

Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft Incident/ Accident Information	Year: 1974	Make: Beechcraft	Model: 95-B55
	Serial number: TC-1726		Registration: N413D
Location: Broadus, MT		Date: 09-17-16	Time: ~1200 MDT
Aircraft Owner		Aircraft Operator	
Tropical Isle Resort, Inc. [REDACTED]. Marathon, FL 33050-3140		Timothy Scott Brown [REDACTED]. Harbor Springs, MI 49740-9405	
Report Information			
Air Safety Investigator: Ernest C. Hall		Report #: ASI-16-CV-T	Report date: 03-17-17

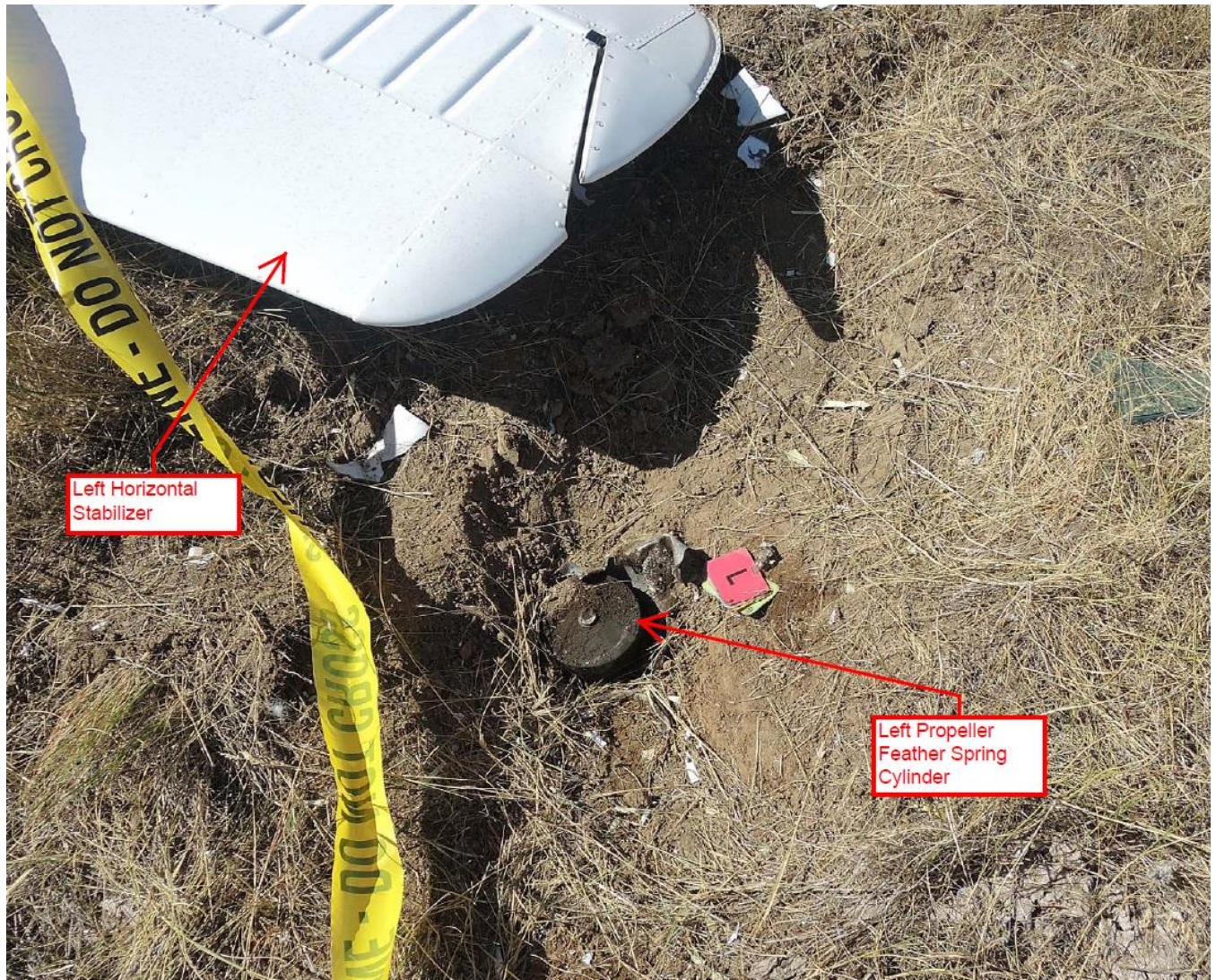
Airframe

Impact Sequence and Airframe Structure

There were ground scars consistent with the width and length of the left wing leading edge, left engine, and right engine. Buried in the left engine ground scar was the left propeller feathering spring cylinder in a vertical position. The ground scars indicated an impact of a magnetic heading of about 120°. The airplane came to rest upright about 2' forward of the ground scars on a magnetic heading of about 143°. Both engines were canted down and partially separated from the airframe. Both Hartzell 2-blade propeller assemblies separated from their respective engine. The left propeller came to rest about 10' to 15' forward of the left engine. The right propeller came to rest under the right wing root and the fuselage. The front and rear carry thru spars were canted forward. The rear carry thru spar had about 5 45° diagonal buckles. The landing gear was retracted and the nose landing gear was pushed aft to the front carry thru spar. There was a 45° aft and downward diagonal buckle from the left rear cabin window to bottom of the airplane. The nose fuselage was fragmented. The cockpit floor was buckled upward. The cockpit roof and side structures were compressed downward.



Ground Scars



Left Engine Ground Scar and Left Propeller Feathering Spring Cylinder

Airframe Systems

Flight Control System Information		
Control lock: Not installed		
Flight Control Cable Continuity		
Ailerons: Established	Elevators: Established	Rudder: Established
Aileron tab: Established	Elevator tab: Established	Rudder tab: Established
Flap and Trim Positions		
Flaps:	Indicator: UP	Handle: UP
	Left actuator: ~1 3/4"=~0°	Right actuator: ~1 3/4"=~0°
Elevator trim:	Indicator: Undetermined	
	Left actuator: ~1"=~0°	Right actuator: ~1"=~0°
Rudder trim:	Indicator: Undetermined	Actuator: ~3 3/4"=~5° Right
Aileron trim:	Indicator: Undetermined	Actuator: ~1 3/8"=~2 1/4° TE UP

Remarks:

Flight control cable continuity was confirmed from each flight control surface to the cockpit control input.

The left wing flap actuator separated from the left flap. The attachment bolt remained attached to flap.

Airframe Fuel System Condition, Controls, and Read Outs					
Fuel strainer screen:		Left: Clean		Right: Clean	
Fuel strainer bowl:		Left: Clean		Right: Clean	
Main fuel tank gauge:		Left: Empty		Right: Empty	
Wing sight fuel gauge:		Left: ~55 gallons		Right: Undetermined due to damage	
Fuel selector handle:	Left: Left	Fuel selector valve:	Left: Left	Fuel boost pump:	Left: Undetermined
	Right: Right		Right: Right		Right: Undetermined

Remarks:

Both wing fuel bladder tanks were breached. The odor of 100LL fuel was evident near each fuel tank.

Both fuel strainers had fuel present.

Both fuel boost pumps were removed from the airplane and connected to an electrical source. Both boost pumps operated in the high and low speeds. Air was blown through the fuel lines from the left and right boost pumps to the left and right engine firewall fittings with no blockage. Air was blown through the fuel lines from the left and right boost pumps to the left and right fuel selector valves with no blockage.

Landing Gear System Condition and Controls			
Gear position:	Nose: Retracted	Left: Retracted	Right: Retracted
Actuator position:	Nose: Retracted	Left: Retracted	Right: Retracted
Landing gear selector: Retracted		Aux gear control: Damaged	
Environmental System Controls and Read Outs			
Cabin heater: Undetermined	Cabin vent: Undetermined	Defrost: Undetermined	
Air conditioner: Not applicable	Oxygen system: Not applicable	Oxygen quantity: Not applicable	
Icing System Information and Switches			
Certified into known icing? No		De-ice boots installed? No	
Pitot heat: Undetermined		Stall heat: Undetermined	
De-ice:	Surface: Not applicable	Propeller: Undetermined	Windshield: Not applicable
ELT Information			
Installed? Yes	Manufacturer: Artex	Model: ME406	Type: AF/AP
Serial number: 242-02912	Battery due date: 12-21	Armed: Yes	Activated: Yes

Remarks:

The landing gear handle was separated.



Front and Rear Carry Thru Spars and Nose Landing Gear

Cabin and Equipment/Furnishings

Restraint System Information						
Seat	Occupied	Restraint type	Restraint used	Condition	Manufacturer	
1	Yes	2-Point	Yes	Cut by first responders	Beechcraft	
2	Yes	2-Point	No	Intact	Beechcraft	
3	No	2-Point	No	Intact	Beechcraft	
4	Yes	2-Point	No	Intact	Beechcraft	
5	No	2-Point	No	Intact	Beechcraft	

Seat Condition Information					
Seat	Orientation	Feet intact	Back intact	Base intact	Rail intact
1	Forward facing	Partially	Yes	Yes	Yes
2	Forward facing	Yes	Yes	Yes	Yes
3	Forward facing	Yes	Yes	Yes	Yes
4	Forward facing	Partially	Yes	Yes	Yes
5	Forward facing	Not applicable	Yes	Yes	Not applicable

Remarks:

According to the local Sheriff, only the pilot was wearing the installed OEM 2-point safety restraint.

Instrument Panel

Navigation Instruments							
Analog primary instruments				Autopilot type: Century II			
Instrument air gage: Off scale low		Magnetic compass: Undetermined		Clock: Undetermined			
	Left side				Left side		
Airspeed:	245 kts			Turn coordinator (airplane):	level		
Attitude (pitch):	Undt			Turn coordinator (ball):	left		
Attitude (roll):	Undt			Heading indicator:	~055°		
Altimeter:	15,330'			Heading "bug":	~030°		
Altimeter setting:	29.91"			Vertical speed indicator:	`2,000'		
Communication and Navigation Radios							
Radio	Control	Active frequency	Stand-by frequency	Radio	Control	Active frequency	Stand-by frequency
Com 1:	19.50	Undetermined	Undetermined	Com 2:	118.5	Undetermined	Undetermined
Nav 1:	9.85	Undetermined	Undetermined	Nav 2:	08.20	Undetermined	Undetermined
Obs 1:	Undetermined			Obs 2:	Undetermined		
Transponder:	Mode: Undetermined		Active code: 1200		Stand-by code: Undetermined		
Electrical Switch Positions							
Master battery: Off							
Left alternator: Undetermined				Right alternator: Undetermined			
Avionics 1: Undetermined							
Lighting Switch Positions							
Navigation: Undetermined		Rotating beacon: Undetermined		Landing: Undetermined			
Taxi: Undetermined		Strobe: Undetermined		Instrument: Undetermined			
Wing Ice: Undetermined							
Ignition Switch Positions							
Left engine:	Left magneto: See below			Right magneto: See below			
Right engine:	Left magneto: See below			Right magneto: See below			

Remarks:

The attitude indicator face plate was displaced.

The left and right engine magneto switches have 5 select positions; OFF, R, L, BOTH, and START. The left engine magneto switch was found in the L (left) position. The right engine magneto switch was found in the R (right) position.

Powerplant Description

Engine Instruments					
Hour meter: 4,355.9					
	Left engine	Right engine		Left engine	Right engine
Tach RPM:	~1800	~0	CHT:	Undt	Undt
Manifold press:	Undt	Undt	Fuel press:	Undt	Undt
Oil press:	Undt	Undt	Fuel flow:	Undt	Undt
Oil temp:	Undt	Undt	Ammeter:	~0	~0
EGT:	Undt	Undt	Voltmeter:	Undt	Undt
Left Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Throttle:	~full forward	Undetermined	Cowl flaps:	Undetermined	Undetermined
Mixture:	~full rich	Undetermined	Alt air:	Undetermined	Undetermined
Propeller:	~full forward	Undetermined	Primer:	Undetermined	
Right Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Throttle:	~full forward	Undetermined	Cowl flaps:	Undetermined	Undetermined
Mixture:	~full rich	Undetermined	Alt air:	Undetermined	Undetermined
Propeller:	~full forward	Undetermined	Primer:	Undetermined	
Engine Condition					
	Left engine		Right engine		
Engine attached to airframe:	Partially		Partially		
Propeller attached to engine:	No		No		
Engine compression:	Yes		No due to impact damage		
Vacuum pump drive shaft:	Intact		Intact		
Valve train continuity:	Yes		No due to impact damage		
Engine Fuel System Condition					
	Left engine		Right engine		
Fuel pump drive shaft:	Intact		Intact		
Fuel injectors:	See below		See below		
Fuel control inlet screen:	Clean		Clean		
Manifold valve screen:	Clean		Clean		

Engine Magneto Condition						
		Left engine		Right engine		
Left magneto attached:		Yes		No		
Left magneto spark:		All leads		All leads		
Right magneto attached:		No		No		
Right magneto spark:		All leads		All leads		
Left Engine Spark Plug Condition (per Champion Check-A-Plug Card)						
	1	2	3	4	5	6
Top	Normal	Normal	Normal	Normal	Normal	Normal
Bottom	Not examined	Not examined	Not examined	Not examined	Not examined	Not examined
Right Engine Spark Plug Condition (per Champion Check-A-Plug Card)						
	1	2	3	4	5	6
Top	Normal	Normal	Normal	Normal	Normal	Normal
Bottom	Not examined	Not examined	Not examined	Not examined	Not examined	Not examined

Remarks:

The right engine case was impacted fractured at the No. 5 and No. 6 cylinders. The bottom spark plugs on the right engine were not removed. The No. 2 fuel injector nozzle was fractured and the No. 1 fuel injector nozzle was bent. All fuel injector nozzles, except No. 2, were found to be free of debris.

Majority of the left engine fuel injector nozzles contained debris consistent with organic material found at the accident site. The debris was easily removed from the nozzles and no signs of lead fouling were noted. The bottom spark plugs on the left engine were not removed.

According to the Continental Motors Air Safety Investigator, "No pre-accident anomalies were noted that would have precluded the [either] engine's ability to produce full, rated power."

Propellers

One left propeller blade exhibited leading edge polishing, chordwise scratches, and a span wise twisting toward the non-camber side. The other blade was bent aft toward the non-camber side about mid span.

The right propeller blades exhibited no leading edge polishing, chordwise striations, or significant blade twisting. One blade was bent aft toward the non-camber side at hub and was loose in the hub. The other blade had minimal damage and remained in the hub.



Left Propeller



Right Propeller

Research & Testing

A Garmin 496 was retained by the NTSB. According to the NTSB, the unit displayed the last flight was 172.6 miles from KBIL to 3V7 (Bell Creek, MT which is now closed) and 1 hour in duration. The next three previous flights were on 09-11-16. Those flights were as follows:

- Mobridge Municipal Airport (KMBG), Mobridge, SD, to KBIL was a 2.2 hour flight
- Todd Field Airport (14Y), Long Prairie, MT, to KMBG was a 1.5 hour flight
- Harbor Springs Airport (KMGH), Harbor Springs, MI, to 14Y was a 3.1 hour flight

The Garmin 496 was sent to the NTSB laboratory for read out. At the writing of this report, no data has been received from the NTSB.