

THE ART OF SKIING UNDISCIPLINED DURING LEVEL 2 CONDITIONS

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ABSTRACT: Level 2 conditions represent a large portion of avalanche accidents within ski touring. Have we missed something in our avalanche education? Most experienced people seem to be clever during level 3 conditions, being careful, skiing disciplined, spacing out, developing good habits - avoiding the hazard.

What if we are not searching the right places and in the right way for level 2 issues when touring? As a result, we might descend with too much confidence, with no signs of instability to restrain us. Perhaps it can be interesting looking into measures beyond test slopes, ski cutting and pits, revealing level 2 conditions even better.

Avalanche accidents including experienced skiers, seem to be common during level 2 conditions. In many cases, we conclude that they should have known better or missed obvious signs. Perhaps being skilled and too disciplined during level 2 conditions, is one of several explanations to many incidents?

KEYWORDS: Avalanche education, avalanche problems, level 2, ski touring accidents, new tests

1. INTRODUCTION

This paper will focus on possibly underestimated challenges given by level 2 conditions and the necessity of searching differently for the avalanche problems in outlined specific terrain combined with snow quality, triggering methods and group management. This might even give us a better understanding of some of the level 2 avalanche accidents involving experienced skiers. Further work might make a possible influence on future educational programs.

2. PREVIOUS WORK

It is difficult to find this perspective outlined in international and national avalanche literature. This work is based on my own observations and discussions with other professionals of the field, and not systematic research.

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The purpose of presenting this at the ISSW 2014 is to share the somewhat twisted idea of “undisciplined skiing” in avalanche terrain with other professionals, discuss its relevance and perhaps more systematic research.

3. LEVEL 2 AND 3 – EASIER VERSION

The avalanche danger scale and some of its selected characteristics are described in table 1. Despite differences, Greene et al. (2006) points out that the North American and the European avalanche danger scales are similar. Both relying heavily on how easy it will be to trigger an avalanche. Additional load is a key issue in my work.

The Norwegian Avalanche Forecasting (NVE 2013) and the newer North American version (Table 1.) has adjusted to the avalanche problem approach (identifying features of concern).

Identifying and understanding the most relevant avalanche problems has been the basis for my fieldwork the last 15 years, aiming for a deeper understanding of where they are relevant, why and how to hunt them down safely.

Tbl 1: Avalanche Danger Scale

European Danger Scale with recommendations (SLF 2014)

Level 3: **Triggering** is possible, even from low additional loads** particularly on those steep slopes indicated in the bulletin. In some cases medium-sized, in isolated cases large-sized natural avalanches are possible

Level 2: Triggering is possible primarily from high additional loads**, particularly on those steep slopes indicated in the bulletin. Large-sized natural avalanches are unlikely

** Additional load:

- high (e.g. group of skiers without spacing, snowmobile/groomer, avalanche blasting)
- low (e.g. single skier, snowboarder, snowshoe hiker)

North American Public Avalanche Danger Scale (Avalanche.org)

Level 3: ... Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.

Level 2: Heightened avalanche conditions on **specific terrain features**. Evaluate snow and terrain carefully; identify features of concern.

Working with new students every winter implies communicating this easier than the official version. The following short version is one I made as a daily reminder and points out the essence of our issue:

Level 3 Considerable: the avalanche problems often find you

Level 2 Moderate – you should search for the avalanche problems ... before they surprise you

4. MORE FOCUS ON LEVEL 2 ACCIDENTS?

During level 3 Considerable the warnings from nature often adjust your awareness and decision making. Level 2 lacks the frequent natural warning signs, luring people into steeper slopes and searching untracked terrain. Level 2 conditions represent a large portion (47 %) of avalanche accidents within ski touring (Techel & Zweifel 2013). This is especially challenging when the danger level is lowered from 3 to 2 with a persistent weak layer waiting for the right trigger.

This is, possibly, ever more of an issue for the experienced skier. The fact that so many end up in level 2 avalanche incidents, is pointed out by Stephan Harvey (2002) leaving us with many questions unanswered. Does their experience lead them to take greater risks unknowingly, since they seem to miss out on vital information on the way up or down? The traditional approach is to be careful – skiing disciplined - spacing out – developing good habits avoiding the hazard. Perhaps we should search more determinedly for trigger factors and avalanche problems in different areas, new ways and using group size as a benefit searching for instability.

5. SEARCHING TRIGGER FACTORS: IMPLICATIONS WHEN SKIING

5.1 Safe spots or the opposite?

Longer periods of moderate avalanche danger can be crucial for our interpretation and the further development of persistent and new weak layers. During level 3 we tend to use ridges as safe areas, minimizing the exposure to avalanche terrain. Level 2 will normally give signs of instability if enough stress on thinner sections. Observing group behavior in Norway and Switzerland during level 2 conditions, resulted often in too many people on level 3 safe spots. If an avalanche releases it's natural to think that it was released by the skier crossing the avalanche path. What if the trigger was a too heavy load of numerous skiers on misunderstood safe spots? Perhaps they should have continued spaced out, and gathering first when arriving the denser snow cover. Or even better, checked out the quality of the thinner snow pack similar to the safely stops, before entering the exposed terrain.

What does this imply? We might need to approach avalanche terrain more dynamically in our search for avalanche problems. Seeking as much information as possible on the way up, identifying the thinner and denser snowpack qualities on relevant exposures. The larger and more focused your group is on level 2 snow/terrain characteristics, the more information and testing can be done without making time consuming stability tests/pits.

5.2 Trigger tests – group management

Not spacing out – or conscious “undisciplined” group management – is a much more efficient and fluent way of getting information from the snowpack compared to traditional conservative route finding. For this to work beneficially, you have to know where and how to lead the group in a critical manner, interpreting the relevance of the continuous information flow hunting for avalanche problems.

Depending on group size, you can easily check out the effect 1 skier, 2 skiers, or even of the whole group on a properly identified area. If no info is revealed spaced out, you can take it to the next level gathering more of the group testing more of the recognized “specific terrain features”. This manner of using the group consciously on the way up, is time saving in comparison to traditional pits and stability tests. You might get information that you would otherwise miss. During my observations of experienced groups, they are surprisingly reluctant in leaving tracks or described ski routes to search additional information. Getting them to jump, as described later, is often a challenge.

5.3 Test jumps

Example from the Lyngen Alps 2011. Northern Norway had encountered several fatal avalanches because of a dry and cold early winter. By March the persistent layer was neutralized up to 500 meters. A group attending the annual Ski and Avalanche workshop hiked up on a potentially weak snowpack getting no signs of instability. Taking a break they were passed by a foreign touring group with guide, spaced out on the terrain not steep enough to slide. Our group entered the same area after the break, gathering the group for a stress test. When jumping as a group they released the tension with a vast collapse over a large area. They found the same layer that killed a group of foreign skiers the week before on a neighboring mountain with the same exposition. The information changed their descending plans that day.

The use of the group jump test can be done in various ways on relevant terrain features during level 2 conditions. The impact that the jump implies, can contribute with vital information for a group of skiers.

What about test slopes? Tremper, (2008) and Brattlien (2008) both describe the use of test

slopes should be on steep slopes not big enough to bury you. Its normally newly loaded terrain representing the exposure you want to ski or test. During level 2 I find it more relevant for our issue to focus on the terrain surrounding the traditional test slopes. In addition the test slope is not, according to Tremper (2008), very efficient in testing deeper persistent weak layers.

6. CONCLUSIONS for AVALANCHE EDUCATION

6.1 Different approaches for level 3 and 2?

A common approach within avalanche education is reducing the risk by identifying and avoiding the hazard with a good margin. Avoidance is a good habit. This approach is truly important and relevant for level 3 conditions.

However - level 2 - might need its own approach. A more dynamic group management in avalanche terrain, searching more for the avalanche problems. With relevant trigger tests, open for possibly different “specific terrain features”, we might avoid missing vital information.

And during level 2, it's just as important to space out when exposed to avalanche terrain, as NOT to space out with a purpose in safe terrain, forcing the snowpack and avalanche problem to reveal itself before it catches us off guard.

With the amount of fatal avalanches among experienced skiers during moderate danger, we should perhaps consider some issues over again, on all educational levels.

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References

- Brattlien, K. 2008 Den Lille Snøskredboka, Fri Flyt. 167 pp
- Greene, E. and T. Wiesinger, K. Birkeland
C.Coléou, A. Jones, G. Statham, 2006:
Fatal Avalanche Accidents and Forecasted
Danger Levels: Patterns in the United
States, Canada, Switzerland and France.
Proceedings of the 2006 *International
Snow Science Workshop*, Telluride, Co
640-649
- Harvey, S. 2002: Avalanche incidents in Switzerland in
relation to the predicted danger degree.
Proceedings of the 2002 International Snow and
Science Workshop, Penticton, BC.
- Tremper, B. 2008: Staying Alive in Avalanche Terrain,
3 rd ed. *The Mountaineers Books* 158-159, pp318
- Colorado Avalanche Information Center
http://www.avalanche.org/danger_card.php
- NVE 2013 Norwegian Avalanche Centre
<http://www.varsom.no/en/Snow-avalanche/Snow-avalanche-problems/>
- SLF 2014 Swiss Federal Institute for Snow & Avalanche
Research:[http://www.slf.ch/schneeinfo/zusatzinfos/
lawinskala-europa/index_EN](http://www.slf.ch/schneeinfo/zusatzinfos/lawinskala-europa/index_EN)