

# Source/Snow Lake Trail Avalanche Accident

December 2, 2007

## Preliminary Report

### ***Accident Summary***

**Time:** 2<sup>nd</sup> December 2007, approximately 15:00 hrs

**Location:** Near Source Lake, Snoqualmie Pass WA

**Activity:** Snow Hiking / Camping

**Caught:** 3

**Buried:** 3 2 completely buried, 1 mostly or completely buried and able to self extricate.

**Injured:** 1

**Killed:** 2

### ***Preliminary Accident Narrative:***

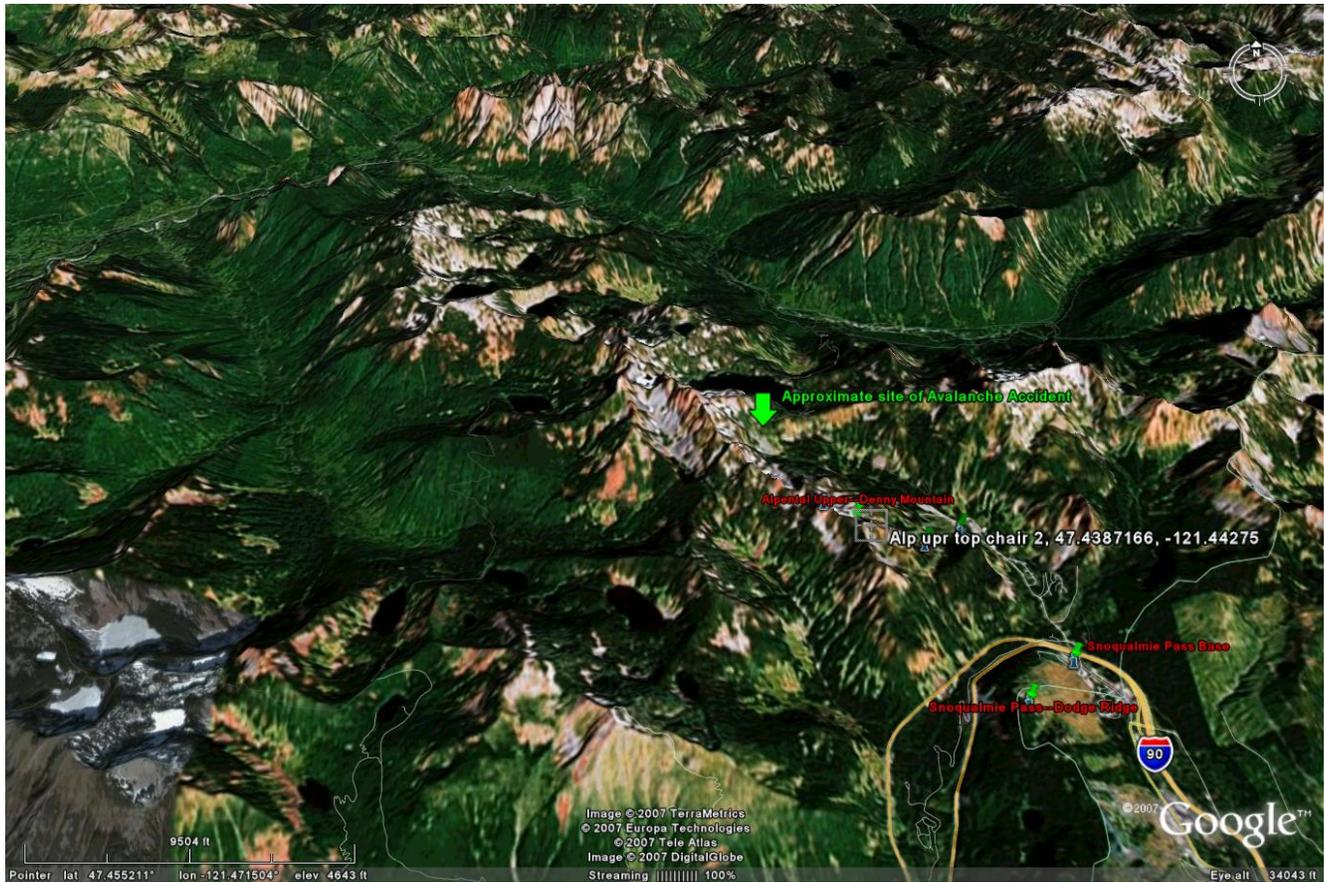
(Narrative prepared by R. Gibson, Summit at Snoqualmie Professional Patrol, and compiled from rescuers and also statements made by the survivor):

A party of 3 snow campers followed a popular summer hiking route to spend the night at Snow Lake on Saturday December 1<sup>st</sup>. The trail traverses up the east side of the South Fork of the Snoqualmie River drainage and then climbs over a short but fairly steep ridge through a series of switchbacks before descending about 500' in elevation to Snow Lake. Snow Lake lies slightly over 3 miles from the trailhead in this adjacent drainage. The party departed from the trailhead at the Alpentel parking lot on Snoqualmie Pass at approximately 1000 hrs, Saturday December 1<sup>st</sup>, 2007, and arrived at the lake by about 1300 hrs where they set up camp for the night. Snow began to fall in the area just after midday Saturday, continuing throughout the night and into the next day. Twenty inches of new snow was measured at the Alpentel Ski Area snow study plot at 0700hrs Sunday, December 2<sup>nd</sup>. Mid-morning Sunday the party broke camp and ascended back to the dividing ridgeline. The wind was strong at their backs and the ridgeline was scoured to the old snow and dirt. It was obvious that the steep slope before them was in the lee and significantly loaded but the very strong wind made staying on the more exposed ridgeline uncomfortable and they began to descend onto the loaded slope. The survivor was the most experienced of the group and was in the lead, hoping to trigger a sluff ahead of him and relieve some of the slope's avalanche potential. He stated that they began to descend in single file and reports hearing an exclamation from behind by one or both of the other party members just prior to being hit from behind by a wave of snow and carried down slope rapidly. The slide occurred at approximately 1500hrs. The ride is recalled as somewhat confusing with tumbling, light and dark, and the striking of at least one object with his left leg. When he came to rest he was either completely or mostly buried but able to self-extricate with some difficulty and remove his pack. Neither of his partners were visible and no one responded to his calls. His gloves were lost during the slide and after trying to move around looking for clues he realized that he would need to work to survive himself. Co-workers raised the alarm when one of the group did not report to work Monday morning, the vehicle was verified to be at the trail head late Monday afternoon and the official alarm was raised. An additional sixteen inches of new snow was measured on Monday morning at the Alpentel plot but the precipitation had changed to rain in the early morning hours and several inches of rain were forecasted.

The Professional Patrol from the Alpentel Resort were requested to be initial response and determine avalanche hazard potential to any rescue response. Hazard was determined to be very high still with ongoing rain Monday evening and based on forecasted decreasing precipitation rates for the following day plans were made to evaluate first thing Tuesday morning. A team of two pro patrollers and a trained avalanche dog went in at 0800 hours Tuesday morning and assessed remaining hazard potential on the route into the area. The team determined hazard to have decreased enough to allow searchers to follow into the area and King County Sheriff's Department began deploying additional teams around 0915 hrs. Team One arrived at the accident site at around 1000 hrs and found a partially erected tent and evidence of an older (soft snow) avalanche.

Contact was made with an injured person in the tent and it was learned that an avalanche accident had occurred Sunday afternoon and two persons were unaccounted for. One rescuer initiated care for the patient, and the second rescuer immediately began a hasty search and dog search. The dog alerted about three minutes into the search and uncovered the arm of victim # 1. Death was verified by the handler while the dog was sent back to searching. A couple personal items were also uncovered by the dog as the search continued and the second victim was found by the dog about 60 yards upslope about 20 minutes later. The second victim was also verified to have expired and the search was suspended. The patient was winched from the scene about an hour later by a rescue helicopter and is expected to survive his injuries. A more complete incident report will follow in a few days.

## Accident Site Map



## Ancillary Weather, Avalanche and Snowpack Information:

(prepared by Mark Moore, NWAC):

The snowpack conditions leading up to the time of this incident had been evolving in the Northwest for some time. After several early-mid November storms produced a healthy crust, this crust experienced both slow weakening (faceting) and slow loading by several weak disturbances that moved over the region in a generally cool northwesterly flow aloft. As these storms were interspersed by significant clearing periods, the end result was a conditionally unstable snowpack in late November that consisted of the following: a weakening and faceting crust above the ground, some 6 to 16 inches of generally low density snow weakly bonded to the crust, and some buried surface hoar layers. Although this snowpack structure was fairly sensitive near higher ridges that had received some wind transport early in the week preceding the event, in many areas the winds had not been that strong and some relatively stable and high quality powder was more the norm. Unfortunately, the overall shallow snowpack and lots of terrain and vegetative anchors, as well as the lack of a cohesive slab in many areas, may have given out the wrong or at least only part of the message regarding stability, especially when this potentially unstable structure was loaded by increasingly large amounts of gradually denser snow, and ultimately rain. At the very least, it certainly allowed relatively easy access into potentially dangerous avalanche terrain.

However, the series of storms that buffeted the region Saturday through Monday were well advertised, both weather wise and avalanche wise. The avalanche forecasts issued both Friday, the 30<sup>th</sup> and Saturday, the 1<sup>st</sup> are given below and indicate the expected severity of the rapidly developing danger over the weekend:

### **NWAC Detailed Avalanche Forecast issued Friday morning, November 30<sup>th</sup>:**

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON CASCADES AND MT HOOD AREA  
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON  
0830 AM PDT FRIDAY NOV 30 2007

NWAC Program administered by:  
USDA-Forest Service  
with cooperative funding and support from:  
Washington State Department of Transportation  
National Weather Service  
National Park Service  
Washington State Parks and Recreation Commission  
Pacific Northwest Ski Area Association  
Friends of the Avalanche Center  
and other private organizations.

This forecast applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

WAZ513-518-519-019-042-501-502-ORZ011-011700-

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#### **ZONE AVALANCHE FORECASTS**

\* OLYMPICS, WASHINGTON CASCADES NEAR AND WEST OF THE CREST-

.AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Considerable avalanche danger above 4-5000 feet and moderate below gradually decreasing through early Saturday becoming considerable above 5-6000 and moderate below. Danger gradually increasing mid-day Saturday through Saturday night, becoming considerable above 4000 feet and moderate below.

\* MT HOOD AREA-

#### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Locally high avalanche danger on east to southeast facing slopes above about 5000 feet early Friday, otherwise considerable avalanche danger above 4-5000 feet and moderate below. Avalanche danger gradually decreasing through early Saturday becoming considerable above 5000 and moderate below. Danger gradually increasing mid-day Saturday through Saturday night, becoming considerable above 4000 feet and moderate below.

#### \* WASHINGTON CASCADES EAST OF THE CREST-

##### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Locally considerable avalanche danger above 5000 feet, moderate from 4 to 5000 feet and generally low below early Friday. Avalanche danger decreasing through early Saturday becoming moderate above 5000 feet and generally low below. Danger gradually increasing Saturday afternoon and night, becoming considerable above 5000 feet and moderate below.

#### \* SUNDAY OUTLOOK-

##### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Avalanche danger substantially increasing Sunday, becoming high above 4000 feet and considerable below. Further increasing danger likely late Sunday through early Monday, possibly becoming high to extreme in the Olympics and Cascades near and west of the crest above 4 to 5000 feet, and high above 5 to 6000 feet along the Cascade east slopes.

#### SNOWPACK ANALYSIS

While a still relatively shallow snowpack and significant vegetation, rock or other terrain anchoring are helping to limit the avalanche danger at lower elevations and along the Cascade east slopes below about 5000 feet, in most other areas where sufficient snow has accumulated to cover existing anchors, an increasingly unstable snowpack structure has developed during the past week. This structure consists of shallow amounts of relatively high density snow or crusts near the ground, about a foot or so of low density snow over the crust, surface hoar layers, and now some one to two feet of slightly denser and a little more cohesive wind slab in the upper snowpack, especially in the Mt Hood area and southern Washington Cascades where heaviest recent snowfall and stronger winds occurred. Additionally, the clear and relatively cool weather about 10-15 days ago produced some serious faceting and weakening of the snow just above the old crust that lies near the ground. A number of field reports corroborate the generally widespread instability, with significant cracking and settling being reported in a variety of areas (Mt Baker, Crystal Mountain, Chinook Pass, Mt Hood Meadows) during the past several days, along with some natural as well as human triggered avalanches. While most of the human triggered slabs have been relatively small, involving only the upper 8-10 inches of recent storm snow, some skier and explosive triggered slabs near Mt Hood Meadows involved all of the snow down to the facets above the old crust, with slab depths ranging from 2 to 3 feet. In most instances, the resulting fractures quickly propagated long distances across slope, and the associated slides ran considerable distances into the runout. This snowpack structure should remain very susceptible to the destabilizing effects of loading, warming and winds, all of which are expected to become major factors from mid-late Saturday through Monday of next week. Back country travelers are urged to stay aware of what is expected to be a rapid and very significant increase in the avalanche danger this weekend.

#### DETAILED FORECASTS

##### FRIDAY, FRIDAY NIGHT, SATURDAY MORNING

As a weak upper disturbance moves mostly southward offshore on Friday, partly to mostly cloudy skies, light winds and relatively cool temperatures are likely in most areas, along with occasional light snow or snow showers, heaviest in the south. With no significant new snow accumulations likely and relatively light winds, this weather should allow recent wind slabs to begin to settle. However, a significant number of buried weak layers remain, and the relatively low temperatures should make stabilization a slow process. The greatest danger should exist on northeast through southeast facing slopes from recent westerly winds, especially in the southern Washington Cascades and Mt Hood area. Decreasing light snow or snow showers, continued light winds and cool temperatures Friday night into early Saturday should allow for a further gradual decrease in the danger as slow snowpack settlement continues.

##### SATURDAY AFTERNOON AND NIGHT

Increasing clouds and increasing light snow should reach the Olympics later Saturday morning and the Cascades mid-day or early Saturday afternoon, with increasing moderate to heavy snow likely developing in most areas later Saturday afternoon and night. Along with generally increasing winds but continued low temperatures, especially near higher ridge lines, this should produce a slow but steady increase in the avalanche danger. With expected winds, the greatest danger should develop on east through north facing slopes near higher ridges, but a slow

increase in east winds near the Cascade passes should also favor shallow wind slabs developing on west facing slopes there. Back country travelers should use increasing caution and test snow stability often later Saturday.

#### SUNDAY AND SUNDAY NIGHT

Moderate to heavy snowfall, increasingly strong winds and slow warming on Sunday should continue to load and stress a multitude of buried weak layers, especially on lee slopes above 4 to 5000 feet where most terrain and vegetative anchoring should be slowly buried. In such areas, a high danger is expected with natural and human triggered avalanches becoming increasingly likely Sunday afternoon. Initially, most slides may involve only the most recently received storm snow on Sunday, with fractures extending into the lower density snow received Saturday. However, instabilities should become quite sensitive and widespread, with shooting cracks, whomping, sympathetic and remotely triggered slides probable. With continued loading by heavy snowfall, very strong winds and further warming late Sunday and Sunday night, expected stresses should produce natural or human triggered slabs involving all of the recent snow down to the facets above the old early-mid November crust. This may produce fractures ranging up to 3 to 5 feet or more, with a high to extreme danger likely developing in terrain above about 4 to 5000 feet. As a result, back country travel is not recommended on steeper, avalanche terrain Sunday, and back country travel should be avoided late Sunday and Monday, with travel confined to relatively low angle terrain well away from avalanche path runouts.

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Backcountry travelers should be aware that elevation and geographic distinctions are approximate and that a transition zone between dangers exists. Remember there are avalanche safe areas in the mountains during all levels of avalanche danger. Contact local authorities in your area of interest for further information.

NWAC weather data and forecasts are also available by calling 206-526-6677 for Washington, 503-808-2400 for the Mt Hood area, or by visiting our Web site at [www.nwac.us](http://www.nwac.us). Also note that field snowpack information is often available on the FOAC website at [www.avalanchenw.org](http://www.avalanchenw.org), and weather and avalanche glossaries for commonly used terms in the forecasts can be found on the NWAC education page.

Moore/Northwest Weather and Avalanche Center

### **NWAC Detailed Avalanche Forecast issued Friday morning, December 1<sup>st</sup>:**

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON CASCADES AND MT HOOD AREA  
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON  
0830 AM PDT SAT DEC 01 2007

NWAC Program administered by: USDA-Forest Service  
with cooperative funding and support from:  
Washington State Department of Transportation  
National Weather Service  
National Park Service  
Washington State Parks and Recreation Commission  
Pacific Northwest Ski Area Association  
Friends of the Avalanche Center  
and other private organizations.

This forecast applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

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#### ZONE AVALANCHE FORECASTS

\* OLYMPICS-

#### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Locally considerable avalanche danger above 5-6000 on north through east exposures Saturday morning, otherwise moderate below 7000 feet. Danger gradually increasing Saturday afternoon through Saturday night, becoming considerable above 4 to 5000 feet and moderate below. Avalanche danger substantially increasing Sunday and becoming high above 5000 feet and considerable below Sunday afternoon. Further increasing danger likely late Sunday through early Monday, becoming extreme above 6000 feet and high below.

#### \* WASHINGTON CASCADES NEAR AND WEST OF THE CREST-

##### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Locally considerable avalanche danger above 5-6000 on north through east exposures Saturday morning, otherwise moderate below 7000 feet. Danger gradually increasing Saturday afternoon through Saturday night, becoming considerable above 4000 feet and moderate below. Avalanche danger substantially increasing Sunday and becoming high above 4000 feet and considerable below Sunday afternoon. Further increasing danger likely late Sunday through early Monday, becoming extreme above 5 to 6000 feet and high below.

#### \* MT HOOD AREA-

##### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Considerable avalanche danger on northeast through southeast facing slopes above 5000 feet Saturday morning, otherwise moderate avalanche danger below 7000 feet. Danger gradually increasing Saturday afternoon and night, becoming considerable above 4000 feet and moderate below. Avalanche danger substantially increasing Sunday, becoming high above 5000 feet and considerable below Sunday afternoon. Further increasing danger likely late Sunday through early Monday, becoming extreme above 5 to 6000 feet and high below.

#### \* WASHINGTON CASCADES EAST OF THE CREST-

##### .AVALANCHE WATCH FOR SUNDAY AND MONDAY...

Locally considerable avalanche danger above 5 to 6000 feet on north through east exposures, otherwise moderate above 5000 feet and generally low below. Danger gradually increasing Saturday afternoon and night, becoming considerable above 5000 feet and moderate below. Avalanche danger substantially increasing Sunday, becoming high above 5 to 6000 feet and considerable below Sunday afternoon. Further increasing danger likely late Sunday through early Monday, becoming high above 4 to 5000 feet and considerable below.

#### SNOWPACK ANALYSIS

While a still relatively shallow snowpack and significant vegetation, rock or other terrain anchoring are helping to limit the avalanche danger at lower elevations and along the Cascade east slopes below about 5000 feet, in most other areas where sufficient snow has accumulated to cover existing anchors, an increasingly unstable snowpack structure has developed during the past week. This structure consists of shallow amounts of relatively high density snow or crusts near the ground, about a foot or so of low density snow over the crust, buried surface hoar, and one to two feet of slightly denser and a little more cohesive wind slab in the upper snowpack, especially in the Mt Hood area and southern Washington Cascades where heaviest recent snowfall and stronger winds occurred. A trace to a few inches of very low density fluff was also deposited over this structure on Friday. Additionally, the clear and relatively cool weather about 10-15 days ago produced some serious faceting and weakening of the snow just above the old crust that lies near the ground. While the most recent field information indicates some settlement and stabilization of the multitude of buried weak layers and a lack of human triggered slides, for the most part the weak layers remain and lack only an increased load to once again become very active. Stability information received during much of the past week corroborated the generally unstable snowpack structure, with natural or human triggered avalanches ranging from those involving only the upper 8 to 10 inches to 2-3 ft slabs involving most of last month's snow down to facets just above the early November crust. This snowpack structure should remain very susceptible to the destabilizing effects of loading, warming and winds, all of which are expected to become major factors from mid-late Saturday through Monday of next week. Back country travelers are urged to stay aware of what is expected to be a rapid and very significant increase in the avalanche danger this weekend.

#### DETAILED FORECASTS

##### SATURDAY AND SATURDAY NIGHT

After mostly cloudy skies and light showers early Saturday morning, increasing light snow should reach the Olympics by mid-morning and the Cascades mid-day or early Saturday afternoon, with increasing moderate to heavy snow likely developing in most areas later Saturday afternoon and night. Along with generally increasing winds but continued low temperatures, especially near higher ridge lines, this should produce a slow but steady increase in the avalanche danger. With expected winds, the greatest danger should develop on east through north facing slopes near higher ridges, but a slow increase in east winds near the Cascade passes should also favor

shallow wind slabs developing on west facing slopes there. Back country travelers should use increasing caution and test snow stability often later Saturday as loading of buried weak layers increases.

#### SUNDAY AND SUNDAY NIGHT

Moderate to heavy snowfall, increasingly strong winds and slow warming on Sunday should progressively load and stress a multitude of buried weak layers, especially on lee slopes above 4 to 5000 feet where most terrain and vegetative anchoring should be slowly buried. In such areas, a high danger is expected with natural and human triggered avalanches becoming increasingly likely Sunday afternoon. Initially, most slides may involve only the most recently received storm snow late Saturday and Sunday, with fractures extending into the lower density snow received Friday or early Saturday. However, expected instabilities should become quite sensitive and widespread, with shooting cracks, whomping, sympathetic and remotely triggered slides probable. With continued stresses added by heavy snow or rain, very strong winds and further warming late Sunday into early Monday, the probability of natural or human triggered slabs involving all of the recent snow down to the facets above the old early-mid November crust should increase dramatically. This should produce an extreme danger in terrain above about 4 to 5000 feet late Sunday. Widespread natural or human triggered avalanches should be certain on most aspects and slope angles, and despite the overall early season snowcover, some large, destructive slabs ranging up to 3 to 5 feet or more are possible. As a result, back country travel is not recommended on steeper, avalanche terrain Sunday, and back country travel should be avoided late Sunday into Monday, with any travel confined to low angle terrain well away from avalanche path runouts.

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Moore/Northwest Weather and Avalanche Center

On the day of the incident, the danger level was increased to high to extreme as indicated by the morning forecast:

#### **NWAC Detailed Avalanche Forecast issued Sunday morning, December 2<sup>nd</sup>:**

BACKCOUNTRY AVALANCHE FORECAST FOR THE OLYMPICS WASHINGTON CASCADES AND MT HOOD AREA  
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON  
900 AM PST SUN DEC 2 2007

NWAC Program administered by: USDA-Forest Service  
with cooperative funding and support from:  
Washington State Department of Transportation  
National Weather Service  
National Park Service  
Washington State Parks and Recreation Commission  
Pacific Northwest Ski Area Association  
Friends of the Avalanche Center  
and other private organizations.

This forecast applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

WAZ513-518-519-019-042-501-502-ORZ011-031700-

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#### ZONE AVALANCHE FORECASTS

\* OLYMPICS-  
.AVALANCHE WARNING SUNDAY AND MONDAY...

Increasing high avalanche danger below 7000 feet Sunday morning. Extreme avalanche danger above 5000 feet and high below Sunday afternoon to Monday morning. Avalanche danger beginning to decrease Monday afternoon and night.

\* WASHINGTON CASCADES NEAR AND WEST OF THE CREST-  
.AVALANCHE WARNING SUNDAY AND MONDAY...

Increasing high avalanche danger below 7000 feet Sunday morning. Extreme avalanche danger above 4-5000 feet and high below Sunday afternoon to Monday morning. Avalanche danger beginning to decrease Monday afternoon and night.

\* WASHINGTON CASCADES EAST OF THE CREST-  
.AVALANCHE WARNING SUNDAY AND MONDAY...

Increasing high avalanche danger above 5000 feet and considerable below Sunday morning. High avalanche danger above 4000 feet and considerable below Sunday afternoon to Monday morning. Avalanche danger beginning to decrease Monday afternoon and night.

\* MT HOOD AREA-  
.AVALANCHE WARNING SUNDAY AND MONDAY...

Increasing high avalanche danger below 7000 feet Sunday morning. Extreme avalanche danger above 5000 feet and high below Sunday afternoon to Monday morning. Avalanche danger beginning to decrease Monday afternoon and night.

### SNOWPACK ANALYSIS

The general snow pack structure in most areas until yesterday should be something like some shallow firmer crusts from early in the season, under weak faceted snow from mid November, under about 1-3 feet of recent snowfall from late November. A similar though shallower structure might be expected east of the crest.

Some good ski conditions but also some signs of instability were reported on Saturday on the Turns All Year, the FOAC web site, and by snow safety crews. Signs of instability such as easy clean shears and low Rutchblock scores were seen near Snoqualmie, Crystal and at Mt Hood Meadows.

Note that this snowpack structure is not expected to support the forecast heavy loads of snow and rain with a warming trend Sunday and Monday.

However terrain and vegetation are also indicated to be anchoring the snowpack at lower elevations especially east of the Cascade crest.

### SUNDAY AND SUNDAY NIGHT

Increasing strong crest level winds, heavy snow and then rain and a warming trend is expected to begin on Sunday. This should cause a widespread avalanche cycle to begin on Sunday. Deep 4-6 foot natural or easily triggered avalanches are expected at higher elevations. Avalanches that begin in recent snow may step down to deeper layers. Back country travel near avalanche terrain is not recommended on Sunday.

### MONDAY AND MONDAY NIGHT

Continued very strong crest level winds, heavy snow or rain with high snow levels are expected on Monday. Destructive avalanches will remain most possible on steep slopes that do not release on Sunday. Avalanches may stabilize other slopes. Back country travel near avalanche terrain is also not recommended on Monday. Avalanche danger may begin to decrease late Monday as snow or rain intensities decrease and temperatures cool and avalanches stabilize many slopes.

Ferber/Northwest Weather and Avalanche Center

In order to help emphasize the severity of the evolving danger, special avalanche statements were also issued Friday through the following Monday. The text of these statements issued on Friday, November 30<sup>th</sup> and Saturday, December 1<sup>st</sup> follow:

## **NWAC Special Avalanche Statement issued Friday afternoon, November 30<sup>th</sup>:**

SPECIAL AVALANCHE STATEMENT FOR THE OLYMPICS WASHINGTON CASCADES  
AND MT HOOD AREA  
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON  
130 PM PDT FRIDAY NOV 30 2007

This statement applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

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OLYMPICS-  
WEST SLOPES NORTH CASCADES AND PASSES-  
WEST SLOPES CENTRAL CASCADES AND PASSES-  
SOUTH WASHINGTON CASCADES-  
EAST SLOPES NORTHERN CASCADES-  
EAST SLOPES CENTRAL CASCADES OF WASHINGTON-  
EAST SLOPES SOUTHERN CASCADES OF WASHINGTON-  
NORTH OREGON CASCADES-

130 PM PST FRI NOV 30 2007

...AVALANCHE WATCH FOR THE OLYMPICS, WASHINGTON CASCADES AND MT HOOD AREA FOR  
SUNDAY AND MONDAY...

With an already unstable snowpack in place, abundant new snowfall mid-late Saturday and Sunday should combine with increasingly strong winds Sunday and a significant warming trend mid-late Sunday into Monday to produce a substantial increase in the avalanche danger both Sunday and Monday. Although a still relatively shallow snowpack in some areas is helping to limit the avalanche danger presently, significant new snowfall anticipated mid-late Saturday and Sunday should help to cover much of the current terrain and vegetative anchors. Large amounts of increasingly dense wind slab should load and stress a variety of buried weak layers on Sunday. Consequently, both natural and human triggered slides should become increasingly likely in steeper avalanche terrain, especially on lee slopes above 4 to 5000 feet where a deeper snowcover exists. Initially, most slides that release should primarily involve only the most recently deposited new snow received late Saturday and early Sunday. However, with more significant warming and sustained heavy loading likely later Sunday, larger slab slides ranging up to 3 to 5 feet or more should become probable as the increased stresses affect more deeply buried weak layers.

As a result, back country travelers should remain very aware of the significantly increasing avalanche danger over the weekend and into early next week and modify their route selections and trip plans accordingly.

Please consult the [www.nwac.us](http://www.nwac.us) web site for further and more detailed information. This statement will be updated as conditions warrant.

Moore/Northwest Weather and Avalanche Center

## **NWAC Special Avalanche Statement issued Saturday morning, December 1<sup>st</sup>:**

SPECIAL AVALANCHE STATEMENT FOR THE OLYMPICS WASHINGTON CASCADES  
AND MT HOOD AREA  
NORTHWEST WEATHER AND AVALANCHE CENTER SEATTLE WASHINGTON  
845 AM PDT SAT DEC 01 2007

This statement applies to back country avalanche terrain below 7000 feet and does not apply to highways or operating ski areas.

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WAZ513-518-519-019-042-501-502-ORZ011-011700-

OLYMPICS-  
WEST SLOPES NORTH CASCADES AND PASSES-  
WEST SLOPES CENTRAL CASCADES AND PASSES-  
SOUTH WASHINGTON CASCADES-  
EAST SLOPES NORTHERN CASCADES-  
EAST SLOPES CENTRAL CASCADES OF WASHINGTON-  
EAST SLOPES SOUTHERN CASCADES OF WASHINGTON-  
NORTH OREGON CASCADES-

845 AM PST SAT DEC 01 2007

...AVALANCHE WATCH CONTINUES FOR THE OLYMPICS, WASHINGTON CASCADES AND MT HOOD AREA FOR SUNDAY AND MONDAY...

With an already unstable snowpack well established, abundant new snowfall mid-late Saturday and Sunday should combine with increasingly strong winds Sunday and a significant warming trend mid-late Sunday into Monday to produce a substantial increase in the avalanche danger both Sunday and Monday. Despite a still relatively shallow snowpack in some areas which as helped to limit the avalanche danger presently, significant new snowfall anticipated mid-late Saturday and Sunday should help to cover much of the current terrain and vegetative anchors. Large amounts of increasingly dense wind slab should load and stress a variety of buried weak layers on Sunday. Consequently, both natural and human triggered slides should become increasingly likely in steeper avalanche terrain, especially on lee slopes above 4 to 5000 feet where a deeper snowcover exists. Initially, most slides that release should primarily involve only the most recently deposited new snow received late Saturday and early Sunday. However, with more significant warming and sustained heavy loading likely later Sunday, larger slab slides ranging up to 3 to 5 feet or more should become likely as the increased stresses affect more deeply buried weak layers. This should result in an extreme avalanche danger at higher elevations and generally high danger at lower elevations in locations where most terrain anchors have been buried. As a result, back country travelers should remain very aware of the significantly increasing avalanche danger over the weekend and into early next week and modify their route selections and trip plans accordingly.

Please consult the [www.nwac.us](http://www.nwac.us) web site for further and more detailed information. This statement will be updated as conditions warrant.

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Moore/Northwest Weather and Avalanche Center

While a radio problem at the upper Alpentel weather station prevents the complete local data set from being available, the following hourly data shows the trends in precipitation and snowfall rates and temperature for this nearby weather station during the 48 hour period preceding and immediately following the incident:

**NWAC Alpentel Weather Data, December 1<sup>st</sup>-2<sup>nd</sup>, 2007:**

12-2-2007  
Northwest Weather and Avalanche Center  
Alpentel Ski Area, Washington

Wind sensors unheated and may rime  
5400' station to be repaired

MM/DD	Hour	Temp	Temp	Temp	RH	RH	Wind	Wind	Wind	Hour	Total	24Hr	Total
	PST	F	F	F	%	%	Avg	Max	Dir.	Prec.	Prec.	Snow	Snow

5400' 4300' 3120' 3120' 5400' 5530' 5530' 5530' 3120' 3120' 3120' 3120'

MM	DD	Hour	Temp	Temp	Temp	RH	RH	Wind	Wind	Wind	Hour	Total	24Hr	Total
		PST	F	F	F	%	%	Avg	Max	Dir.	Prec.	Prec.	Snow	Snow
			5400'	4300'	3120'	3120'	5400'	5530'	5530'	5530'	3120'	3120'	3120'	3120'
12	1	500		15	20	95					0	0	-0	19
12	1	600		14	19	95					0	0	-0	19
12	1	700		14	19	95					0	0	0	19
12	1	800		14	19	94					0	0	-0	18
12	1	900		14	19	93					0	0	-0	19
12	1	1000		14	19	93					0	0	-0	17
12	1	1100		14	20	91					0	0	-0	17
12	1	1200		17	21	87					0	0	-0	18
12	1	1300		15	21	89					0	0	-0	18
12	1	1400		15	20	91					0	0	-0	19
12	1	1500		14	19	95					.01	.01	-1	18
12	1	1600		14	18	95					.05	.06	1	17
12	1	1700		13	18	96					.05	.11	3	19
12	1	1800		13	18	96					.03	.14	-213	19
12	1	1900		13	18	95					.02	.16	-213	21
12	1	2000		13	18	95					.06	.22	-213	24
12	1	2100		13	18	95					.09	.31	8	22
12	1	2200		13	17	95					.15	.46	11	27
12	1	2300		13	18	95					.11	.57	13	29
12	2	0		13	18	95					.13	.7	-213	28
12	2	100		13	18	95					.12	.82	-213	30
12	2	200		13	18	95					.11	.93	-213	32
12	2	300		13	18	94					.12	1.05	-213	35
12	2	400		13	18	95					.11	1.16	-213	34

12-3-2007

Northwest Weather and Avalanche Center  
Alpental Ski Area, Washington

Wind sensors unheated and may rime  
5400' station to be repaired

MM/DD	Hour	Temp	Temp	Temp	RH	RH	Wind	Wind	Wind	Hour	Total	24Hr	Total	
	PST	F	F	F	%	%	Avg	Max	Dir.	Prec.	Prec.	Snow	Snow	
		5400'	4300'	3120'	3120'	5400'	5530'	5530'	5530'	3120'	3120'	3120'	3120'	
12	2	500		14	18	95					.09	.09	19	36
12	2	600		15	19	95					.07	.16	18	33
12	2	700		17	19	95					.12	.28	17	35
12	2	800		15	19	96					.11	.39	18	37
12	2	900		19	20	95					.13	.52	19	36
12	2	1000		18	21	96					.1	.62	-214	40
12	2	1100		18	21	96					.11	.73	-215	38
12	2	1200		18	22	96					.17	.9	16	42
12	2	1300		19	23	96					.14	1.04	-215	42
12	2	1400		21	24	97					.01	1.05	-0	42
12	2	1500		21	25	97					.16	1.21	0	43
12	2	1600		25	26	98					.08	1.29	-0	41
12	2	1700		25	27	99					.02	1.31	-218	41
12	2	1800		25	27	99					0	1.31	0	42
12	2	1900		27	28	98					.03	1.34	1	42
12	2	2000		26	29	99					.07	1.41	1	42
12	2	2100		27	29	98					.24	1.65	-219	42
12	2	2200		26	29	99					.19	1.84	4	40
12	2	2300		27	30	99					.18	2.02	5	45
12	3	0		27	30	99					.16	2.18	8	46
12	3	100		28	30	99					.14	2.32	8	46
12	3	200		29	32	99					.14	2.46	10	47
12	3	300		29	32	99					.18	2.64	10	46
12	3	400		30	33	99					.27	2.91	9	46