Aviation Investigation Final Report

Location:	South Timbalier Platform,	**Accident Number:**	CEN14FA286
Date & Time:	June 11, 2014, 14:30 Local	**Registration:**	N207MY
Aircraft:	Bell 206 L4	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The commercial-rated pilot and passenger were en route to an oil platform located in the Gulf of Mexico. A witness, who was on the platform, saw the helicopter heading toward the platform. As the helicopter approached, it started to spin in a clockwise direction. The helicopter spun several times before it dropped to the water.

Examination of the helicopter and rotor system did not reveal any preimpact abnormalities. Weather stations located about 26 and 48 miles from the accident site reported favorable conditions with relatively light wind. Given the lack of specific wind information for the accident location and the lack of information regarding the helicopter's direction, speed, and altitude as it approached the platform, it could not be determined if the helicopter experienced a loss of tail rotor effectiveness.

A medical review of the pilot noted discrepancies between his declared medical conditions and medicine usage and those found during the autopsy and toxicology tests. However, there was not enough information to determine whether a medical issue resulted in the pilot's loss of helicopter control.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's loss of helicopter control for reasons that could not be determined based on the available information.

Findings

Not determined	(general) - Unknown/Not determined
Personnel issues	Predisposing condition - Pilot

Factual Information

History of Flight

Approach	Collision with terr/obj (non-CFIT)
Approach	Loss of control in flight (Defining event)
Approach	Unknown or undetermined

HISTORY OF FLIGHT

On June 11, 2014, about 1430 central daylight time, a Bell 206 L4 helicopter, N207MY, impacted the waters in the Gulf of Mexico. The helicopter was registered to Coy Leasing, LLC, and operated by Westwind Helicopters, Inc., under the provisions of 14 Code of Federal Regulations Part 135 as an on-demand air taxi. The commercial rated pilot and passenger were fatally injured and the helicopter was destroyed. Visual meteorological conditions prevailed and company flight following was in effect at the time of the accident. The flight departed Ship Shoal 266B oil platform at 1409, and was en route to the South Timbalier 317 (ST 317) platform.

A witness, who was located on the ST 317 oil platform reported that he heard the helicopter approach the platform. The helicopter was on a straight in approach to the platform, when the helicopter started to spin in a clockwise direction. The witness added they he heard a "snap" like something broke, and it looked like the baggage compartment door was open and debris was coming out of the baggage compartment during the spin. The helicopter spun 8-10 times, before the helicopter went silent and dropped to the water.

The helicopter sank and was recovered from about a depth of 380 feet of water. The tail boom had separated from the main fuselage and was recovered from the surface of the water. One of the main rotor blades, which had separated about four feet from the mast, was not recovered. Several sections of the helicopter were not recovered which included the landing skids, cabin door, and floor.

PERSONNEL INFORMATION

The pilot held a U.S. commercial pilot certificate with a rotorcraft-helicopter rating. The pilot held a second class medical certificate issued on November 13, 2013, with the restriction; "must wear corrective lenses". At the time of the exam, the pilot reported 13,500 hours total flight time with 260 hours in last six months. In addition, he held a Canadian private pilot certificate with ratings for airplane single land, multi-engine land and helicopter.

AIRCRAFT INFORMATION

The Bell 206 L4, is a two –bladed, single-engine, helicopter. The helicopter was powered by a Rolls-Royce (Allison) 250-C30P turbo shaft engine. The helicopter's last 100 hour inspection was on May 18, 2014, at an aircraft total time of 6,387 hrs. The engine had 19,736 hours total hours.

A review of maintenance records for the helicopter revealed a maintenance discrepancy was written as "no fwd cyclic", four days before the accident. The pilot who entered the write-up reported that he no forward and limited left cyclic. He also stated that the control felt more like a jam, rather than a hydraulic problem and that he didn't push too hard. Maintenance annotated in the records that the helicopter controls were checked and then flight checked, with no defects noted.

METEOROLOGICAL INFORMATION

At 1450, the automated weather observation facility located at the Houma-Terrebonne Airport Houma, Louisiana, about 92 miles north of the accident site recorded; wind from 360 degrees at 4 knots, 6 miles visibility in haze, scattered clouds 5,000 feet, temperature 93 degrees Fahrenheit (F), dew point 70 F, and a barometric pressure of 29.91 inches of mercury.

The closest surrounding weather reporting locations were identified as oil platforms; Green Canyon 338 (KGRY), Mississippi Canyon (KMDJ), Ship Shoal 178 (KLSPR), and Green Canyon 78 (KATP).

At 1420, the automated weather observation facility located at KGRY, located about 26 miles south-southwest recorded: wind variable at 5 knots with gusts to 13 knots, visibility 10 statute miles, sky clear below 12,000 feet, temperature 30° Celsius (C), dew point 24° C, and an altimeter 29.92 inches of mercury (Hg).

At 1435, the automated weather observation facility located at KMDJ, located about 48 miles south-southwest recorded: wind 280 degrees at 7 knots, visibility 10 statute miles, sky clear below 12,000 feet, temperature 29° C, dew point 22° C, and an altimeter 29.93 inches of mercury (Hg).

There were no convective SIGMETs for the accident area.

The closest Terminal Aerodrome Forecast (TAF) to the accident site was issued for Houma-Terrebonne Airport (KHUM), Houma, Louisiana.

The forecast indicated a west-southwest wind at 7 knots, visibility unrestricted, and few clouds at 5,000 feet agl. No significant weather was expected surrounding the period.

The National Weather Service (NWS) Winds and Temperature Aloft Forecast (FD) valid during the accident time for New Orleans expected at 3,000 feet msl a wind from 250° at 11 knots.

The National Oceanic and Atmospheric Administration (NOAA) Air Resource Laboratory (ARL) archive data of North American Mesoscale (NAM) numerical model data was obtained and a sounding plotted on a standard Skew-T log P diagram from the surface to 18,000 feet over the approximate accident site at 1300 CDT utilizing RAOB software. The sounding depicted a surface temperature of 28° C (82° F), with a dew point temperature of 23° C (74° F), and a relative humidity of 75%, with a density altitude of 1,835 feet.

The model surface wind was from 240° at 7 knots, with a slight veering clockwise with the wind with height to the west. The model wind at 400 and 1,000 feet was from approximately 240° at 8 knots, and did not indicate any low-level wind shears.

A complete Weather Study Report was prepared for this investigation; the Group Chairman's factual report is located in the docket for this accident.

COMMUNICATIONS and RADAR INFORMATION

The helicopter was equipped with a Sky Connect system. The system recorded the helicopter had flown 6 hours 26 minutes on June 11. The flight system recorded the helicopter's departure and flight en route to ST 317. Several positon points were recorded during the flight which indicated the helicopter was on a east-southeast heading. The helicopter's altitude and airspeed varied, but the altitude was generally above 550 feet agl, with an airspeed of about 115 knots. The last recorded position of the helicopter was at 1923:49 (greenwich mean time) on a heading of 121 degrees, at an altitude of 551 feet, and an airspeed of 111 knots; approximately 0.9 miles from ST 317.

AIRPORT INFORMATION

South Timbalier 317 is an oil platform in the Gulf of Mexico, located about 67 miles off the coast of Louisiana, and about 100 miles south of Houma, Louisiana.

WRECKAGE AND IMPACT INFORMATION

The wreckage was transported to the operator's facility located near Santa Fe, Texas. Examination of the wreckage was conducted by the NTSB, FAA, and technical representatives from the engine and airframe manufacturers. The helicopter was heavily damaged during the accident with extensive damage to the cabin. The engine and transmission remained attached to the fuselage. The cabin and cockpit of the helicopter was destroyed; the cabin floor was not with the fuselage, nor recovered with the wreckage. One of the two main rotor blades remained attached to the mast and the other blade had separated about 4 feet from the mast. The tailboom separated just aft of the fuselage, the tail rotor drive shaft had rotational scoring near the hangar bearings; the tail rotor gearbox remained with the tailboom and both tail rotor blades remained attached, and bent, towards the tailboom. The flight control connections were secure; however, the condition of the fuselage and separation of the tailboom, prevented movement of the tail rotor controls. The effect of salt water immersion was beginning, however, continuity and rotation of the transmission was established. Engine continuity to the accessory was established and the turbine and compressor sections were free to rotate.

MEDICAL AND PATHOLOGICAL INFORMATION

The Jefferson Parish Forensic Center, Harvey, Louisiana conducted an autopsy on the pilot. The cause of death was determined to be, "multiple blunt force injuries".

Toxicological testing on the pilot was not conducted by the FAA Bioaeronautical Sciences Research Laboratory, in Oklahoma City, Oklahoma, because the specimens were ruined during shipment.

A review of the pilot's FAA medical records indicated that the pilot had not reported any chronic medical problems nor medications to the FAA. However, his autopsy identified a large area of myocardial scarring and fibrosis as well as the presence of a patent stent in the left anterior descending coronary artery; the other coronary arteries were too damaged to be assessed.

The Jefferson Parish coroner did conducted toxicological testing. The result was positive for 2,500 ng/mL of Tramadol.

Tramadol is a prescription medication used to treat moderate to severe pain.

TEST AND RESEARCH

The helicopter's hydraulic system, section of the main rotor blade, tail boom, and two sections of the tail rotor drive shaft were sent to the Bell Field Investigations Laboratory, in Hurst, Texas. An examination of the components was conducted under the supervision of the NTSB, FAA, and technical representatives of HR Woodard, Bell Helicopter, and the operator.

Examination of the fractures on the tail rotor drive section was consistent with overload as a result of extreme bending. The tailboom section had buckling damage of the left side; the section was absent of paint transfer from any object impact. Additionally, the paint cracks on the tailboom were consistent with buckling of the tailboom metal. The facture surface of the main rotor blade section was also inspected; the D channel spar was bent aft and downward and consistent with an overload failure.

The hydraulic system was removed from the helicopter's fuselage and examined at the lab. The pump and hydraulic actuators were separated from the system and tested on a hydraulic test stand. The hydraulic filters were partially restricted with fine particles. Despite impact damage to the pump and salt water immersion of the system, the hydraulic system functionally performed with no anomalies noted.

The three actuators were then sent to the manufacturer in Santa Clarita, California for additional examination. A disassembly examination was conducted under the supervision of the NTSB and a technical representative from Woodward HRT. Examination of the actuators did not reveal any abnormalities, nor evidence of any previous malfunction.

ADDITIONAL INFORMATION

Excerpts from FAA Helicopter Handbook, FAA-H-8083-21A, Chapter 11 - Helicopter Emergencies and Hazards:

Loss of Tail Rotor Effectiveness (LTE) or an unanticipated yaw is defined as an uncommanded, rapid yaw towards the advancing blade which does not subside of its own accord. It can result in the loss of the aircraft if left unchecked. It is very important for pilots to understand that LTE is caused by an aerodynamic interaction between the main rotor and tail rotor and not caused from a mechanical failure. Some helicopter types are more likely to encounter LTE due to the normal certification thrust produced by having a tail rotor that, although meeting certification standards, is not always able to produce the additional thrust demanded by the pilot.

Unfortunately, the aerodynamic conditions that a helicopter is susceptible to are not explainable in black and white terms. LTE is no exception. There are a number of contributing factors but what is more important to understanding LTE are taking the contributing factors and couple them with situations that should be avoided. Whenever possible, pilots should learn to avoid the following combinations:

1. Low and slow flight outside of ground effect.
2. Winds from ±15º of the 10 o'clock position and probably on around to 5 o'clock position

3. Tailwinds that may alter the onset of translational lift and translational thrust hence induce high power demands and demand more anti-torque (left pedal) than the tail rotor can produce.
4. Low speed downwind turns.
5. Large changes of power at low airspeeds.
6. Low speed flight in the proximity of physical obstructions that may alter a smooth airflow to both the main rotor and tail rotor.

Pilot Information

Certificate:	Commercial; Foreign	**Age:**	66
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 13, 2013
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	13500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N207MY
Model/Series:	206 L4	**Aircraft Category:**	Helicopter
Year of Manufacture:	2000	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	52258
Landing Gear Type:	N/A; High skid	**Seats:**	
Date/Type of Last Inspection:	May 18, 2014 100 hour	**Certified Max Gross Wt.:**	4550 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	6387 Hrs as of last inspection	**Engine Manufacturer:**	ALLISON
ELT:	C126 installed, not activated	**Engine Model/Series:**	250-C30 SER
Registered Owner:	COY LEASING LLC	**Rated Power:**	650 Horsepower
Operator:	Westwind Helicopter LLC	**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KGRY	**Distance from Accident Site:**	26 Nautical Miles
Observation Time:	14:20 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / 13 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	30°C / 24°C
Precipitation and Obscuration:			
Departure Point:	Ship Shoal 266B, GM	**Type of Flight Plan Filed:**	Company VFR
Destination:	South TB 317, GM	**Type of Clearance:**	VFR
Departure Time:	14:09 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	28.049999,-90.400001(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Daniel Ferris; FAA FSDO; Houston, TX Jack Johnson; Rolls-Royce Corporation; Indanapolis, IL Harold Barrentine; Bell Helicopters; Fort Worth, TX
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Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89428