Aviation Investigation Factual Report

Location:	Palm Coast, Florida	**Accident Number:**	ERA13FA105
Date & Time:	January 4, 2013, 14:19 Local	**Registration:**	N375B
Aircraft:	Beech H35	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of engine power (total)	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

On January 4, 2013, about 1419 eastern standard time, a Beechcraft H35, N375B, owned and operated by a private individual, experienced a loss of engine power while in cruise flight and was destroyed when it impacted a house, while on approach to the Flagler County Airport (XFL), Palm Coast, Florida. The private pilot and two passengers were fatally injured. Instrument meteorological conditions prevailed and an en route instrument flight rules (IFR) clearance was obtained for the flight, which departed Saint Lucie County International Airport (FPR), Fort Pierce, Florida, and was destined for Knoxville Downtown Island Airport (DKX), Knoxville, Tennessee. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The airplane arrived at FPR after flying from Stella Maris, Bahamas. The passengers cleared U.S. Customs about 1145. The airplane was subsequently refueled and departed for DKX under visual flight rules.

According to air traffic control information provided by the Federal Aviation Administration (FAA), the pilot contacted Daytona Approach control about 1407, and reported vibrations and an "oil pressure problem." The controller advised the pilot that the airports in the area were IFR with cloud ceilings of 900 to 1,000 feet above ground level. The pilot received radar vectors for an airport surveillance radar approach to runway 29 at XFL, which was about 8 miles north of the airplane's position. At 1411:06, the pilot reported that the engine oil pressure was "zero" with "cool cylinders." At that time, the airplane was flying at an altitude of 5,300 feet mean seal level (msl), and was located about 2.5 miles from the approach end of runway 11, at XFL. The airplane continued to be vectored to a point about 6.5 miles northeast of the airport and was provided headings to the south and then west, to the final approach course for runway 29. The airplane was subsequently cleared to land about 1416. Radar contact with the airplane was lost when the airplane was about 2 miles from the runway, at an altitude of 200 feet msl. At 1418:27, the pilot transmitted "…we need help; we're coming in with smoke." There were no further communications from the airplane.

The XFL airport director observed the airplane as it approached runway 29. He described the weather conditions as instrument meteorological conditions with a low ceiling and mist. He observed the airplane "break out" of the cloud layer, very low, just above the tree line. The airplane's wings were level as it descended and disappeared in the tree line.

Another witness, who was an airline transport pilot and flight instructor, reported that the airplane looked "slow" as it exited clouds, was in a nose high attitude, and appeared to "stall" prior to descending below the tree line, which was followed by smoke about 10 seconds later.

Pilot Information

Certificate:	Private	**Age:**	58
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
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:**	December 31, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 1300 hours (Total, all aircraft)		

The pilot, age 58, held a private pilot certificate, with ratings for airplane single-engine land and instrument airplane. The pilot's logbooks were not recovered. His most recent FAA third class medical certificate was issued on December 31, 2012. At that time, he reported a total flight experience of 1,300 hours, which included 30 hours during the previous 6 months. The pilot reported 1,100 hours of total flight experience, with 50 hours during the previous 6 months, on an FAA medical certificate application dated February 4, 2010.

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N375B
Model/Series:	H35	**Aircraft Category:**	Airplane
Year of Manufacture:	1957	**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	D-5121
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	CONT MOTOR
ELT:	C91 installed, not activated	**Engine Model/Series:**	IO-470 SERIES
Registered Owner:	On file	**Rated Power:**	250 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The four-seat, all-metal, low-wing, retractable-gear airplane, serial number D-5121, was manufactured in 1957. It was powered by a Continental Motors IO-470-C1, 250-horsepower engine and equipped with a Beech 278 propeller assembly. According to Beechcraft, the airplane was originally manufactured with a Continental Motors O-470-G series engine, which could be modified post manufacturer with a fuel injected engine per Beech Kit 35-648, "Engine Conversion to Fuel Injection on the Beech Model H35 Bonanza." No documentation for the engine that was installed on the accident airplane was found.

The airplane was found to have been modified with the addition of 15-gallon fiberglass wingtip fuel tanks, which would have included a wingtip tank fuel transfer pump mounted in each respective wing's wheel-well, to allow fuel to be transferred from each wingtip fuel tank, to its respective wing. There was no record of a supplemental type certificate for the installation of wingtip fuel tanks found in the airplane's FAA airworthiness file.

According to FAA records, the pilot purchased the airplane on May 30, 2008.

The airplane's maintenance records were not located. According to an FAA inspector, it was reported that the pilot traveled with his personal logbook and the airplane's maintenance records onboard the airplane. Additional information obtained by the FAA inspector revealed that the engine's No. 1 and No. 4 cylinders were replaced due to low compression during early December 2012; however, no work orders or other associated documentation could be located.

A friend of the pilot reported that he believed that the airplane's last annual inspection was performed around September-October 2012. He stated that he was not aware of any previous engine issues with the airplane, except for a small oil leak.

In a written statement, the lineman who refueled the airplane at FPR reported that he noticed "visible oil leaks" on the airplane's nose gear strut. In addition, after he informed the pilot of a fuel imbalance prior to refueling, the pilot informed the lineman that the airplane's right fuel pump was not working.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	XFL,33 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:50 Local	**Direction from Accident Site:**	288°
Lowest Cloud Condition:		**Visibility**	3 miles
Lowest Ceiling:	Broken / 900 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.21 inches Hg	**Temperature/Dew Point:**	15°C / 13°C
Precipitation and Obscuration:	N/A - None - Mist		
Departure Point:	St.Lucie County, FL (FPR)	**Type of Flight Plan Filed:**	VFR
Destination:	Knoxville, TN (DKX)	**Type of Clearance:**	VFR
Departure Time:	13:30 Local	**Type of Airspace:**	

The weather reported at XFL at 1350 was: wind 360 degrees at 7 knots, visibility 3 statute miles, ceiling 900 feet broken, 1,400 feet overcast, temperature 15 degrees Celsius (C), dew point 13 degrees C, and altimeter 30.22 in/hg.

Airport Information

Airport:	Flagler County Airport XFL	**Runway Surface Type:**	Asphalt
Airport Elevation:	33 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	29	**IFR Approach:**	ASR
Runway Length/Width:	4999 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	3 Fatal	**Latitude, Longitude:**	29.458889,-81.185554

The airplane impacted trees and a residence about 3/4 mile from the approach end of runway 29, slightly left of the extended centerline. The initial impact point (IIP) was identified as a pine tree that was about

60 feet tall and contained broken limbs about 30 to 35 feet above ground level. Various components of wreckage extended from the IIP, on a heading of 288 degrees magnetic for 50 feet. The remainder of the airplane impacted the roof of a detached single family home and a large fire ensued, which destroyed most of the airplane and dwelling.

The airplane's left outboard wing, with about one-half of the corresponding aileron attached, displayed evidence of a tree strike and was found at the base of a tree located about 60 feet from the back of the house. The inbound portion of the left aileron was observed near the right wing, which was inverted and located along the back of the house. The empennage came to rest inverted on the backside edge of the roof alongside of a section of the right wing inboard leading edge. Other remains of the fuselage and left wing were found inside the house. Examination of the airplane's flight control cables did not reveal evidence of any preimpact failures. The right flap actuator remained intact and was observed in a flap retracted position. The landing gear actuator was not observed and the preaccident position of the landing gear could not be confirmed.

The engine was found inverted on the floor of the house. It sustained a significant amount of thermal and impact damage, which destroyed all accessories, with the exception of the propeller governor, which was intact, but fired damaged. A large hole was observed in the crankcase, which contained a portion of the No. 4 connecting rod. The engine was forwarded to Continental Motors Inc., Mobile, Alabama, for further examination.

The propeller remained attached to the crankshaft flange. The spinner was dented and did not display spiral dents. Both propeller blades displayed light chordwise scratches. The outboard section of one propeller blade was missing about 4 to 6 inches of its tip. The propeller blade was cut inboard of the missing section and forwarded to the NTSB Materials Laboratory, Washington, DC, for further examination.

Subsequent teardown of the engine under the supervision of the NTSB investigator-in-charge revealed that the crankshaft exhibited lubrication distress, thermal damage, and mechanical damage at the No. 4 connecting rod journal. The crankshaft oil transfer passage at the No. 4 journal sustained mechanical damage and contained displaced journal material. The remaining crankshaft oil transfer passages were unrestricted. Only fragments of the No. 4 connection rod bearing were recovered and they displayed lubrication and thermal distress. In addition, the number No.4 connecting rod was fractured at the base of the I-beam and exhibited extreme thermal and mechanical damage consistent with a loss of lubrication. The oil galleys and passages in the left and right crankcase halves were intact, clear, and unrestricted.

Subsequent examination of sectioned propeller blade by an NTSB metallurgist revealed that it exhibited extensive evidence of exposure to elevated temperatures that approached the melting point of the blade. This included complete removal of the paint, a thick oxide skin, and internal slumping of the blade material. The blade fracture surface exhibited characteristics consistent with separation while at elevated temperatures. The blade also showed a gradual deformation toward the camber side adjacent to the fracture. The deformation was accompanied by transverse cracking and stretching of the oxide layer on the flat side of the blade indicating deformation after or during high temperature exposure.

Communications

The following information, which contains excerpts of recorded communications, was obtained by an NTSB air traffic control specialist through interviews and review of communications and radar information obtained from the FAA:

At 1349:34, the pilot contacted Daytona Beach approach control and reported that he was at 4,500 feet. Eight minutes later, the pilot requested a climb to 6,500 feet. The approach controller informed the pilot that they had received a pilot report (PIREP) reporting that the cloud tops were at 7,000 feet. The controller advised the pilot to maintain at or above 7,000 feet, and remain in VFR conditions. The pilot complied and climbed to 7,500 feet.

At 1407:01, the pilot reported, "…we got a vibration in the prop, I need some help here." The approach controller informed the pilot that the closest airport was at his 12 to 1 o'clock position and 5 miles, and asked him if he was instrument flight rules (IFR) capable and equipped. The pilot stated, "I'm IFR, we're just getting a little vibration. We've got an oil pressure problem; we're going to have to drop quickly here." When asked to clarify the nature of the problem, the pilot stated, "…we got a propeller or something going, I'm backing it up here to see."

According to the approach controller, Ormond Beach Airport, which was located approximately 6 miles to the southeast of the airplane's position, was considered briefly, however, because runway 8/26 was closed for construction and there had been a strong tailwind for runway 17, that airport was not an option. The approach controller subsequently cleared the flight to XFL, instructed the pilot to descend and maintain 2,000 feet.

About 1408, the approach controller instructed the pilot to continue his present heading, and informed him that he would get him as close as he could to the Flagler airport for a runway 29 approach. He advised the pilot that the weather ceiling at XFL was 900 feet, and that an instrument approach was necessary. The controller subsequently asked the pilot if he could accept an airport surveillance approach (ASR) into XFL and the pilot replied that he was "…lovely with that" (An ASR approach was a type of instrument approach wherein the air traffic controller issued instructions, for pilot compliance, based on an aircraft's position in relation to the final approach course, and the distance from the end of the runway as displayed on the controller's radar scope).

Flagler County Airport did not have a published ASR approach. The controllers determined that to best handle the emergency it was necessary to offer the pilot an unpublished ASR approach to runway 29 at XFL using area navigation (RNAV) approach minimums. This determination was based on the information obtained from the pilot, and the need for the pilot to conduct an instrument approach into the airport due to the IFR weather conditions.

At 1409, the pilot checked in with the arrival controller and reported he was at 7,000 feet descending to 2,000 feet. The arrival controller instructed the pilot to descend and maintain 3,000 feet, and to turn right to a heading of 060 degrees. According to the arrival controller, he assigned the airplane 3,000 feet because he wanted to ensure the airplane was high enough to remain clear of an antenna that was located northwest of XFL.

About 1410, the controller advised the pilot to expect an ASR approach to runway 29 at XFL.

At 1411:06, the pilot reported, "…we got zero oil pressure, but we've got cool cylinder head temperature." The controller acknowledged the pilot's transmission and instructed the pilot to turn right to a heading of 090 degrees and to descend and maintain 2,000 feet.

At 1411:47, the controller informed the pilot that he would provide guidance along the RNAV runway 29 approach and that the straight in minimum descent altitude (MDA) was 560 feet.

At 1413:46, the controller instructed the pilot to turn right to a heading of 180 degrees and advised that the airplane was about 6 miles east-northeast of XFL on " a base leg for about a four and one-half to five mile final." The pilot acknowledged the turn and said "…we're starting to see some ground here."

At 1414:27, the controller instructed the pilot to descend to 1,600 feet and to turn right, to a heading of 200 degrees.

At 1415:01, the controller informed the pilot that the airplane 5 miles southeast of XFL. About 35 seconds later, the controller provided the pilot turns to intercept the final approach course and informed the pilot that he was 4 miles straight in for runway 29, which the pilot acknowledged.

About 1416, the controller informed the pilot that the airplane was three miles from the runway, asked him to advise when he had the airport in sight, and cleared the airplane to land on runway 29.

At 1417:25, the controller told the pilot that the airplane was below radar coverage, instructed him to contact the XFL tower, and provided missed approach instructions, "if you don't have the airport in sight, climb straight ahead to 2,000 [feet]."

At 1417:59, the pilot transmitted, "…do you read me?" The controller immediately responded that he had him loud and clear and asked the pilot if he had the airport in sight at his 12 o'clock and a mile. The pilot did not respond.

At 1418:27, the pilot transmitted, "…we need help; we're coming in with smoke." The arrival controller informed the pilot that Flagler Tower was waiting for him, and that he was cleared to land.

At 1418:55, the XFL tower controller called the arrival controller and informed him that the airplane did not make it to the airport.

Federal Aviation Administration order 7110.65, "Air Traffic Control," provides guidance and instruction to air traffic controllers when an emergency situation exist or is imminent. Paragraphs 10-1-1, 10-1-2, and 10-2-5 stated in part:

10-1-1: Emergency Determinations...Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances and which most nearly conforms to the instructions in this manual.

10-1-2: Obtaining Information…Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot because he/she is authorized by 14 CFR Part 91 to determine a course of action.

10-2-5: Emergency Situations…Consider that an aircraft emergency exists…when any of the following exist:

a. An emergency is declared by either:

1. The pilot.

2. Facility personnel.

3. Officials responsible for the operation of the aircraft.

[For additional information, please see the NTSB Air Traffic Control Group Factual Report located in the Public Docket.]

Medical and Pathological Information

An autopsy was performed on the pilot by the Office of the Medical Examiner, District 23, St. Augustine, Florida. The autopsy report noted the cause of death as "multiple blunt force injures."

Toxicological testing performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma, was positive for the following:

"Atenolol detected in Liver
Atenolol detected in Blood (Heart)
1949 (mg/dl) Glucose detected in Urine
149 (mg/dl) Glucose detected in Vitreous
7 (%) Hemoglobin A1C detected in Blood"

Review of the pilot's most recent FAA medical examination application (dated December 31, 2012) revealed "No" was selected to the question "Do you currently use any medication (Prescription or Nonprescription)."

Administrative Information

Investigator In Charge (IIC):	Duprie, Terry
Additional Participating Persons:	Peter Kandravi; FAA/FSDO; Orlando, FL Paul E Yoos; Hawker Beechcraft; Wichita, KS Kurt A Gibson; Continental Motors, Inc; Mobile, AL
Report Date:	April 29, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=85964