Aviation Investigation Final Report

Location:	Wellington, Florida	**Accident Number:**	ERA13LA428
Date & Time:	September 23, 2013, 12:37 Local	**Registration:**	N40KG
Aircraft:	Beech A36	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot departed for a planned 4-hour instrument flight rules, cross-country flight, and about 5 hours 13 minutes into the flight, the engine lost power. The pilot reported that he then landed the airplane on a wet roadway and lost directional control as the wheels hydroplaned on the wet surface. The airplane subsequently struck a sign and electrical power pole, resulting in substantial damage. The quantity of fuel onboard the airplane at the time of the accident could not be determined due to damage sustained to the airframe during the accident. Although the pilot advised an air traffic controller during the forced landing, "I believe I ran out of fuel," at least 12 usable gallons should have remained based on the amount of fuel the pilot reported the airplane had before departing on the flight and the total fuel use calculated by an onboard fuel flow indicator.

A postaccident test run of the engine showed that it started normally and ran with no anomalies noted. Download of non-volatile memory from an engine monitoring device showed that the loss of engine power was immediately preceded by a rise in exhaust gas temperature and a rapid reduction in fuel flow, consistent with an interruption of fuel flow. The pilot did not report the position of the fuel selector before the loss of engine power, and its preaccident position could not be determined because the pilot had selected it to the off position before egressing the airplane after the accident.

Probable Cause and Findings

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

A total loss of engine power due to an interruption in fuel flow, which was most likely due to fuel starvation. Contributing to the accident was the pilot's failure to maintain control of the airplane while performing the subsequent forced landing to a wet roadway.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Lack of action - Pilot
Aircraft	Directional control - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Enroute-descent	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-landing roll	Loss of control on ground
Landing-landing roll	Collision with terr/obj (non-CFIT)

On September 23, 2013, at 1237 eastern daylight time, a Beech A36, N40KG, was substantially damaged during a forced landing following a total loss of engine power near Wellington, Florida. The commercial pilot was not injured. Visual meteorological conditions prevailed and the airplane was operating on an instrument flight rules flight plan. The flight had originated from Washington Dulles International Airport (IAD), Dulles, Virginia, about 0730, and was destined for Boca Raton Airport (BCT), Boca Raton, Florida. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to the pilot, he performed a preflight inspection and noted that a total of 74 (usable) gallons of fuel were onboard the airplane. He subsequently departed from IAD and climbed the airplane to a cruise altitude. While in cruise, the pilot referenced the airplane's GPS and noted that the expected total duration for the flight was about 4 hours. Later during the flight, the pilot referenced the installed engine monitor and fuel totalizer, and compared it with the GPS's estimate of the amount of time remaining for the flight. In the vicinity of Melbourne, Florida, the pilot was instructed by air traffic control to begin descending the airplane, and was given radar vectors around weather that was in the vicinity. During the descent, the pilot noted that the fuel totalizer predicted that the airplane had about 10 gallons of fuel remaining, with an estimated endurance of about 75 minutes.

About 20 miles from the destination airport, and while flying at an altitude of about 4,000 feet, the engine experienced a total loss of power. The pilot attempted to restart the engine to no avail, and subsequently declared an emergency to air traffic control. After realizing that the airplane would not be able to reach the nearest airport, the pilot performed a forced landing to a highway below. During the landing, the airplane bounced, veered left, then right as it hydroplaned on the wet road surface. The airplane eventually came to rest after striking a utility pole, resulting in substantial damage to the airframe. After the landing, the pilot turned off the master switch, ignition and fuel selector and exited the airplane unharmed.

Review of archived FAA Air Traffic Control (ATC) radio communication transcripts showed that the pilot was provided a handoff and checked in with an air traffic controller at Palm Beach Terminal Radar Approach Control facility at 1243, and reported he was approaching his assigned altitude to 4,000 feet. After being provided two radar vectors, the pilot advised ATC at 1244:49, "uh can you give me vectors to the nearest field uh I believe I ran out of fuel four zero kilo golf declaring an emergency at this time." The controller subsequently provided a vector toward Wellington Aero Club Airport (FD38), West Palm Beach, Florida, which was about 6 miles south of the flight's position at that time. The pilot finally

advised the controller the he would not be able to reach the diversionary airport, and no further transmissions were received.

A Federal Aviation Administration inspector performed a cursory examination of the airplane at the accident site. According to the inspector, the airplane's right wing struck a roadway sign and the left wing struck a power transmission pole, resulting in substantial damage to both wings. Damage to the wings precluded determining the quantity of fuel onboard the airplane at the time of the accident, though the inspector did note that there was no smell of fuel present at the accident site. After the airplane was recovered from the accident scene, the engine was separated from the airplane, placed on a test stand, and run under the supervision of the inspector. The engine started normally and was run to a maximum of 2,300 rpm, a limit imposed due to the test propeller installed on the engine. Oil and fuel pressure were observed to be within nominal limits, as was the loss of rpm noted when testing both magnetos.

A JP Instruments EDM-700 engine monitoring device was recovered from the airplane and downloaded in the National Transportation Safety Board Vehicle Recorders Laboratory. The unit was in good condition and the data were extracted normally. The unit contained recorded data over 12 power cycles, recorded at a sample rate of once every 6 seconds. The recorded data spanned dates of July 30, 2013, through the accident flight on September 23, 2013, as recorded by the unit's internal clock. The entire accident flight recording was 5 hours and 31 minutes in duration. The duration during which the fuel flow was greater than 9 gallons per hour (gph) was 5 hours and 13 minutes. The parameters recorded were exhaust gas temperature (EGT), cylinder head temperature (CHT), voltage, fuel flow, and oil temperature. The calculated shock cooling rate, total fuel used, and maximum difference between EGT sensors were also recorded. No other parameters were recorded by the unit. The unit was configured such that 98 gallons was full fuel.

At about 11:58 (4 hours and 40 minutes after the fuel flow first went above 9 gph), the engine parameters began to fluctuate slightly. At this time, the fuel used was 56 gallons. At 12:28:30, the CHTs and EGTs began a gradual decrease, coincident with a reduction in fuel flow from about 12 gph to 10 gph. At 12:29:48, the EGTs began to increase, peaking at 12:30:24. At 12:30:30, the fuel flow reduced to 0 gph for the remainder of the recording, and the CHTs and EGTs began to rapidly decrease. The recording ended at 12:37:48, 7 minutes and 48 seconds after the fuel flow first reduced to 0 gph. The final recorded total fuel used for the flight was 62 gallons.

Pilot Information

Certificate:	Commercial	**Age:**	45
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	August 11, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	646 hours (Total, all aircraft), 533 hours (Total, this make and model), 488 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N40KG
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	E-1283
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3651 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Teledyne Continental Motors
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550-B
Registered Owner:	FOURSTARS AVIATION	**Rated Power:**	300
Operator:	FOURSTARS AVIATION	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPBI,21 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	16:47 Local	**Direction from Accident Site:**	80°
Lowest Cloud Condition:	Scattered / 1800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	30°C / 24°C
Precipitation and Obscuration:			
Departure Point:	Herndon, VA (IAD)	**Type of Flight Plan Filed:**	IFR
Destination:	BOCA RATON, FL (BCT)	**Type of Clearance:**	IFR
Departure Time:	07:30 Local	**Type of Airspace:**	

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:**	26.647222,-80.331947(est)

Administrative Information

Investigator In Charge (IIC):	Diaz, Dennis
Additional Participating Persons:	David M Avery; FAA/FSDO; Hollywood, FL
Original Publish Date:	January 14, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=88108