

Safety Bulletin

Rope Breaks!

This past year we had 2 genuine in flight “rope breaks” and a premature release as well.

Bottom line—**In case of an overrun, that piece is removed and the endpiece re-attached. We MUST PREVENT OVERRUN so NEW PROCEDURE ==> APPLY wheelbrake in K21 and G102 until takeoff.**

With practice, replacement of the endpiece will still take about 10 min . The tools are in the Pawnee, under the seat.

In the case of slack rope recovery—be gentle and don't jerk! A jerk weakens the rope. In turbulent weather, perhaps the wake box is best tested another time, but, if you must, pay scrupulous attention to maintaining position well.

Explanation:

Due to the loss of the end-piece in the last one, we are unable to do a full forensic autopsy. However we do know this-- The rope was **new**. It had been **overrun** that day by the nosewheel. It was **inspected** and deemed **OK!** A wakebox maneuver in somewhat turbulent conditions resulted in a large slack bow in the rope. In removing the slack, the **rope broke** near the endpiece. The release was pulled and the endpiece dropped—exactly “by the book!” If the weak link had broken, part of the endpiece would have stayed with the tow plane.

A previous break was near the tow plane attach point, so the glider had the 55m or so of rope attached, and was landed with it. So-autopsy was performed! The pilot attempted a **deliberate rope break** due to loss of control and inability to release. He did not know that the tow plane could cut him loose, and was about to do that!

Autopsy result was that the rope ruptured at the retaining knot inside the Pawnee. The weak link did not break, and examination of it indicated it was not even stressed. The rope itself is rated at >2500 lb which is about twice the weak link rating of 600 daN (1349 lbf).

Conclusions----

Either the weak link is not performing according to specs (doubtful, although I'll bet we can get a pull test on one of our spares. Eh? Delta or Georgia Tech?) Possibly the rate of onset of the force might influence this? On the other hand, the rope may have been weakened—a more likely scenario.

The rope is a kernmantle design, like climbers and others use as a safety rope to belay a fall. It is weakened by a jerk (the physical quantity, not a psycho-social attribute). The effect can be cumulative. If a safety rope belays a fall greater than its rating, it is replaced. So how might we experience this? A faulty slack rope recovery technique could do it.

If the glider wheel overruns the rope, it may, or may not, damage the cover. The cover is merely to keep all the internal strands together. The internal, straight strands are the strength. It may well weaken the internal structure by damaging some of the strands. (A few, or many—might be undetectable).

Happy flights!

Hartley