

BASIC DECISION MAKING IN AVALANCHE TERRAIN

By Stuart Macdonald, November 2012

This article is aimed at skiers and snowboarders intending to go off-piste within ski areas. Rather than trying to impart as much avalanche safety knowledge as possible it instead highlights a few areas of decision making that people often get wrong.....

The best way to avoid being avalanched is simply not to be there in the first place. If you think that a certain slope is potentially dangerous given the current conditions DON'T GO TO THAT SLOPE. I often hear people say "We're just going to take a look", but what are they going to see ? There will often be no obvious signs on the surface. The snow will look white – so what exactly are they going to look at ? Usually the danger is not obvious until you are on the slope and already committed. Best option – don't be on the slope ! It's worth noting that unless you are skiing on touring gear, you are very quickly committed to skiing a slope as retreat is almost impossible.

So when people "go to take a look", *why* are they going there ? The simple answer can only be because they want to ski that slope. So emotion is possibly over-riding sensible decision making. The Swiss Avalanche Institute coined an excellent phrase recently – "Hot and Cold thinking", and I will try and explain this now.

Hot thinking is based on emotion and irrational thought. The fact that you only have a few days of holiday left or that this is a slope you've wanted to ski for a long time – both are irrelevant and should never sway your judgement. Likewise the fact that other people are going there does not necessarily mean it's safe – the herd mentality has caused many accidents. Peer pressure is another common reason for judgement being skewed.

Cold thinking on the other hand is based purely on facts: Temperature, recent snowfall, slope angle, avalanche forecast etc.

In avalanche terrain we should only work on Cold Thinking – clear, logical, and factual.

So what facts should you be examining *before skiing* to minimise the risk of avalanche ? The following is not a definitive list, but I have tried to include the most important factors:

- Recent avalanche forecasts. Read the current avalanche forecast, but also try and look at the forecast for the past few days to build a mental picture of what has been happening in the snow-pack. Is it becoming more or less stable ? Are any weaknesses identified within the reports ? Take note of the specific hazards mentioned in the most recent report, most importantly which slope aspects and altitudes are at greatest risk. We will talk more about these later.
- Recent weather patterns including temperature, snowfall, and wind. Again, don't just look at the forecast for the day you will be on the mountain. Try and see the forecast for the previous few days. Has there been significant snowfall ? Has there been any wind ? If so, what was the wind direction ? What were the temperature fluctuations ? This information, combined with the avalanche bulletin should by now be giving you a fairly clear indication of which slopes to avoid. Now, remember the Cold Thinking theory we discussed earlier ? If

you've decided from your research that North facing slopes are currently high risk, then make a plan to simply avoid those slopes altogether. The best way to avoid being avalanched is simply not to be on the slope in the first place.

Great, so we've made our plan for the day's activities, trying to minimise the danger. But that is just the beginning. Decision making in avalanche terrain is a dynamic process – it evolves constantly throughout the day. Despite deciding that certain slopes are probably safe, you have to be prepared to change your itinerary if you see warning signs during the day. So what should we be looking out for ?

- Slope aspect is absolutely critical. You need to know what aspect you are on at all times during the day. There is no point in knowing that East facing slopes are at high risk on that day if you don't know where East is ! Have a look at a map, and consider carrying a compass.
- Slope angle. Avalanches most often occur between 30 and 45 degrees. If you avoid those slopes at times of high risk, you stand a much better chance of not being caught. Remember that it is not just the slope you are on – the slope above you is just as important. You could be on a gentle slope, but if the steeper slope above you releases (whether naturally or triggered by another party) you may find yourself in the path of an avalanche.
- Windslab. Slab is often easy to detect without even digging. Increased resistance to a ski pole, or cracks appearing on a slope are both good indicators. Slab is most commonly formed by fresh snow arriving in windy conditions.
- Shape of slope. As a general rule convex slopes are at greater risk than concave. Convexities cause tension within the snowpack, sometimes leading to avalanche. Even on a slope that seems safe you should try and pick a route that avoids convexities wherever possible.
- Signs of activity. Recent debris is a classic sign that things are not stable.
- Signs of localised wind-loading, notably near the crests of ridges and near cols.
- Temperature. Increasing temperatures usually increase risk. But remember that even on a cool day there will be a big difference between the temperature at 3000m on a Northerly slope and 1500m on a Southerly slope. I hope you're now grasping how important slope aspect is.
- Terrain traps. Cliffs, natural funnels, and woodland are just a few of the terrain traps you may encounter in the mountains. If the risk is high, stay well away. Being caught in a terrain trap could easily be fatal.
- Signs of high-risk areas. Areas that are prone to avalanche risk will often have man-made structures for avalanche control. Metal barriers, GasEx and CatEx (explosive avalanche control systems) should act as clear indicators that you are in a high risk area. Likewise, a lack of trees or vegetation in an otherwise green area could be as a result of previous avalanches. Only venture onto these slopes on low-risk days.

- If unsure – have a dig. A hasty snow-pit, or even a shovel compression test, will tell you a lot about the snowpack. Remember that pit results are very localised, and should not be taken as an indication of conditions on the whole slope. Also remember that if you've stopped skiing to dig a pit, it is because you are concerned about the conditions. Regardless of your findings, proceed with caution.
- Worth noting that in avalanche terrain you will only see negative signs of safety. In other words, you might see lots of signs that things are dangerous, but you cannot see signs that things are safe. You can only see a lack of danger signs. Just because a group have skied a slope and it has not released does not mean it is safe – it might just mean that they were lucky !

As a final thought, remember that if there is doubt – there is no doubt. If you're not happy with a slope, make the decision to ski elsewhere and stick to it. Don't be swayed by Hot Thinking into justifying why it might be safe.

Bonne ski.....