

**Beechcraft**

BY TEXTRON AVIATION

Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft Incident/ Accident Information	Year: 2013	Make: Cessna	Model: 208B
	Serial number: 208B2428		Registration: N928JP
Location: Heyburn, ID		Date: 04-13-22	Time: 0835 MDT
Aircraft Owner		Aircraft Operator	
Spirit Air Inc 64 Miller Ln Salmon, ID 83467-5163		Same as Owner	
Report Information			
Air Safety Investigator: Casey J. Love [REDACTED]		Report #: ASI-22-AQ-T	Report date: 09-13-22

Airframe

Impact Sequence and Airframe Structure

Upon impact with a smokestack, the left and right wings separated from the fuselage at the wing root attach fittings. The right wing separated from the fuselage and came to rest approximately 60' from the main wreckage. The left wing came to rest beside the fuselage. The flaps and ailerons remained attached to the wings. The empennage remained attached to the fuselage. The right horizontal stabilizer and elevator were bent downward approximately 70 degrees midspan. The right horizontal stabilizer, right elevator, vertical stabilizer, and rudder were virtually undamaged. The engine and mount were displaced aft into the firewall and remained partially attached to the airframe. The firewall was impacted by the engine and exhibited a concave shape conforming to the engine. The fuselage structure and belly skin were impact separated at the cockpit aft door posts but remained attached via cables and wires.

Airframe Systems

Flight Control System Information		
Control lock: Installed		
Flight Control Cable Continuity		
Ailerons: Established	Elevators: Established	Rudder: Established
Aileron tab: Established	Elevator tab: Established	Rudder tab: Established
Flap and Trim Positions		
Flap indicator: Full	Flap handle: Undt	Flap actuator: 6.6" ~ fully retracted
Stand-by flap system:	Direction switch: See below	Motor control: See below
Elevator trim:	Indicator: Between neutral and full nose up	Actuator: Undt
Rudder trim:	Indicator: Unknown due to damage	Actuator: Undt
Aileron trim:	Indicator: Between neutral and full left	Actuator: Undt

Remarks:

The section of the upper cabin structure that contained the flap stand-by switches sustained impact damage and was part of the section cut from the wreckage by first responders. The switch guard for the stand-by motor was fracture separated and the frangible safety wire that held the switch guard closed was broken and remained attached to the switch base. The flap stand-by down switch guard was impact damaged and the switch position was unreliable. The flap drive gearbox remained attached to the mount structure, but the mount structure was impact separated from the airframe and remained connected to the right wing via the flap linkage. The primary flap drive motor was impact separated from its mount. The stand-by motor remained attached to the flap drive gearbox.

The cockpit portion of the flight control system sustained severe impact damage. The flight control cables remained attached to their respective cockpit control attach points. Movement was produced at the elevator and rudder when the cockpit portion of the control cables were pulled. The elevator and rudder trim cables remained intact, but the trim controls were liberated from the mount structure. All flight controls remained attached to their respective attach points and were present at the accident site. The elevator and rudder autopilot control cables were around the capstans and attached to their respective control cable via the bridle cables or the bellcranks. The right aileron control cables remained attached to the wing bellcrank. The push/pull rod from the wing bellcrank remained attached to the aileron. The control cables exhibited fractures consistent with overload inside the wing. The left aileron control cables remained attached to the wing bellcrank and the aileron sector in the center of the fuselage. The aileron low tension loop control cables were fracture separated near the aileron sector in the center of the fuselage. The fracture separations were consistent with overload signatures.



ASI-22-AQ-022 (Wreckage overview)

Airframe Fuel System Condition, Controls, and Read Outs				
Fuel strainer screen: Clean			Fuel strainer bowl: Clean	
Main fuel tank gauge:		Left: Undt		Right: Undt
Fuel selector handle:	Left: Undetermined	Fuel selector valve:	Left: Undetermined	Fuel boost pump: Normal
	Right: Undetermined		Right: Undetermined	
Firewall fuel shutoff: Not applicable				

Remarks:

Due to the extent of damage, the power lever and emergency power lever positions were not reliable.

Landing Gear System Condition and Controls			
Gear position:	Nose: Fixed	Left: Fixed	Right: Fixed
Landing gear selector: Not applicable			
Environmental System Controls and Read Outs			
Left side vent: Off		Right side vent: Off	
Temp selector knob: Undt	Bleed air heat: Undetermined	Mixing Air: Undetermined	
Aft/Fwd cabin: Undetermined	Defrost: Undetermined	Air conditioner: Undetermined	
Left AC fan: Undetermined	Aft AC fan: Undetermined	Right AC fan: Undetermined	
Icing System Information and Switches			
Certified into known icing? Yes		Type of ice protection installed? Fluid	
Pitot/Static heat: Off	Stall heat: Off	Wing light: Off	
Deice/Anti-ice: Windshield: Off		Propeller: Not applicable	Boot press: Not applicable
ELT Information			
Installed? Yes	Manufacturer: Undt	Model: Undt	Type: Undt
Serial number: Undt	Battery due date: Undt	Armed: Undetermined	Activated: Undetermined

Remarks:

The aircraft was equipped with a TKS fluid anti icing system. The TKS system switch was observed in the OFF position. The TKS tank assembly, which includes the pumps and control valves, was impact separated from the aircraft during the impact sequence. An undetermined amount of fluid was present in the tank.

The ELT was observed in the wreckage but not examined.

Cabin and Equipment/Furnishings

Restraint System Information						
Seat	Occupied	Restraint type	Restraint used	Condition	Manufacturer	2nd seat stop
1	Yes	5-Point	Partial	Cut by rescue personnel	Cessna	Not applicable
2	No	5-Point	N/A	Undt	Cessna	Not applicable

Seat Condition Information					
Seat	Orientation	Feet intact	Back intact	Base intact	Rail intact
1	Forward facing	See below	Yes	See below	Partially
2	Forward facing	See below	No	Partially	Partially

Remarks:

The pilot seat base was cut by first responders. The lap restraints were used. The cut portion of the seat restraints were not observed. Portions of the co-pilot seat restraints were found fragmented at the accident site. The aircraft was configured for cargo operations.



ASI-22-AQ-066 (Cockpit and Co-pilot Seat)

Instrument Panel

Navigation Instruments							
Digital Primary Instruments				Autopilot type: Garmin			
Suction Gage: Undetermined		Magnetic compass: Undetermined		Clock: Undetermined			
	Left side	Right side		Left side	Right side		
Airspeed:	Undt	Undt	Turn coordinator (airplane):	Undt	Undt		
Attitude (pitch):	Undt	Undt	Turn coordinator (ball):	Undt	Undt		
Attitude (roll):	Undt	Undt	Heading indicator:	Undt	Undt		
Altimeter:	Undt	Undt	Heading "bug":	Undt	Undt		
Altimeter setting:	Undt	Undt	Vertical speed indicator:	Undt	Undt		
Stand-by:	Airspeed: Undt		Attitude (pitch): Undt		Attitude (roll): Undt		
	Altimeter: Undt		Altimeter setting: Undt				
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							
External power: Off		Battery: Off		Generator: On			
Stby alt pwr: Off		Avionics stby pwr: Off		Avionics bus tie: Off			
Avionics 1: Off				Avionics 2: Off			
Lighting Switch Positions							
Left landing: Off		Taxi/recognition Off		Right landing Off			
Strobe: Off		Navigation: Off		Beacon: Off			
No smoke: Off		Seat belt: Off		Cabin: Off			
Engine Starter and Ignition Switches							
Starter: Off				Ignition: Norm			

Remarks:

In video footage, the landing lights were observed on in the seconds before impact. The landing light switch was observed OFF.

Fragments of three Garmin G1000 displays were identified near the wreckage. Two SD cards were recovered from the wreckage location. One was labeled MFD Bottom, the other was labeled MFD TOP.

Powerplant Description

Engine Instruments					
Hour meter:	Undetermined	Ng RPM:	Undt	Np RPM:	Undt
Torquemeter:	Undt	Oil temp:	Undt	Oil press:	Undt
ITT:	Undt	Fuel flow:	Undt	Ammeter:	Undt
Voltmeter:	Undetermined	Standby torquemeter: Undt			
Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Power:	Undt	Undt	Emer. power:	Undt	Undt
Fuel control:	Undt	Undt	Inertial sep:	On	Undt
Propeller:	Undt	Undt	Cowl flaps:	Undt	Undt
Engine Condition					
Engine attached to airframe: Partially			Propeller attached to engine: No		

Remarks:

The inertial separator door, louvers, and linkage were impact separated from the aircraft. The throttle cable was attached to the fuel control. The propeller control cable was fracture separated from the propeller governor.



ASI-22-AQ-057 (Engine) (Cropped)

Propeller

The propeller remained attached to the drive shaft. The end of the drive shaft, propeller governor, and a section of the reduction gear box (RGB) separated from the RGB. Blade A impact separated from the hub. The outboard one third of the blade fracture separated. An approximately two-inch deep by 4-inch-long gouge existed on the leading edge, inboard of the fracture separation. Blade B and C remained attached to the hub. The tip of blade B impact fracture separated and was found on scene. Blade B also exhibited S bending and impact signatures on the camber side of the blade and was bent aft mid-span. Blade C did not exhibit leading edge damage but was bent aft 90 degrees mid-span.



ASI-22-AQ-082 (Propeller)



ASI-22-AQ-079 (Propeller)

Research & Testing

The SD cards that were recovered at the accident location were sent to the NTSB recorders laboratory for download. The cards sustained impact damage that rendered the data unrecoverable. A weight and balance was calculated by this investigator, and found to be within limits. The Pratt & Whitney engine data monitor was sent to the manufacturer for potential download, which has not been completed at the time of this writing.

