Aviation Investigation Final Report

Location:	Placida, Florida	**Accident Number:**	MIA07LA049
Date & Time:	February 11, 2007, 13:06 Local	**Registration:**	N819BP
Aircraft:	McDonnell Douglas 369FF	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot elected to land in an open field that was used as an overflow parking lot for a restaurant. The area was empty upon his arrival. At the time of his departure, the helicopter was surrounded with vehicles. During the liftoff, at about 30 feet above the ground, a witness and the pilot reported hearing a loud bang. The witness saw something black, about a foot long, fly off the tail rotor section. The helicopter immediately began an uncontrollable spin, descended, and crashed into trees. Postcrash examination of the helicopter revealed a section of the tail rotor pitch change control rod and bellcrank clevis were fractured and missing. Metallurgical examination of the remaining bellcrank and rod showed fractures consistent with a bending overload fracture. Examination of the remainder of the helicopter control systems, structure, and engine showed no evidence of precrash failure or malfunction.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The in-flight separation of the tail rotor pitch change control rod and bellcrank during takeoff-initial climb.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) ROTOR SYSTEM,TAIL ROTOR HUB PITCH LINK - SEPARATION
2. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. OBJECT - TREE(S)

Factual Information

On February 11, 2007, about 1306 eastern standard time, a McDonnell Douglas 369 FF, N819BP, registered to BP Aviation LLC and operated by an individual, crashed into a mangrove area during liftoff from an open field at Placida, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 Code of Federal Regulation Part 91 personal flight. The private-rated pilot received minor injuries and the two passengers were not injured, and the helicopter incurred substantial damage. The flight was originating at the time.

The responding Federal Aviation Administration (FAA) inspectors stated that the helicopter landed in an area that was commonly utilized as an overflow parking area for the restaurant parking lot. When the helicopter landed, the area was empty of vehicles. By the time the pilot was ready to depart the overflow parking area was full of vehicles. The pilot had to wait until several vehicles left the area in order to depart. None of the restaurant representatives recalled receiving prior communication of the helicopter's arrival in the parking area for that day.

The pilot stated that a preflight and pre-start checklist was completed. During the start up "All the gauges were within normal operating ranges, controls were checked and were normal, and there were no cautions or warnings." The helicopter was brought to a short duration, low stabilized hover with no indications of warnings or cautions. The collective was lifted for the departure. At about 20 feet above the ground, he heard a loud bang. The helicopter snapped to the right and he applied the left pedal, the horizon moved at great speed as the g-force increased. The pilot lowered the collective, decreased the throttle, and used the cyclic control to maneuver away from the congestion. The helicopter crashed into the trees. The engine was shutdown. The pilot and the two passengers evacuated the helicopter.

Witnesses stated that white smoke was seen coming out of the tail section before the engine spooled up. Once the helicopter's engine started, the helicopter rose to 30 feet (one witness stated up to 80 feet), before the helicopter went out of control. Another witness reported hearing a big bang noise from the helicopter and something black about a foot long fly off the tail rotor section. Immediately after this the helicopter started spinning uncontrollable clockwise before descending and impacting into trees.

A post recovery wreckage examination was conducted by an FAA inspector and representatives from the Boeing Company and Rolls-Royce Engines. Examination of the tailrotor assembly mounted on the tailboom showed that the tail rotor control rod attaching to the tailrotor bellcrank was broken off. Approximately 2 inches of the clevis end of the bellcrank was missing. Neither of the sections was recovered. The fractured bellcrank and control rod were sent to the National Transportation Safety Board, Materials Laboratory, for examination. The examination revealed the fractured bellcrank and control rod had fracture surfaces consistent with bending overload. The examination of the remainder of the flight

control system, helicopter structure and engine revealed no evidence of preimpact mechanic failure or malfunction.

Pilot Information

Certificate:	Private	**Age:**	64,Male
Airplane Rating(s):	Single-engine land	**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:**	September 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 1, 2007
Flight Time:	466 hours (Total, all aircraft), 6 hours (Total, this make and model), 409 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	McDonnell Douglas	**Registration:**	N819BP
Model/Series:	369FF	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0058FF
Landing Gear Type:	High skid	**Seats:**	4
Date/Type of Last Inspection:	October 1, 2006 100 hour	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:	24 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	1853.7 Hrs as of last inspection	**Engine Manufacturer:**	Rolls-Royce
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	250-L30
Registered Owner:	B. P. Aviation LLC	**Rated Power:**	425 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:	PGD,26 ft msl	**Distance from Accident Site:**	
Observation Time:	12:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	22°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Placida, FL	**Type of Flight Plan Filed:**	None
Destination:	Tampa, FL (KTPF)	**Type of Clearance:**	None
Departure Time:	13:06 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 2 None	**Latitude, Longitude:**	26.850555,-82.25

Administrative Information

Investigator In Charge (IIC):	Obregon, Jose
Additional Participating Persons:	Linda M Nevin; FAA FSDO ; Tampa, FL. Rolls-Royce; Indianapolis, IN Boeing; Mesa, AZ
Original Publish Date:	September 26, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65292