Beechcraft | Cessna | Hawker

TEXTRON AVIATION

Air Safety Investigations
Aircraft Incident/Accident Technical Report

Aircraft Incident/ Accident Information	Year: 1956	Make: Beechcraft	Model: G35
	Serial number: D-4863	Registration: N394CW	
Location: Eaton, CO		Date: 10-13-15	Time: 1134 MDT

Aircraft Owner	Aircraft Operator
Benjamin Jesse Bates [redacted]	Same as Aircraft Owner

Report Information		
Senior Air Safety Investigator: Paul E. Yoos	Report #: ASI-15-DX-T	Report date: 03-15-16

Airframe

Impact Sequence and Airframe Structure

The flight path was about 90˚ nose down. The airplane cart-wheeled with the left wing contacted the ground first, then the nose, and then the right wing. The rear fuselage buckled to the left. The left wing was shattered and the outboard half was separated. The cabin door separated. The nose keel structure with the engine partially attached separated from the fuselage bottom. The keel and engine were inverted and under the right wing near the extended right main landing gear assembly and the closed inboard landing gear door. The left main landing gear assembly was collapsed into the external side of the closed inboard landing gear door.

The rear fuselage and attached empennage flight control surfaces were not visibly damaged.

Airframe Systems

Flight Control System Information		
Control lock: Not installed		
Flight Control Cable Continuity		
Ailerons: Established	Elevators: Established	Rudder: Established
Aileron tab: Not applicable	Elevator tab: Established	Rudder tab: Not applicable
Flap and Trim Positions		
Flap actuator: Retracted	Flap indicator: Undt	Flap handle: Undt
Elevator trim:	Actuator: 2-3 deg tab trailing edge down	Indicator: Undetermined
Rudder trim:	Actuator: Not applicable	Indicator: Not applicable

Remarks:

The aileron chain was separated from aileron sprocket, which remained attached to the backside of the firewall. The aileron cables remained attached to chain links. The left aileron bell crank had the balance arm separated. The right aileron bell crank remained intact. The elevator cable remained

attached to the control column. The rudder cables remained attached to the forward rudder bell crank. The rudder and elevator flight controls located in the rear fuselage remained intact.

Airframe Fuel System Condition, Controls, and Read Outs			
Fuel strainer screen: Clean		Fuel strainer bowl: Clean	
Main fuel tank gauge:	Left: See below	Right: See below	
Fuel selector handle: Right	Fuel selector valve: Right	Fuel boost pump: See below	
Firewall fuel shutoff: See below			

Remarks:

A fuel wobble (manual) pump, fuel selector valve, and strainer assembly was installed and remained intact. A fuel selector valve positioned to OFF would be a firewall shutoff.

The selector valve was confirmed to be selected to the RT MAIN tank by applying low pressure air at the detached TO ENGINE fuel line detached from the carburetor.

The G35 Bonanza airplane only has a single fuel indicator gauge. Lower instrument panel switches configure that gauge to indicate the fuel quantity either in the left AUX, right AUX, left MAIN, or right MAIN tank. The single gauge read about ½. The panel switches were destroyed.

The right wing was elevated due to the right main landing gear being extended and the left main landing gear being collapsed. The fuselage maintained a level attitude due to the engine having rolled under the forward part of the cabin and inboard right wing area. The airplane fuel tanks were examined at the accident site before recovery. The following quantities were determined:

- Right AUX – a 10-gallon capacity tank containing 4 to 41/2 gallons of fuel (about ½ full)
- Right MAIN – a 20-gallon capacity tank containing nil fuel
- Left MAIN – a 20-gallon capacity tank containing 1 gallon of fuel
- Left AUX – *a 10-gallon capacity tank that was breached

* Each AUX tank should contain the same quantity of fuel, since the outputs are interconnected.

A review of the airplane Pilot's Operating Handbook and Airplane Flight Manual, P/N 35-590072-9, Section V Performance, Cruise Power Settings, stated that the expected fuel consumption for flight at 6,000 feet MSL on a standard day would be as follows:

- At 2300 RPM and 23 inHg (169 Hp) about 13.6 gallons per hour (GPH) and would achieve 160 knots true airspeed
- At 2300 RPM and 21 inHg (146 Hp) about 11.5 gallons per hour (GPH) and would achieve 156 knots true airspeed
- Previous owners suggested operating information was 2,350 rpm at a manifold pressure that would yield around 12 gallons per hour fuel bum.
- At 2300 RPM and 18.6 inHg (124 Hp) about 9.5 gallons per hour (GPH) and would achieve 142 knots true airspeed
- At 2100 RPM and 17.7 inHg (101 Hp) about 8.1 gallons per hour (GPH) and would achieve 130 knots true airspeed

The radar and weather information provided by the NTSB IIC suggested the flight path over the ground would have been into about an 8 to 9 knot headwind.

A review of the FAA Airplane Record - Airworthiness revealed the following information:

- On 10-21-59, two twelve-gallon wing tip fuel tanks were installed in accordance with FAA Supplemental Type Certificate (STC) SA1-368 and Safe Flight Extenders Company Manual SFE-35 (IIII). This installation includes fuel boost pumps that pump fuel from their respective wing tip tank into that wings main wing tank via the tanks fuel receiver/cap assembly. Boost pump switches are mounted on the instrument panel
- On 12-13-91, the Safe Flight Extenders wing tip fuel tanks were removed and Madras Air Services Super Wing Tips were installed in accordance with STC SA2081WE.

A review of the FAA Airplane Record – Registration revealed that on 09-04-11, the then airplane owners wrote a letter to the FAA addressing the issuance of a special registration N-number. In that letter the owners stated that they had installed wing tip fuel tanks on the airplane, giving the airplane a total fuel capacity of 90-gallons. This would mean the tip tanks had a 15-gallon capacity each.

At the accident site wing tip fuel tanks were observed installed on the airplane, not Madres Air Services Super Wingtips. Fuel boost pumps were observed mounted in each wheel well, and fuel lines were observed going into each main tank fuel receiver/cap assembly.

Landing Gear System Condition and Controls			
Gear position:	Nose: Extended	Left: Extended	Right: Intermediate
Actuator position:	Nose: Not applicable	Left: Not applicable	Right: Not applicable
Landing gear selector: Undetermined		Emer gear handle: Undt	

Environmental System Controls and Read Outs		
Cabin heater: Undt	Cabin vent: Undt	Defrost: Undt
Air conditioner: Not installed	Oxygen system: Not applicable	Oxygen quantity: Not applicable

Icing System Information and Switches			
Certified into known icing? No		De-icing boots installed? No	
Pitot heat: Undetermined		Stall heat: Undetermined	
Anti-ice:	Surface: Not applicable	Propeller: Not applicable	Windshield: Not applicable

ELT Information			
Installed? Yes	Manufacturer: Ameri-King Corp	Model: AK-450	Type: TSO-91
Serial number: 486200	Battery due date: See below	Armed: Yes	Activated: See below

Remarks:

The ELT unit was found adrift in the rear fuselage and detached from its antenna.

There was no record of an ELT signal having been received. When the ELT's activation switch was placed in the ON position the red light indicating activation did not illuminate. A piece of tape affixed to the ELT's case indicated "12/2022" for a battery date replacement date. The date on the actual battery was not obtained.

Cabin and Equipment/Furnishings

Restraint System Information						
Seat	Occupied	Restraint type	Restraint used	Condition	Manufacturer	2nd seat stop
1	Yes	2-Point	Yes	Good	Undetermined	Not applicable
2	Yes	2-Point	Yes	Good	Undetermined	Not applicable
3	No	2-Point	N/A	Good	Undetermined	Not applicable
4	No	2-Point	N/A	Good	Undetermined	Not applicable

Seat Condition Information					
Seat	Orientation	Feet intact	Back intact	Base intact	Rail intact
1	Forward facing	Yes	Yes	Yes	Yes
2	Forward facing	Yes	Yes	Yes	Yes
3	Forward facing	Yes	Yes	Yes	Yes
4	Forward facing	Yes	Yes	Yes	Yes

Remarks:

The installed seat belts had a shoulder harness post on the male end of the seat buckle, but no shoulder harness belts were installed in the airplane.

Instrument Panel

Navigation Instruments					
Analog primary instruments			Autopilot type: None		
Suction gage: Undetermined			Magnetic compass: Undetermined		Clock: Undetermined
	Left side	Right side		Left side	Right side
Airspeed:	110	N/A	Turn coordinator (airplane):	Undt	N/A
Attitude (pitch):	ND	N/A	Turn coordinator (ball):	Undt	N/A
Attitude (roll):	LWD	N/A	Heading indicator:	Undt	N/A
Altimeter:	Undt	N/A	Heading “bug”:	Undt	N/A
Altimeter setting:	Undt	N/A	Vertical speed indicator:	Undt	N/A
Stand-by:	Airspeed: N/A		Attitude (pitch): N/A		Attitude (roll): N/A
	Altimeter: N/A		Altimeter Setting: N/A		

Communication and Navigation Radios							
Radio	Control	Active frequency	Stand-by frequency	Radio	Control	Active frequency	Stand-by frequency
Com 1:	Undt	Undetermined	Undetermined	Com 2:	Undt	Undetermined	Undetermined
Nav 1:	Undt	Undetermined	Undetermined	Nav 2:	Undt	Undetermined	Undetermined
Obs 1:	Undetermined			Obs 2:	Undetermined		
Transponder:	Mode: Undetermined			Active code: Undetermined		Stand-by code: Undetermined	

Electrical Switch Positions		
Master battery: On	Master alternator: On	Avionics 1: Undetermined
Stand-by battery: Not applicable	Alternator 2: Not applicable	Avionics 2: Not applicable

Lighting Switch Positions		
Navigation: Undetermined	Rotating Beacon: Undetermined	Landing: Undetermined
Taxi: Undetermined	Strobe: Undetermined	Instrument: Undetermined

Ignition Switch Position	
Key: Both	

Remarks:

None

Powerplant Description

Engine Instruments							
Hour meter:	Undt	Tach RPM:	Undt	Tach hours:	0798.0	Manifold press:	Undt
Oil press:	Undt	Oil temp:	Undt	EGT:	Undt	CHT:	Undt
Fuel press:	Undt	Fuel flow:	Undt	Ammeter:	Undt	Voltmeter:	Undt

Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Throttle:	IN	Undetermined	Cowl flaps:	Undetermined	Undetermined
Mixture:	IN	Undetermined	Carburetor heat:	Undetermined	Undetermined
Propeller:	Undetermined	Undetermined	Primer:	Undetermined	

Engine Condition			
Engine attached to airframe:	Partially	Propeller attached to engine:	See below
Engine compression:	Yes	Valve train continuity:	Yes
Vacuum pump drive shaft:	Intact		

Engine Fuel System Condition			
Fuel pump drive shaft:	Seperated	Carburetor inlet screen:	Clean
Fuel distribution valve screen:	Not applicable	Fuel injectors:	Not applicable

Magneto Condition			
Left magneto attached:	Yes	Right magneto attached:	Yes
Left magneto spark:	All leads	Right magneto spark:	All leads

Spark Plug Condition (per Champion Check-A-Plug Card)						
	1	2	3	4	5	6
Top	See below	See below	See below	See below	See below	See below
Bottom	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined

Remarks:

The top spark plugs were removed. Spark plugs 1, 3, and 5 were NORMAL in coloration and WEAR. Plugs 2, 4, and 5 were not WORN, but they were oil soaked, likely due to the engine coming to rest in an inverted position.

The engine accessories were partially separated.

Propeller

The propeller remained attached to the Hartzell crankshaft adapter, and the crankshaft adapter remained attached to the crankshaft.

One blade was separated from the propeller mounting collar. Both blades of the 2-bladed propeller were bowed forward and had no leading edge nicks or dings. The one blade that remained attached to the engine/propeller assembly had blade back chordwise scratches.

Research & Testing

An IPhone 6 and an IPad Mini belonging to Langston were found in the debris and were sent to NTSB Headquarters Recorders Division for download. No information received to date.