Aviation Investigation Final Report

Location:	Rockland, Maine	**Accident Number:**	ERA16LA137
Date & Time:	March 2, 2016, 08:00 Local	**Registration:**	N198WA
Aircraft:	Beech 99	**Aircraft Damage:**	Substantial
Defining Event:	Turbulence encounter	**Injuries:**	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The commercial pilot was conducting a nonscheduled cargo flight. The pilot reported that, as the airplane was descending on an instrument approach, it encountered continuous light-to-moderate turbulence. As the airplane descended through about 2,000 ft mean sea level at an airspeed of 130 knots, it encountered severe turbulence, and the pilot subsequently executed a missed approach and chose to divert to an alternate airport. The airplane continued to encounter light-to-moderate turbulence en route to the alternate airport, and the pilot landed the airplane uneventfully.

Postaccident examination of the airplane revealed that the airframe had sustained substantial damage during the flight. Although there were multiple AIRMETs for widespread moderate turbulence and low-level windshear, there were no pilot reports of, nor SIGMETs forecasting, severe turbulence at the time the pilot received her preflight weather briefing.

Probable Cause and Findings

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

The airplane's encounter with isolated severe turbulence, which resulted in substantial airframe damage.

Findings

Environmental issues	Clear air turbulence - Effect on equipment

Factual Information

History of Flight

Approach-IFR final approach	Turbulence encounter (Defining event)

On March 2, 2016, about 0800 eastern standard time, a Beech 99A, N198WA, operated by Wiggins Airways Inc., was substantially damaged during approach to Knox County Regional Airport (RKD), Rockland, Maine, following an encounter with severe turbulence. The commercial pilot was not injured. Instrument meteorological conditions (IMC) prevailed, and an instrument flight rules flight plan was filed for the flight. The non-scheduled cargo flight was operated under the provisions of Title 14 Code of Federal Regulations Part 135, and originated from Manchester Airport (MHT), Manchester, New Hampshire, around 0730.

The pilot stated that the flight was in IMC on descent for the instrument landing system approach to RKD when the airplane encountered an area of continuous light to moderate turbulence. About 2,000 feet mean sea level (msl), and an airspeed about 130 knots, the airplane encountered severe turbulence, and the pilot initiated a missed approach. She decided not to attempt another approach to RKD, and instead diverted to Bangor International Airport (BGR), Bangor, Maine. She stated that the airplane continued to experience light to moderate turbulence enroute to BGR. After landing and securing the airplane, she entered the severe turbulence encounter in the aircraft log book.

Examination of the airplane by a Federal Aviation Administration inspector revealed that both wings exhibited skin deformation, and the fuselage side skins were wrinkled. Further examination by a local repair station revealed substantial damage to the right wing root between the fuselage and nacelle, just aft of main spar. The right wing root-to-fuselage fillet fairing was also damaged just aft of the main spar. There were several other areas noted with wrinkled skin on both wings.

The pilot held an airline transport certificate with a rating for airplane single-engine land, multi-engine land, and instrument airplane. She also held a first class medical certificate, issued on March 15, 2016. Her last flight review was completed on November 24, 2015. At the time of the accident the pilot reported 3,600 total hours of flight experience, with 2,784 hours in the accident airplane make and model airplane. She had had accumulated 480 hours of flight experience in IMC, of which 295 hours were in the accident airplane make and model.

The RKD weather observation at 0756 included wind from 150 degrees at 20 knots, gusting to 30 knots, visibility 4 statute miles in mist, ceiling overcast at 700 feet above ground level, temperature 8 degrees Celsius (C), dew point 7degrees C, and altimeter setting of 29.43 inches of mercury. Peak wind from 150 degrees at 34 knots was recorded at 0716, with pressure falling rapidly.

The Terminal Aerodrome Forecast for RKD, valid at the time of the accident, predicted wind from the southeast at 22 knots with gusts to 37 knots, and the potential for low-level wind shear at 2,000 feet, with wind from 180 degrees at 45 knots.

The National Weather Service issued multiple AIRMETs for the region, which advised of widespread IMC, moderate turbulence, and low-level wind shear. There were no pilot reports (PIREPs) or SIGMETs for severe turbulence in the area.

The operator's policy and procedures manual stated that it was a general policy of the company to suspend operations over a route that subjected equipment to unacceptable turbulence.

Pilot Information

Certificate:	Airline transport	**Age:**	31,Female
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	March 15, 2016
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 24, 2015
Flight Time:	3600 hours (Total, all aircraft), 2784 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N198WA
Model/Series:	99 A	**Aircraft Category:**	Airplane
Year of Manufacture:	1970	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U142
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	February 5, 2016 AAIP	**Certified Max Gross Wt.:**	10399 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:	13548.3 Hrs	**Engine Manufacturer:**	P&W
ELT:	C91A installed, not activated	**Engine Model/Series:**	PT6A-27
Registered Owner:	Wiggins Airways INC	**Rated Power:**	680 Horsepower
Operator:	Wiggins Airways INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	AXSA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KRKD,47 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	12:56 Local	**Direction from Accident Site:**	355°
Lowest Cloud Condition:	Unknown	**Visibility**	4 miles
Lowest Ceiling:	Overcast / 700 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	20 knots / 30 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.43 inches Hg	**Temperature/Dew Point:**	8°C / 7°C
Precipitation and Obscuration:	Moderate - None - Mist		
Departure Point:	MANCHESTER, NH (MHT)	**Type of Flight Plan Filed:**	IFR
Destination:	ROCKLAND, ME (RKD)	**Type of Clearance:**	IFR
Departure Time:	07:30 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	KNOX COUNTY RGNL RKD	**Runway Surface Type:**	
Airport Elevation:	55 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	ILS
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	44.060001,-69.099166(est)

Administrative Information

Investigator In Charge (IIC):	Boggs, Daniel
Additional Participating Persons:	Paul W Hubbard; FAA-FSDO; Portland, ME
Original Publish Date:	February 13, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92875