



National Transportation Safety Board Aviation Accident Preliminary Report

Location:	Hertford, NC	Accident Number:	ERA17FA316
Date & Time:	09/08/2017, 1120 EDT	Registration:	N146DU
Aircraft:	EUROCOPTER DEUTSCHLAND GMBH MBB BK 117	Injuries:	4 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled - Air Medical (Discretionary)		

On September 8, 2017, about 1120 eastern daylight time, a Eurocopter Deutschland GMBH MBB BK117-C2 helicopter, N146DU, was destroyed when it crashed on a wind turbine farm in Hertford, North Carolina. The commercial pilot, two flight nurses, and one patient were fatally injured. Day visual meteorological conditions prevailed at the time, and a company flight plan was filed for flight that departed the Sentara Albemarle Regional Medical Center Heliport (NC98) about 1108. The flight was destined for the Duke University North Heliport (NC92). The helicopter was operated by Air Methods Corporation under the provisions of 14 *Code of Federal Regulations* Part 135.

According to the operator, on the morning of the accident, the pilot and both medical crew flew from their base at the Johnston Regional Airport (JNX), Smithfield, North Carolina to the Elizabeth City Regional Airport (ECG), Elizabeth City, North Carolina for refueling. They arrived at ECG about 0924, and loaded 70 gallons of fuel. About 1011, the crew radioed the company operations center and advised they were departing for NC98, and had 2 hours of fuel on board. They arrived at NC98 about 1022. At 1108, the pilot radioed the company operations center and advised that they were departing for NC92 with 2 hours of fuel and four people on board. There were no further communications with the helicopter.

Preliminary data transmitted from the helicopter showed that it departed NC98 to the northwest, climbed to about 1,000 ft mean sea level (msl) and then turned west. The helicopter climbed to about 2,500 ft msl and continued on a westerly track at a groundspeed of about 120 knots. About 8 minutes after takeoff, the helicopter began a turn toward the south. About 1 minute later, the transmitted data ended at an altitude of about 1,200 ft msl and a groundspeed of 75 knots, while the helicopter was on a southeasterly track.

Several witnesses reported observing smoke trailing behind the helicopter while it was in flight. The smoke was described by some witnesses as "heavy" or "dark", while others reported the color as "black", "dark blue" or "blue." One witness reported that the helicopter was "hovering" and "not travelling forward" while it was a "couple of hundred feet" above the wind turbine farm. Another witness reported hearing a "popping noise," he then observed the helicopter

turn left, then right. It then descended quickly and appeared "in control" with the rotors turning before he lost sight of it.

The helicopter impacted a shallow turf drainage pathway, about 30 ft wide and 2,000 ft long, located between two fields of 8 ft tall grass, on a wind turbine farm. The fuselage came to rest in a 7 ft wide ditch in the center of the pathway, and was oriented on a heading of 261° magnetic. No ground scars were present leading toward or away from the main wreckage.

Examination of the wreckage revealed that all the major components of the helicopter were present at the accident site. The cabin had collapsed downward and was partially consumed by a postcrash fire. The tailboom remained largely intact. Flight control continuity was established from the cockpit area to the rotor systems and engines. All main and tail rotor blades remained attached to the rotor hubs. The No. 4 (red) main rotor blade was found rotated about 180° in the hub with its pitch links fractured and partially melted. None of the main or tail rotor blades exhibited leading edge damage, chordwise scratches, or other evidence of rotation. The outboard 4 ft of No. 1 (yellow) blade came to rest in the 8 ft tall grass adjacent to the drainage path. The grass on either side of the blade was undisturbed. The tail rotor shaft remained attached to the transmission. The transmission could not be rotated by hand.

No foreign object damage was found on the axial compressor blades of either engine. No damage was observed on the visible portions of the turbine blades at the rear of either engine. The gas generator of the No. 1 engine moved freely when rotated by hand, the No. 2 engine gas generator would not rotate. The No. 1 engine fuel shutoff valve was found in the open position. The No. 2 engine fuel shutoff valve was damaged and its position could not be determined during the field examination. The No. 2 engine rear turbine shaft bearing exhibited discoloration consistent with overheating and lack of lubrication. The bearing roller pins were worn down to the surface of the bearing race. The end of the turbine shaft aft of the nut exhibited rotational nonuniform damage.

The helicopter was equipped with an on-board audio and video recording system. The unit was thermally damaged; however, the memory device remained intact. The unit was sent to the NTSB vehicle recorder laboratory for examination.

According to Federal Aviation Administration (FAA) airworthiness records and helicopter maintenance records, the helicopter was manufactured in 2011. The helicopter's most recent 30-hour engine inspection was completed on August 15, 2017. At that time, the helicopter and both engines had accrued 2,673 total hours of operation. Several additional inspections were completed during scheduled maintenance on September 1, 2017. At that time, the helicopter had accrued 2,710 total hours of operation. According to the operator, a daily airworthiness check is performed by a mechanic.

According to FAA airman records, the pilot held a commercial pilot certificate with ratings for rotorcraft-helicopter and instrument-helicopter. His most recent second class medical certificate was issued on October 6, 2016, at which time he reported 4,362 total hours of flight experience. According to the operator, the pilot had accrued 1,027 hours of flight time in the

same make and model as the accident helicopter, and had been employed with Air Methods Corporation since August 2009.

The helicopter was retained for further examination.

Aircraft and Owner/Operator Information

Aircraft Make:	EUROCOPTER DEUTSCHLAND GMBH	Registration:	N146DU
Model/Series:	MBB BK 117 C2	Aircraft Category:	Helicopter
Amateur Built:	No		
Operator:	Air Methods Corporation	Operating Certificate(s) Held:	On-demand Air Taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KECG, 13 ft msl	Observation Time:	1154 EDT
Distance from Accident Site:	15 Nautical Miles	Temperature/Dew Point:	24° C / 12° C
Lowest Cloud Condition:	Clear	Wind Speed/Gusts, Direction:	6 knots / , 350°
Lowest Ceiling:	None	Visibility:	10 Miles
Altimeter Setting:	30.18 inches Hg	Type of Flight Plan Filed:	Company VFR
Departure Point:	ELIZABETH CITY, NC (NC98)	Destination:	DURHAM, NC (NC92)

Wreckage and Impact Information

Crew Injuries:	3 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	In-Flight and On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	Unknown
Total Injuries:	4 Fatal	Latitude, Longitude:	36.290278, -76.487500

Administrative Information

Investigator In Charge (IIC):	Douglass P Brazy
Additional Participating Persons:	Matt Rigsby; FAA; Washington, DC Jason Quisling; Air Methods Corporation; Englewood, CO Bryan Larimore; SAFRAN Turbomeca; Grand Prairie, TX Seth Butner; Airbus Helicopters; Grand Prairie, TX
Note:	The NTSB traveled to the scene of this accident.