Aviation Investigation Final Report

Location:	St. Louis, Illinois	**Accident Number:**	GAA19CA279
Date & Time:	May 23, 2019, 14:10 Local	**Registration:**	N369PA
Aircraft:	Guimbal Cabri	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor reported that, during a training flight in the helicopter, he briefed the student pilot on the procedures required to land with a simulated stuck left pedal. The student began a descent to enter a shallower-than-normal glidepath to the runway surface, and he completed his final checks for the maneuver and continued the approach. During the approach the flight instructor directed the student pilot to use "throttle manipulation to control the yaw caused by a fixed input on the anti-torque system." Upon contacting the runway, the helicopter veered left, and the instructor chose to abort the landing. As the helicopter lifted off, it began to rapidly yaw left while drifting left of the runway. Recognizing that the helicopter was in a spin, they attempted to correct by leveling the helicopter long enough to regain tail rotor authority. The helicopter's left skid impacted mud on the left side of the runway, and the helicopter rolled onto its left side. The helicopter sustained substantial damage to the main rotor, fuselage, and tailboom. The instructor reported that there were no preaccident mechanical failures or malfunctions with the helicopter that would have precluded normal operation. A manufacturer's service letter, SL 19-002 A, stated, "During in-flight tail rotor control failure simulation, pilots should never use the twist grip to control yaw." Therefore, the flight instructor's direction to the student to use the throttle to correct the yaw was incorrect and led to ground impact and a dynamic rollover.

Probable Cause and Findings

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

The flight instructor's improper emergency procedure instruction to the student pilot, which resulted in the student improperly using the throttle to correct the loss of yaw control, which resulted in ground impact and a dynamic rollover.

Findings

Aircraft	Directional control - Not attained/maintained
Personnel issues	Aircraft control - Student/instructed pilot
Personnel issues	Aircraft control - Instructor/check pilot
Environmental issues	Wet/muddy terrain - Effect on operation

Factual Information

History of Flight

Landing-aborted after touchdown	Loss of control on ground (Defining event)
Landing-aborted after touchdown	Attempted remediation/recovery
Landing-aborted after touchdown	Runway excursion
Landing-aborted after touchdown	Collision with terr/obj (non-CFIT)
Landing-aborted after touchdown	Dynamic rollover

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	32,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	Unknown
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	June 18, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 27, 2018
Flight Time:	(Estimated) 653 hours (Total, all aircraft), 425 hours (Total, this make and model), 545 hours (Pilot In Command, all aircraft), 135 hours (Last 90 days, all aircraft), 32 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	**Age:**	27,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 29, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 62 hours (Total, all aircraft), 62 hours (Total, this make and model), 11 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Guimbal	**Registration:**	N369PA
Model/Series:	Cabri G2	**Aircraft Category:**	Helicopter
Year of Manufacture:	2015	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1109
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	May 8, 2019 100 hour	**Certified Max Gross Wt.:**	1543 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1839.8 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-360-J2A
Registered Owner:	D H Helicopter Inc	**Rated Power:**	145 Horsepower
Operator:	D H Helicopter Inc	**Operating Certificate(s) Held:**	Pilot school (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCPS,413 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	18:53 Local	**Direction from Accident Site:**	295°
Lowest Cloud Condition:	Few / 3500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	26°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St Louis, IL (CPS)	**Type of Flight Plan Filed:**	None
Destination:	St. Louis, IL (CPS)	**Type of Clearance:**	VFR
Departure Time:	14:10 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	St Louis Downtown CPS	**Runway Surface Type:**	Concrete
Airport Elevation:	412 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30R	**IFR Approach:**	None
Runway Length/Width:	5301 ft / 75 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	38.570278,-90.154998(est)

Administrative Information

Investigator In Charge (IIC):	Gutierrez, Eric
Additional Participating Persons:	Stephen Ragin ; FAA; St Louis, MO
Original Publish Date:	April 13, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99479