



National Transportation Safety Board Aviation Accident Final Report

Location:	PORTLAND, Maine	Accident Number:	BFO94FA013
Date & Time:	November 19, 1993, 20:39 Local	Registration:	N911ME
Aircraft:	BELL 206L-1	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal, 1 Serious
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Unspecified)		

Analysis

THE PILOT STATED THAT HE HAD DEPARTED PORTLAND EARLIER WITH 2 HR 45 MIN OF FUEL TO PICK UP THE PATIENT AT ELLSWORTH. HE STATED THAT HIS TOTAL CAPACITY WAS ABOUT 570 LBS, AND THE FUEL BURN FOR THE HELICOPTER WAS 200-220 LBS/HR. HE SAID THE 97 NM FLIGHT IS NORMALLY COMPLETED UNDER 1 HR, BUT TOOK 1 HR 10 MIN DUE TO WINDS. HE THEN DEPARTED ELLSWORTH WITH 310 LBS OF FUEL FOR THE RETURN FLIGHT. DURING THE RETURN FLIGHT TO PORTLAND HE ENCOUNTERED INSTRUMENT METEOROLOGICAL CONDITIONS AND A 'SUBSTANTIAL HEAD WIND OF 40 TO 60 KNOTS.' WHILE BEING VECTORED INTO PORTLAND THE ENGINE QUIT AND THE HELICOPTER DITCHED IN THE OCEAN IN ROUGH SEAS 7 MI EAST OF THE AIRPORT. ACCORDING TO THE COMPANY OPERATIONS MANUAL FOR EMS PROCEDURES, IT STATES IN PART, 'THE MINIMUM ACCEPTABLE WEATHER IS IN VFR CONDITIONS...!'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S CONTINUED VFR FLIGHT INTO INSTRUMENT METEOROLOGICAL CONDITIONS, AND HIS FAILURE TO ASSURE THAT ADEQUATE FUEL WAS AVAILABLE TO COMPLETE THE FLIGHT, RESULTING IN A LOSS OF ENGINE POWER DUE TO FUEL EXHAUSTION. FACTORS WHICH CONTRIBUTED TO THE ACCIDENT WERE: THE WEATHER, THE DARK NIGHT AND THE ROUGH SEA CONDITION.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE - NORMAL

Findings

1. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (C) VFR FLIGHT INTO IMC - CONTINUED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - FOG
4. (F) WEATHER CONDITION - RAIN
5. (F) WEATHER CONDITION - LOW CEILING

Occurrence #2: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: APPROACH - IAF TO FAF/OUTER MARKER (IFR)

Findings

6. (F) WEATHER CONDITION - UNFAVORABLE WIND
7. (C) FLUID,FUEL - EXHAUSTION
8. (C) FUEL SUPPLY - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: FORCED LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

9. (F) LIGHT CONDITION - DARK NIGHT
10. AUTOROTATION - PERFORMED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

11. (F) TERRAIN CONDITION - WATER,ROUGH

Factual Information

HISTORY OF FLIGHT

On November 19, 1993, at 2039 eastern standard time, a Bell 206-L-1, N911ME, landed hard during a forced landing touchdown in the Atlantic Ocean seven miles east of Portland International Jetport, Portland, Maine. The helicopter was owned by Airmed Skycare Inc of Portland, and operated by Echo Helicopter Inc. of Portland, Maine. Instrument meteorological conditions prevailed at the accident site. The certificated commercial pilot received serious injuries, while two of the three passengers were fatally injured. The third passenger has not been recovered and is presumed to be fatally injured. The helicopter was submerged in 85 feet of water and was destroyed. The flight was conducted under part 14 CFR 135. The medical evacuation flight originated in Ellsworth, Maine.

According to the pilot, he had departed Portland earlier to pick up a 70 year old burn victim at Ellsworth, Maine, and was returning when he encountered instrument meteorological conditions (IFR). He stated that he departed under visual flight rules (VFR) conditions; however, the weather deteriorated and he encountered a "substantial head wind of 40 to 60 knots" on his return flight. He stated that he obtained an instrument flight rules (IFR) clearance from Brunswick Approach Control. He was provided with vectors to runway 11, but during the approach the low fuel light illuminated. He stated that he requested a straight in approach to runway 29, and as he was turning onto the inbound course for the runway, the engine lost power.

According to the pilot, when he departed Portland he had approximately 2 hours and 45 minutes of fuel on board. He stated that the flight to Ellsworth was 1 hour and 10 minutes. He said that the 97 mile trip is normally completed under an hour, but due to the winds the trip was longer. The pilot stated that he departed Ellsworth with 310 lbs of fuel on board for the flight. He stated that the helicopter's fuel consumption was about 200 to 220 lbs/hr.

The pilot stated that when he first got an indication of low fuel, which is the low fuel light being illuminated, the light did not remain illuminated. The pilot reported that "the 20 minute low fuel light was only illuminated for 5 minutes so he estimated he had an additional 15 minutes of fuel remaining." According to Bell Helicopter Operations Safety Notice "It is possible for the fuel low warning to illuminate even though the fuel quantity gage indicates up to 215 lbs of fuel remaining." The Bell Flight Manual states, in part, that in the event of a low fuel caution light the fault and remedy advises "approximately 10 gallons of fuel remaining Plan landing."

The engine lost power shortly thereafter and the pilot stated that he performed an autorotation using the helicopter's radar altimeter as he had no visual reference. During the autorotation, he reported that he deployed the floats attached to the skids. He said he decelerated the helicopter and tried to cushion the landing referring to the instruments. The helicopter landed hard in "rough water" with 6 foot waves and sank, inverted. Search efforts located two of the passengers four days later in the submerged, inverted helicopter.

The accident occurred at night, about 43 degrees 40 minutes North latitude and 70 degrees 12

minutes West longitude.

PERSONNEL INFORMATION

At the time of the accident the pilot held a commercial pilot certificate for helicopter operations, and a commercial certificate with single and multi-engine land ratings for airplanes. The pilot reported his total flight time as 8221 hours including 3640 in type. The pilot completed his 14 CFR, Part 135 proficiency check ride on June 7, 1993. Details of the proficiency check are attached to this report.

AIRCRAFT INFORMATION

The 1980 year model Bell 206L-1 helicopter, serial no. 45553, was equipped with an Allison A250-C28 engine, serial no. 860368. The aircraft had over 2220 hours including 34 hours since the last Approved Aircraft Inspection Program (AAIP) on October 12, 1993.

METEOROLOGICAL INFORMATION

The 2141 hour surface weather observation for Portland International Jetport, about 7 miles west of the accident site was as follows:

"Sky condition, 400 feet overcast; visibility, 2 miles in fog and rain; temperature, 50 degrees (F); dew point, 50 degrees (F); wind condition, 130 degrees at 13 knots gusting to 19 knots; and altimeter, 29.54 inches."

WRECKAGE AND IMPACT INFORMATION

The aircraft was recovered from the Casco Bay on November 26, 1993. The aircraft was submerged in about 85 feet of water. It was transported to Central Connecticut Aircraft Company, Plainsville, Connecticut, where it was examined on December 9, 1993. The skid of the aircraft was separated from the helicopter. During the recovery from the Bay, the tail boom and one of the main rotor blades were cut for removal, along with the tail rotor control tube at the point of tail boom breakage. One bolt was removed at the tail rotor drive shaft coupling in the same area. The recovery personnel stated that the main rotor blade was broken and the tail boom was still attached to the aircraft when it was removed from the water. They also stated that the control and drive for the tail rotor were intact and damaged.

Control continuity of the drive train was confirmed by rotating the rotor in the direction of rotation. The rotor was unable to rotate backwards against the freewheeling unit due to engine gearbox deterioration from the salt water.

The cyclic control was intact from the pilot's cyclic control stick to the main rotor. The collective pitch control was broken at the aft end resulting in a disconnect in the collective control at that point. The tail rotor control system continuity could not be determined due to deformation of the main fuselage. The link from the pilot's anti-torque pedals to the center console was fractured.

Examination of the main rotor blades revealed one of the main blades was separated approximately three feet from the end of the blade root. The other blade revealed upward bending at the outboard end. Both pitch links and pitch horns were intact. One of the tail rotor blades was bent. There was evidence of red paint marks on the side of the blade matching airframe paint. There was no evidence of rotational damage. The plate at the lower end of the vertical fin and the horizontal stabilizer were twisted to the left.

The STC'd fuel elbow was removed from the fuel tank filler port to gain visual access to the interior of the tank. There was no evidence of fuel in the main tank. The airframe around the main fuel tank was deformed. There was evidence of a puncture mark on the lower surface of the fuel bladder. The cover over the fuel lines was removed from the aft cabin floor to expose the fuel filters. The fuel lines and filters were removed from the aircraft. A 1/4 cup of a clear liquid was drained from each fuel line.

The aircraft had two forward cell tanks. With the aircraft twisted to the left in a left side low position, the fuel quantity probe in the forward left cell was removed and the tank dip-sticked. There was approximately a half inch of clear liquid in the tank. The fuel vent line from the forward right cell was removed and that cell was dip-sticked. There was no evidence of liquid in this tank. The airframe fuel filter was removed and opened. The contents were emptied into a one lb coffee can. There was about 2/3 of the one lb container of clear liquid obtained. The filter was also examined and there was no evidence of any restriction.

The engine was examined and appeared to be intact. The engine was transported to Allison Engines in Indianapolis, Indiana, where a teardown was done under the supervision of the FAA on March 18, 1994. The examination did not reveal any pre-existing deficiencies. Details of the examination are attached to this report.

ADDITIONAL INFORMATION

According to the Company Operations Manual for EMS Procedures it states in part, "the minimum acceptable weather is in VFR conditions. The weather information [cloud ceilings measured in feet above ground (AGL) and visibility in statute miles (SM) shall be gathered from all qualified and commonly acceptable sources (FAA, NWS, Military, etc.) to include, when necessary, actual pilot observations.

LOCAL 1	LOCAL 2	CROSS COUNTRY	MOUNTAIN
DAY 500'/1SM	800'/2SM	1000'/3SM	1200'/3SM
NIGHT 800'/2SM	1000'/3SM	1200'/4SM	1200'/5SM

The final decision for acceptance and accomplishment of the flight rests with the duty pilot. High winds [>40 k(knots)] and or gust spreads (>15 k), forecast or reported heavy or severe turbulence, especially in mountainous areas may constitute sufficient reason to refuse or cancel a flight. Remote areas or over-water situations at night or during periods of reduced visibility require special caution. Reported minimums notwithstanding, flights shall not be conducted without a discernible horizon. For night operations in designated mountainous areas: the

closest reporting stations to the terrain intended to be crossed may not be able to provide representative or accurate conditions which might be present. If no alternative route refueling or other considerations, the flight should only be attempted if it can be assured that the highest terrain feature within a 5 NM corridor of the intended route is clear of clouds."

A formal air traffic control package was requested from the Federal Aviation Administration immediately following the accident. As of June 30, 1994, the formal package has not been received. When a formal package is available, it will be added to this accident report.

The aircraft wreckage was released to Walter J Liona, the owner's insurance representative, on March 21, 1994.

Pilot Information

Certificate:	Commercial; Flight instructor; Private	Age:	49, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Glider; Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	Last FAA Medical Exam:	June 1, 1993
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	8221 hours (Total, all aircraft), 3640 hours (Total, this make and model), 8100 hours (Pilot In Command, all aircraft), 85 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BELL	Registration:	N911ME
Model/Series:	206L-1 206L-1	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	45553
Landing Gear Type:	Emergency float; Skid	Seats:	4
Date/Type of Last Inspection:	October 12, 1993 AAIP	Certified Max Gross Wt.:	4150 lbs
Time Since Last Inspection:	34 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	2220 Hrs	Engine Manufacturer:	ALLISON
ELT:	Installed	Engine Model/Series:	A250-C28B
Registered Owner:		Rated Power:	520 Horsepower
Operator:		Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	ECHO HELICOPTER INC.	Operator Designator Code:	ECHA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	PWM ,74 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	21:41 Local	Direction from Accident Site:	290°
Lowest Cloud Condition:	Unknown	Visibility	2 miles
Lowest Ceiling:	Overcast / 400 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	13 knots / 19 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	130°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	10° C / 10° C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	ELLSWORTH , ME	Type of Flight Plan Filed:	IFR
Destination:		Type of Clearance:	IFR
Departure Time:	19:12 Local	Type of Airspace:	Class D

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:	0 ft msl	Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal, 1 Serious	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Johnson, Beverley
Additional Participating Persons:	DAVID C DOSKER; FORT WORTH , TX DONNIE R LUMMUS; DOYLESTOWN , PA MARK V EVANS; INDIANAPOLIS , IN EDWARD JOHNSON; PORTLAND , ME
Original Publish Date:	November 1, 1994
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=8833

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