



National Transportation Safety Board Aviation Accident Final Report

Location:	Strum, WI	Accident Number:	CEN19TA075
Date & Time:	12/24/2018, 2215 CST	Registration:	N145EC
Aircraft:	MBB BK117	Aircraft Damage:	Substantial
Defining Event:	Collision during takeoff/land	Injuries:	3 Minor
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled - Air Medical (Medical Emergency)		

Analysis

The pilot and two crewmembers were on a night air medical flight. While on approach to the landing zone with several obstructions nearby, the pilot noticed a street sign and slowed the helicopter, which lowered the tailboom and tail rotor. The helicopter's tail rotor then struck a hose rack on a fire truck, which resulted in a loss of control and impact with the ground. The helicopter sustained substantial damage to the tail rotor. The pilot reported no preaccident mechanical failures or malfunctions with the helicopter that would have precluded normal operation.

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 clearance from the fire truck.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Monitoring environment - Pilot (Cause)
Environmental issues	Ground vehicle - Contributed to outcome (Cause)

Factual Information

On December 24, 2018, about 2215 central standard time, a Eurocopter Deutschland MBB-BK117 C-2 helicopter, N145EC, impacted a fire truck during a visual approach to a landing zone near Strum, Wisconsin. The commercial pilot and two crewmembers received minor injuries, and the helicopter was substantially damaged. The helicopter was registered to U.S. Bank and operated by Mayo Clinic under the provisions of Title 14 *Code of Federal Regulations* Part 135 as an air medical flight. Night visual meteorological conditions prevailed for the flight, which departed from Chippewa Valley Regional Airport (EAU), Eau Claire, Wisconsin, about 2154.

The pilot reported that while on approach to a landing zone, the crew called out obstructions such as trees, fire trucks, and flag poles. About 30 ft above ground level, the pilot noticed a street sign and decelerated the helicopter, which resulted in a lowering of the tail boom and rotor. During this movement, the tail rotor contacted the hose rack on a fire truck and the helicopter started to spin. The pilot lowered the collective control and the helicopter impacted terrain, which damaged the landing gear skids. Postaccident examination revealed that the helicopter sustained substantial damage to the tail rotor. The pilot reported there were no preaccident mechanical failures or malfunctions with the helicopter that would have precluded normal operation.

Following the accident, the operator initiated the following actions:

Reviewed current company policies regarding confined area/ scene landing to verify pilots were provided the proper guidance and training to land at a non-airport/helipad environment.

Provided training to all pilots regarding expectations in these landing scenarios and steps to assist in decision making and determining the suitability of a landing area.

Introduced scene landing scenarios into annual simulator training.

Developed annual syllabi for pilots to complete annually to refresh themselves and medical crew on basic confined area/scene landing protocols.

Developed an off-airport landing checklist that included:

- 1. Ensure the size of the area is adequate,*
- 2. The landing surface is suitable. Is it level is there mud, ice, blowing snow, etc.*
- 3. Review obstacles in or around the landing zone (wires, vehicles, flagpoles, fences, street signs, etc.),*
- 4. The best approach direction and type of approach (Normal, steep, vertical),*
- 5. The best departure direction and type of departure (Normal, vertical),*

6. Power requirements needed to avoid obstacles.

History of Flight

Landing	Collision during takeoff/land (Defining event)
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Pilot Information

Certificate:	Commercial	Age:	52, Male
Airplane Rating(s):	None	Seat Occupied:	Front
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last FAA Medical Exam:	01/11/2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	10/22/2018
Flight Time:	3842 hours (Total, all aircraft), 1064 hours (Total, this make and model), 3842 hours (Pilot In Command, all aircraft), 42 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MBB	Registration:	N145EC
Model/Series:	BK117 C2	Aircraft Category:	Helicopter
Year of Manufacture:	2008	Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	9181
Landing Gear Type:	Skid	Seats:	5
Date/Type of Last Inspection:	12/24/2018, AAIP	Certified Max Gross Wt.:	7887 lbs
Time Since Last Inspection:		Engines:	2 Turbo Shaft
Airframe Total Time:	6055 Hours at time of accident	Engine Manufacturer:	Turbomeca
ELT:	C126 installed, not activated	Engine Model/Series:	Arriel 1E2
Registered Owner:	U.S. Bank	Rated Power:	790 hp
Operator:	Mayo Clinic	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:	Mayo Clinic	Operator Designator Code:	15MA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	KEAU, 895 ft msl	Distance from Accident Site:	19 Nautical Miles
Observation Time:	2156 CST	Direction from Accident Site:	348°
Lowest Cloud Condition:	Few / 8000 ft agl	Visibility	10 Miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:		Temperature/Dew Point:	-8° C / -11° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Eau Claire, WI (EAU)	Type of Flight Plan Filed:	Company VFR
Destination:	Strum, WI	Type of Clearance:	None
Departure Time:	2154 CST	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	3 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Minor	Latitude, Longitude:	44.549722, -91.391389

Administrative Information

Investigator In Charge (IIC):	Michael J Folkerts	Report Date:	06/29/2020
Additional Participating Persons:	Mark Kosko; Flight Standards District Office; Milwaukee, WI		
Publish Date:	06/29/2020		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=98928		

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