



National Transportation Safety Board Aviation Accident Data Summary

Location:	Miami, FL	Accident Number:	ERA13FA186
Date & Time:	04/03/2013, 1600 EDT	Registration:	N3101H
Aircraft:	ROBINSON R44	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Flight Test		

Analysis

The pilot, who also owned the helicopter company, hired a mechanic to change the main rotor blades on the helicopter. The main rotor blade change also required several adjustments to the pitch change rods on the rotor system followed by test flights. The accident flight was the second maintenance flight of the day and occurred about 1 hour of operation after the main rotor blade replacement.

Witnesses observed the helicopter flying and heard a loud “pop” sound followed by components separating from the helicopter. They then observed the tail section separate from the helicopter and the helicopter crash to the ground. Witness statements and wreckage documentation were consistent with a main rotor blade rotating upward during the accident flight, which was followed by a tail strike and the helicopter rolling inverted. Subsequently, the mast bumped and the helicopter descended uncontrolled to the ground.

A witness, who had flown the helicopter numerous times, stated that he observed the mechanic make adjustments to the pitch change rods on the rotor system during the maintenance procedure. He also stated that the mechanic told him that the owner of the helicopter was upset and that the helicopter manufacturer installed refurbished spindles onto the new blades. The owner’s frustration likely distracted the mechanic and/or applied pressure for the mechanic to return the helicopter to service and revenue operations as soon as possible.

On-scene examination of the wreckage revealed that the pitch-link-to-swash-plate connection for one of the main rotor blades was missing. The pitch link and horn were found about 90 feet away. Metallurgical examination of the main rotor system revealed that the attaching hardware for the pitch-link-to-swash-plate connection was most likely not secured properly and separated after about 1 hour of flight following the maintenance. All other failures were consistent with overstress and no preexisting cracking was noted. No other anomalies with the helicopter structure, systems, or engine were found.

Flight Events

- Prior to flight - Aircraft maintenance event
- Initial climb - Part(s) separation from AC
- Initial climb - Flight control sys malf/fail
- Initial climb - Mast bumping
- Initial climb - Loss of control in flight
- Uncontrolled descent - Collision with terr/obj (non-CFIT)

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The mechanic's failure to properly secure the pitch link hardware of one main rotor blade to the rotating swash plate, which resulted in the pitch link separating in flight and the pilot's subsequent loss of control. Contributing to the accident was the pilot's/owner's pressure on the mechanic to return the helicopter to revenue service.

Findings

Aircraft-Aircraft propeller/rotor-Main rotor system-Main rotor mast/swashplate-Incorrect service/maintenance - C

Personnel issues-Task performance-Maintenance-Replacement-Maintenance personnel - C

Personnel issues-Psychological-Personality/attitude-Motivation/respond to pressure-Pilot - F

Pilot Information

Certificate:	Commercial	Age:	53
Airplane Rating(s):	Single-engine Land	Instrument Rating(s):	None
Other Aircraft Rating(s):	Helicopter	Instructor Rating(s):	None
Flight Time:	6840 hours (Total, all aircraft), 999999 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	ROBINSON	Registration:	N3101H
Model/Series:	R44	Engines:	1 Reciprocating
Operator:	Bravo Helicopters LLC	Engine Manufacturer:	Lycoming
Air Carrier Operating Certificate:	None	Engine Model/Series:	O-540-F1B5
Flight Conducted Under:	Part 91: General Aviation - Flight Test		

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KTMB, 10 ft msl	Weather Information Source:	Weather Observation Facility
Conditions at Accident Site:	Visual Conditions	Lowest Ceiling:	None
Condition of Light:	Day	Wind Speed/Gusts, Direction:	12 knots/ 6 knots, 120°
Temperature:	29° C / 20° C	Visibility	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Miami, FL (TMB)	Destination:	Miami, FL (TMB)

Airport Information

Airport:	Kendall Tamiami Executive Airp (TMB)	Runway Surface Type:	N/A
Runway Used:	N/A	Runway Surface Condition:	Unknown
Runway Length/Width:			

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None

Administrative Information

Investigator In Charge (IIC):	Patrick M Murray	Adopted Date:	06/02/2014
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=86581		

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