

## **A Lifetime Of Learning In The Winter Of 2008**

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### **ABSTRACT**

The winter of 2008 produced a series of persistent weak layers that plagued backcountry skiers from the very beginning of the season. These layers formed a snowpack, which consistently delivered a large number of anomalous avalanches throughout the Columbia and Rocky Mountains.

Some of the greatest learning tools available to avalanche professionals are the stories and pictures passed on by people who have lived through years and conditions similar to those of 2008 in western Canada.

This presentation will be a series of short case studies of significant avalanches that occurred in guiding operations focusing on the February 26<sup>th</sup> surface hoar layer. This persistent weak layer created an unusual set of problems, which broke the rules of terrain and snowpack assessment. In the guiding world, where “the show must go on”, these conditions had to be managed in very unique and creative ways and forced operations to think outside of the box.

**KEYWORDS:** Persistent weak layer, decision-making, variability.

### **1. INTRODUCTION**

The winter of 2008 in the Columbia Mountains was plagued with a series of weak layers, starting with the December 5<sup>th</sup> crust, then the January 26<sup>th</sup> surface hoar and followed by the February 26<sup>th</sup> and March 9<sup>th</sup> surface hoar layers. In some areas, the February 26<sup>th</sup> layer became one of the most persistent and unpredictable layers in the history of mechanized skiing.

### **2. FEBRUARY 26TH LAYER**

Almost exactly one month after the burial of the January 26<sup>th</sup> surface hoar layer, the February 26<sup>th</sup> layer was buried following a few weeks of very stable high pressure. Where it was present, the layer varied in thickness from 5mm to 50mm. The

general spottiness and variability in crystal size contributed greatly to the random and unpredictable nature of its reactivity.

### **3. VARIABILITY**

Some areas experienced relatively rapid loading of the layer then a widespread avalanche cycle followed and it was back to business as usual within a week. Other areas experienced the same rapid loading, a moderate avalanche cycle then a series of random and potentially devastating avalanches that lasted the rest of the operating season.

What followed was a steady stream of reports describing large avalanches in terrain where avalanche activity had never

previously been observed. There were also reports of avalanches where there had been widespread skier compaction on the weak layer or, where successful avalanche control with explosives had already occurred.

#### 4. CASE STUDIES

##### **Dome Glacier, Central Purcells**

Two size 3 skier remote avalanches (17 days apart) on a very low angle glacier run.

##### **Wild Indian, Central Purcells**

Third group to ski low angle, previously skied line, triggered two size 1.5 slabs in tracks of previous groups.

##### **Gator, Central Purcells**

Low snowpack area, had been receiving lots of skier traffic due to lack of load on weak layer. The narrow entrance to the run was skied by 48 skiers on February 26<sup>th</sup>, 200 skiers on March 20<sup>th</sup> then triggered (size 2.5) by the 56<sup>th</sup> skier on March 27<sup>th</sup>.

##### **Sibley, Central Monashees**

One size 2.5 triggered by explosive avalanche control on the morning of March 6<sup>th</sup>. Third group to ski run in PM triggered one size 1.5 skier accidental which triggered one size 2 sympathetic, both of which were on the flanks of the explosive triggered avalanche.

##### **Graceland, Selkirks**

Two skier remote size 2 avalanches triggered from 20m away and one skier remote size 2.5 triggered from 100m away. The Group was on low

angled terrain on a run that had had previous skier traffic and explosive control. Ski tracks are visible in the bed surface of one avalanche.

#### 5. MITIGATION

Once the layer was buried, guides operating in these areas started pulling out all of the usual tools to deal with it. They tried to track the surface hoar by digging profiles, they kept close track of skier compaction and used explosive to control problem slopes.

After several close calls, it became apparent that they were going to have to change their approach. This layer was breaking the rules of slope angle, avalanche activity and skier compaction.

In the end, avoidance was the most effective tool. The guides avoided entire drainages where the surface hoar was present, they avoided avalanche terrain which had not received intense skier traffic throughout the entire season and above all, they avoided falling to the pressures of trying to provide fresh snow for their guests.

#### 6. CONCLUSION

The season of 2008 in the Columbia Mountains reinforced many things we have learnt over the years.

The importance and significance of historical record keeping. Many of these runs will never be looked at the same again. "I have never seen an avalanche there" doesn't hold the same weight it used to for many

guides who worked through the duration of the February 26<sup>th</sup> surface hoar. Having photos accessible for future guides to learn from may help them one day make good decision based on someone else's experiences.

It is also vital to recognize the importance of having the operational freedom and support to step back as far as necessary to maintain a safe program despite external pressures to deliver the worlds best skiing.

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