

Comparing Fracture Propagation Tests and Relating Test Results to Snowpack Characteristics

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The Propagation Saw Test (PST) and the Extended Column Test (ECT) are two recently and independently developed field tests that indicate the propensity for a slab and weak layer combination to propagate a fracture. University of Calgary researchers performed the PST and ECT throughout the 2008 winter season along with other standard stability tests to establish their strengths and limitations. The PST and ECT were compared side-by-side in over 80 test pits with close to 600 individual test results throughout the 2008 winter in the Columbia Mountains of British Columbia, Canada. We tested numerous slab and weak layer combinations including tracking four persistent weak layers from initial burial to depths of over two meters. Field observations and initial analysis indicate correlations between slab hardness, weak layer depth, and propagation propensity, and hint at how these snowpack characteristics influence the observed results of each test. We discuss the specific slab and weak layer combinations that appear to have high, low, or no propagation propensity, and suggest particular conditions under which one test is more appropriate than the other for aiding forecasters in assessing propagation propensity.