



Aviation Investigation Final Report

Location:	Union Center, South Dakota	Accident Number:	CEN19LA092
Date & Time:	March 3, 2019, 00:13 Local	Registration:	N450AM
Aircraft:	Bell 407	Aircraft Damage:	Substantial
Defining Event:	Ground collision	Injuries:	1 Minor, 2 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Unspecified)		

Analysis

The helicopter pilot, flight nurse, and flight paramedic had arrived at a landing zone to pick up a patient at night. After landing, the pilot rolled the engine throttle to idle and briefed the flight crew that they were clear to depart the helicopter. About 20 seconds later, the ground ambulance drove toward the helicopter, and the main rotor blades impacted the top of the ambulance. The flight paramedic was thrown to the ground and sustained minor injuries. The main rotor blades, tailboom, and fuselage sustained substantial damage. The ground ambulance driver stated that he saw the crew open the doors and get out of the helicopter, so he moved the ambulance ahead to get closer to the helicopter. The driver stated that he did not realize "that the helicopter blades were still rotating." The operator confirmed that the ambulance driver had received training, which indicated that ground personnel are not to approach the helicopter until the blades had stopped rotation. In addition, the general operations manual stated that ground personnel will not come beneath the rotor disk until directed to do so by the pilot.

Probable Cause and Findings

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

The ambulance driver's failure to see the helicopter's rotating main rotor blades in dark night conditions, which resulted in the ambulance's inadvertent collision with the helicopter. Contributing to the accident was the ambulance driver's failure to follow procedures when approaching the helicopter.

Findings

Personnel issues	Visual function - Ground crew
Environmental issues	Dark - Effect on personnel
Personnel issues	Incorrect action selection - Ground crew

Factual Information

History of Flight

Standing-engine(s) shutdown	Ground collision (Defining event)
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On March 3, 2019, about 0013 mountain standard time, a Bell 407 helicopter, N450AM, was substantially damaged after landing near Union Center, South Dakota. The pilot and flight nurse were not injured. The flight paramedic sustained minor injuries. The helicopter sustained substantial damage. The helicopter was owned by Air Methods and operated under the provisions of Title 14 *Code of Federal Regulations* Part 135. Dark night visual meteorological conditions prevailed, and a company visual flight rules flight plan was filed and activated for the flight. The on-demand air medical flight departed Spearfish, South Dakota, about 2337, and was en route to Union Center to pick up a patient.

The helicopter had arrived at the landing zone at Union Center to pick up a patient. After landing, the pilot rolled the engine throttle to idle and briefed the flight crew that they were clear to depart the helicopter. About 20 seconds into the "cool down" process the ground ambulance drove towards the helicopter and subsequently the main rotor blades impacted the top of the ambulance. The flight paramedic was thrown to the ground during the collision. The main rotor blades, tail boom, and fuselage sustained substantial damage. The ground ambulance driver saw the crew open the doors and get out of the helicopter, so he moved the ambulance forward to get closer to the helicopter. The ground ambulance driver stated that he did not realize "that the helicopter blades were still rotating."

Air Methods confirmed that the ambulance driver had received their training. A review of that training indicated that ground personnel are not to approach the aircraft until the blades had stopped rotation. The training also indicated that ground vehicle lights should be turned off while the helicopter is landing. An excerpt from the Air Methods General Operations Manual stated that ground personnel will not come beneath the rotor disk until directed to do so by the pilot in command; the pilot will use appropriate hand signals to do so.

Pilot Information

Certificate:	Commercial; Private	Age:	36
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	October 2, 2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	November 27, 2018
Flight Time:	2138 hours (Total, all aircraft), 130 hours (Total, this make and model), 2138 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N450AM
Model/Series:	407	Aircraft Category:	Helicopter
Year of Manufacture:	2013	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	54435
Landing Gear Type:	N/A; High skid; Skid	Seats:	4
Date/Type of Last Inspection:	March 1, 2019 Continuous airworthiness	Certified Max Gross Wt.:	5250 lbs
Time Since Last Inspection:		Engines:	1 Turbo shaft
Airframe Total Time:	2105 Hrs at time of accident	Engine Manufacturer:	Rolls Royce
ELT:	Installed, not activated	Engine Model/Series:	250-C47B
Registered Owner:	Air Methods Corp	Rated Power:	650 Horsepower
Operator:	Air Methods Corp	Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	Black Hills Life Flight	Operator Designator Code:	QMLA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	KRAP,3203 ft msl	Distance from Accident Site:	
Observation Time:	00:52 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	13 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.42 inches Hg	Temperature/Dew Point:	-24°C / -29°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Spearfish, SD (KSPF)	Type of Flight Plan Filed:	Company VFR
Destination:	Union Center, SD	Type of Clearance:	Traffic advisory;None
Departure Time:	23:37 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor, 2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 2 None	Latitude, Longitude:	44.564723,-102.661392(est)

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer
Additional Participating Persons:	William Howell; Federal Aviation Administration; Rapid City , SD
Original Publish Date:	August 10, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=99047

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).