

From: [Fox Matthew](#)
To: [Read Leah](#)
Subject: ERA22LA134 - Sarasota, FL - Lab examination complete
Date: Friday, April 8, 2022 4:56:47 PM
Attachments: [IMG_2558.JPG](#)
[image001.png](#)

Leah,

The nose wheel fork assembly shown in the attached image was examined visually and with a stereo microscope. According to a representative of SilverLight Aviation, the cross-tube assembly at the upper end of the nose wheel fork for the aircraft in the subject investigation was manufactured with a vertical tube that was welded to the upper side of the transverse tube. The submitted cross-tube assembly was fractured at the weld between the transverse tube and the vertical tube. The vertical tube was not included in the submitted components.

The fracture at the upper side of the cross tube appeared to be through the weld at or near the vertical leg of a fillet weld around the circumference of the vertical tube. The fracture surfaces had a mix of rough irregular features and flat smeared features consistent with ductile overstress shear fracture. No evidence of fatigue was observed.

As measured from the transverse tube surface, the vertical length of the fracture measured 0.048 inch, 0.025 inch, 0.057 inch, and 0.030 inch at the left, aft, right, and forward sides of the fracture, respectively. The outside diameter of the weld at the transverse tube surface (weld toe on the horizontal leg) measured 1.678 inch and 1.645 inch in the transverse and longitudinal directions, respectively.

According to scale drawings provided by SilverLight Aviation, the vertical tube has an outer diameter of 1.54 inch and a wall thickness of 0.25 inch. As measured on the submitted assembly, the transverse tube had a thickness of 0.127 inch. The representative for Silverlight Aviation reportedly stated that they strive for 70% penetration on welds. The inside diameter was measured where the fracture surface intersected the upper surface of the transverse tube, and the distance measured 1.455 inch in the transverse direction and 1.449 inch in the longitudinal direction. Assuming the vertical tube had an outer diameter in accordance with the drawing, the depth of penetration at the joint interface was approximately 0.046 inch $(1.54/2 - 1.449/2)$. This represents 18% of the thickness of the vertical tube and 36% of the thickness of the transverse tube.

Best regards,
Matt



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