Shear Quality or Fracture Character with an Extended Column Test – No Longer in SWAG or SnowPilot

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The 3rd Edition of Snow, Weather and Avalanches: Observation Guidelines for Avalanche Programs in the United States (SWAG) was published in the summer of 2016 with a few updates. One notable change is the removal of Shear Quality (SQ) and Fracture Character (FC) for the Extended Column Test (ECT) and the Propagation Saw Test (PST). This change has caused consternation with some professionals, including SnowPilot users who no longer have this field alongside the ECT.

The reason to remove it is simple: SQ and FC were developed as a proxy for crack propagation. With the addition of the Extended Column and Propagation Saw Tests, the proxy is no longer needed. The ECT and PST aim to provide a direct index of crack propagation. Recording SQ/FC adds nonessential and redundant information to the already complicated task of evaluating slope stability.

Some SnowPilot users would like to use SQ as a way to describe the motion of an ECT after fracture. However, with an ECT, the movement of the block into the pit does not depend on crack propagation propensity, but rather on the balance between slope angle and friction. Given a steep enough slope, the ECT block will almost always slide regardless of crack propagation propensity. On the other hand, on low angle slopes an ECT block will remain in place even with a Sudden Fracture or Q1 shear. SQ/FC is not – and was never meant to be – a good test to demonstrate block movement, since it relies on slope angle vs. friction rather than crack propagation propensity. Instead, we encourage people to describe the block motion in plain language whenever it is needed.

SnowPilot allows the observer to include comments on a specific snowpit test and for the snow profile as a whole. These are very useful features and allow the observer to document notable observations that don't fit into one of the standard coded fields.

SQ or FC with an ECT.pdf
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