

From: [Kramer Donald](#)
To: [Galbraith Damian](#)
Cc: [Budinski Michael](#)
Subject: Materials Laboratory Factual Report for CEN23LA200
Date: Thursday, July 27, 2023 2:11:13 PM

ACCIDENT INFORMATION:

Place: Gregory, Michigan
Date: May 23, 2023
Vehicle: Flight Design GMBH CTSW, N165CT
NTSB No.: CEN23LA200
Investigator: Damian Galbraith, ASI-CEN

COMPONENTS EXAMINED:

Fractured nose wheel rotation unit: P/N: KA4010100.

EXAMINATION PARTICIPANTS:

Specialist - Donald Kramer, Ph.D., NTSB, Washington DC

DETAILS OF THE EXAMINATION:

A fractured nose wheel rotation unit from the aircraft referenced above was submitted to the NTSB Materials Laboratory for examination. The unit originally consisted of a strut tube with a U-shaped clevis attached to its end, to which the nose wheel was attached. The clevis was a welded construct, formed from pieces of steel tube of rectangular cross section. The longitudinal arms of the clevis were each butt-welded to adjacent lengths of steel tube, all ends beveled to form 45° included angles between tubes. The angled pieces were in turn welded to the base piece of the clevis; the ends similarly beveled. The base of the clevis was joined to the end of the strut tube. In total, the clevis was formed from five pieces of steel joined by four welds.

The clevis had fractured where each of the angled tube sections met the base of the clevis. Examination with the aid of a stereomicroscope revealed that the fractures were through the base metal, adjacent to each weld. The fractured tube cross sections were twisted, with the aft portion of the fracture deformed upward and the forward portion of the fracture deformed downward. The strut tube was deformed in the aft direction. Visual examination of the fracture surfaces was consistent with shear overstress. The observations were consistent with a torsion overstress failure of the clevis.

Submitted by:

Donald Kramer, Ph.D.
Sr. Materials Engineer