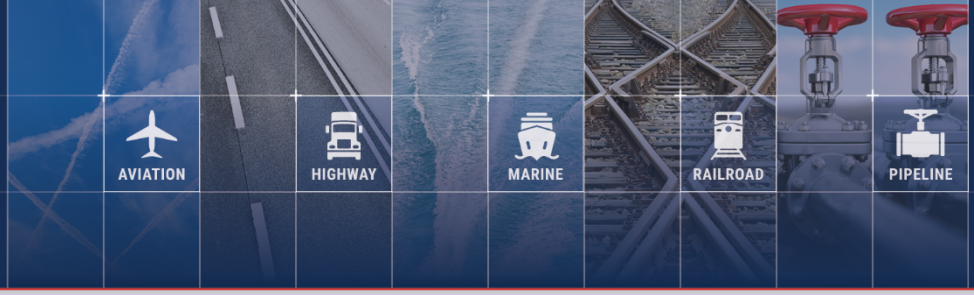

Aviation Investigation Final Report

Location:	Gregory, Michigan	**Accident Number:**	CEN23LA200
Date & Time:	May 23, 2023, 09:46 Local	**Registration:**	N165CT
Aircraft:	FLIGHT DESIGN GMBH CTSW	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was landing on a grass runway with a slight right quartering tailwind. During the landing, the nose landing gear bounced after touchdown then separated from the airplane. The airplane nosed over and came to rest inverted. The fuselage and empennage sustained substantial damage.

Metallurgical examination of the nose landing gear rotation unit revealed the fracture surfaces were consistent with shear overstress. A review of the maintenance logbooks revealed that the nose landing gear had been replaced two previous times due to hard landing events. No anomalies were noted with the airplane that would have precluded normal operation.

It is likely that the landing was harder than the pilot perceived, which resulted in the shear overstress of the nose landing gear.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's improper landing flare that resulted in a hard, bounced landing and subsequent overstress failure of the nose landing gear.

Findings

Aircraft	Landing flare - Not attained/maintained
Personnel issues	Incorrect action performance - Pilot
Aircraft	(general) - Capability exceeded
Personnel issues	Decision making/judgment - Pilot
Environmental issues	(general) - Response/compensation

Factual Information

History of Flight

Landing-flare/touchdown	Hard landing (Defining event)

On May 23, 2023, about 0946 eastern daylight time, a Flight Design GMBH CTSW, N165CT, was substantially damaged when it was involved in an accident at Richmond Field Airport (69G), Gregory, Michigan. The pilot was not injured. The flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight.

The pilot reported that after a 40-minute flight he overflew 69G to familiarize himself with the area and the condition of the turf runway before he entered a left traffic pattern for runway 36. The automated weather observing system reported the wind was nearly calm. He flew the final approach at the “appropriate speed with 40 degrees of flaps” extended. During the landing, the nose landing gear gently bounced after touchdown then the nose collapsed, and the airplane nosed over.

The responding Federal Aviation Administration inspector stated that the nose landing gear strut was found separated at the fork. A flight control continuity check was completed, and no anomalies were found. Photos of the airplane revealed the fuselage and empennage sustained substantial damage.

Metallurgical examination of the nose landing gear rotation unit revealed the fracture surfaces were consistent with shear overstress. A review of the maintenance logbooks revealed that the nose landing gear had been replaced two previous times due to hard landing events. No anomalies were noted with the airplane that would have precluded normal operation.

Recorded wind at the time of the accident was from 140° at 4 knots.

Pilot Information

Certificate:	Private	**Age:**	72,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Unknown Unknown	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 5, 2023
Flight Time:	(Estimated) 220 hours (Total, all aircraft), 84 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	FLIGHT DESIGN GMBH	**Registration:**	N165CT
Model/Series:	CTSW	**Aircraft Category:**	Airplane
Year of Manufacture:	2006	**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special); Experimental light sport (Special)	**Serial Number:**	06-03-09
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	April 8, 2023 Condition	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:	5 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	600 Hrs at time of accident	**Engine Manufacturer:**	Rotax
ELT:	Installed	**Engine Model/Series:**	912ULS
Registered Owner:	CAMERON MICHAEL F	**Rated Power:**	100 Horsepower
Operator:	CAMERON MICHAEL F	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KOZW,944 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	10:15 Local	**Direction from Accident Site:**	18°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	18°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Grosse Lle Township, MI (KONZ)	**Type of Flight Plan Filed:**	None
Destination:	Gregory, MI (69G)	**Type of Clearance:**	Unknown
Departure Time:	09:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Richmond Field Airport 69G	**Runway Surface Type:**	Grass/turf
Airport Elevation:	921 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	36	**IFR Approach:**	None
Runway Length/Width:	2471 ft / 100 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	42.441702,-84.064361(est)

Administrative Information

Investigator In Charge (IIC):	Galbraith, Damian
Additional Participating Persons:	Dennis Heinze; FAA; Belleville, MI Roger Knoll; BFU
Original Publish Date:	May 14, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=192230