Aviation Investigation Final Report

Location:	THOMASTOWN, Mississippi	**Accident Number:**	MIA99LA133
Date & Time:	April 19, 1999, 07:30 Local	**Registration:**	N32PH
Aircraft:	Bell 47G-3B1	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot stated he was pulling up the aerial spray rigged helicopter from the platform of the 'nurse truck' in order to reposition for a better placement on the platform, when he experienced uncommanded rotation. His ground crew stated, as he pulled up, a piece of the aircraft flew off and the tail rotor began to spin down. The aircraft went into an uncontrollable rotation, and the main rotor blades collided with an adjacent small tree stand. The helicopter impacted the terrain, the right landing skid collapsed, and the helicopter rolled over on its right side. Subsequent examination of the wreckage and interviews of the pilot, passenger, and ground crew revealed the approach and pull up for the second approach were into downwind conditions. The piece of the aircraft that flew off was a section of the tail rotor drive shaft. Except for the missing piece of shaft, no mechanical abnormalities could be found in the pilot controls, engine, or drive train.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: An in-flight loss of control caused by the main rotor severing the tail rotor drive shaft as a result of the pilot's cyclic pull-up into a tailwind for his second approach and landing. The loss of the tail rotor caused an uncontrollable descent and tree strike with the main rotor and in-flight collision with terrain. Contributing to the accident was the pilot's improper decision to make a downwind approach and landing.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: HOVER - IN GROUND EFFECT

Findings
1. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. (C) CYCLIC - IMPROPER - PILOT IN COMMAND
3. (C) ROTOR DRIVE SYSTEM,TAIL ROTOR DRIVE SHAFT - BLADE STRIKE

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - HIGH VEGETATION

Factual Information

On April 19, 1999, about 0730 central daylight time, a Bell 47-G3B, N32PH, registered to Provine Helicopter Service, Inc., operating as a 14 CFR Part 137 aerial application flight, crashed while attempting a liftoff from a truck mounted platform near Thomastown, Mississippi. Visual meteorological conditions prevailed and no flight plan was filed. The helicopter sustained substantial damage and the commercially-rated pilot and a passenger reported no injuries. The flight originated about 30 minutes before the accident.

The pilot stated he departed with the land owner for an orientation flight over the tract to be sprayed. Upon completion of the orientation flight, he returned to the "nurse truck" and made an approach to deplane the land owner. He was not content with his landing skid placement on the platform and pulled up for a second approach, when the helicopter started an uncommanded yaw, followed by an uncontrolled rotation. He stated he thought the passenger had stepped on the right anti-torque pedal. He maneuvered the helicopter away from the truck, but the main rotor blades collided with a small tree, the right landing skid hit the terrain hard enough to collapse, and the aircraft came to rest on its right side.

According to the two-man ground crew, as the helicopter was lifting off the platform for better positioning on the platform, they heard a "loud bang similar to a shotgun blast". They saw a piece of the aircraft fly away and the tail rotor stopped turning. The helicopter performed multiple rotations, tilted toward its right side, and impacted a stand of small trees with its main rotor blades. The helicopter came to rest on its right side within the trees.

Subsequent examination of the accident site and interview of the pilot, ground crew, and land owner by Federal Aviation Administration (FAA) inspectors, revealed that the pilot was making a downwind approach to the platform in order to position the passenger near the ladder to expedite his exit off the platform. The wreckage revealed the throttle was fully open and the right anti-torque pedal was full forward. A 16-inch section of tail rotor drive shaft located in the plane of the main rotor tips was missing and the tail boom truss had sustained a main rotor blade strike. One of the main rotor blade tips (outer 4-6 inches) had witness marks that would be consistent with striking the tail rotor shaft. Except for the aforementioned, the inspectors could find no mechanical malfunctions of the pilot's flight or engine controls, the engine or its components, or the transmission or drive train to the main or tail rotor systems. The FAA operations inspector stated, "It appears that the pilot through cyclic and collective control input caused the rotor blades to make contact with the tailboom and tailrotor drive shaft".

Pilot Information

Certificate:	Commercial	**Age:**	50,Male
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 1, 1999
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	4100 hours (Total, all aircraft), 12 hours (Total, this make and model), 3900 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N32PH
Model/Series:	47G-3B1 47G-3B1	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2768
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	March 22, 1999 Annual	**Certified Max Gross Wt.:**	2950 lbs
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	12767 Hrs	**Engine Manufacturer:**	Allison
ELT:	Installed, not activated	**Engine Model/Series:**	250-C-20B
Registered Owner:	PROVINE HELICOPTER SERVICE, IN	**Rated Power:**	420 Horsepower
Operator:		**Operating Certificate(s) Held:**	
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	JAN ,346 ft msl	**Distance from Accident Site:**	45 Nautical Miles
Observation Time:	06:54 Local	**Direction from Accident Site:**	222°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	9°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	07:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	Metal/wood
Airport Elevation:		**Runway Surface Condition:**	Dry
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Stone, Alan
Additional Participating Persons:	DAN MALONE; JACKSON , MS
Original Publish Date:	March 31, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46124