To All Sylvaire Bushmaster and Husky Norseman Owners / Opperators

From Gerry Golla / Corman Airpark December 2009

Subject:
A possible serious problem with the wings of these aircraft.

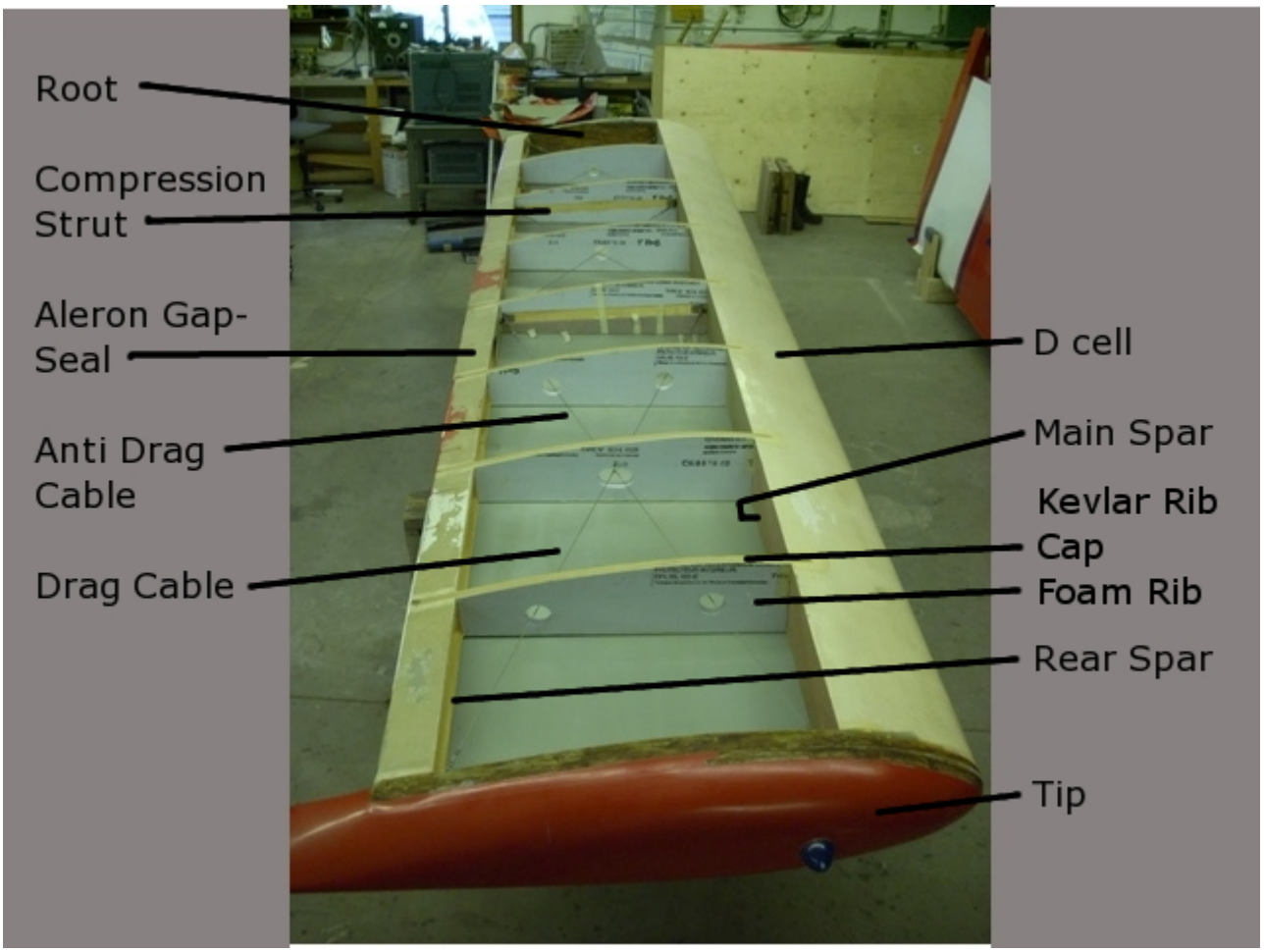
The following report is in the opinion of the author.

Following the crash of C-IAUE that killed Vern Rees and Ryan Chute on August 17, 2009, I took it upon myself to investagte the cause of that crash.
The reason for this, is the Transportation Safety Board of Canada, at this time, has chosen not to release a report on the crash, even though the cause of the crash is most likely present on
most of these aircraft that are flying today. Their mandate is suposed to be that of informing the public of transportation related accident causes in order to prevent future occurances. Since they have
chosen not to do this, I have taken it upon myself to inform you, the owners and opperators of these aircraft, as to the cause of the crash and what to look for on your airplane to keep it from happening to you.

First of all, these airplanes have an almost perfect safety record. Up untill Vern and Ryan's crash, there had NEVER been a fatality in one. That is very impressive for ANY production aircraft that has been flying for 20+ years!

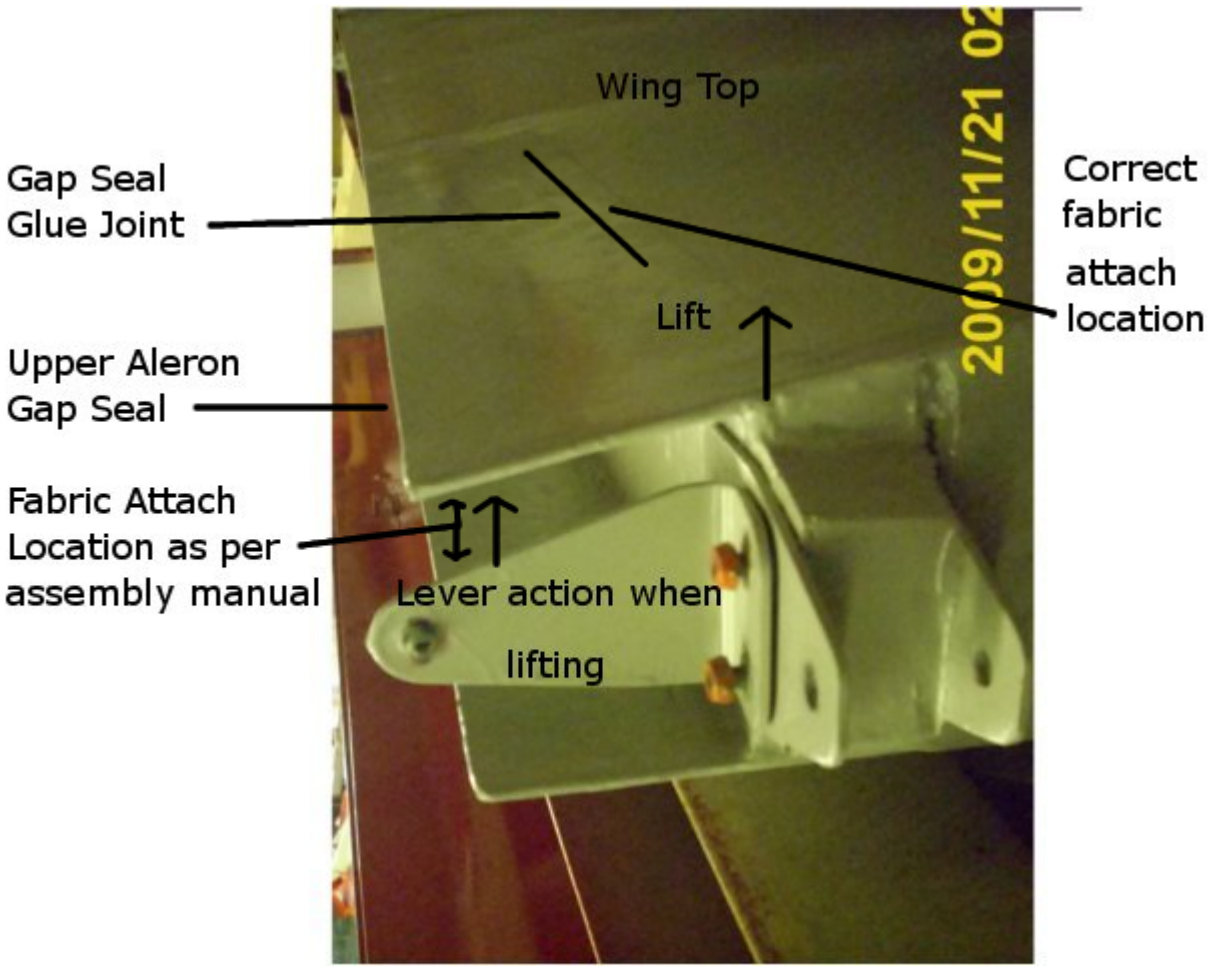
I have been studing the wreckage and crash scene photos of C-IAUE for the past two and one half months and I am completely confident that I have found the cause of the crash.
It was caused by the failure of a glue joint that held the upper inboard aleron gap seal to the left wing.
This seal is CRITICAL to the wing, even though without looking carefully, it may not appear to be so.
It is the ONLY thing that holds the upper fabric to the wing. It is also all that attaches the back end of the rib caps. Loss of this component means that you WILL CRASH!
The cause of the glue joint failure is not a simple thing to explane. It was a combination of the type of glue used, the conditions it was applied under, the poor instructions in the assembly manual and the way the fabric was attached to the gap seal.

In case you don't know what the gap seal I am refering to is, here is a diagram showing it.



Labeled Wing Intact.jpg

The fabric on C-IAUE was NOT attached in any way to the rib caps. Once it started tearing there was nothing to stop it. They lost the entire top of the wing and the aircraft became unflyable.
The Bushmaster assembly manual clearly states that if the factory specified type of fabric primer is NOT used, then the wings MUST be rib stiched. The type of primer in question would have
glued the fabric to the rib caps and anything else it came in contact with. I have not seen very many of these airplanes with the propper primer and only one that had rib stiching. The manual also
recomends attaching the fabric with glue only around the inside of the gap seal. What the manual overlooks is that if the correct primer is NOT used, then this is a very bad way indeed to attach the fabric.
Study the next diagram and you will see why.



Labeled Gap Seal.jpg

If you picture the lift of the wing pulling upward on the top fabric of the wing and the fabric is not attached to the gap seal over the glue joint that holds it to the wing, then every time the wing lifts, the rear floating end of the gap seal is pulled upward by the fabric. The gap seal becomes a lever and it puts tremendous loads on the glue joint. This is not just a small pull either. Under normal flying conditions it amounts to close to 400 lbs distributed along the length of the gap seal. That is in smooth air and that is for EACH WING! Glue joints are only effective in shear loadings and this is definately NOT shear!
Over time this stress on the glue joint will cause it to fail and the gap seal may start to show signs of seperation. This seperation can be difficult to spot, especially if you have no reason to be looking for it. The first indications of it are often warpage of the gap seal along its rear edge. This is the first thing to look for.
Are your gap seals fairly straight? Are they wavy? Is the fabric glued to the gap seal directly above it's glue joint? If the answers to the first and last are no, and you have a high time aircraft, you should probably be concerned. Having said that, C-IAUE only had 430 hours on it since it was built more then 20 years ago.
If the fabric is not glued to the top of the gap seals then it is also most likely not attached to the rib caps either.

Take a look at the photo below.

C-IAUE Stock.jpg

These gap seals dont look too bad, but you can see the waves in the ones on the left wing. This picture was taken about 2 weeks before the fatial crash. The starting point of the seperation is believed to be where the inner and outer seals join, just above the rear strut.

Next, take a coin, a quarter works well. Tap gently along the entire lenght of the gap seal, directly over its glue joint with the edge of the coin. It should sound solid over it's entire length. Hollow sounding spots are not good. You should check both the upper and lower seals this way.
If you can worm your fingers under the seal between it and the aleron, pull upward, quite hard, 10 - 20 lbs. If the seal shows any

signs of trying to come free..... well again not good.
If your aircraft still has it's original fabric, then it is probably more the 20 years old. Check it. It is almost impossible to put one's finger through good fabric by poking HARD. The most important and the most susceptable to ultraviolet damage, is the top of the wing. And don't forget the tail, you can't fly without that either.

If everything seems ok, then you are PROBABLY allright. If you think you have a problem then DON'T fly the airplane. Gap seal problems can be repaired, but it can involve a lot of disissembly and reconstruction on the wings.
We are in the process right now of replacing the seals on a Husky Norseman that has almost 3000 hours on the clock. I will have a beter idea of what is involved at a later date.
Just to put all of this into perspective, of the 5 aircraft we have checked so far, three have gap seal issues. Two of these need immediate attention and the third is probably ok for awhile.

We are in the process of designing and making avialable a retro fit set of brackets for these aircraft that will make it difficult or impossibe for the gap seals to completely seperate. I would not recomend using these to try and fix an airplane that has already developed problems in this area and improperly attached fabric can only be taken care of by recovering.

Well thats about it.
If you want to discuss any of this with me please feel free to contact me, Gerry Golla, at:

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or

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I wish I could go back to August 17 knowing what I know now, but of course I can't. You, on the other hand, do have options.

Happy Flying!!

Gerry