

# INCIDENT REPORT: ROPE BREAK



Date of Incident: Sunday, August 23, 2020

Wind: 180° at 7 knots with mild convection

Active Runway: 18

*This is a report of a rope break, and because there is no indication of pilot error, on the contrary the pilot flew with precision and good judgment, the usual masking of the pilot's identity is not used in this report.*

## CONTACTS & INTERVIEWS

8/23/2020 Interview of the glider pilot, Rodin Lompart

8/23/2020 Phone conversation with Jennifer Lompart, (Rodin Lompart's mother)

8/24/2020 Meeting of the Blue Ribbon Panel on Rope Breaks (Bob Wander (MSC flight instructor and former owner of a gliding flight school), JC Cunningham (retired flight instructor and former owner of a gliding flight school), Ron Houle (MSC President), and Stephen Nesser (MSC Chief Flight Instructor))

8/24/2020 Examination of the MSC Super Cub with Tom Kuhfeld (former MSC Director of Equipment) and Ron Houle (MSC Chief Tow Pilot)

8/28/2020 Interview of the tow pilot, Jackson Maddux

8/29/2020 Second interview of Mr. Lompart

8/30/2020 Second Meeting of the Blue Ribbon Panel on Rope Breaks with Bob Wander, Jackson Maddux, and Stephen Nesser

9/01/2020 Interview of Director of Operations, Jay Biggs

9/02/2020 Meeting with Joe and Jennifer Lompart (Rodin Lompart's parents)

## DOCUMENTS

Photographs of the tow rope and the MSC Super Cub Glider.

Bob Wander's photographs of a tow rope cut, chopped, and pulled apart.

## THE ROPE BREAK ON AUGUST 23, 2020

During the preflight, tow pilot Jackson Maddux identified a weak spot in the tow rope close to the tow plane, upon conferring with the duty instructor, Stephen Nesser, it was decided to repair the rope. The fray was removed and the rope spliced by Mr. Maddux.

There were four flights on the repaired rope before the rope break: two solo flights in the Junior, and two dual training flights in the ASK-21. During both dual flights the students boxed the wake and did slack line recoveries. One of the dual flights was with Mr. Lompart in which, during the preflight checklist, his emergency rope break plan was reviewed in detail. Mr. Lompart flew his dual flight with skill and was approved to fly solo.

On the fifth flight of the day, at 11:09 a.m. Mr. Lompart took off observed by Mr. Nesser. His take off was smooth and in position. At about 150' the tow plane made a 40° right turn to a heading of 220°. The tow rope broke at 300' AGL and Mr. Lompart pushed the stick forward, did a left 220° turn, at a bank angle of 45°, to a heading of 360°.

He touched down smoothly and pulled off to the left side of the runway with the majority of the tow rope attached to the glider's tow hook.

Mr. Lompart stated that he did not know why the rope broke, and when it did he immediately pushed the stick forward and then turned to the left, and because he was high, used airbrakes to descend to the desired flight path.

Mr. Maddux examined the failed rope and though the rope failed near the rope's exit point on the tow plane, the splice he inserted had held. His splice was under the blue sheathing in Image 2.

Photographs were taken of the failed rope shortly after the rope failure, (Image 1 and Image 2).



Image 1: Tow plane side of the broken rope



Image 2: Glider side of the broken rope

The tow plane was examined at the point where the rope failed. The tow rope runs from the winch's barrel drum through PVC tubing and out a metal horn-shaped pipe on the back of the tow plane. The last piece of PVC had separated from its PVC coupling (Image 3), resulting in the pipe sticking beyond its usual position by about one inch (Image 4).



Image 3 PVC pipe separated from coupling



Image 4 The PVC pipe sticking out of the exit point at the end of the tow plane

### ANALYSIS

Mr. Wander 1. Cut with scissors (Image 5), 2. Sliced (Image 6), and 3. broke by force with a car (Image 7), three polypropylene ropes like the rope that was on the tow plane.



Image 5 Rope cut with scissors



Image 6 Rope cut with a knife



Image 7 Rope pulled apart by force

The Blue Ribbon Panel on Rope Breaks compared the photographs of the rope that broke on August 23 with those cut and pulled apart, and concluded that the failed rope did not break by a strong pull, but was either cut in the air or separated due to a failed splice. Committee members believe the most likely cause of the failure was a failed splice but could not rule out it was cut by rubbing against the PVC pipe.

The Blue Ribbon Panel on Rope Breaks determined that the failed rope may have been weakened by friction against a burnt end of the rope that was inside the spliced rope, however it was evident that this was not the cause of the rope break in flight.

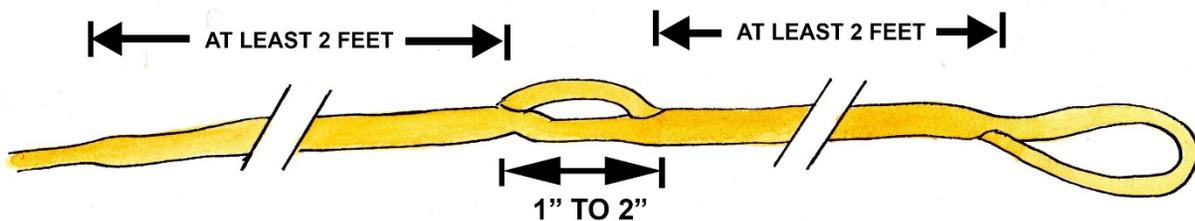
MSC Director of Equipment, Mr. Biggs, believes the rope was sliced by rubbing against the PVC pipe that extended past its normal position.

While we were unable to conclusively determine the cause of the break, we are using this opportunity to recommend changes for both scenarios that may have caused the rope to fail.

The Blue Ribbon Panel made recommendations about splicing ropes, and these are in the recommendations below.

## RECOMMENDATIONS

1. The PVC pipe be sanded around its exit point to make it as dull as possible and be glued (at the coupling) pulling the end into its normal recessed position. (Completed on August 24, 2020)
2. A new rope be installed on MSC's Super Cub (Completed on August 24, 2020)
3. All eye splices of the tow rope be completed as illustrated below:



4. All in-line splices of the tow rope be completed as recommended by Mr. Wander in his training video (see below).
5. All burnt ends of the rope be cut off before the rope is put into service.
6. A training video be made of the proper way to make splices on the ends of the rope, and once completed this video to be posted on the club web site. (In process by Mr. Wander and Mr. Houle)

7. A training video be made of the proper way to make straight-line splices and once completed this video to be posted on the club web site. (In process by Mr. Wander and Mr. Houle)
8. A training video be made of the common mistakes make in splicing rope with explanations of why they will fail on tow and once completed this video to be posted on the club web site. (In process by Mr. Wander and Mr. Houle)
9. A rope splicing container be placed in the FOO cart with new fids, tape, and other supplies along with a card detailing the new rope splicing procedures. (In process by Mr. Maddux)
10. Proper splicing be demonstrated during the MSC Safety Meeting in 2021.

Respectfully submitted,



Stephen Nesser, CFI-G  
Chief Flight Instructor  
Minnesota Soaring Club

September 2, 2020