

MOUNTAIN ESSENTIALS®

SKI TOURING

Sébastien CONSTANT



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INTRODUCTION

Fellow skier,

Ski touring (backcountry skiing), ski mountaineering and snowboard touring are great ways of enjoying the mountains in winter and spring, as they offer limitless possibilities for exploring inaccessible places when snow makes most other forms of transport impractical (multi-day ski tours and glacier skiing will be addressed in a separate handbook).

Whether you are motivated by the effort of the ascent, the exhilaration of the descent, or the magnificent scenery, few activities in our modern world are as rewarding as skiing in the backcountry – as long as you have the (self-)awareness to avoid the traps the mountain environment can set.

MOUNTAIN ESSENTIALS® handbooks incorporate the principles of Threat and Error Management (TEM), developed by the aviation sector over the last 15 years. Applied in conjunction with other management tools, the TEM approach has significantly improved accident awareness and prevention in all aspects of aviation: commercial, leisure, gliding and paragliding, etc. However, the

precepts of TEM are just as applicable to ski touring, where they can help ensure you get the most from your days in the mountains. With this in mind, the Scenarios and Solutions section of this handbook describes a number of concrete situations every ski tourer may have to face and suggests ways of dealing with them. Colour-coded pictograms (**GREEN / ORANGE / RED / BLACK**) give a visual indication of the level of risk associated with each situation, thereby highlighting key moments when action has to be taken in order to minimise the chances of an undesirable situation becoming dangerous or critical.

Following the TEM approach will not always get you to your chosen summit but, most importantly, it will help you get home safe and sound. As a way of meeting a growing demand from mountaineers, I have adapted this approach to different levels of experience. I hope you find it beneficial.

This Mountain Essentials Ski Touring handbook draws upon the practical lessons I have learned (good and bad experiences) during a ski-touring career spanning almost 30 years, first as an amateur, then as a mountain guide (15 years) and a member of professional mountain-rescue teams. However, every solution is necessarily the result of choices, which means that the strategy described for any given situation may be just one valid option among others.

The TEM approach focuses on recognising threats and preventing errors in order to avoid situations with potentially undesirable outcomes (e.g., an avalanche). However, ski touring is a demanding sport and anything that may affect your vigilance (weather conditions, fatigue, etc.) should incite even greater prudence. The best way to avoid an unwelcome incident or accident may be to change your objective or even to stay at home!

Sebastien Constant - January 2014

Situation

LOW RISK

CAUTION

INCIDENT

ACCIDENT

Il existe de très nombreuses variantes possibles en fonction de la pente, des micreliefs...

Plus la plaque a une consistance dure plus cela favorise la propagation de la ligne de rupture.

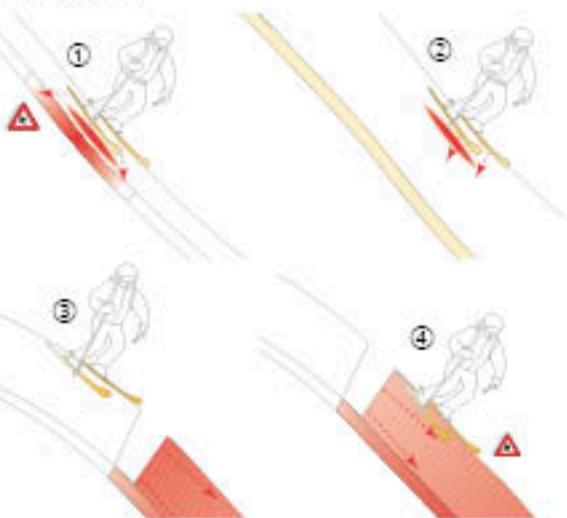
Souvent, une plaque mince sur couche fragile ① est plus facilement déclencheable qu'une plaque très épaisse ② (grosse chute de neige). Dans la seconde configuration, la surcharge d'un skieur a dû mal à atteindre et à déstabiliser la couche fragile.

Il arrive que le skieur déclenche la ligne de propagation de rupture :

- Devant ses skis ③. Il ne se fait pas emporter puisque la plaque part en dessous de lui.
- Juste au-dessus de ses skis ④.
- Loin de lui. Il se trouve alors isolé au milieu rendant les possibilités d'échappatoire limitées, difficiles (p. 15 par ex.).

Facteurs facilitants et décisifs :

- Forte inclinaison de la pente.
- Neige fraîche associée à du vent.
- Pente surmontée par une corniche de neige.
- Proximité de crêtes.
- Rupture de pente dans un vallon/crête.
- Quantité et qualité de neige récente.
- Réchauffement fort et rapide du manteau.
- Présence de couche fragile.



3-1 A SKI COMES OFF WHILE CLIMBING

After skiing up easy terrain, Sue and Pat have to traverse a 25° slope of very hard snow. As a result, they decide to put on their ski crampons (**Amber situation** ●). When they set off again, Sue loses a ski because her boot wasn't clipped in correctly. All of a sudden, she is balanced precariously on one ski (**Red situation** ●). Her skis don't have ski brakes or leashes, so the lost ski slides down the slope, coming to a stop in a small hollow 50 m lower.

In order to remedy the situation she:

- Takes off the other ski and attaches it to her rucksack.
- Descends to the lost ski, walking backwards and kicking steps into the slope.
- When the angle eases, she turns round and continues down to her lost ski.
- She puts on her skis again, making sure that both boots are clipped in correctly and locked in the climb position.

This type of **incident** ● can occur very easily if skiers are not careful. Both Sue and Pat put on their ski crampons, but they did not check their own or their partner's bindings before setting off again.

Extra care ● must be taken on sections requiring the use of ski crampons. Not pausing to check that you and your companions' have put on your crampons and skis correctly is an error.

3-2 HE FORGOT TO PREPARE HIS AIRBAG

The avalanche risk is **level 3 (considerable)**. Dave and Allen, who know each other well and have frequently gone skiing in similar conditions, are both carrying airbags and wearing Avalungs. They get to the summit and take a break before skiing down. The slope they want to descend appears stable, but **they cannot be certain** ●. Nevertheless, before they set off they **make the error** of not checking their gear.

- Neither of them checked that the other had prepared his airbag's activation handle, which Allen had forgotten to do.
- The second error they committed was not doing an overall safety check before starting the descent.

Without knowing it, they are in a **Red situation** ●. The consequences of Allen triggering a wind slab would be serious, as he would almost certainly be **buried under the snow** ●.

Even though his Avalung should allow him to continue breathing until Dave can dig him out, Allen did not do everything he could to increase his chances of surviving an avalanche. He has an airbag, which would reduce the chances of him being buried, but he is not in a position to use it.

Errors like this can be avoided with a bit more diligence. When faced with this type of **Amber situation** ● of a potentially dangerous slope (level 3 avalanche risk), it is extremely important to check all your safety equipment before starting a descent:

- Check your own and your companions' Avalung tubes and airbag handles.
- Check that each person's avalanche transceiver is still in the send position.
- Agree on a strategy for skiing down one-by-one.



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