

Chinook Pass Accident, 4-24-14



**American Avalanche Association
Forest Service National Avalanche Center
Avalanche Incident Report: Long Form**



Please send to: CAIC; 325 Broadway WS1; Boulder CO 80305; caic@qwest.net; Fax (303) 499-9618
and to the nearest Avalanche Center.

Occurrence Date: 4/24/2014 **Time:** 1000

Report Author(s)

Name: John Stimberis

Affiliation: WSDOT

Address: P.O. Box 1068 Snoqualmie Pass, WA 98068

Phone:

Fax:

Email:

Location:

State: Washington County: Yakima

Forest: Okanogan-Wenatchee

Peak, Mtn Pass, or Drainage: Chinook Pass

Site Name: SR 410

Lat/Lon or UTM: 46.847 121.5081

| Summary | Caught | Partially Buried Not Critical | Partially Buried Critical | Completely Buried | Injured | Killed | Vehicles Damaged | Structures Damaged |
|---------|--------|----------------------------------|------------------------------|----------------------|---------|--------|---------------------|-----------------------|
| Number | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

Weather

Fill in the weather chart of the five days prior to the accident. Use 24 hr trends for wind speed and direction.

| | | | | | |
|---|----------------------------|-----------------|--|---|--|
| Weather station location(s): Chinook Pass | | Lat/Lon or UTM: | | Elevation: 5500 <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft | |
| Date | station data not available | | | | |
| Tmax | | | | | |
| Tmin | | | | | |
| HN24 | | | | | |
| HN24W | | | | | |
| Wind Speed | | | | | |
| Wind Dir | | | | | |

Avalanche Conditions

Attach most recent advisory (Section VII).

| | | |
|--|---|--|
| Closest Avalanche Center: NWAC <input type="checkbox"/> accident outside of forecast area Avalanche warning in effect? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | Avalanche Danger Rating <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> Considerable <input checked="" type="checkbox"/> High <input type="checkbox"/> Extreme | Recent Avalanche Activity Natural activity previous day, plus most slopes affecting the highway were controlled by WSDOT crew using explosives and ski cutting. |
|--|---|--|

Snowpack

Describe the state of the snowpack. Include season history, snow profiles, and prominent features as necessary.

Upper snowpack wet with near surface crust. New snow over crust (~6-10"). New snow amounts diminish quickly east of Chinook Pass.

Section I: Group Information

Fill in the following tables. Some of the fields can be checked or left blank. Attach additional pages and reports from other agencies as necessary (Section VII).

| Subject | Name | Age | Gender | Address | Phone |
|---------|---------------|-----|--------|---------|-------|
| 1 | Tom Martinson | 56 | M | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |

| Skill Level | Activity | Years at Activity | Activity Skill Level | Accessed Local Avalanche Advisory? | Avalanche Education Level |
|-------------|--------------------|-------------------|----------------------|------------------------------------|---------------------------|
| 1 | Equipment operator | 30 | Expert | via local avalanche crew | NAS |
| 2 | | | — | | |
| 3 | | | — | | |
| 4 | | | — | | |
| 5 | | | — | | |

| Rescue Equipment Carried | Transceiver Make and Model | Shovel | Probe Pole | Releasable Bindings | Other | Snowmobile: Rescue Equipment Carried on Person |
|--------------------------|----------------------------|--------|------------|---------------------|-------|--|
| 1 | Pieps DSP | N | Y | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

| Injuries or Cause of Death | Unknown | None | First-Aid Needed | Doctor Care Needed | Hospital Stay Needed | Asphyxiation | Head Injury | Chest Injury | Spinal Injury | Hypothermia | Skeletal Fracture | Other | Fatal |
|----------------------------|--------------------------|--------------------------|------------------|--------------------|----------------------|--------------|-------------|--------------|---------------|-------------|-------------------|-------|--------------------------|
| 1 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | <input type="checkbox"/> |
| 3 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | <input type="checkbox"/> |
| 4 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | <input type="checkbox"/> |
| 5 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | <input type="checkbox"/> |

Comments
 Equipment operator Tom Martinson was clearing snow in an avalanche path. He was operating a John Deere 850 dozer when the avalanche hit.

Section II: Avalanche Path and Event Information

Fill in the following tables. Some of the fields can be checked or left blank. Attach additional pages, fracture line profiles, and reports as necessary (Section VII).

| Avalanche Characteristics | | |
|---|---|-----------------|
| Type: Point releases (loose wet) with good entrainment of new snow | Trigger: Natural | Size: R 2 \ D 2 |
| Aspect: SE | Elevation: 5200 <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft | |
| Sliding surface (check one): <input checked="" type="checkbox"/> In new <input checked="" type="checkbox"/> New/old <input type="checkbox"/> In old <input type="checkbox"/> Ground | | |

| Dimensions <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft | | Average | Maximum | Snow | | |
|---|------|---------|---------|--|----------|-----------------|
| Height of Crown Face | | | | Slab | Hardness | Grain Type |
| Width of Fracture | | | | Weak Layer | | Grain Size (mm) |
| Vertical Fall | 1700 | | | Bed Surface | 1F | |
| | | | | Thickness of weak layer: <input type="checkbox"/> mm / <input type="checkbox"/> cm / <input type="checkbox"/> in | | |

| Start Zone | | Ground Cover: | Location of Crown Face: | Snow Moisture |
|--|--|---|--------------------------------------|---|
| Elevation: <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft | | <input type="checkbox"/> Smooth | <input type="checkbox"/> Ridge | <input type="checkbox"/> Dry |
| Average Slope Angle: >30° | | <input checked="" type="checkbox"/> Rocky | <input type="checkbox"/> Cornice | <input checked="" type="checkbox"/> Moist |
| Maximum Slope Angle: ° | | <input type="checkbox"/> Glacier | <input type="checkbox"/> Mid-Slope | <input checked="" type="checkbox"/> Wet |
| Aspect: SE | | <input type="checkbox"/> Dense Forest | <input type="checkbox"/> Convex Roll | |
| | | <input type="checkbox"/> Open Forest | <input type="checkbox"/> Rocks | |
| | | <input type="checkbox"/> Unknown | <input type="checkbox"/> Unknown | |
| Vegetation: Sparsely timbered start zone | | | | |

| Track | | Snow Moisture |
|--|------------------------|---|
| <input type="checkbox"/> Open Slope | Average Slope Angle: ° | <input type="checkbox"/> Dry |
| <input checked="" type="checkbox"/> Confined | Aspect: | <input checked="" type="checkbox"/> Moist |
| <input type="checkbox"/> Gully | | <input checked="" type="checkbox"/> Wet |

| Runout | | Ground Cover: | Snow Moisture | Debris Type | α_i : ° |
|---|--|---|---|--|--|
| Elevation: 4500 <input type="checkbox"/> m / <input checked="" type="checkbox"/> ft | | <input type="checkbox"/> Smooth | <input type="checkbox"/> Dry | <input type="checkbox"/> Fine | α_c : ° |
| Average Slope Angle: ° | | <input checked="" type="checkbox"/> Rocky | <input checked="" type="checkbox"/> Moist | <input type="checkbox"/> Blocks | Debris Density: <input type="checkbox"/> kg m ⁻³ |
| Aspect: SE | | <input type="checkbox"/> Glacier | <input checked="" type="checkbox"/> Wet | <input type="checkbox"/> Hard | Terrain Trap? <input type="checkbox"/> no <input type="checkbox"/> yes |
| | | <input type="checkbox"/> Dense Forest | | <input checked="" type="checkbox"/> Soft | Terrain Trap Type: |
| | | <input type="checkbox"/> Open Forest | | <input type="checkbox"/> Rocks | |
| | | <input type="checkbox"/> Unknown | | <input type="checkbox"/> Trees | |
| Vegetation: | | | | | |

| Comments |
|---|
| Equipment operator was clearing avalanche debris on SR 410. The main path on "Knob 2" consists of numerous start zones which combine into one track. The highway is located mid track at the narrowest point in the track, less than 100' wide at that point. |

Section III: Accident Description

Fill in the following sections with available information. Attach additional pages, witness accounts, and other reports as necessary.

Events Leading Up to the Avalanche Include objectives of the party, departure point, route taken, familiarity with area, encounters with other groups, location of the party at time of avalanche, etc.

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

Slope angle at approximate trigger site: _____ °

The start zone above the highway had been controlled the previous day by ski cutting. Wide spread results were noted and the start zone was cleaned out exposing the supportable crust/bed surface. Additional snow was received overnight ranging from 6-10" with a noticeable decrease in heights east of Chinook Pass. The forecast called for moderate snow through the morning with showers in the afternoon. Around 0930 the avalanche crew spoke with the equipment operator and advised they would need to pull out soon. By 0945 snowfall ended and cloud cover diminished. At approximately 1000 the equipment operator announced on the radio that he was in an avalanche. Several crew members watched as the avalanche ran over the bulldozer. The operator continued to stay in radio contact during the avalanche. Once the avalanche stopped it was confirmed that the operator was uninjured and the dozer was intact.

Avalanche Danger Evaluation

| | | |
|---|--|--|
| Number of snowpit observations: | Stability Tests Performed: | Test Results: No tests on the morning of 4/24/2014. Extensive ski cutting on slopes above SR 410 on 4/23/2014. |
| Signs of Instability Observed: | <input type="checkbox"/> yes | |
| <input type="checkbox"/> none | <input checked="" type="checkbox"/> no | |
| <input type="checkbox"/> some cracking | <input type="checkbox"/> unknown | |
| <input type="checkbox"/> whumphing | <input type="checkbox"/> shooting cracks | |
| <input checked="" type="checkbox"/> recent avalanche activity | <input type="checkbox"/> hollow sounds | |

Comments

| Witness | Name | Address | Phone |
|---------|----------------|---------|--------------|
| 1 | Nic Zirkle | WSDOT | |
| 2 | John Stimberis | WSDOT | 509 929 1647 |

Accident Diagram On a separate page (Section VII) or photograph, draw a diagram of the accident scene. Include avalanche boundaries, prominent rocks and/or trees, the location of all party members before the avalanche, and the location of people, machines, and equipment after the avalanche.

Section IV: Rescue

Fill in the following sections with available information. Attach additional pages, witness accounts, and other reports as necessary.

| Rescue Chronology | | | | | | |
|---------------------------|----------|--------------------|---------------|---------------------|-----------------------|-----------|
| First Report | Response | | | | | |
| Reporting Party: WSDOT | Agency | Time Dispatched | Time on Scene | Method of Travel | Number of Rescuers | Equipment |
| Report Method: | WSDOT | 1000 | 1000 | Skis | 2+ | |
| Time Reported: | | | | | | |
| | | | | | | |
| | | | | | | |

| Recovery | | | | | | | | | |
|-----------------|--------------------------|--------------------------------------|----------------------------------|--------------------------|---------------------------|-------------------|---------------------|------------------|------------------|
| Subject | Caught | Partially Buried— Not Critical | Partially Buried— Critical | Completely Buried | Depth to Face □m / □ft | Time Recovered | Length of Burial | Body Position | Head Position |
| 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | — | — |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | — | — |
| 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | — | — |
| 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | — | — |
| 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | — | — |

| Recovery Method | | | | | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|
| For a transceiver recovery, include make and model of transceiver used by searcher. If an object on the surface was used as a clue, list object. | | | | | | | | | | |
| Subject | Self Rescue | Companion | Organized | Voice | Object | Transceiver | Spot Probe | Probe Line | Rescue Dog | Digging |
| 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Rescue Description List pertinent events that occurred during the rescue. Include additional pages of dispatch notes, statements, and agency reports as needed (Section VII).

When the avalanche stopped contact was again made with the equipment operator. He was ok and a small window on the cab was exposed. The WSDOT avalanche crew determined that any type of rescue could not take place until the scene was safe from additional avalanche. One crew member remained on the highway to act as an observer and communication point, as well as back up to the team ascending the slope. A team of two made their way to the start zone above the accident site and began releasing additional avalanches into the track and over the buried dozer. Ski cutting and throwing snowballs both produced D2 avalanches. The two crew members worked their way across the extensive starting zone and then down into the track to clean up any possible trigger points eventually they made it to the dozer. The door was excavated in a few minutes and the operator was able to get out

Section V: Damage

Fill in the following sections with available information. Attach additional pages, witness accounts, and other reports as necessary.

| Vehicles in Avalanche Describe and/or estimate the cost of damage to each vehicle caught in the avalanche. | | | |
|---|--------------------------|-------------------------------------|--------|
| Type | Partially Buried | Completely Buried | Damage |
| John Deere 850 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | None |
| | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | |
| | <input type="checkbox"/> | <input type="checkbox"/> | |

| Structures Damaged Describe and/or estimate the cost of damage to each structure affected the avalanche. | | | |
|---|-------------------|--------|--------------------------|
| Type | Construction Type | Damage | Destroyed |
| | | | <input type="checkbox"/> |

Total Loss Estimate the cost of damage caused by the avalanche: \$ _____

Rescue Cost Estimate the cost of rescue: \$ _____

Economic Effects List economic effects not included in the above tables (road closed, ski area closed, mine closed, change in policy, etc)
 Highway was under seasonal closure. No additional closures needed.

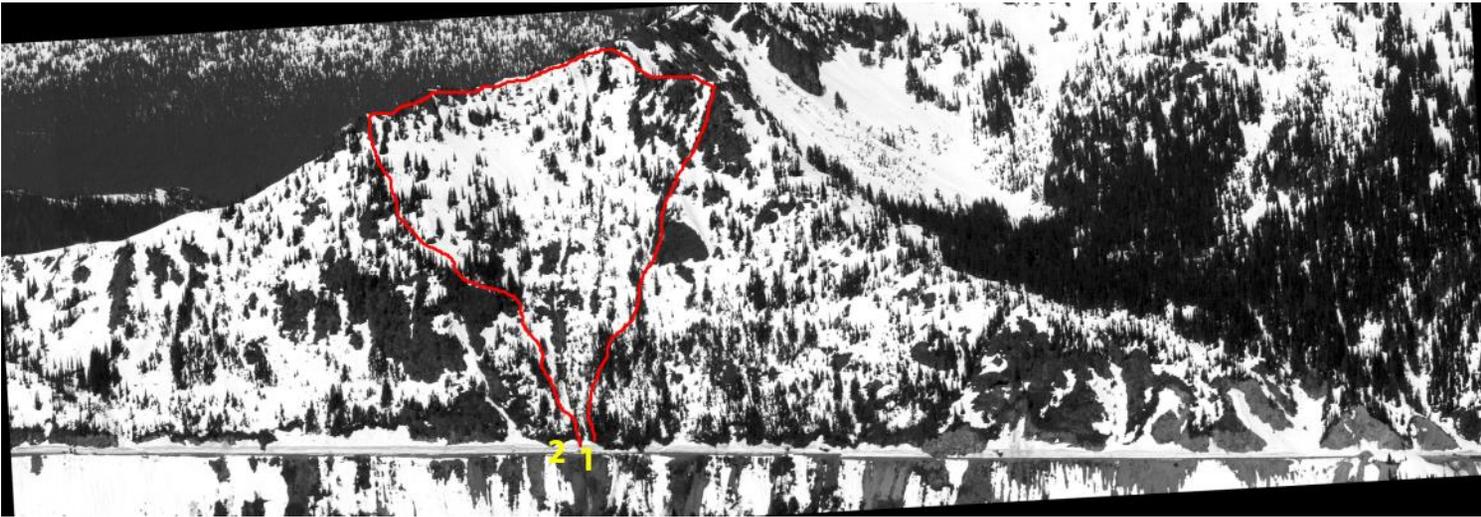
Section VI: Additional Comments and Recommendations

Section VII: Blank pages for Additional Information

This page is not protected, so diagrams, digital photos, or other information can be pasted in.

NWAC Comments: The accident long form and pictures were submitted by John Stimberis. John is part of the WSDOT avalanche crew that was working to open Highway 410 at Chinook Pass. Equipment operator Tom Martinson was clearing snow in an avalanche path. He was operating a John Deere 850 dozer when the avalanche hit. NWAC had ceased daily forecasts by this time but does provide daily weather support to cooperators such as the WSDOT during the spring and had a spring avalanche warning in effect (attached).





WA Cascades near and west of crest - between Snoqualmie and White Pass



Avalanche Warning

Issued: Wed, April 23, 2014 at 6:00 PM

Expires: Thu, April 24, 2014 at 6:00 PM

Issued: 6:00 PM Wednesday, April 23, 2014 by Garth Ferber

Please note that regularly scheduled mountain weather and avalanche forecasts for the past winter season have ended. However, weather and snow conditions will continue to be monitored at the Northwest Avalanche Center with the information that remains available. Additional forecasts or special statements will be issued according to the criteria and schedule given [here \(http://www.nwac.us/media/filer_public/0f/91/0f91b78c-2d24-44ec-9299-9166b8abf0ee/spring14forecastannouncement.pdf\)](http://www.nwac.us/media/filer_public/0f/91/0f91b78c-2d24-44ec-9299-9166b8abf0ee/spring14forecastannouncement.pdf).

The Bottom Line: Very dangerous avalanche conditions are likely from Mt Rainier to Mt Hood on Thursday. Travel in avalanche terrain from Mt Rainier to Mt Hood is not recommended.

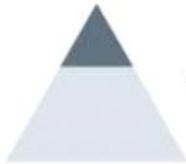
11/14/2014

Northwest Avalanche Center — Avalanche Region Forecast

Elevation

Thursday

Friday



Above Treeline



High

Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.



Near Treeline



High

Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.



Below Treeline



High

Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.



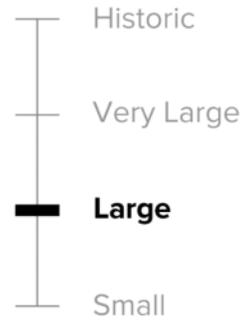
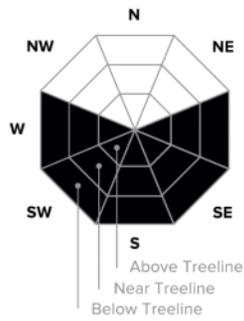
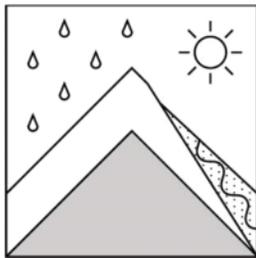
Danger Scale



Avalanche Concerns

Loose Wet

Loose wet avalanches occur where water is running through the snowpack, and release at or below the trigger point. Avoid terrain traps such as cliffs, gullies, or tree wells. Exit avalanche terrain when you see pinwheels, roller balls, a slushy surface, or during rain-on-snow events.



Avalanche Concern

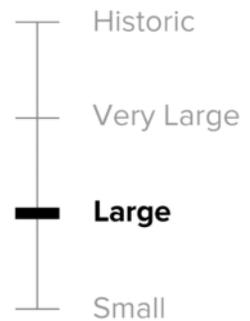
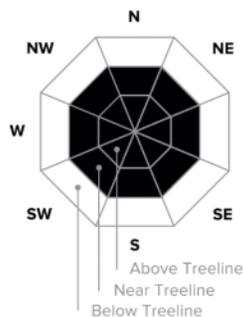
Aspect/Elevation

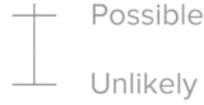
Likelihood

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 Concern

Aspect/Elevation

Likelihood

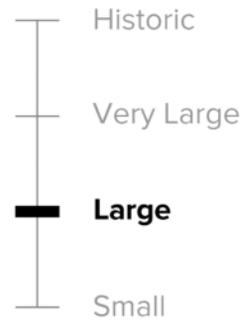
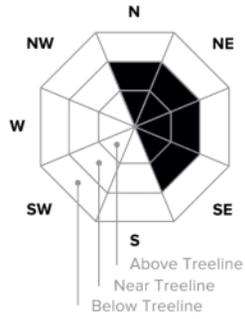
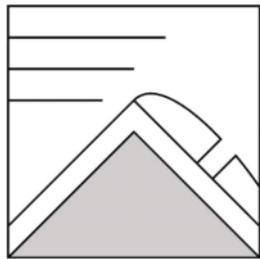
Size

11/14/2014

Northwest Avalanche Center — Avalanche Region Forecast

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 Concern

Aspect/Elevation

Likelihood

Size

11/14/2014

Northwest Avalanche Center — Avalanche Region Forecast

Snowpack Analysis:

It might be late April but Mother Nature isn't watching the calendar and more weather systems are moving across the Northwest this week.

Recent reports are few and far between. Yesterday the Chinook Pass DOT crew reported large natural and triggered wet loose avalanches on solar aspects. Wednesday morning Mt Hood Meadows ski patrol reported widespread triggered 6-10 inch storm slab avalanches. This afternoon the Mt Hood Meadows ski patrol reports widespread natural and triggered wet loose avalanches in their closed Heather Canyon area.

Detailed Forecast for Thursday:

A warm front will move across the Northwest on Wednesday night followed by the cold front Thursday morning. This will cause southwest winds and further moderate to heavy rain and snow especially from Mt Rainier to Mt Hood. Snow levels should rise to the 4000 foot, 5000 foot and 6000 foot range in the north, central and south Cascades respectively on Wednesday night. Snowfall in the ATL and NTL zones for the 48 hours ending Thursday morning should be in the .5-1 foot range from Mt Baker to Snoqualmie and in the 2-3 foot range from Mt Rainier to Mt Hood. Less snowfall is likely east of the crest.

Southwest winds and moderate to heavy showers should be seen following the front on Thursday morning. Further southwest winds and generally moderate showers should be seen Thursday afternoon. Snow levels should lower a bit to about 4000 feet in the north and 5000 feet in the south following the cold front.

New snow will be very susceptible to strong spring solar effects and strong daytime warming! New or further building storm and wind slab will also be seen. These avalanche concerns will be especially where snowfall is expected to be heaviest from Mt Rainier to Mt Hood.

Further banding storm and wind slab will also be seen. These avalanche concerns will be especially where snowfall is expected to be heaviest from Mt Rainier to Mt Hood.

The avalanche concerns will be listed as very likely from Mt Rainier to Mt Hood, likely at Hurricane and from Mt Baker to Snoqualmie, and possible east of the crest.