

## SHUKSAN ARM AVALANCE ACCIDENT, 2/14/1999

**Date & Time**—2-14-1999, ~1220 PM PST

**Location**—Rumble Gully below Shuksan Arm in the Mt Baker Wilderness, just east of the eastern boundary of the Mt Baker Ski Area

**Weather**—Mostly sunny, temperature about 26 degrees F at 0800, 31 deg F at 1300 PST, light winds

**Number in party**—2; 1 skier caught, completely buried and killed; 1 snowboarder caught, completely buried and killed. The snowboarder was found by coarse probe approximately 80 minutes after the slide, buried vertically, head up, about 9 feet deep. The skier's body was not recovered until it melted out substantially later, either the summer of 1999 or the following summer

**Type of Activity**—ski and snowboard

**Type and Size of slide**—N-HS-R5-D4, releasing from just beneath a large cornice (which may have triggered the slide)

**Other slide parameters:** N-NE aspect; estimated slope angle = 40+ deg; slab about 12-15 ft deep (4-5m) X 150 yards (~140m)wide; ~5300 ft starting elevation; vertical fall ~1,500+ ft; multiple victims caught by slide in lower part of Rumble Gully well below starting point of slide

**Format Note: The following report follows the format for avalanche accident reporting in *The Snowy Torrents, 1980-86*.**

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Date Prepared: March 31, 1999

### A. General Information

1. Date: February 14, 1999

2. Time: 12:19

3. Exact Location:

Backcountry wilderness area outside the ski area boundaries of Mt. Baker Ski Area, at the top of Rumble Gully on Shuksan Arm.

4. 2 persons caught; 0 partly buried; 2 buried; 0 injured; 2 killed

5. Victim(s):

Name Age Address

(1) Justin Parker 19 Tacoma, Washington

(2) Shawn Riches 25 London, Ontario

Condition / Injuries Experience Level Avalanche Training

(1) Killed Intermediate none

(2) Missing/presumed dead Expert none

6. Witnesses:

At least 20 people witnessed Parker's burial including his father. Riches' friend Kent was the only one to witness his burial.

7. No damage occurred to buildings or lifts.

A. **Accident Summary**

Over 20 feet of snow fell at Mt. Baker in 14 days from January 28<sup>th</sup> 1999 to Thursday, February 11<sup>th</sup>. On Saturday February 13<sup>th</sup>, people had begun to ride and ski the Shuksan Arm backcountry and the Rumble Gully area for the first time in over two weeks; however this access was on a relatively limited basis as visibility was still somewhat marginal. Three inches of new snow fell Saturday night, the 13<sup>th</sup>; however Sunday morning the 14<sup>th</sup> dawned clear, sunny and 23 degrees. As a result, more people left the ski area boundaries past the wilderness warning signs and through the boundary rope lines located near the top of Chair 8. Several groups also began to hike above the top of the lift to access the ridgeline that lies about 500 feet vertical above the top lift station and extends both east and west above the area. From this ridge significant areas of untracked terrain lie in a variety of north facing bowls, most of which lie within the Mt Baker Wilderness that extends along Shuksan Arm toward Mt Shuksan. As backcountry travelers traverse into Rumble Gully through the boundary rope lines, patrollers frequently point out how dangerous the traverse line into Rumble Gully from the top of Chair 8 is. This route traverses at least 8 different avalanche paths across the bottom third of the slopes, with a terrain trap below and with people hiking the ridge line above the traverse.

At 12:19 a 12-15 foot deep slab released from a lee side, north-northeast facing, convex slope approximately 100 feet from the top of the ridge. Either releasing naturally or from a nearby cornice collapse at the upper right of the fracture line at about the 5300 ft (1615 m) level, the massive slide traveled approximately 3-4,000 feet slope distance down the gully leaving debris piles 6-30 feet deep along the entire length of the gully. At least 20 people witnessed 19 year old snowboarder Justin Parker turn down hill from the traverse line and try to out run the slide. Before Parker started on the traverse, it was unconfirmed but reported that he had turned to his father who was boarding with him and said, "If I don't make it tell Mom I love her." That day was Parker's father's birthday.

Approximately 2,000 feet further down the gully, almost into the lower angle runout zone of Rumble Gully, Shawn Riches and his friend Kent were skiing when the avalanche released. Either hearing or observing the slide, both skiers attempted to avoid the onrushing wall of snow. Riches turned left when he heard the slide coming and his friend turned right. Riches was caught in the slide and his friend was not.

## B. Search

Several volunteer patrollers at the top of Chair 8 heard a sharp crack, turned to watch the slide and saw it bury Parker. They immediately reported the burial and did an amazing job of keeping everyone but Parker's father out of the scene until a snow control team member could arrive and assess the risk of further slides in the area.

Three patrollers performed a scuff search and transceiver search of the upper basin. The upper basin had one confirmed burial with the possibility of two others missing. Two patrollers then went to scuff and transceiver search the lower gully approximately 2,000 feet below and came across several people looking for buried skiers. Neither Parker nor Riches were wearing transceivers.

Parker's father had witnessed the burial of his son and stayed on scene to assist with recovery efforts. Over 120 customers, instructors and patrollers volunteered to help probe and shovel. About 60 people were devoted to each burial scene.

Parker was probed by the end person on the line, during the first pass of a coarse probe. He was almost vertically oriented, head up, buried 9 feet deep. His head was uncovered 1 hour and 10 minutes after the slide. Parker was found about 214 feet from the point last seen. He was not breathing and had no pulse. Rescue breathing could not be initiated until he was extricated from the hole. Once extricated, Parker was intubated and CPR began. He was transported to the aid room where efforts to revive him were stopped at 14:25. No other people were reported missing in the upper basin. Searchers cleared the upper area after Parker was extricated.

Probing in the lower gully for Riches was very frustrating for searchers due to the quantity of trees in the debris. Many strikes were dug down only to reveal 3-6 inch diameter sections of broken trees. One of Riches' skis had been thrown 52 feet up out of the gully and stuck into the snow on the hillside like a javelin. His ski was approximately 100 yards from his point last seen. Riches' hat was found 100 yards down gully from his ski and his glasses were found 100 yards down gully from his hat. All clues were in a consistent line of travel.

All searchers were pulled out of the lower search area around 15:00 as the temperature continued to rise and the threat of more natural releases existed. Two avalanche dogs from Whistler were flown in and arrived by 15:30. The dogs, patrollers and members of the Bellingham Mountain Rescue re-entered the area to support the dog search. The dogs searched the area for about an hour and a half without any good indications. All searchers left the scene by 17:30.

The search for Shawn Riches has been postponed until summer. It was determined that the search area could not be effectively controlled to protect rescuers in the ensuing days following the avalanche. Given the force of the slide and the quantity of trees in the debris, it is unlikely that Riches survived the initial impact of the slide.

### C. Weather and Snowpack Data

1. Weather: A fourteen day storm cycle that started January 28<sup>th</sup> brought 272 inches of snowfall to the Mt. Baker area prior to the accident. The temperature stayed in the mid 20s (deg F) until February 12<sup>th</sup>. On the 12<sup>th</sup>, it stopped snowing and the temperature rose to reach a maximum of 34 degrees F for two days. At 05:00 on the morning of the 14<sup>th</sup>, the temperature was 23 degrees F. At 08:00 the temperature was 26 degrees and at 13:00 it was 31 degrees F.

2. Snowpack: Most of the beginning of January was clear and cold until a storm cycle started on the 16<sup>th</sup> of January. A solid rain crust had formed up during New Year's. This New Year's crust would prove to be a problematic layer in the Cascade snowpack for the rest of the season and several other large but relatively isolated slides released on the crust. Investigation of other similar size slides occurring within a week or two of the accident indicated that faceted grains existed on top of the New Year's crust. These weaker crystals probably developed as relatively cold snow fell on top of the near freezing crust for much of January. Overall, over 20 feet of snow had fallen in the base area along with significant winds in a short amount of time.

3. Danger Rating: The Northwest Weather and Avalanche Center had rated the danger Considerable above 5,000 feet and Moderate below 5,000 feet for Sunday the 14<sup>th</sup>. The forecast issued on the morning of the 14<sup>th</sup> specifically mentioned northeast through northwest exposure slopes on the northern volcanoes as having larger and more unstable slabs due to heavy recent snowfall and strong winds.

### D. Avalanche Data

(due to continuing avalanche danger following the accident, some of the data presented here has been estimated)

1. Class:HS-N-R5-D4-0
2. Dimensions: about 150 yards across; 4,000 feet of run, ~1,500 vertical fall
3. Crown Face: 12-15 feet for most of the crown; estimated
4. Depth of Debris: 6-30 feet
5. Other: Convex slope, below a corniced leeward ridge.

### A. Terrain Data

1. Crown line elevation:5,300 feet
2. Avalanche Toe elevation: 3,800 feet
3. Starting Zone angle:N/A; estimated: 38-45 degrees
4. Vegetative cover:open
5. Shape of avalanche path:open-gully
6. Slope Aspect:north-northeast

#### A. **Conclusions:**

Several factors probably led to the natural release of this slide. Glide cracks were beginning to form on one side of the crown, evidence that the whole hillside was beginning to move. At least 8 backcountry travelers had skied or snowboarded down the slope before it released. Over 20 feet of snow fell in 14 days prior to the 14<sup>th</sup> with significant wind transport. Finally, very large cornices had developed on the ridgeline above the steep roll, and it is possible that a cornice collapse triggered the event.

In an effort to continue to emphasize the risks and dangers of backcountry skiing and snowboarding, Mt. Baker Ski Area, in cooperation with the United States Forest Service and the Whatcom County Sheriff's Department implemented the following enhanced guidelines for anyone seen leaving or re-entering the ski area boundaries from the backcountry

#### Enhanced Guidelines for Wilderness Access from the Mt Baker Ski Area

Anyone seen leaving the ski area or re-entering must have all of the following or they will lose their ski area privileges:

1. Avalanche transceiver and demonstrated ability to use.
2. A partner
3. Shovel
4. Knowledge of the terrain and planned route
5. Avalanche knowledge (ability to answer basic questions about avalanche formation and backcountry travel)
6. Knowledge of local avalanche conditions including the Northwest Weather and Avalanche Center's stability rating for the day and recent weather.

Dan Hudson, the individual who probed Parker's body reminded us that, "tracks are not to be considered signs of intelligent life."

## **AVALANCHE SITE PHOTOS**

All photos © Mark Moore, 2/15/1999

(Photos taken the day after the accident)

Photo 1. Shuksan Arm and Mt Baker Chair #8 terrain. Photo taken from top of Chair #7, with Shuksan Arm ridgeline extending from upper center of photo toward the left. The avalanche fracture line is just visible near the top of the convex roll in the upper left center of the photo. Much of the shaded terrain lying to the left of the fracture line may slide several times each winter.



Photo 2. Shuksan Arm Knob Avalanche. Photo taken from within the ski area toward Shuksan Arm Ridge and the convex roll where the slide release occurred. Shuksan Arm Chair #8 is in the foreground of the picture, with Rumble Gully just over the ridge beyond the chair. A Possible cornice collapse which may have been involved in the release is along the ridge

to the upper right of the fracture line. Note the many secondary (some relatively large) fracture lines triggered by the main release in the upper center of photo. The Shuksan Arm ridgeline described in the text runs from right to left at top of the photo, with Mt Shuksan off camera to the right. The traverse track that is commonly used by skiers and snowboarders to access terrain within the Mt Baker Wilderness runs diagonally from right to left just below the rock cliff in the middle right of the photo. The old fracture line just below the ridgeline in the upper right rear of the photo was released through control about 3 weeks earlier to protect rescuers when a smaller avalanche caught and killed a snowboarder lower in the gully.



Photo 3. The Shuksan Arm ridgeline from just the ski area boundary just east of the unloading area near the top of Chair #8. Rumble Gully begins just beyond and to the right of the ridgeline in the foreground, and the fracture line of the avalanche is evident near the top of the ridgeline in the upper center of the photo. Note several secondary slides which were triggered by the main release, and once again the jagged cornice area just above the upper right of the crown face and fracture line.



Photo 4. Picture of lower Rumble Gully runout with some of large debris deposit in center foreground. Avalanche deposit filled the gully in foreground with 10-30 feet of snow. Fracture line of avalanche on Shuksan Arm knob is in upper center of photo. Portion of avalanche ran over lightly treed ridgeline directly beneath stauchwall (lower extent of initial slab boundary), released several secondary avalanches, and then continued into lower gully. Larger part of initial slide ran into upper Rumble Gully to right of and below fracture line, filled much of the upper bench and then ran over breakover where it flowed into lower gully.

