

Deep Tap Test

Objective

The primary objective of the deep tap test is to determine the fracture character of a weak layer that is too deep to fracture consistently in the compression test. In addition, it is possible to observe the tapping force required for fracture to occur.

Site selection

Select a safe site that has undisturbed snow and is representative of the slopes of interest.

Equipment

The equipment required is the same for test snow profiles. A snow saw is useful for cutting the test column.

Procedure

1. Using a profile or other means, identify a weak snowpack layer, which is overlain by 1F or harder snow and which is too deep to fracture consistently in the compression test.
2. Prepare a 30 cm by 30 cm column as for a compression test (note that the same column can be used after a compression test of the upper layers, provided the compression test did not disturb the target weak layer). To reduce the likelihood of fractures in weak layer below the target layer such as depth hoar at the base of the snowpack, it may be advantageous not to cut the back wall more than a few centimeters below the target weak layer.
3. Level the column such that only 15 cm of snow (measured at the back of the sidewall) remains above the target weak layer.
4. Place the shovel blade (facing up or facing down) on top of the column. Apply 10 light, 10 moderate and then 10 hard taps as for a compression test.

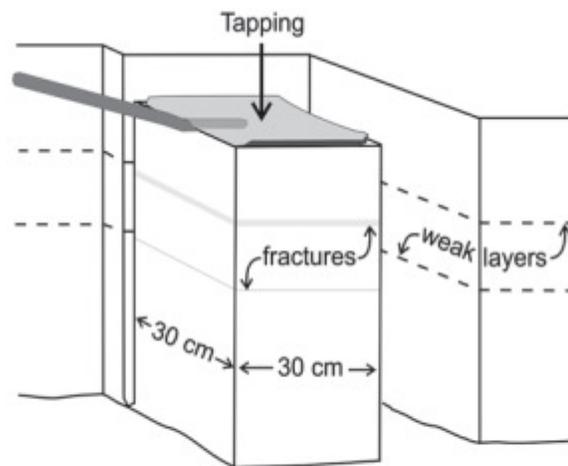


Figure 8 *Compression test and deep tap test technique and column dimensions.*

Results

Score each fracture according to the following table:

Term	Description	Data code
Very easy	Fractures during cutting.	DTV
Easy	Fractures before 10 light taps using finger tips only.	DTE
Moderate	Fractures before 10 moderate taps from elbow using finger tips.	DTM
Hard	Fractures before 10 firm taps from whole arm using palm or fist.	DTH
No fracture	Does not fracture.	DTN

Fracture character

Limitations

While very effective for testing deeper weak layers, the number of taps required to initiate failure in the deep tap test has never been correlated with skier-triggering or avalanche activity on adjacent slopes. However, the fracture character observations have been verified and may be interpreted as in the compression test.