



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Lakeport, California	Accident Number:	WPR22FA053
Date & Time:	December 2, 2021, 11:15 Local	Registration:	N425RD
Aircraft:	RUSSELL W DYER VORTEX	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness reported seeing the gyroplane flying straight and level about two miles from the departure airport. The witness reported the gyroplane then tumbled tail over nose three times before he lost sight of it below the tree line. The gyroplane sustained substantial damage when it impacted the heavily vegetated terrain.

The smell of fuel was present at the accident site and there was no evidence of a wire or bird strike. Additionally, there were no reports of downed power lines or power outages in the accident area.

Examination of the gyroplane revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation. The gyroplane was equipped with a horizontal stabilizer that remained intact. The engine was likely producing power at the time of the accident, because two of its propeller blades contacted the main rotor blades during the accident sequence. The main rotor blades sustained minimal damage, consistent with the gyroplane entering a low-rotor-rpm state for undetermined reasons before ground impact.

According to the Federal Aviation Administration (FAA), FAA-H-8083-21, Chapter 21, *Gyroplane Emergencies*, if rotor force is rapidly removed, some gyroplanes may pitch forward abruptly into a power pushover event and if not corrected can continue to tumble and become irreversible.

Probable Cause and Findings

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

The pilot’s loss of control for reasons that could not be determined and the delayed remedial action to recover from the power pushover event.

Findings	
Aircraft	Prop/rotor parameters - Not attained/maintained
Aircraft	Airspeed - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Personnel issues	Understanding/comprehension - Pilot

Factual Information

History of Flight

Enroute-cruise	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On December 2, 2021, about 1115 Pacific standard time, an experimental amateur-built, Sport Copter Vortex gyroplane, N425RD, was substantially damaged when it was involved in an accident near Lakeport, California. The pilot was fatally injured. The gyroplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

Witnesses located about 2 miles west of the accident site observed the gyroplane in level flight, about the same height as a set of telephone poles, and then saw it tumble tail over nose three times before they lost sight of it behind a tree line. The gyroplane was not equipped with an automatic dependent surveillance – broadcast transponder and it was flying too low for radar coverage.

PILOT INFORMATION

The pilot had been involved in another accident in the same area while flying a gyroplane in August 2020. The National Transportation Safety Board (NTSB) determined the probable cause of that accident to be:

“The pilot’s distraction and failure to maintain adequate airspeed during a low altitude maneuver, which resulted in a loss of aircraft control and collision with terrain.” See NTSB accident report WPR20CA253.

Flight logbook records were not recovered for the pilot; however, at the time of the last accident, he reported to the NTSB that he had accrued 853.8 total hours of flight time in single-engine airplanes and 71.3 total hours in rotorcraft.

WRECKAGE AND IMPACT INFORMATION

The entire gyroplane came to rest generally intact on its left side on flat open terrain covered with tall heavily vegetated brush near the shoreline of a lake. The fuselage sustained crush and bending damage, consistent with the impact, and there was no evidence to indicate an inflight structural failure. The smell of fuel was present at the accident site and there was no evidence of a wire or bird strike. There were no reports of damaged power lines or power outages in the accident area.

The rotor head and mast were intact and remained attached to the airframe. The main rotor blade hub could be rotated freely. The main rotor blades remained attached to the hub bar and straps and both showed a 20° downward bow outboard of the strap fittings. Both blades exhibited similar tear marks to their trailing edge skins, just outboard of the straps. One blade exhibited a black streak on its lower surface next to the strap consistent with engine propeller blade contact.

Flight control continuity was established from the foot pedals through to the rudder surface, and from the cyclic control stick through to the rotor mast.

There was no evidence of a catastrophic engine failure, and the engine crankshaft could be rotated via the propeller reduction drive hub. One propeller blade remained attached at the hub. The second propeller blade had detached at the root, and the third propeller blade had similarly detached but its tip was not located in the surrounding heavy vegetation.

Further examination of the gyroplane revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed by Bennet Omalu Pathology, Stockton, California. The autopsy report was reviewed by the NTSB Investigator-In-Charge. According to the autopsy report, the cause of death was blunt force trauma.

Toxicology testing performed at the FAA Forensic Sciences Laboratory found no drugs of abuse.

ADDITIONAL INFORMATION

According to the FAA Rotorcraft Flying Handbook (FAA-H-8083-21), Chapter 21, *Gyroplane Emergencies*, if the rotor force is rapidly removed, some gyroplanes may tend to pitch forward abruptly, often referred to as a power pushover, forward tumble, or buntover. "A power pushover can occur on some gyroplanes that have the propeller thrust line above the center of gravity and do not have an adequate horizontal stabilizer." Removing the rotor force is often referred to as unloading the rotor and can occur if pilot-induced oscillations become excessive, in extremely turbulent conditions are encountered, or the nose of the gyroplane is pushed forward rapidly after a steep climb. If a correction is not made, the nose pitching action can become "self-sustaining and irreversible." Additionally, the FAA handbook states that "an adequate horizontal stabilizer slows the pitching rate and allows time for recovery."

According to the Pilot's Operating Handbook, Section 3.10, *Emergency Procedures, Flight Control Malfunction*: "an immediate reduction of power, respectively speed [sic] may be necessary to avoid pitch oscillations or other effects affecting dynamic or static stability."

Pilot Information

Certificate:	Sport Pilot	Age:	68, Male
Airplane Rating(s):	None	Seat Occupied:	Center
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	None None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 853 hours (Total, all aircraft), 71.8 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	RUSSELL W DYER	Registration:	N425RD
Model/Series:	VORTEX	Aircraft Category:	Helicopter
Year of Manufacture:	2019	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	011
Landing Gear Type:	Tricycle	Seats:	1
Date/Type of Last Inspection:		Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	ROTAX
ELT:	Not installed	Engine Model/Series:	582
Registered Owner:	On file	Rated Power:	65 Horsepower
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:	KUKI,601 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	10:56 Local	Direction from Accident Site:	294°
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:	30.14 inches Hg	Temperature/Dew Point:	14°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lakeport, CA	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:		Type of Airspace:	Class G

Airport Information

Airport:	LAMPSON FLD 102	Runway Surface Type:	
Airport Elevation:	1380 ft msl	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	39.027041,-122.90724(est)

Administrative Information

Investigator In Charge (IIC): Cornejo, Tealeye

Additional Participating Persons: Brook Stewart; Federal Aviation Administration; Sacramento, CA

Original Publish Date: December 14, 2023

Last Revision Date:

Investigation Class: [Class 3](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=104342>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).