

## **Morse Creek Drainage Avalanche Accident – March 7, 2004**

- ❖ **Date**: Avalanche occurred around 1:30pm, Sunday March 7, 2004.
- ❖ **Location**: In the Morse Creek drainage, just south of Three Way Peak, just beyond the South boundary of Crystal Mountain (WA) ski area.
- ❖ **Who**: 2 skiers partially buried; one dug self out, then dug out the other
- ❖ **State**: WA
- ❖ **Activity**: Back Country Skiing

Thanks to Crystal Mountain for providing this incident report. Data compiled by Corey Meador, Crystal Mountain Ski Patrol. Details provided by Paul Baugher, Ski Patrol Director; Chet Mowbray, Snow Safety Director; Mason Stafford, Assistant Snow Safety Director; Ed Delmolino, Ski Patroller.

### **Accident Synopsis and Decision Making**

Ed Delmolino, a first-year ski patroller with 11 years of backcountry experience in the Colorado Rockies, and his wife Pilar, were skiing at Crystal Mountain on a day off, March 7, 2004. Ed had been off work and away from the mountain the two previous days, but had spoken with other patrollers and had checked the Northwest Weather & Avalanche Center's forecasts and telemetry data. Though skiing on backcountry equipment and carrying shovels, probes and transceivers, they planned to limit their skiing to in-bounds areas. Ed remembered the hazard rating as being Moderate to Considerable as it had been the day before, Saturday, March 6, 2004. Actually though, for Sunday March 7 the NWAC's forecast rating was High. Saturday's forecast also included a special note recommending that people avoid backcountry travel on Sunday, though that note was not included in Sunday's forecast and that information was folded into the "Snowpack Analysis" paragraph.

About 10:30 a.m. Ed & Pilar observed the sun starting to warm a west-facing slope from an area informally called Boxcar Cornice on the boundary of the ski area's avalanche-controlled South Country, down toward Crystal Lakes in Mount Rainier National Park. Ed was familiar with skinning and skiing in that area and decided to ski the "perfect" SW-facing softening snow to the lakes. After lingering for about half an hour at Crystal Lakes, they skinned up to the middle of three small passes in the South ridge behind Three Way Peak. The "bulletproof" hardness of the SW-facing snow surface relieved Ed's concern about radiation on the snow pack though he remained wary since they were now in terrain with which he was unfamiliar, fog had moved in reducing visibility, and they had left behind touring supplies like map and compass. As they ascended the ridge toward the summit of Three Way Peak, they could see that they could continue in a counter-clockwise direction traversing under Three Way Peak, though in the fog, they thought they would be on a Northeast facing aspect, not South facing, as was actually the case. Ed recognized an increasing degree of danger as they traversed across the steeper, warmer snow pack with pinwheels forming, so they stopped to put on climbing skins to ascend to a higher elevation.

Pilar, who had not had any formal avalanche hazard recognition training, was traveling well in front of Ed. Ed, feeling increasingly wary of the snow pack, stopped to dig a snow pit by hand

and found the snow fairly saturated down to a crust layer about six inches below the surface. He realized both that it might not be safe to continue on, and that it also might not be safe to return the way they came. At that point, Pilar had gotten about 100 feet ahead of Ed, so he yelled for her to stop. He then rushed toward her to convey his concern. When Ed reached Pilar he dug another snow pit by hand, so anxious to show her the dynamics of the snow pack at work that he ignored that they were standing 5 feet apart from each other below a convexity on a steep ( $\approx 38^\circ$ ) slope loaded with unstable snow. This time he did not reach a crust six inches down, so continued to dig, finding a crust layer 12" – 14" below the surface. At approximately 1:30pm, just as Ed felt consumed by a sense of "let's get the hell out of here", they heard a loud crack that sounded similar to ice cracking on a lake. A fracture formed at what seemed like 10 feet--but was later measured at 20 – 30 feet--above them. As the snow they were on started to move, Pilar verbalized alarm and appeared to freeze with fear. Since they were only about 5 feet away from the flank of the slide, Ed pushed Pilar forward and encouraged her to ski forward to safety as he, too tried to push off to ski forward. However, their climbing skins prevented them from gliding and Ed's "push" caused Pilar to fall over. The avalanching snow they were in ran slow for about 10 seconds while Ed shouted at Pilar to keep her head and feet up, to kick and swim toward safety and to watch out for the trees they were quickly approaching. Ed tumbled in the snow coming to the surface a couple times before hitting the trees that broke his left ski (presumably slowing his descent) and caused a contusion to his left elbow, arm & shoulder.

Ed came to rest lying on his back, buried just under the surface and was able to dig himself out. Pilar was buried head-first to the middle of her torso, lying on her left side about 20 feet above Ed, not moving or responding as he ran toward her yelling her name. Ed grasped around Pilar's torso and pulled her out of the light, easy-to-move snow. She was unresponsive at first, but then gasped to consciousness as he opened her airway. Ed did a quick medical assessment noting Pilar's pallor, gurgling respiratory distress and disorientation. He sat her upright and her look quickly changed from "traumatized" to "relaxed" as she regained orientation. They discussed his going for help and he left her with his pack and extra clothes as he set off skinning roughly North toward the ridge and the ski area. On the way, he crossed another natural slide of roughly the same size and aspect.

Ed reached the developed part of the ski area and the patrol station at the top of the Quicksilver chair at approximately 2:00 p.m. Crystal Mountain Ski Patrol responded, with about 30 patrollers directly involved at the scene or in relaying communication over the ridge. Crystal's Grooming, Lift Maintenance and Electrical departments provided snow cat and snowmobile assistance. The location made extrication problematic, compounded by the malfunction of a responding M.A.S.T. helicopter. Pilar was finally delivered to the Ski Patrol first aid room at 7:39 p.m. and transported by helicopter to Harborview Medical Center in Seattle.

Ed's injuries did not require any medical care. Pilar had six broken ribs on the left side, a hemopneumothorax, a fracture to the C-2 cervical vertebrae and a liver laceration.

In retrospect, Ed Delmolino commented that there is so much to observe when backcountry touring, even for those with experience. Feedback comes so quickly when traveling three different directional aspects and three widely varying snow conditions all within a short period of

time, combined with optimism about the blue-sky conditions--it quickly become "too late" to correct mistakes.

### **Avalanche Characteristics**

*American classification: WS-AS-3-O: wet slab, artificial skier release, size 3, old bed surface.*

*Bed Surface: Melt-freeze crust--"pencil" hardness.*

*Weak Layer: Surface hoar/NSF (near-surface faceting)*

*Slab: Wet, soft slab—"fist" hardness.*

The south-facing slope averaged approximately 38°. The fracture averaged 12" deep and was 14" deep at the center line of the slide path. Both flanks were slightly higher ground. Straight across from flank to flank measured about 50', or about 75' following its upward arcing contour. The path narrowed somewhat as it descended. The bed surface was about 520' top to bottom with the steeper breakover and tree band about in the middle. The debris was about 160' from the top of the deposition to the toe and averaged 100' across. Pilar was buried near the middle of the debris. The vertical fall from the fracture to where Pilar came to rest was 350'. Ed and Pilar's slightly ascending ski track cut across the upper 1/3 of the bed surface.

### **Weather & Snowpack Summary for Sunday March 7, 2004**

March 1<sup>st</sup> and 2<sup>nd</sup> brought very light showers and broken skies with moderate temperatures in the mid-twenties creating a thin sun crust on SE to SW aspects. With the combination of light winds, wide spread near-surface faceting and surface hoar developed on most slopes.

March 3<sup>rd</sup> through 6<sup>th</sup> Crystal Mountain's Green Valley weather plot received 21" (3.39" water equivalent) and 19" (1.39" water equivalent) at the base weather plot. Temperatures averaged mid to upper 20's. Wind speed and direction for the three day period averaged W-NW mid teens to mid 20's. March 7<sup>th</sup> brought blue skies with a peak high of 41 degrees at 7,000' and light winds.

Avalanche Control in the "North Country" on 3/4/2004 produced minimal results on the ridges and multiple class 2's on SE-SW exposures running on NSF/surface hoar between 6,500' and 5,500' average 6" – 8". South Country was closed through the storm cycle and opened March 6<sup>th</sup>. Control work produced minimal results with large cornices and some settlement.

### **Snowpack Analysis--From Monday March 8, 2004; NWAC Zone Avalanche Forecast**

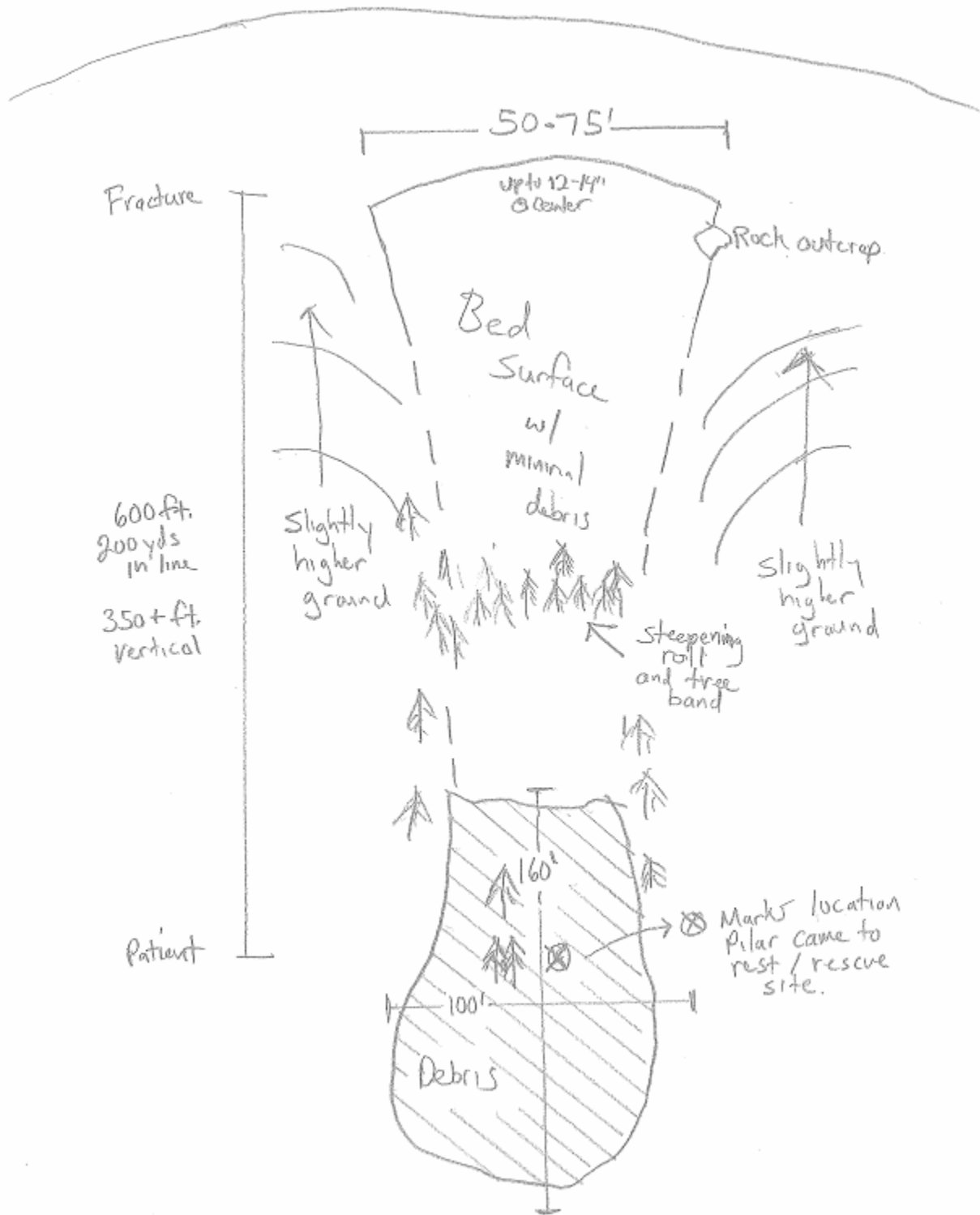
From 1 to 3 feet of new snow that has recently accumulated over a melt freeze crust from early last week is being loaded and weakened by rising freezing levels and increasing light rain or snow overnight and early Sunday, especially in the north-central Washington Cascades and Olympics where heaviest precipitation has been received. Along with several buried weak layers of surface hoar, graupel or lower density and/or faceted snow above the weak crust, this weather and snow pack structure are resulting in generally increasing avalanche danger in most areas. While only very limited avalanche activity was reported on Saturday, recent warming and rain has begun to load and weaken surface snow layers and natural and human triggered wind slabs should be probable on steeper lee terrain early Sunday. This danger should be greatest on

northeast through southeast exposures where most wind transported snow has been deposited, with some large or unusual deposits probable relatively low in starting zones due to very high winds late last week. Also due to the high winds, some wind exposed terrain may have been scoured down to an old crust and be quite stable; yet large unstable wind rolls or unstable cornices may exist nearby on or beneath adjacent ridges. Hence, travelers should expect a wide variability of danger within relatively short distances. However, in general, with current and expected rain and additional warming expected to further increase the danger Sunday morning, back country travel is not recommended in avalanche terrain on Sunday, especially near or on steeper snow covered terrain receiving rain.

[Data compiled by Corey Meador, Crystal Mountain Ski Patrol. Details provided by Paul Baugher, Ski Patrol Director; Chet Mowbray, Snow Safety Director; Mason Stafford, Assistant Snow Safety Director; Ed Delmolino, Ski Patroller.]



**Incident Diagram**



Looking from South toward natural avalanche about 75' looker's right of accident site, approximately same size, aspect, and time of occurrence.



From air, looking down on the accident site. Trees cut-off at top of photo are trees through which Pilar and Ed got strained. Rescue site is the small cluster looker's right of 2 big trees in center of debris.

