Aviation Investigation Final Report

Location:	Granbury, Texas	**Accident Number:**	CEN23LA386
Date & Time:	August 20, 2023, 08:05 Local	**Registration:**	N57AR
Aircraft:	Silverlight AR-1	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to two witnesses, the pilot of the gyroplane started his takeoff roll with the rotor in a horizontal position. Both witnesses stated that the gyroplane's take off roll was longer than usual. When the pilot pitched the rotor up, the gyroplane pitched up, climbed about 30 to 40 ft above the ground, rolled to the left, and subsequently impacted the runway. The left main landing gear separated from the gyroplane after impacting the runway, and the gyroplane departed the runway to the left. The gyroplane came to rest about 1,400 ft from its departure point. The pilot was seriously injured. During the runway excursion, the gyroplane's rotor impacted the ground resulting in substantial damage to the rotor, horizontal stabilizer, vertical stabilizer, and rudder.

The pilot stated via telephone that there were no mechanical malfunctions or failures that would have precluded normal operation. The pilot did not provide an NTSB Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report.

According to FAA-H-8083-21 *Rotorcraft Flying Handbook*, "The normal takeoff for most amateur-built gyroplanes is accomplished by prerotating to sufficient rotor r.p.m. to prevent blade flapping and tilting the rotor back with cyclic control. Using a speed of 20 to 30 m.p.h., allow the rotor to accelerate and begin producing lift. As lift increases, move the cyclic forward to decrease the pitch angle on the rotor disc." It is likely the pilot did not position the rotor at the appropriate pitch angle to allow the main rotor to reach sufficient takeoff rpm before attempting to takeoff.

Probable Cause and Findings

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

The pilot's improper takeoff procedure which resulted in a loss of control during takeoff.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Climb capability - Not attained/maintained

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Takeoff	Abnormal runway contact
Takeoff	Landing gear collapse
Takeoff	Runway excursion
Takeoff	Dragged wing/rotor/float/other

Pilot Information

Certificate:	Private	**Age:**	72,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	None None	**Last FAA Medical Exam:**	
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 260 hours (Total, all aircraft), 30 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Silverlight	**Registration:**	N57AR
Model/Series:	AR-1	**Aircraft Category:**	Helicopter
Year of Manufacture:	2021	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	0057
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	1200 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Rotax
ELT:		**Engine Model/Series:**	912 ULS
Registered Owner:	DRAPER ALAN C	**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KGDJ,778 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	07:55 Local	**Direction from Accident Site:**	307°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.07 inches Hg	**Temperature/Dew Point:**	27°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Granbury, TX	**Type of Flight Plan Filed:**	
Destination:		**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	PECAN PLANTATION 0TX1	**Runway Surface Type:**	Asphalt
Airport Elevation:	712 ft msl	**Runway Surface Condition:**	
Runway Used:	1/19	**IFR Approach:**	None
Runway Length/Width:	3616 ft / 50 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	32.353689,-97.67615

Administrative Information

Investigator In Charge (IIC):	Rutt, Brian
Additional Participating Persons:	Gary Watson; FAA North Texas FSDO
Original Publish Date:	January 10, 2024
Last Revision Date:	
Investigation Class:	Class 4
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=192960