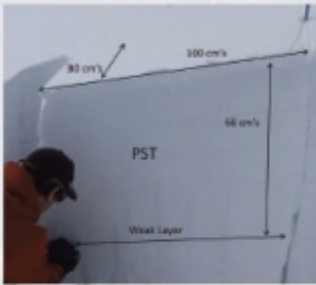


# PST WITH A TWIST: COMPARING THE PST TO THE CROSS-SLOPE

Eric Knoff, Gallatin National Forest Avalanche Center, Bozeman, Mon

## Why CPST?

In recent years, the propagation saw test (PST) gained popularity for both avalanche professionals and backcountry recreationalists. A limiting factor of the PST is the additional time required to isolate a column on the sidewall of the snowpit. Since digging snowpits and performing stability tests takes time, this season I examined the effectiveness of conducting cross-slope PSTs (CPST). The CPST is simply a PST done across, rather than up, the slope. It is more efficient than the PST, particularly after conducting an extended column test (ECT).

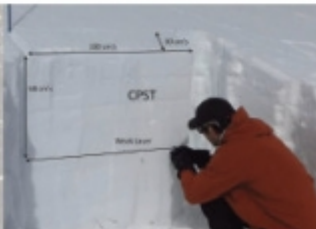


PST in process. A limiting factor of the PST is the time to isolate a column on the sidewall of the snowpit.

## How is a CPST Performed?

The CPST is a new variation of the PST designed to indicate the propensity of a slab/weak layer combination to propagate a fracture. The CPST uses column dimensions of 30 cm upslope by 100 cm+ cross slope, isolated to below the weak layer on all sides (The cross-slope column length will be equivalent to the depth of the targeted weak layer if the buried weak layer is deeper than 100 cm.).

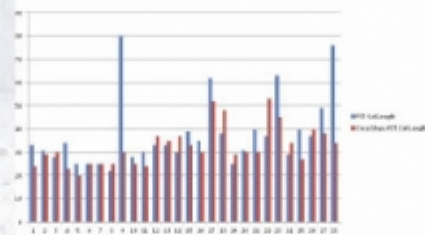
The CPST is performed by inserting the blunt end of the saw into the targeted weak layer in the isolated column, then sliding the saw parallel across the slope. Test results for the CPST can be interpreted the same as the PST. If fracture propagation initiates and continues uninterrupted to the end of the column with a saw cut of less than or equal to 50% of the column length, then fracture propagation is determined to be likely (an unstable result) (Ross & Jamieson, 2008).



CPST in process. CPSTs can easily be performed in the pit wall following an ECT.

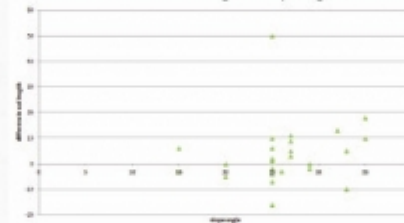
## Data

### Cut Lengths

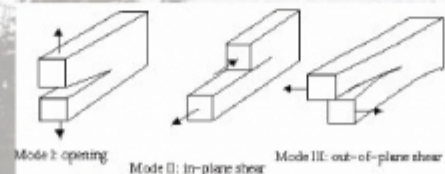


Data collected indicates that 75% of critical cut lengths between the standard PST and CPST were  $\pm 10$  cm's of each other when the weak layer propagated the entire length of the column.

### Difference in cut length vs slope angle



Test results show a slight difference in critical cut lengths between the standard PST and CPST in relation to slope angle. There is an indication that critical cut lengths may become shorter for the CPST as slope angle increases. The difference in critical cut lengths begins to appear once the slope angle becomes greater than 28-30 degrees.



The influence slope angle plays on critical cut lengths may be the result of the addition of Mode III fracture in the CPST. The PST takes place in two dimensions (Mode II fracture) (Gauthier, Ross, & Jamieson, 2008).

This poster was presented at the 2014 ISSW in Banff Canada. You can read the full paper [HERE](#).

No Region, 2014-10-26