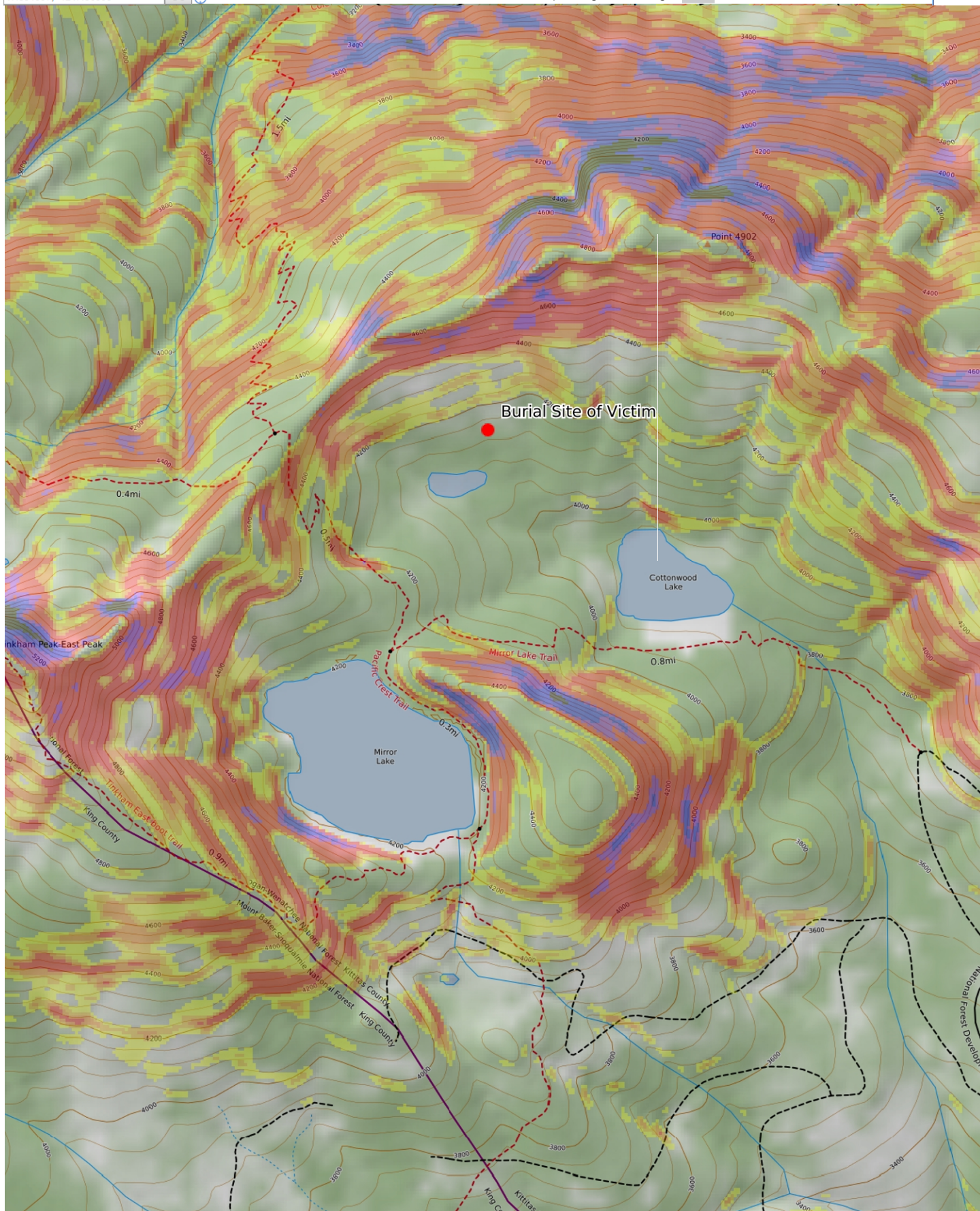


Northwest Avalanche Center [www.nwac.us](http://www.nwac.us)

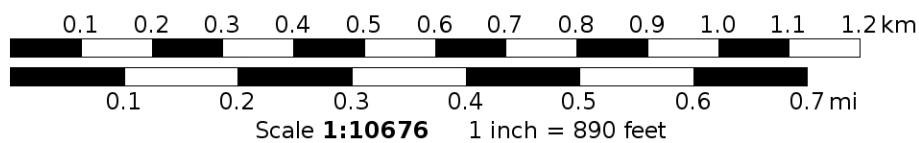


GO 

27°-29° 30°-31° 32°-34° 35°-45° 46°-50° 51°-59° 60°+



Mercator Projection  
WGS84  
USNG Zone 10TFT  
CalTopo.com

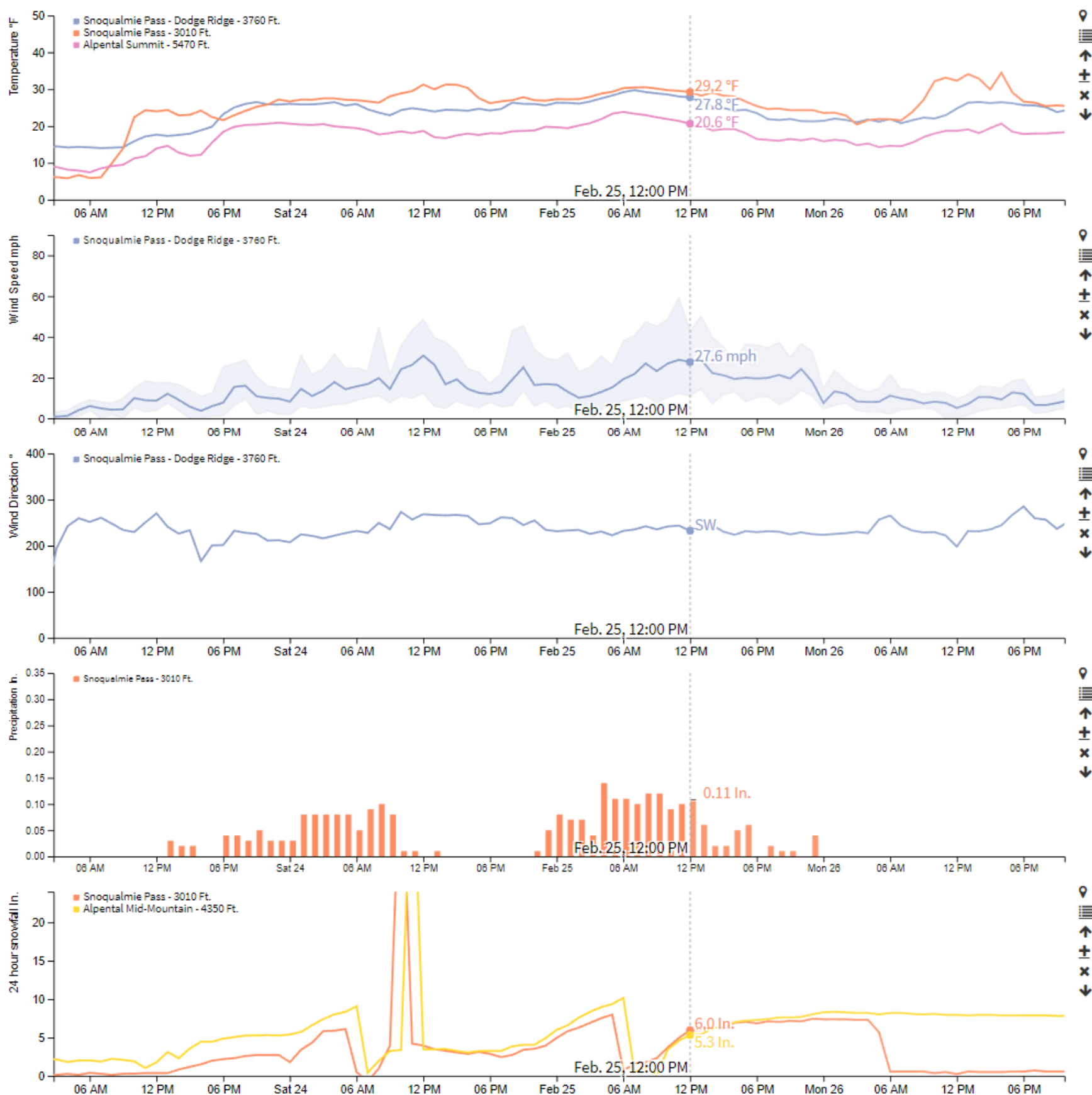


# Weather Station List — Snoqualmie Pass

Legacy Graphs

(select station)

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



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## Snoqualmie Pass

Issued: 6:55 PM PST Saturday, February 24, 2018

by Josh Hirshberg

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.

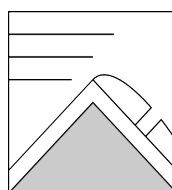
**The Bottom Line:** Travel in avalanche terrain is not recommended as very dangerous avalanche conditions exist. Expect widespread avalanches big enough to bury or kill you. Only travel in the backcountry today if you are certain that you can avoid avalanche terrain.

Elevation	Sunday		Outlook for Monday
 Above Treeline	 High	Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.	 Considerable
 Near Treeline	 High	Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.	 Considerable
 Below Treeline	 High	Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.	 Considerable

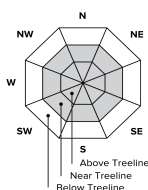
### Avalanche Problems for Sunday

#### 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.



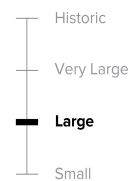
Avalanche  
Problem



Aspect/Elevation



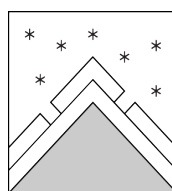
Likelihood



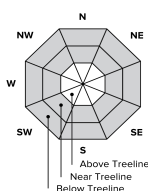
Size

#### Storm Slabs

Storm slabs usually stabilize within a few days, and release at or below the trigger point. They exist throughout the terrain, and can be avoided by waiting for the storm snow to stabilize.



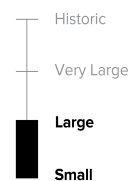
Avalanche  
Problem



Aspect/Elevation



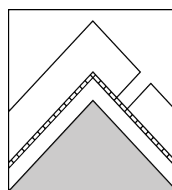
Likelihood



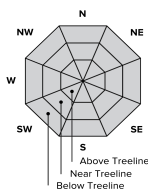
Size

#### Persistent Deep Slab

Deep, persistent slabs are destructive and deadly events that can take months to stabilize. You can triggered them from well down in the avalanche path, and after dozens of tracks have crossed the slope. Give yourself a wide safety buffer to handle the uncertainty, potentially for the remainder of the season.



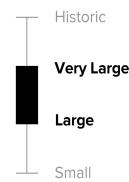
Avalanche  
Problem



Aspect/Elevation



Likelihood



Size



## Avalanche Forecast for Sunday

Expect widespread avalanches in the new snow including many natural avalanches. Many of these could be big enough to kill you. The most dangerous areas will be steep slopes where new snow and wind have deposited 2 feet or more of cohesive snow since Friday. Select appropriate terrain to stay safe. Stay out of open slopes steeper than 35 degrees. Be aware of areas where avalanches commonly run. Avoid traveling below avalanche terrain and stay out of large avalanche paths. Only go into the backcountry today if you are sure of your ability to avoid avalanche terrain.

With several overlapping avalanche problems this will be a challenging time to travel in the mountains. While Storm and Wind Slabs exist in the upper snowpack, very dangerous Deep Slabs lurk below. It's possible that avalanches in the upper snowpack could step down to deeper layers, triggering a very large and destructive avalanche. Deep Slab avalanches are very difficult to predict and give little warning sign. While they may be difficult to trigger your chances of surviving one are slim. If you dig 2-3 feet below the snow surface, you will find a thin layer of sugar-like facets adjacent to a hard crust. You can dig snowpits and use snowpack tests to confirm the strong over weak snow layers of the Deep Slab avalanche problem. Your best way to stay safe from these avalanches is to avoid triggering avalanches in the upper snowpack. Excellent travel conditions can still be found on slopes less than 30 degrees that are not connected to steep overhead slopes.

## Avalanche Summary

Heavy snowfall and strong winds have elevated avalanche danger, once again. Up to 1.5 feet of snow accumulated across the West Slopes by Saturday evening. Another 1-2 feet of snow will fall with strong winds by late Sunday. Snowfall starting at the end of the work week fell on a variety of surfaces including old snowflakes, surface hoar, and possibly some small facets.

Widespread natural avalanches were reported from the Mt Baker and Snoqualmie pass areas on Saturday. These were soft slab avalanches and some loose avalanches in the recent snow 1-1.5 feet deep with a few reported as big enough to bury a person. Some of these avalanches ran within the new snow while other slid on the interface of new and old snow. Observers have not consistently found problematic weak layers at the February 23rd interface.

Last weekend, observers reported a widespread cycle of large to very large avalanches occurring with a potent storm. Avalanches ran in the storm snow as well as on facets, buried on the 13th of February. In many locations these weak sugar-like facets sit 3 feet below the surface on or adjacent to a hard crust layer. Avalanches, collapses, and whumphs have been triggered on this persistent weak layer well after last weekend's initial avalanche cycle. Snowpack test and observations from around the region continue to demonstrate that this layer can fail and produce avalanches. Tests and profiles show the most consistent results from the Stevens and Snoqualmie pass areas. In the Mount Baker area the weak layer is more intermittent and can often show up as facets around a series of crusts.

A thin rain crust formed and was buried on 2/17 near and below 4000' in the Snoqualmie area. Limited information about this snowpack layer has been reported other than it is ski-supportable.

Below the 2/8 crust there are no significant layers of concern.

### Observations

#### Stevens and Snoqualmie Pass

On Saturday, Alpentel Patrol reported that slab avalanches were easily triggered in the recent snow with ski cuts during control work. An NWAC observer reported many similar natural avalanches in the adjacent backcountry at Snoqualmie Pass.

Also on Saturday, NWAC staff reported two different locations near Snoqualmie pass. While the 2/13 facet layer is showing rounding, test results indicated that the potential for triggering an avalanche still exists. This supports numerous similar snowpack tests results Stevens and Snoqualmie passes, the Crystal and Mt Rainier backcountry and to some extent the Mt Baker backcountry all conducted over the last week.

On Tuesday NWAC staff traveled through popular backcountry terrain near the Skyline area of Stevens Pass, finding the 2/13 facets on most slopes.

The most recent Persistent Slab avalanche was triggered on Monday at Stevens Pass backcountry ([Stevens Pass-Hollywood Bowl-2-19](#)). It failed on facets just above the 2/5 crust.

### South

On Friday NPS rangers in the Paradise area reported 3-4 feet of snow over weak facets. No wind transported snow was observed.

NWAC Forecaster Dallas Glass observed a large audible whumph caused by a collapsing weak layer Tuesday near Paradise. Snowpack tests in the area indicated the persistent weak layer could fail and produce avalanches up to 4 feet deep.

No recent observations have been received from the Crystal backcountry. A higher level of uncertainty exists in this area.

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## Mountain Weather Synopsis for Sunday & Monday

A 100+ kt westerly jet stream core centered on the WA coast early Sunday morning added a solid punch to a trough moving across the region and the associated frontal moisture Sunday. The strong westerly flow aloft translated down to crest level and combined with heavy precipitation rates to create stormy conditions throughout the forecast region Sunday. This pattern has caused several post frontal or convergence bands of heavier showers to form Sunday afternoon. Most of the heavier shower activity has been targeted to the Stevens Pass area, but certainly not limited to. The flow and subsequent showers should diminish rapidly overnight with convergence bands dissipating. Freezing levels have been lowering since an early morning shallow warm up. The trough will

continue to dig southward as high pressure rebuilds over the eastern North Pacific Sunday night. This should allow for further diminishing flow becoming more northwesterly and gradually drying causing diminishing showers overnight Sunday. By Monday the trough along the west coast digs southward to central California while the offshore high pressure ridge gains strength. This should cause a weakening NW flow, maintaining cool temperatures and a few scattered light snow showers Monday, mainly along the west slope areas, along with partial clearing at times.

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	1.00	lt .10	Sunday Morning	2000'	1000'	1000'	2000'	2500'
Mt Baker Ski Area	.50 - .75	lt .10	Sunday Evening	1000'	500'	500'	1000'	2000'
Washington Pass	.50	lt .10	Sunday Night	500'	0'	0'	500'	1000'
Stevens Pass	1.50	lt .10	Monday Morning	500'	0'	0'	500'	500'
Snoqualmie Pass	1.00 - 1.50	lt .10	Monday Afternoon	1500'	1000'	1000'	1500'	2000'
Mission Ridge	.25 - .50	0	Monday Night	1000'	500'	500'	1000'	1000'
Crystal Mt	.75	lt .10	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	1.00 - 1.50	lt .10						
White Pass	1.00 - 1.50	lt .10	* 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	2.00	lt .10						
Timberline	2.00	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 (YYYYMMDD): 20180225 and Time (HHMM): 1200 Comments: Time estimated

Reporting Party Name and Address: Northwest Avalanche Center  
7600 Sandpoint Way NE  
Seattle, WA 98115

## Avalanche Characteristics:

Type: SS Aspect: SSE  
Trigger: AV (Snowbike) Slope Angle: 35 deg avg 40 deg max  
Size: R 3 \ D 2 Elevation: 4680 ☐m / ☒ft  
Sliding surface (check one):  
☐ In new ☒ New/old ☐ In old ☐ Ground

## Location:

State: WA County: Kittias Forest: Okanogan-Wentachee NF  
Peak, Mtn Pass, or Drainage: Point 4902 near Tinkam Peak  
Site Name: Cottonwood Lake  
Lat/Lon or UTM: 47.351997, -121.436305

Group	Number of People	Time recovered	Duration of burial	Depth to Face <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft
Caught	5			
Partially Buried—Not critical	3			
Partially Buried--Critical	1		<15 minutes	1 (est)
Completely Buried	1		aprx 15 minutes	5 (est)
Number of people injured: 4		Number of people killed: 1		

## Dimensions

<input checked="" type="checkbox"/> m / <input type="checkbox"/> ft		Average	Maximum
Height of Crown Face		40 cm (M)	70 cm (M)
Width of Fracture		135 m	
Vertical Fall			175 m
Snow	Hardness	Grain Type	Grain Size (mm)
Slab	4F - 1F	DF	0.5-2.0 mm
Weak Layer	4F (est)	FCxr	0.5 mm
Bed Surface	P	MFcr	
Thickness of weak layer: <1 <input type="checkbox"/> mm / <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: 6 tracks in start zone

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		29	M			Snowmobile
2		24	M			Snowmobile
3		31	M			Snowmobile
4		29	F			Snowmobile
5		Unknown	M			Snow bike

## Equipment Carried

1	2	3	4	5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Transceiver
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Shovel
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Probe
<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"/>	

## Experience at Activity

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
<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 checked="" type="checkbox"/>	<input type="checkbox"/>	Intermediate
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Advanced
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert

## Avalanche Training

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	<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 checked="" type="checkbox"/>	Some
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Advanced
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert

## Signs of Instability Noted by Group

- ☐ Unknown  
☒ None  
☐ Recent avalanches  
☐ Shooting cracks  
☐ Collapse or whumphing  
☐ Low test scores

## Injuries Sustained

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	First Aid
<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"/>	Hospital Stay
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fatal

## Extent of Injuries or Cause of Death

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Asphyxiation
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Head Trauma
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spinal Injury
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chest Trauma
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Skeletal Fractures
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:



**Damage** Number of Vehicles Caught:5 Number Structures Destroyed: 0 Estimated Loss: \$ unknown

**Accident Summary** Include: events leading to accident, group's familiarity with location, objectives, route, hazard evaluation, etc. The morning of Saturday, February 25th, a group of five people convened at the Crystal Springs Sno-Park trailhead just east of Snoqualmie Pass. The group was comprised of four people on snowmobiles and one person on a snow bike. The members of the group had been in the area before and they knew each other through a local motorsports store. They spent the morning riding trails and exploring terrain. They travelled by machine on trails northwest of the trailhead past Lost Lake. At around 11:45 am they started riding a southeast facing slope between Cottonwood Lake, Point 4902 and Tinkham Peak. The slope topped out at a broad ridge around 4650 ft. After about a half-dozen passes on the slope, Riders 1-4 were stationary, parked in a roughly 15 foot radius. They were near the toe of the slope around 4200 ft and were near or on their machines. Rider 5, had climbed the slope on snow bike, and was descending at about 4300 ft when the avalanche released. One of the riders yelled, "Avalanche!" All five riders were caught and carried by the avalanche. Rider 1 and 2 were parked near to each other. Rider 1 was carried downslope less than 100ft and partially buried with head and arms exposed. Rider 2 was carried less than 100 vertical feet, through a small stand of mature trees and completely buried. Riders 3 and 4 were carried over 100 vertical feet to the lowest positions on the slope. Rider 4 was partially buried with her head and an arm above the surface. Rider 3 was partially but critically buried, face down with only his airbag backpack visible above the snow. Rider 5 was carried downhill and was partially buried at the furthest east position of all the riders.

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

Rider 1 was uninjured and able to dig himself out of the snow. He walked downhill to Rider 4, who was the lowest on the slope and partially buried, but unable to self-extricate. Rider 1 made sure Rider 4's airway way clear of snow and then went immediately uphill to Rider 3, who's avalanche airbag pack was deployed and visible on the surface, but was otherwise buried and positioned face-down. Rider 1 shoveled snow away from Rider 3 reaching his airway. Rider 3 was unconscious. Rider 1 realized he would need the help of the other group members. Rider 1 fully extricated Rider 4. Meanwhile, Rider 5 had self-extricated and joined Riders 1 and 4. They focused their efforts on Rider 3. After performing chest compressions on Rider 3, he did not regain consciousness. Riders 1, 4, and 5 used beacons and probes to search for Rider 2. Rider 2 was positioned just uphill of a stand of small trees and buried roughly 5 feet (1.5 meters). He was buried for approximately 15 minutes and was unconscious, but breathing when he was extricated by Riders 1, 4, and 5. Rider 2 regained consciousness on his own after being dug out of the snow. The group called 911/Kittitas County dispatch around 12:30 pm. Kittitas County Sheriff responded with Search and Rescue teams who recovered the body of Rider 3 and assisted the rest of the group back to the trailhead. Rider 2 was assessed by Emergency Medical Services on site and released. Riders 2 and 5 sought treatment at a local hospital and were released with minor injuries.

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

**Rescue Method**

1	2	3	4	5	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spot probe
<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 checked="" type="checkbox"/>	<input type="checkbox"/>	Voice
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Object
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Digging
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:

Please see full report at: <https://www.nwac.us/accidents/accident-reports/>

**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.**