



Aviation Investigation Final Report

Location:	Cullman, Alabama	Accident Number:	ATL06LA059
Date & Time:	April 1, 2006, 18:02 Local	Registration:	N2183U
Aircraft:	Brantly Helicopter B2B	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The helicopter was observed by witnesses descending and flying east bound over County Road 222 in the vicinity of Whitlock's General Store between 30 to 200 feet above the ground. One witness thought the pilot was following a creek in preparation for landing at a private helipad where a mechanic is known to perform maintenance on helicopters. A change in engine noise was heard as the helicopter collided with telephone lines, the nose pitched down, the helicopter collided with the ground near a highway guardrail, rolled over on its right side, and a post crash fire ensued. Examination of the airframe, flight controls, main rotor system, tail rotor system, and engine assembly and accessories revealed no anomalies. The pilot stated to his brother he has no recollection of the events concerning the flight. Review of records revealed the pilot had flown the helicopter 4.1 hours in the last year.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain a visual look out while maneuvering resulting in an in-flight collision with wires and the ground. A factor in the accident was the pilot's lack of recent experience in rotorcraft operations.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: MANEUVERING

Findings

1. OBJECT - WIRE,STATIC(MARKED)
2. (C) VISUAL LOOKOUT - NOT MAINTAINED - PILOT IN COMMAND
3. (F) LACK OF RECENT EXPERIENCE - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On April 1, 2006, at 1802 central standard time, a Brantly B2B, N2183U, registered to a private owner, operating as a 14 CFR Part 91 personal flight, collided with telephone and guy wires while maneuvering in the vicinity of Cullman, Alabama. Visual meteorological conditions prevailed and no flight plan was filed. The helicopter sustained substantial damage, and a post crash fire ensued. The private pilot received serious injuries and stated to his brother that he has no recollection of the events concerning the flight. The flight originated from a private heliport in Madison, Alabama, on April 1, 2006, at an undetermined time. The helicopter was enroute to a private heliport in Cullman, Alabama.

A witness who was driving his truck west bound in the vicinity of Cullman, Alabama stated he observed a helicopter flying east bound over County Road 222 between 100 to 200 feet above the ground. The helicopter flew over his truck and started a descent as if it was going to land. The driver pulled over and turned his vehicle around to watch the helicopter. The helicopter leveled off between 30 to 40 feet above the ground and collided with some telephone wires. Right before the collision, the witness stated he felt the pilot lost control of the helicopter. The nose of the helicopter pitched down and the helicopter collided with the ground near a highway guardrail and rolled over on its right side.

Another witness who was in his back yard with his son heard the helicopter approaching their location. The helicopter was flying eastbound across County Road 222 near a creek in the vicinity of Whitlock's General Store. The witness thought the pilot was following a creek in preparation for landing at a private helipad where a mechanic is known to perform maintenance on helicopters. The helicopter was observed to start a descent. The helicopter was at about 30 feet above the ground when the witness heard a change in engine noise. The witness stated the helicopter collided with telephone lines, the nose pitched down, and the helicopter disappeared from view. He immediately informed his wife to call the 911 emergency operators. He and his son departed on a four-wheeler and went to the crash site. The helicopter was on fire, and he heard someone ask for a knife. He went over to the helicopter and cut the pilot's seat belt and the pilot was removed from the burning wreckage. The girlfriend of the injured pilot arrived at the accident site shortly after the accident. She stated the pilot was taking the helicopter to a private heliport in the immediate area so an annual inspection could be performed on the helicopter.

PERSONNEL INFORMATION

Review of records on file with the FAA Airman Certification Branch, Oklahoma City, Oklahoma, revealed the pilot was issued a private pilot certificate on April 30, 1988, with ratings for

rotorcraft helicopter. The pilot held a third class medical certificate issued on June 8, 2004, with the restriction, " Holder shall wear corrective lenses." The pilot indicated on his application for the third class medical certificate that he had accumulated 152 total flight hours. The pilot's last flight review was conducted on March 26, 2006. The pilot's logbook revealed he has a total of 160.1 hours of which 83.61 hours are in the B2B. The pilot has 80.6 hours as pilot-in-command in all helicopters and 79.4 hours in the B2B. The pilot's last recorded flight before the accident was during his flight review. The pilot's last flight before the flight review was on September 8, 2005.

AIRCRAFT INFORMATION

The helicopter was a Brantly model B2B, serial No. 345, manufactured in 1965. The helicopter is equipped with a Lycoming IVO-360-A1A, 180 horsepower engine. The last recorded annual inspection was conducted on March 18, 2005. The Hobbs meter indicated 537.2 hours. The total time since major overhaul was 790.2 hours. The airframe total time was 1,405.0 hours. The helicopter has flown 4.1 hours since the annual inspection not including the accident flight. The Hobbs meter was destroyed by post crash fire. No Airworthiness Directive compliance list was located with the logbooks.

METEOROLOGICAL INFORMATION

The nearest weather reporting facility at the time of the accident was Folsom Field, Cullman, Alabama, located 11.2 south southwest of the accident site. The 1800 surface weather observation was: clear, visibility 10 miles, temperature 70 degrees Fahrenheit, dew point temperature 55 degrees Fahrenheit, winds calm, and altimeter 30.09.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located on County Road 222, adjacent to Whitlock's General Store, and 11.2 miles south southwest of Folsom Field, Cullman, Alabama. Examination of the wreckage revealed the helicopter collided with telephone wires and guy wires before colliding with County Road 222, and came to rest on its right side on a heading of 170-degrees magnetic next to a guardrail opposing opposite traffic.

The cabin assembly, upper and lower canopy, left and right cabin seats, seatbelts and shoulder harness were consumed by fire. The left doorframe separated from the airframe and the door glass was consumed by fire. The right cabin door separated from the airframe and received fire damage. The door glass was consumed by fire. The lower console instrument panel was consumed by fire except for the circuit breaker panel. The upper console separated from the lower console and was fire damaged. The pilot seat frame was present and fire damaged.

All struts were connected to the left skid and were fire damaged. Recovery personnel cut the two rear struts. The forward lateral and oleo strut separated from the airframe. The drag strut separated from the airframe. All struts were connected to the right skid and were fire

damaged. Recovery personnel cut the forward oleo strut. The forward lateral strut separated from the fuselage. Recovery personnel cut the rear lateral and rear oleo struts. The drag strut separated from the airframe.

The right rudder bell crank was attached to the seat frame. The left seat frame was not located. The left seat rudder bell crank separated from the seat and was fire damaged. Both control rods that connect the left seat bell crank to the rudder pedals were connected to the bell crank. The interconnect control rod from the left to the right rudder bell crank was found connected to the right bell crank and separated from the left bell crank.

The left and right rudder pedals were fire damaged, and were separated forward of the control rods. The left rudder cable was attached to the right bell crank and was separated aft of its turnbuckle. The cable was forwarded to the NTSB Laboratory for further analysis. The right rudder cable was attached by its safety wire to the right bell crank and separated forward of its turnbuckle. The cable was forwarded to the NTSB laboratory for further analysis. The left and right rudder cables extended aft to the aft bell crank. The tail rotor pitch change control was continuous from the aft bell crank to both tail rotor blades.

Examination of the right rudder control cable by the NTSB Materials Laboratory revealed the exposed surfaces displayed corrosion and the surface of the turnbuckle displayed a splatter of white metal. These features are commonly observed after a post impact fire (white metal splattered on components is normally structural aluminum that had melted, splashed onto that component, and eventually solidified). After cleaning, the clevis end was placed in a scanning electron microscope (SEM) and the fracture face was examined. The SEM examination revealed that the fracture face displayed ductile dimples, typical of an overload event.

The portions of the left rudder control cable received for examination consisted of a turnbuckle and a length of cable that was approximately 8 inches long. The turnbuckle was still intact and wire locked. As observed on the right turnbuckle, the exposed surfaces displayed corrosion, and the surface of the turnbuckle displayed a splatter of white metal, features commonly observed after a post impact fire. The SEM examination revealed that the fracture faces on all the wires displayed a faceted surface and cracks that followed the grain boundaries, typical of an intergranular separation normally associated with an overload fracture at an elevated temperature. Examination of the other end the cable portion revealed clean angular sheared faces on the individual wires in the cable, consistent with the cable being cut after fire exposure.

The left and right collective pitch was connected to one another, received fire damage, and was not connected to the airframe. The collective pitch tie rod was connected to the collective pitch assembly at the forward end and the collective bell crank assembly at the aft end. The collective pitch bell crank assembly was separated from the airframe and the lateral and longitudinal control linkage. The mixture control was in the full rich position at the fuel servo. The throttle cable was fire damaged and separated 6-inches aft of the throttle gear and torque tube assembly. The throttle stops on the fuel servo was consumed by fire and the position of

the throttle control could not be confirmed. The throttle plate was fully open.

The left and right cyclic control sticks remained attached to the cyclic control tube assembly and were not connected to the airframe. The left cyclic lateral tie rod assembly remained attached to the forward lateral control arm. The right cyclic lateral control tie rod assembly was separated from the forward lateral control arm. The aft lateral control arm was separated from the lateral control tube. The longitudinal control rod remained attached to the cyclic control tube and longitudinal control arm. The right vertical lateral control tube was separated from the lateral control arm at the bottom and from the swash plate assembly at the top. The vertical longitudinal control rod was separated at the lateral control arm at the bottom and from the swash plate assembly at the top. The left vertical lateral control tube was separated from the lateral control arm at the bottom and from the swash plate assembly at the top. All pitch change links in the hub remained attached at both ends except for the pitch change link on the yellow main rotor blade which separated at the top threaded end of the pitch change link.

The rotor system with the transmission attached separated from the engine at the clutch assembly. The centrifugal clutch assembly remained attached to the engine. The telephone guy wire was wrapped around the outboard hinge of the yellow main rotor blade. The telephone wire came over the top of the yellow main rotor blade and under the blue main rotor blade near the rotor hub.

The forward firewall was bent and fire damaged. The left and right rotor mounts were bent, fire damaged, and separated near the transmission. Recovery personnel cut the left rotor mount. The left and right side of the engine compartment airframe received fire damage. The stainless steel deck was bent and fire damaged. The aluminum deck was bent. The fuel tanks were ruptured and fire damaged. The aft firewall was bent and fire damaged. The top cowling assembly was fire damaged, bent, and remained attached to the airframe.

The engine remained attached to the airframe at the engine mounts and received fire damage. The left and right exhaust assemblies remained attached to the engine. The air filter and the ducting from the air filter to the fuel servo were destroyed by fire. The fuel servo remained attached to the engine but was partially consumed by fire. The fuel flow divider remained attached to the engine. The fuel manifold was removed and examined. The diaphragm was intact and no contamination was noted. The fuel injectors were removed and unobstructed. The engine driven fuel pump received fire damage. The fuel pump was removed and could not be rotated, and the spline drive was intact. The electric fuel pump received fire damage, and the motor armature could not be rotated. The induction tube couplings at the fuel servo were consumed by fire. The induction tubes remained attached to the engine. The belt driven engine cooling fans remained attached to the airframe. The cooling fan drive belt was destroyed by fire. The oil cooler remained attached to the airframe and no damage was noted. The oil cooler hoses received fire damage. The oil sump remained attached to the engine and oil was present on the engine oil dipstick. The starter and generator remained attached to the engine. The generator belt was consumed by fire. The starter bendix pinion was retracted. Both magnetos

and the ignition leads received fire damage, and could not be rotated.

The overrunning clutch and rag coupling separated from the centrifugal clutch. The spline gear inside the overrunning clutch was turned by hand freely in the counterclockwise direction and locks in the clockwise direction. The centrifugal clutch was removed from the engine and disassembled. Corrosion was present in the centrifugal clutch and on the clutch friction plates. Normal wear was present on the clutch plates and clutch facing. The clutch spring and tube assembly was present with grease. The pinion bearing was separated from the pinion-bearing adapter on top of the flywheel plate, and was not located. The planetary transmission moved freely 360-degrees when turned by hand.

The yellow main rotor blade remained attached to the rotor hub. The top leading edge of the inboard main rotor blade was damaged. The outboard main rotor blade separated outboard of the hinge block. The blue main rotor blade remained attached to the main rotor hub. The trailing edge of the inboard main rotor blade was fire damaged. The top and bottom of the leading edge of the inboard main rotor blade was damaged. The outboard main rotor blade separated outboard of the hinge block. The red main rotor blade remained attached to the main rotor hub. The inboard control tube was bent. The trailing edge of the main inboard rotor blade was bent and separated from the control tube. The leading edge of the inboard main rotor blade was separated and not located. The outboard main rotor blade separated outboard of the hinge block. One outboard main rotor blade was recovered but not identified as red, blue, or yellow.

The aft fuselage section near the forward end received fire damage. The baggage compartment was fire damaged. The baggage compartment door was open, bent, and fire damaged. The aft fuselage at the oil cooler skin and right hand side was bent. The tail cone was bent aft of the stabilizer. The right stabilizer was bent and separated. The vertical tail pylon was bent and torn 7-inches down from the upper tail rotor gearbox.

The extension tail rotor drive shaft was bent and separated from the tail rotor tube drive shaft (long horizontal shaft). The tail rotor drive shaft (long horizontal shaft) and housing were bent at the tail cone at the No.10 hangar bearing. The intermediate and upper tail rotor gearboxes were intact. Both tail rotor blades are wrinkled on the trailing edge. The tail rotor guard was separated and not recovered.

The engine was partially disassembled. The starter ring gear was intact. The crankshaft and crankshaft flange were intact. The left and right ignition harnesses were destroyed by fire. The top and bottom spark plugs were removed and exhibited "worn out normal" when compared to the Champion Check A Plug chart. The No. 2 and No. 4 cylinder top spark plugs were oily, and the bottom spark plugs were oil soaked. The engine was rotated using a drive tool inserted as an adapter into the fuel pump drive. Compression and suction was obtained at all cylinders. Continuity was established from the crank shaft to the rear gears. The rocker arms and valves moved when the crankshaft was rotated. The oil suction screen pressure screen was removed, opened, and was free of contaminants. The oil pressure screen was removed, opened, and free

of metallic contaminants.

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot was transported to the University of Alabama Medical Center, Birmingham, Alabama, with serious injuries. Law enforcement did not request toxicology samples from the pilot.

ADDITIONAL INFORMATION

The aircraft and pilot logbooks were released to the FAA Coordinator on April 5, 2006. The helicopter wreckage and components retained for further examination by the NTSB Materials Laboratory was released to Atlanta Air Recovery on June 8, 2006. T

Pilot Information

Certificate:	Private	Age:	52, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	June 1, 2004
Occupational Pilot:	No	Last Flight Review or Equivalent:	March 1, 2006
Flight Time:	160 hours (Total, all aircraft), 84 hours (Total, this make and model), 81 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Brantly Helicopter	Registration:	N2183U
Model/Series:	B2B	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	345
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	March 1, 2005 Annual	Certified Max Gross Wt.:	1670 lbs
Time Since Last Inspection:	4 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1405 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IVO-360-A1A
Registered Owner:	Peter J. Spinelli Jr.	Rated Power:	180 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	3A1,969 ft msl	Distance from Accident Site:	6 Nautical Miles
Observation Time:	18:00 Local	Direction from Accident Site:	50°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.09 inches Hg	Temperature/Dew Point:	21°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Madison, AL	Type of Flight Plan Filed:	None
Destination:	Cullman, AL	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	Jose Carreras; Birmingham FSDO-09; Birmingham, AO Textron Lycoming; Elizabethton, TN Gilles Lehoux; Brantly; Vernon, TX
Original Publish Date:	October 3, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=63427

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