

From: [REDACTED]
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Subject: Email Report (CEN24LA169 - Landing Gear)
Date: Friday, July 12, 2024 8:06:46 AM
Attachments: [Figure 1.png](#)
[Figure 2.jpg](#)

Hello Aaron,

On April 29th, 2024, a Baby Great Lakes (N822CH) crashed upon landing on a grass strip in Castroville, Texas and subsequently caught fire. A fractured landing gear assembly was submitted to the Materials Laboratory for further inspection. The tubular welded assembly arrived at the lab in two pieces, consisting of a Y-shaped portion of the landing gear leg and a flanged fitting which remained bolted to the wheel.

Three fracture surfaces were identified on the landing gear leg. Two of these surfaces were at the upper end, and one towards the lower. The two fracture surfaces on the upper end of the leg were matte gray and rough in nature, consistent with overstress fracture.

The fracture surface on the lower end of the leg was located on a tube (OD 0.8 in, thickness 0.1 in) that passed through the body of the landing gear leg and was welded in place. The fracture surface mirrored the fracture surface seen on the flanged fitting on the wheel. It was cleaned with soap, water, and a soft brush to remove soil. Examination of the cleaned surface under an optical stereoscope revealed a series of ratchet marks extending from the weld toe at the outside lower edge of the fracture surface which coalesced through the tube wall, consistent with multiple fatigue crack initiation points joining into a single larger crack. In this region, the surfaces between the ratchet marks were primarily oriented perpendicular to the axis of the tube. The fatigue crack extended across approximately 30% of the cross section of the tube before transitioning into a rougher, slanted appearance towards the upper side of the tube, consistent with final failure due to overstress. The locations of the fatigue initiation points were consistent with the cyclic bending forces that would have been applied to this section of the landing gear under normal landing and takeoff conditions.

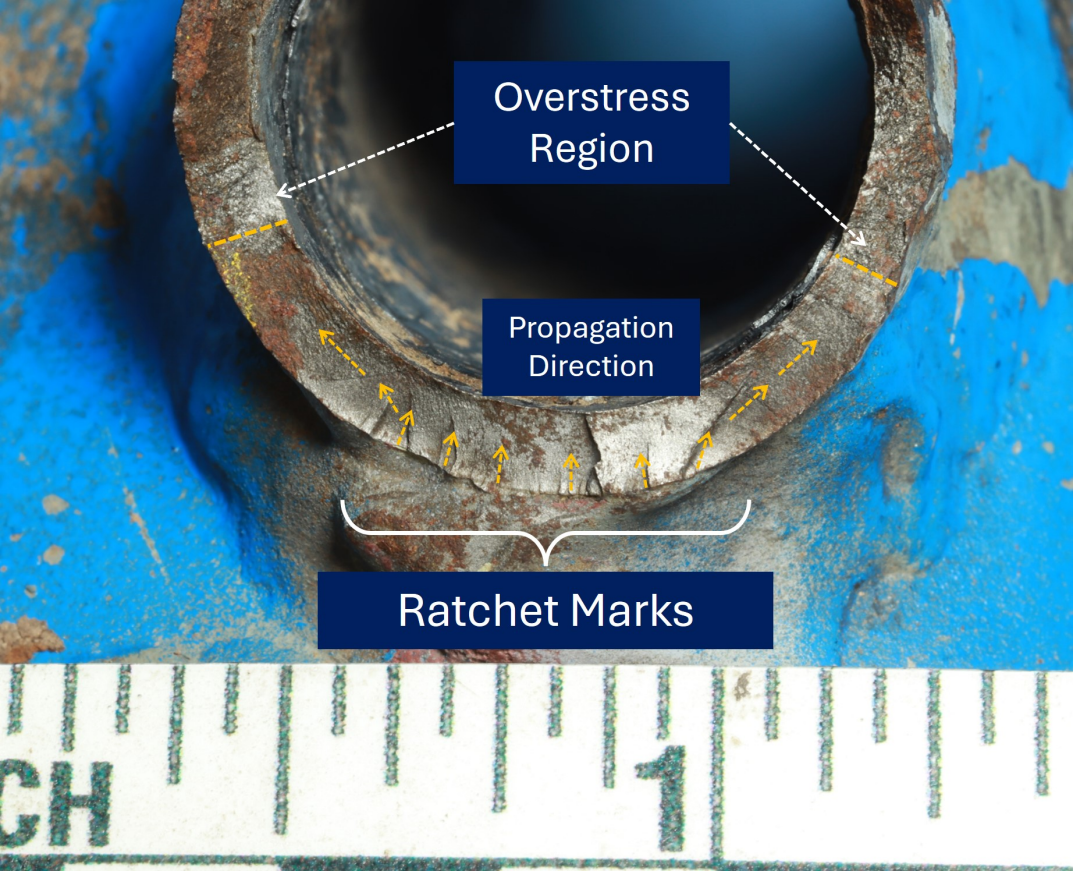
Let me know if you have any questions,

Brian Fuchs, Ph.D.
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Overstress



Subjected to
cleaning and
further
inspection



Overstress
Region

This image shows a cross-section of a metal component that has failed. The fracture surface is visible, showing a dark, smooth area at the top and a rougher, more textured area below. A blue background is visible around the component. A white bracket at the bottom indicates a specific region of interest. A ruler is visible at the very bottom of the image, showing markings in inches and centimeters.

Propagation
Direction

Ratchet Marks