

November 24, 1997

One hiker buried and killed

**WEATHER AND SNOWPACK CONDITIONS**

During a cold October in the Chugach Mountains of southern Alaska, the shallow snowpack became faceted. November brought relatively warm temperatures to the area. On the day prior to the avalanche, about six to eight inches of snow fell—the first snowfall in several weeks. The storm started warm and ended cold. Gusty winds during the last few hours of the storm formed shallow drifts in leeward pockets of terrain.

**ACCIDENT SUMMARY**

On the afternoon of November 24, Angela Paez (34) and Bill English (mid-40s) decided to go skiing in the Crow Creek area north of Girdwood. The snow conditions were not ideal for skiing, so they decided to hike instead. The route to Crow Pass follows an old mining road for the first two miles. At the end of the mining road, the trail ascends a series of switchbacks up a steep scree slope. Drifted snow typically covers the switchbacks by the end of September. Ascending the slope “requires skilled evaluation, careful route selection, and luck” because of a combination of factors: the slope angle is in the mid to high 30s, the ground cover is smooth scree that provides few anchors for the snowpack, and a gorge at the base of the slope acts as a terrain trap.

Paez and English discussed their route options when they reached the switchbacks.

One option was to follow a windblown scree rib vertically to the high route, then traverse across along the base of the cliffs above. Another option was to try to follow the existing trail zigzagging back and forth across the slope, but because the trail was buried, this made little sense. The third option was to traverse the scree slope (approximately 600 feet horizontally) with the intent of gaining a wind-blown rocky rib that ran vertically along the north side (left side looking upslope). They felt that this last route would give them the least exposure and would be the most direct, but to gain this route they had to first climb upslope about 300 linear feet (to be parallel with the beginning of the rocky rib).

The snowpack along the traverse was “generally less than 12 inches deep with numerous rocks exposed.” Walking was easy. English hiked first and reached the rocky rib at 14:35 p.m. He turned around to watch Paez following in his track. She was about

50 feet behind him when the slope around her started to move. The avalanche broke about 50-75 feet above her and extended about 10-15 feet in front of her.

The avalanche immediately knocked Paez down. Initially, the avalanche was “shallow and slow-moving, but quickly accelerated and gained in volume and size as it descended.” Paez was in a sitting position, and “made no attempt to fight, jump, or roll to the side.”

English watched as the avalanche carried Paez downslope. She disappeared beneath the debris just before it spilled over the edge of the gorge. English ran downslope, following Paez’s trajectory, and jumped the last 20 vertical feet into the gorge to reach the debris.

**RESCUE SUMMARY**

The avalanche debris made a cone about 25 feet around and six to 12 feet deep. English immediately found one of Paez’s ski poles and placed it vertically in the snow to mark its location. With his shovel, English carefully dug a series of three trenches, one row above the other, horizontally across the debris. Each trench was about three feet deep. He periodically stopped and yelled into the snow. Twice, he thought he heard a faint, muffled yell in response, but he was unable to pinpoint the source, either by listening or by digging. He did not probe below or next to his trenches because he did not have a probe. Around 15:45, after about 70 minutes of systematic searching, English decided he needed help.

Getting out of the gorge was not easy, but with skillful climbing, English was able to climb the cliff. He reached his truck by 16:45 and drove to the nearest residence, approximately seven minutes away. There, he called 911. Alaska State Troopers alerted a host of other agencies: Alyeska Ski Resort, the Girdwood Volunteer Fire Dept., the Alaska Mountain Rescue Group, Dogs Organized for Ground Search, the Nordic Ski Patrol, the U.S. Forest Service, Alaska State Parks, the 210th Air National Guard, and the Rescue Coordination Center at Elemendorf Air Force Base.

Organized rescuers quickly converged on two staging areas by 18:30. Because of the dual staging areas, there was some confusion during the early hours of organization. Initial attempts to reach the avalanche site by snowmobile were unsuccessful due to deteriorating weather, poor visibility, drifting snow, and the concern of additional avalanches. Two attempts at reaching the site in an Air National Guard Pavehawk helicopter also proved unsuccessful due to 25 to 30 mph northerly headwinds and poor visibility from blowing snow. Rather than risk the lives of rescuers, the decision was made to resume the rescue effort in the morning, contingent upon better weather and visibility.

At first light, a team of avalanche specialists mitigated the slopes adjacent to the accident site from an A-Star helicopter. They triggered several small avalanches. A team of 13 rescuers and two avalanche dogs flew to the site. A dog alerted on Paez within four minutes of reaching the site. It took rescuers about 15 minutes to excavate her. She had no vital signs. Rescuers found Paez in a sitting position, her head under 30 inches of debris. There was no evidence of an air space or ice mask.

**AVALANCHE SUMMARY**

Due to strong winds and drifting snow the night after the accident, no fracture line was visible the day the rescuers found Paez. However, an examination of the bed surface and adjacent slopes, which had not slid, provided important information about

the avalanche. The cool temperatures a month prior created a weak layer about two inches thick on top of the scree. The facets had a hand-hardness of Fist. Subsequent warm temperatures and slight accumulations of new snow settled the upper snowpack, creating a poorly bonded shallow crust layer about two inches thick and pencil hard immediately above the facets. The crust layer did not exist everywhere, but most likely did exist to the lee of the rocky ridge where the depth was slightly greater. The snow that began November 23 bonded well to the crust because temperatures were warm when the snowfall started. Moderate winds near the end of the storm drifted low-density snow onto the slope.

The slope angles varied across the slope. The lowest was 32 degrees (measured) where Paez was standing when the avalanche broke. The highest was 41 degrees (estimated) along the upper 15 to 20 feet of the starting zone, roughly 50 feet above her position. The scree slope was uniformly smooth and provided poor anchoring.

The rocky rib on which English was standing ran vertically upslope. The rib acted as a snow fence, allowing cross-slope winds to drift snow onto the slope the pair crossed.

#### COMMENTS

The two hikers observed no signs of instability along their route. They did not see significant wind drifting, either.

This may have been due to the fact that they a) had been following a well beaten trail and b) had just reached a point in elevation where the wind action was more prevalent. In other words, within a few steps they went from an area of no wind slab to a small pocket of wind slab.

This accident is a good example of how a little avalanche ending in a terrain trap can have deadly consequences. If the same avalanche had occurred on a slope shaped like an alluvial fan, Angela most likely would have been caught in snow that was less than knee deep, and probably could have easily stood up and walked away. [Because the debris piled up deeply in the gully] this accident is a classic example of how a small, isolated area of instability posed a disproportionately high hazard because of the unforgiving nature of the terrain.

Neither Bill or Angela can be described as having a high-risk taking attitude or as being ego-involved with the route, but time was a factor in their route selection decisions as sunset was less than a couple of hours away.

Angela was an experienced climber, but her avalanche training was unknown. Bill had no formal avalanche education, but had attended awareness talks over the years and had read avalanche articles on his own. Bill said that the threat of avalanches never occurred to them. The sun was shining, the trail conditions were good, and the scenery was spectacular. In that sense, they may have been lulled into thinking that everything was all right and lowered their guard. Both missed the subtle changes in the snow conditions as they reached the steeper scree slope, but this would be easy for an inexperienced avalanche person to do. They carried a pair of ski poles, which could be used as probes, and a shovel, but Bill never had any formal avalanche rescue training. He showed great courage in leaping into the gorge and carrying out a systematic search by trenching a series of ditches. Had he used the ski pole as a probe, he may have found Angela sooner, but it is unlikely this would have changed the outcome.