

## #16

### **Aileron cable failure and inspection**

29 May 2003

Aileron Cable Failure

MAJOR SAFETY PROBLEM

This tip was originally authored by Carl Mason and was featured in the 1986 summer issue of the "Observer."

This problem has reared its ugly head again... Read and heed!

During the summer of 1985, an L-19 with a banner in tow made a right turn while flying low over the water. Witnesses reported the plane rolled excessively to the right, followed by the sound of the throttle being closed (popping, backfire, then idle). The plane struck the water nose low, which demolished the plane and injured the pilot. The pilot drowned. Five hours later the plane was brought up and the engine tested, with perfect results. An aileron cable was found snapped, with the outboard section beyond the break piled up in a "birds nest" in the left aileron bell crank space. Microscopic examination of the break revealed that the majority of the wires in the cable had been rubbed through before the cable snapped. The rubbing occurred at the first phenolic support (called the chafe strips" in the manuals) just outboard of the cable connector in the left wing. It appears likely that the cable snapped as the pilot rolled into his right turn, and, in the resulting confusion, he closed the throttle causing the nose to drop and hit the water.

Examination of seven other L-19's resulted in the removal of four additional aileron cables with obvious damage at the same point on the cables. It appears that the weight of the long cable extending from the little pulleys in the center of the cabin on the back of the rear cabin carry through spar, and out to the first phenolic support in the wings creates more wear at that point than elsewhere. Note that the connectors themselves are contained in this run of cable, there by adding more weight to the cable. Civilian Cessna's do not have these connectors, which add weight to the cables. Worn cables may not be detected in the "feel test", due to the dirt and gunk "cementing" the severed ends to the rest of the cable as it passes back and forth on the "chafe strips". On L-19's with electric flaps, good visual inspections can be made through the large flap-jack inspection hole. The aileron can be moved up and down to bring the wear spot to the flap inspection hole on the first cable, then the other cable to the inboard side of the phenol support. On birds with manual flaps, it may be necessary to disconnect and remove the outboard cable sections for inspection and then put them back in. Other operators have mentioned similar problems.

Also, it seems that all L-19's were originally shipped without the secondary aileron travel stop bolts installed under the floor. The bracket for the bolts is there; in some cases people have later installed these bolts. The bolts prevent the stick from traveling beyond the aileron travel, thus over stressing the cables. Check your Bird Dog and install these bolts if they are missing. The aileron cable problem is serious... So serious, in fact, that the FAA is recommending an AD be issued requiring inspection.

Mitch adds: The above article is supported by a copy of a FAA "Memorandum and Recommendation", dated Oct. 2 1992 from the Aviation Safety Inspector titled, Airworthiness Alerts AC 43-16 and the Service Difficulty report Summary published by AVN-143.