Aviation Investigation Final Report

Location:	Dunkirk, New York	**Accident Number:**	NYC07FA119
Date & Time:	May 17, 2007, 09:37 Local	**Registration:**	C-FDJP
Aircraft:	Beech BE-A55	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Non-U.S., non-commercial		

Analysis

The airplane experienced a left engine failure while en route to its destination and diverted to another airport. Instrument meteorological conditions prevailed at the time of the accident, and the airplane was observed exiting the clouds in level flight, about one-half to three-quarters beyond the approach end of the intended landing runway. The pilot attempted a missed approach and the airplane made a climbing left turn, and entered clouds. Shortly thereafter, the airplane was observed descending toward the ground in a flat spin. The airplane impacted in a wooded area about 1/2-mile south-southwest of the approach end of the runway. Examination of the left engine revealed the propeller was at or near the feathered position. An approximate 5.5-inch hole was observed in the crankcase, above the number 1 cylinder, which was attributed to the separation of the aft-top counterweight assembly. No other mechanical failures were observed. This was the airplane's first flight after an annual inspection. The engines had been operating for approximately 308 hours since they were disassembled and inspected after the airplane sustained a gear-up landing. At that time, the work performed on the left engine included the installation of new snap rings on the counterweight assemblies.

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 aircraft control during a single-engine missed approach, after the failure of the airplane's left engine aft-top counterweight assembly. Contributing to the accident were instrument meteorological conditions due to clouds.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE - NORMAL

Findings
1. (C) ENG ASSEMBLY,CRANKSHAFT COUNTERWEIGHTS/VIB DAMPER - FAILURE

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MISSED APPROACH (IFR)

Findings
2. (F) WEATHER CONDITION - CLOUDS
3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On May 17, 2007, at 0937 eastern daylight time, a Canadian registered Beech BE-A55, C-FDJP, was substantially damaged when it impacted terrain while attempting a single-engine landing to the Chautauqua County Airport, Dunkirk (KDKK), New York. The Canadian certificated private pilot, a pilot rated passenger, and another passenger were fatally injured. Instrument meteorological conditions prevailed and an instrument flight rules flight plan had been filed for the flight that departed the Oshawa Airport (CYOO), Oshawa, Ontario, Canada, destined for the New Castle Airport (KILG), Wilmington, Delaware. The flight was conducted under Canadian Aviation Regulations (CAR) 602.

The airplane was based at CYOO. According to the pilot's wife, the pilot owned two-thirds of the airplane and pilot rated passenger held a one-third ownership interest in the airplane. The pilot rated passenger, and his brother, who was seated in a rear seat, were traveling to Delaware for business purposes.

According to air traffic control information, the airplane departed Oshawa about 0830, and had climbed to an altitude of 8,000 feet, approximately 15 minutes later. About 0910, C-FDJP, contacted Erie Approach Control, subsequently reported experiencing a rough running left engine, and requested a diversion to Dunkirk. At 0918, C-FDJP contacted Buffalo Approach Control, and reported "we're level at five thousand, heading to Dunkirk, and we're on single engine operation, we've shut down the left engine." The airplane was vectored to the very high frequency omni-directional range (VOR) approach to runway 24, a 5,000-foot-long, 100-foot-wide, asphalt runway. At 0931, C-FDJP transmitted, "...were ah pretty smooth and ah everything seems to be going according to the numbers." At 0933, the airplane was about 6 miles northeast of the airport, and reported receiving the VOR signal. The airplane was subsequently cleared for the approach and at 0934, was about 2.5 miles northeast of the airport. At 0936:33, C-FDJP, transmitted, "and delta juliet papa we're going to ahhh try that again hold on watch the airspeed."

There were no other communications received from the airplane.

Witnesses reported hearing the airplane as it approached the airport. The airplane exited the clouds in level flight, about one-half to three-quarters beyond the approach end of the runway. The airplane then made a climbing left turn, and entered clouds. Shortly thereafter, the airplane was observed descending toward the ground in a flat spin. Witnesses further reported that the airplane's landing gear was extended, and the left engine propeller was not turning.

The airplane impacted in a wooded area about 1/2-mile south-southwest of the approach end

of the runway.

PERSONNEL INFORMATION

The pilot, age 55, seated in the right front seat, held a Canadian private pilot certificate with ratings for single and multiengine land airplanes. He also held a valid group 1 instrument rating. The pilot held a current Transport Canada category 3 medical certificate, which was renewed on June 6, 2006.

Review of the pilot's logbook revealed that he had accumulated about 1,430 hours of total flight experience, which included about 500 hours in multiengine airplanes, of which approximately 350 hours were as pilot-in-command. In addition, the pilot had logged about 230 hours of instrument flight experience, of which approximately 130 hours was logged under "actual instrument" conditions. The pilot also logged about 50 hours in the accident airplane during the 12 months that preceded the accident.

The pilot rated passenger, seated in the left front seat, held a Canadian private pilot certificate with ratings for single and multiengine land airplanes. He did not hold an instrument rating. The pilot rated passenger's logbook was not recovered. Transport Canada reported that he had reported approximately 488 hours of total flight experience, as of his most recent category 3 medical certificate, which was renewed on May 4, 2005.

The airplane's journey log documented approximately 80 hours of flight time between May 22, 2006 and May 14, 2007, of which the pilot entered 71 hours, and the pilot rated passenger entered 9 hours.

AIRCRAFT INFORMATION

The airplane was manufactured in 1962. According to the airplane journey log, the accident flight was the airplane's first flight since an annual inspection was completed on May 14, 2007. At the time of the inspection, the airplane had been operated for approximately 5,206 hours.

The airplane was equipped with two Teledyne Continental Motors (TCM) IO-470L engines. According to maintenance records, at the time of the accident, the right engine had been operated for about 950 hours since it was overhauled during December 1995, and the left engine had been operated for about 1,040 hours since it was overhauled during September 1994.

Further review of maintenance records revealed that the airplane sustained a gear-up landing during July 2003. Both engines were subsequently disassembled, inspected, and repaired per the TCM maintenance manual. They were reinstalled on the accident airplane during November 2003, and had accumulated approximately 308 hours at the time of the accident. Examination of the work order associated with the left engine revealed that the work performed included "new snap rings required for counterweights."

METEOROLOGICAL INFORMATION

The weather reported at KDKK, about the time of the accident was: winds from, 310 degrees at 6 knots; visibility 3 statue miles in mist; ceiling 800 feet broken, 1,400 feet overcast; temperature 7 degrees Celsius (C); dew point 5 degrees C; altimeter 30.12 inches of mercury.

AERODROME INFORMATION

The Chautauqua County/Dunkirk Airport was publicly owned and positioned at 42 degrees, 29 minutes, 36.0 seconds, north latitude; 79 degrees, 16 minutes, 19.3 seconds, west longitude, at an elevation of 693 feet above sea level.

Runway 24-6, was 5,000 feet-long, 100 feet-wide, and constructed of asphalt. Runway 24 included a two light precision approach path indicator, for a 3-degree glide path.

Review of the VOR Runway 24 approach diagram revealed that the straight-in landing minimum descent altitude was 1,300 feet msl, which was 624 feet above the runway touchdown zone elevation. The published missed approach procedure was a climb to 2,000 feet, followed by a climbing right turn to 2,700 feet, direct to the DKK VOR.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest upright, on a magnetic heading of 290 degrees. Damage to trees in the area surrounding the accident site was consistent with a flat, vertical flight path to the ground. All major components of the airplane were accounted for at the accident site. The empennage was separated forward of the vertical stabilizer, and remained attached via a rudder cable. The left aileron was separated, and the outboard 3 feet of the left wing was torn forward. The right wing was intact. The cabin contained crush damage at the floor, and the roof was buckled.

Flight control continuity was confirmed from the right aileron, and left aileron bell crank to the forward cockpit floor. The elevator cables were intact from the control surface to the cables separation point at the empennage. The rudder control was connected via one cable that was traced to the cabin, the second cable was separated at the empennage. All separated cables contained frayed ends consistent with overload.

The left and right flaps were in the retracted position. The left flap actuator corresponded to a retracted flap setting. The right flap actuator was not accessible. The landing gear selector handle was broken; however, the landing gear was in an extended position.

Both engines remained attached at their respective nacelles, and were canted forward. Both propellers were partially buried in the ground. The right propeller contained a blade that was bent about 90 degrees forward at the outboard third, another blade was twisted aft, and a third

blade was relatively straight. Freshly cut tree braches, up to a diameter of approximately 3.5 inches were observed adjacent to the right engine. In addition, the cut surfaces contained black paint transfer. The left propeller was at or near a feathered position.

The right engine was removed from the airframe for examination. The vacuum pump was removed, and the engine was rotated via the vacuum pump drive. Valve train continuity and thumb compression was attained on all cylinders. Both magnetos were removed and produced spark at all towers when rotated. The top spark plugs were removed. Their electrodes were intact and gray in color. Fuel was observed in the fuel control unit. The fuel control unit inlet, and manifold screens did not reveal any obstructions. The right engine vacuum pump was disassembled, and no abnormalities were noted.

Examination of the left engine revealed an approximate 5.5 inch hole in the crankcase, above the number 1 cylinder, which exposed the number 1 connecting rod and crankshaft counterweight assembly. Portions of the opposite counterweight assembly were observed outside of the engine, between cylinders number 1 and 3. The right magneto was separated from its mount, and the left magneto remained attached. The left engine was retained for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the pilot and passengers on May 18, 2007, by the Erie County Medical Examiner's Office. The autopsy reports indicated the cause of death as multiple blunt force injuries.

Toxicological testing was conducted by the Federal Aviation Administration Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

TESTS AND RESEARCH

The National Transportation Safety Board investigator, along with representatives from the Transportation Safety Board of Canada, and the airplane and engine manufacturer, conducted a teardown inspection of the left engine on August 7, 2007, at TCM, Mobile, Alabama. The teardown revealed that the crankcase was breached above and in-line with the number 1 and 2 cylinder bays. The crankshaft and counterweight assembly exhibited mechanical damage concentrated at the aft counterweight locations. The aft-top counterweight assembly was separated from the hanger. The aft-top hanger blade leading bushing bore was fractured through. All four of the aft-top counterweight plates were accoutered for. One remained in the counterweight and three were separated from their installed positions. Of the three, two exhibited mechanical damage and deformation, while the third plate exhibited minimal mechanical damage.

The aft-bottom counterweight was intact on the hanger, but exhibited mechanical damage. The forward counterweights were undamaged and moved freely on their respective hangers.

No catastrophic failures or evidence of thermal distress was noted on the camshaft, crankshaft, accessory gears or the connecting rod and piston assemblies.

Pilot Information

Certificate:	Private	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 1, 2005
Flight Time:	1432 hours (Total, all aircraft), 1200 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	C-FDJP
Model/Series:	BE-A55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TC311
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	May 1, 2007 Annual	**Certified Max Gross Wt.:**	4880 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5206 Hrs as of last inspection	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-470
Registered Owner:	1419937 Ontario Inc.	**Rated Power:**	260 Horsepower
Operator:	Maxwell B. Hudson	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DKK,693 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	09:36 Local	**Direction from Accident Site:**	30°
Lowest Cloud Condition:		**Visibility**	3 miles
Lowest Ceiling:	Broken / 800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	7°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Oshawa (CYOO)	**Type of Flight Plan Filed:**	IFR
Destination:	Wilmington, DE (KILG)	**Type of Clearance:**	IFR
Departure Time:	08:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Chautauqua County KDKK	**Runway Surface Type:**	Asphalt
Airport Elevation:	693 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	VOR
Runway Length/Width:	5000 ft / 100 ft	**VFR Approach/Landing:**	Go around

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	42.481388,-79.283889

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Patrick M Long; FAA/FSDO; Rochester, NY Peter A Rowntree; TSB Canada; Ontario, Canada Russell R Schrock; Hawker Beechcraft; Wichita, KS Andrew Swick; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	August 28, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65803