



Aviation Investigation Final Report

Location:	PENN YAN, New York	Accident Number:	IAD97FA032
Date & Time:	December 12, 1996, 21:13 Local	Registration:	N90750
Aircraft:	Mbb BO-105CBS	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Unspecified)		

Analysis

The pilot landed the helicopter in an open field for a medical evacuation. He had planned to fly to a hospital about 40 miles northwest. After takeoff, the pilot radioed the company dispatcher that he was airborne, and to standby for time and distance to the destination. The distance would be obtained from a GPS located on the rear of the helicopter's center console. About 2 minutes later, the helicopter crashed in a secluded wooded area on rising terrain about 1.1 miles northwest of the departure point. Witnesses reported that the cloud cover and the isolated area made a dark night with no discernable horizon. Winds were reported as strong and gusty from the south/southeast. The topography surrounding the area included rising terrain, with peaks at 2,700 feet msl. The helicopter had departed an airport with an elevation of 814 feet msl. The pick-up point was 1,540 feet msl, and the accident site was 1,740 feet msl. Cloud cover in the area was at 1,900 to 2,000 feet msl.

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 altitude/clearance from the terrain. Factors relating to the accident were: the pilot's diverted attention to the GPS, darkness, low ceiling, rising terrain, and high wind condition.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CLIMB - TO CRUISE

Findings

1. (F) LIGHT CONDITION - DARK NIGHT
2. (F) WEATHER CONDITION - LOW CEILING
3. (F) WEATHER CONDITION - HIGH WIND
4. (F) TERRAIN CONDITION - RISING
5. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
6. (F) DIVERTED ATTENTION - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT On December 12, 1996, approximately 2113 eastern standard time, a Messerschmitt-Bolkow-Blohm (MBB) BO-105CBS, N90750, was destroyed following a collision with the terrain west of Penn Yan, New York. The certificated commercial pilot, paramedic, and the patient received fatal injuries. The helicopter was owned by RTS Helicopter Services Corporation, Montvale, New Jersey; leased by EMS Air Services of New York, Inc., and operated by Mercy Flight Central, Inc., Canandaigua, New York. Night visual meteorological conditions existed and no flight plan was filed for the medical evacuation flight conducted under 14 CFR Part 135.

The initial request for the medical evacuation of an injured hunter was received at Mercy Flight Central Dispatcher, at 2029. The helicopter departed from the Canandaigua Airport, at 2039, and landed on a field, in the town of Jerusalem, New York, at 2059. The pilot had planned to take the injured hunter to a hospital in Rochester, New York, approximately 40 miles northwest. Witnesses that helped load the injured hunter, stated that the helicopter took off towards the south/southeast and made a turn to the west. Witnesses stated that the cloud cover and the isolated area, made it a dark night with no discernable horizon. The pilot radioed the Mercy Flight Central Dispatcher, at 2111, and stated that he was "airborne, and standby for the time and distance (to the destination)." Approximately 2113, initial phone calls were received at the local Fire Department concerning a fire and explosion in a secluded wooded area, approximately 1 mile from the location where the helicopter departed.

The accident occurred during the hours of night, approximately 42 degrees 39.18 minutes north latitude, and 77 degrees 14.07 minutes west longitude.

PERSONNEL INFORMATION The pilot held a Commercial Pilot Certificate with ratings for rotorcraft-helicopter, instrument helicopter, and a Private Pilot Certificate for airplane single engine land. He also held a Flight Instructor Certificate for rotorcraft-helicopter.

His most recent Federal Aviation Administration Second Class Medical Certificate was issued on June 1, 1996.

A Mercy Flight Pilot History sheet, dated November 4, 1996, indicated that the pilot transitioned to the BO-105 in April, 1996. The block marked Pilot-In-Command (PIC) Experience for the BO-105 was filled in as follows: 70 Total Hours, 70 hours Total Last 12 Months, 20 hours Total Last 90 Days, 0 hours Total Instrument, and 30 hours Total Night. The Airman Competency/Proficiency Check FAR 135, FAA Form 8410-3, indicated that the pilot was given and passed the FAR 135 Check flight in the BO-105 on April 5, 1996.

The pilot's flight time in the BO-105 from September 12, 1996, to December 11, 1996, was

compiled by the Director of Operations. His totals showed: September 12, 1996, through October 12, 1996, 8.3 hours day/6.3 hours night; October 13, 1996, through November 12, 1996, 3.3 hours day/8.3 hours night; November 13, 1996, through December 11, 1996; 1.1 hour day/4.3 hours night.

The pilot's total PIC time for all makes and models flown was 4,450 hours.

The pilot's Duty Time Records for November 1996, and December 1996, indicated that the pilot rotated from a daytime(0700 to 1900) schedule to a nighttime (1900 to 0700) schedule, with days off in between. Mid November, the pilot started a night shift beginning the night of November 19, 1996, and ended it the morning of November 24, 1996. A day shift began the morning of November 29, 1996, and ended the evening of December 3, 1996. The pilot started a night shift the evening of December 9, 1996, and was on it the night of the accident.

METEOROLOGICAL INFORMATION The Penn Yan Airport's Automated Surface Observation System, which was in the test stage at the time of the accident, recorded the ceiling as 1,000 feet, variable 700 feet; visibility 10 miles; winds 150 degrees magnetic at 15 knots with gusts at 20 knots.

Witnesses reported strong gusty winds from the south/southeast when the helicopter departed.

WRECKAGE AND IMPACT INFORMATION The helicopter wreckage was located in a secluded wooded hilly area, approximately 1.1 miles north/northwest of the field where the helicopter departed. The elevation of the terrain in the crash area was 1,740 feet msl, and the patient pickup field had an elevation of 1,540 feet msl. A post crash fire consumed a large portion of the wreckage. Examination and documentation of the wreckage site was accomplished on December 13 and 14, 1996. All major components of the helicopter were accounted for at the scene. Remoteness of the crash site and inclement weather hampered the wreckage recovery until December 15, 1996, when the wreckage was taken to the Mercy Flight hangar at the Canandaigua Airport.

The debris field was oriented on a heading of 347 degrees magnetic, and was 224 feet long from the initial tree contact to the main fuselage wreckage. Smaller parts of debris were found beyond the main wreckage, but the main fuselage, main rotor blades, tail section, and engines were located together.

The main fuselage and cockpit were fragmented by impact forces and burnt by post crash fire. Flight control continuity could not be accomplished. The engines were severely damaged, and both main magnesium gearbox casings were consumed by fire. The shafting to both engines were intact, but unable to rotate. The engines were shipped to the Allison Engine Company, Indianapolis, Indiana, for further examination. Non burnt segments of the main rotor blades, including leading edge lead, blade skin, trailing edge skin were found scattered throughout initial debris field leading to the main wreckage. The four main rotor blades were found

attached to the main hub, splintered and burnt in the post crash fire.

The initial tree impact scars were observed at the top of a 50 foot tree. Broken tree limbs and cut branches were progressively lower on the trees in the direction of the main wreckage. Approximately 188 feet beyond the initial tree impact, a 17 foot high tree in the middle of the debris path was uprooted and lying on its side, pointing in the direction of the main wreckage. A piece of metal was embedded in a 15 foot high tree, approximately 130 feet from the initial tree contact point. The tail boom and tail rotor were separated from the main fuselage and showed signs of rotational damage.

MEDICAL AND PATHOLOGICAL INFORMATION An autopsy was performed on the pilot by Cynthia B. Hoeflinger, M.D., Ph.D., Deputy Medical Examiner, County of Monroe, Office of the Medical Examiner, Rochester, New York, on December 13, 1996.

The toxicological testing report from the FAA toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, and the Office of the Chief Medical Examiner, was negative for drugs and alcohol for the pilot.

TESTS AND RESEARCH Examination of the engines at the Allison Engine Company occurred on February 18, 1997. No evidence of pre-impact failure was found. Mechanical integrity of the compressor and power turbine shafting systems was confirmed. Both engines exhibited heavy rubbing in the power turbine section, where both 3rd and 4th stage turbine wheels made contact with the 4th stage turbine nozzle.

ADDITIONAL INFORMATION The company's Operations Specifications addressed weather for flights in two segments, locally and cross country, which were color coded for the separate locals. The requirements necessary to launch for flights was based on weather, and got more stringent as the weather deteriorated. Visual flight rules (VFR) conditions was color coded as green. Below VFR conditions, but, above the Instrument Flight Rules (IFR) was classified as yellow. Below IFR minimums, the color code was red. The night of the accident the weather was classified as yellow/yellow, for the local area and cross country, which required the weather to be checked by the pilot. The Dispatcher reported that the pilot received a weather briefing.

The President and the Director of Operations were interviewed to determine if any pressure was placed on the pilot to conduct the flight. The President stated that he did not think there was, and the Director of Operations stated that the company had not been doing well financially, and the company pilots were aware of it. The Director of Operations could not state whether this was perceived by any of the pilots as pressure.

According to the Director of Operations and other company pilots, the "airborne, and time and distance" radio call made to the company dispatcher during flights was a required company call made for billing purposes. The pilots stated that the GPS was located on the center console and its size and aft position on the console made it difficult to read. The pilots who

had flown this helicopter, stated that in order to read the instrument, most pilots had to lean left and look aft in order to get the correct angle to read the instrumentation.

The topography of the accident area varied from lakes to rising terrain with peaks at 2,700 feet msl. The helicopter originated from an airport with an elevation of 814 feet, landed in a field with an elevation of 1,540 feet msl, and the accident site had an elevation of 1,740 msl. The weather recorded at Penn Yan, elevation of 977 feet, 10 miles east of the accident site, was 1,000 foot ceiling or approximately 1,900 to 2,000 feet msl. The initial tree strike was the top of a 50 foot tree, approximately 1,800 feet msl.

The pilot lived locally. Witnesses in the landing zone stated that they were surprised when the helicopter initially approached them from the south when they were expecting it from the north. A direct flight from Canandaigua Airport to the field was approximately 15 miles to the south. Witnesses stated that the route of flight from Canandaigua, initially was to the east, south, and back to the west towards the field. This route of flight avoided the higher terrain which laid between Canandaigua Airport and the landing field.

The helicopter wreckage was released on December 16, 1996, to Joseph B. Shelby, a representative of the owner's insurance company.

Pilot Information

Certificate:	Commercial; Military	Age:	38, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter; Instrument helicopter	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	June 1, 1996
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	4450 hours (Total, all aircraft), 70 hours (Total, this make and model), 3850 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mbb	Registration:	N90750
Model/Series:	BO-105CBS BO-105CBS	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	S-154
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	October 30, 1996 100 hour	Certified Max Gross Wt.:	5291 lbs
Time Since Last Inspection:	25 Hrs	Engines:	2 Turbo shaft
Airframe Total Time:	11036 Hrs	Engine Manufacturer:	Allison
ELT:	Installed	Engine Model/Series:	250-C20B
Registered Owner:	AMERICAN AIRCRAFT EQUITY, INC	Rated Power:	420 Horsepower
Operator:	EMS AIR SERVICES OF NEW YORK	Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	MERCY FLIGHT CENTRAL	Operator Designator Code:	NYSA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	PEO ,977 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	21:52 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Unknown	Visibility	
Lowest Ceiling:	Overcast	Visibility (RVR):	
Wind Speed/Gusts:	13 knots / 19 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	7°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	JERSUSALEM (NONE)	Type of Flight Plan Filed:	None
Destination:	ROCHESTER (NONE)	Type of Clearance:	None
Departure Time:	21:11 Local	Type of Airspace:	Class E

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	On-ground
Total Injuries:	3 Fatal	Latitude, Longitude:	42.590034,-77.14981 (est)

Administrative Information

Investigator In Charge (IIC): Cain, Jim

Additional Participating Persons: ANTHONY JAMES; ROCHESTER , NY
DEL LIVINGSTON; GRAND PRAIRIE , TX
SCOTT S SCHEURICH; INDIANAPOLIS , ID

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Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=28125>

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