



National Transportation Safety Board Aviation Accident Final Report

Location:	Broomfield, CO	Accident Number:	DEN07LA132
Date & Time:	08/01/2007, 1635 MDT	Registration:	N568TD
Aircraft:	Bell 206B	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 Minor, 2 None
Flight Conducted Under:	Part 91: General Aviation - Business - Sightseeing		

Analysis

According to the pilot, this was his sixth sightseeing flight of the day. He had just landed and three passengers disembarked. Three other passengers boarded the helicopter. As the pilot brought the throttle to full rpm and increased torque, the helicopter turned left about 15 degrees. Approximately 3 inches of opposite pedal was used to bring the helicopter back to its original heading. The pilot continued to increase torque and as the skids started to come off the ground, the nose pitched up rapidly and the helicopter rolled to the right. The left skid was about 3 inches off the ground during the yaw. The right skid never left the ground. Full forward and left cyclic had no effect. The pilot then lowered collective and tried to roll off the throttle. The helicopter rolled right until the main rotor blades contacted the ground. A piece of main rotor blade struck a nearby hangar. The pilot reported no control anomalies and a subsequent examination revealed no discrepancies. FAA's "Rotorcraft Flying Handbook" (FAA-H-8083-21) defines "dynamic rollover" as "the tendency of a helicopter to continue rolling when the critical angle is exceeded, if one gear is on the ground, and the helicopter is pivoting around that point."

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 control of the helicopter, resulting in an inadvertent dynamic rollover.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: TAKEOFF

Findings

1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: ROLL OVER
Phase of Operation: TAKEOFF

Findings

2. (C) DYNAMIC ROLLOVER - INADVERTENT - PILOT IN COMMAND

Factual Information

On August 1, 2007, approximately 1635 mountain daylight time, a Bell 206B, N268TD, piloted by an airline transport-certificated pilot, was substantially damaged when it yawed to the left and rolled over to the right and struck the helipad while taking off at Rocky Mountain Metropolitan Airport (BJC), Broomfield, Colorado. Visual meteorological conditions prevailed at the time of the accident. The sightseeing flight was being conducted under the provisions of Title 14 CFR Part 91 without a flight plan. The pilot and two passengers aboard the helicopter received minor injuries. One passenger was not injured. The local flight was originating at the time of the accident.

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On August 15, 2007, the helicopter was examined by FAA and Bell Helicopter investigators. They reported finding no anomalies.

FAA's "Rotorcraft Flying Handbook" (FAA-H-8083-21) defines "dynamic rollover" as "the tendency of a helicopter to continue rolling when the critical angle is exceeded, if one gear is on the ground, and the helicopter is pivoting around that point." It elaborates: "A helicopter is susceptible to a lateral rolling tendency, called dynamic rollover, when lifting off the surface. For dynamic rollover to occur, some factor has to first cause the helicopter to roll or pivot around a skid...until its critical rollover angle is reached. Then, beyond this point, main rotor thrust continues the roll and recovery is impossible. If the critical rollover angle is exceeded, the helicopter rolls on its side regardless of the cyclic corrections made."

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	60, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Helicopter; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	03/01/2007
Occupational Pilot:		Last Flight Review or Equivalent:	03/01/2007
Flight Time:	17867 hours (Total, all aircraft), 106 hours (Total, this make and model), 16246 hours (Pilot In Command, all aircraft), 46 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Bell	Registration:	N568TD
Model/Series:	206B	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	2976
Landing Gear Type:	Skid	Seats:	5
Date/Type of Last Inspection:	05/01/2007, 100 Hour	Certified Max Gross Wt.:	3200 lbs
Time Since Last Inspection:		Engines:	1 Turbo Shaft
Airframe Total Time:	9353 Hours	Engine Manufacturer:	Rolls Royce
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	250-620B
Registered Owner:	Vertical Lift, LLC	Rated Power:	420 hp
Operator:	Rotors of the Rockies	Air Carrier Operating Certificate:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	RT6A

Meteorological Information and Flight Plan

Observation Facility, Elevation:	BJC, 5670 ft msl	Observation Time:	1650 MDT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Scattered / 11000 ft agl	Temperature/Dew Point:	33 °C / 8 °C
Lowest Ceiling:	Broken / 20000 ft agl	Visibility	30 Miles
Wind Speed/Gusts, Direction:	8 knots, 60 °	Visibility (RVR):	
Altimeter Setting:	30.15 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Broomfield, CO (BJC)	Type of Flight Plan Filed:	None
Destination:	(BJC)	Type of Clearance:	None
Departure Time:	1635 MDT	Type of Airspace:	

Airport Information

Airport:	Rocky Mountain Metropolitan (BJC)	Runway Surface Type:	
Airport Elevation:	5670 ft	Runway Surface Condition:	
Runway Used:	NA	IFR Approach:	Unknown
Runway Length/Width:		VFR Approach/Landing:	Unknown

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	Adopted Date:	09/27/2007
Additional Participating Persons:	Gary L Kopp; FAA Flight Standards District Office; Denver, CO Brent Weckwerth; FAA Flight Standards District Office; Denver, CO Steven R Scully; FAA Flight Standards District Office; Denver, CO David Dosker; Bell Helicopter Textron, Inc.; Fort Worth, TX		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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