

Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft Incident/ Accident Information	Year: 1975	Make: Cessna	Model: 310R
	Serial number: 310R0164		Registration: N5044J
Location: Walton, NY		Date: 11-09-18	Time: 1502 EST
Aircraft Owner		Aircraft Operator	
KBUF Air LLC [REDACTED]		Daniel Prince Drew [REDACTED]	
Report Information			
Air Safety Investigator: Jennifer D. Barclay		Report #: ASI-18-DK-T	Report date: 04-29-19

Airframe

Impact Sequence and Airframe Structure

The aircraft initially impacted two trees, approximately 50' in height and 20' apart, at the top of a hill. The aircraft continued through wooded, downward sloping terrain and fragmented along a 320° heading for approximately 1,300'. All four corners of the aircraft were observed, and portions of all flight controls were located along the wreckage path. The vertical stabilizer remained intact and the rudder remained attached by the trim tab actuator.

Airframe Systems

Flight Control System Information		
Control lock: Undetermined		
Flight Control Cable Continuity		
Ailerons: See below	Elevators: See below	Rudder: See below
Aileron tab: See below	Elevator tab: See below	Rudder tab: See below
Flap and Trim Positions		
Flap indicator: Undt	Flap handle: Undt	Flap actuator: Undt
Elevator trim: Indicator: See below	Actuator: Undetermined	
Rudder trim: Indicator: See below	Actuator: 1.3", outside normal limits	
Aileron trim: Indicator: See below	Actuator: 1.8', 5° up	

Remarks:

Control cable continuity was not established due to fragmentation of the wreckage. Trim measurements were unreliable due to the condition of the wreckage.

The vertical stabilizer remained intact and the rudder remained attached by the trim tab actuator. The trim tab hardware was installed, the measurement was outside the normal limits.

The right horizontal stabilizer was found midway through the wreckage path with a 2' section of the elevator attached. The trim tab was located intact with hardware still attached and 3" of the actuating rod remaining.

Several portions of the right and left ailerons were covered with heavy soot.

Three of the rudder pedals remained attached to the torque tube. The pilot's side left rudder pedal separated from the airframe and was observed with heavy soot. The pedal was fractured outboard mid-pedal, and the fracture surface was clean with very little soot. The co-pilot's left pedal was also fractured; the surface was clean with very little soot.



Pilot left rudder pedal, TAI On-site ASI-DK-194



Co-pilot LH rudder pedal, TAI On-site ASI-DK-154

Airframe Fuel System Condition, Controls, and Read Outs					
Fuel strainer screen:		Left: Undetermined		Right: Undetermined	
Fuel strainer bowl:		Left: Undetermined		Right: Undetermined	
Main fuel tank gauge:		Left: Undt		Right: Undt	
Auxiliary fuel gauge:		Left: Undt		Right: Undt	
Locker fuel gauge:		Left: N/A		Right: N/A	
Locker transfer:		Left: Not applicable		Right: Not applicable	
Fuel selector handle:	Left: See below	Fuel selector valve:	Left: Undetermined	Fuel boost pump:	Left: Undetermined
	Right: See below		Right: Undetermined		Right: Undetermined

Remarks:

The aircraft was delivered with 166 gallons total fuel capacity. Main tip tanks with 51.5 gallons each, 50 gallons usable and wing auxiliary tanks with 63 gallons total and usable. Portions of both main tip tanks were observed as well as portions of the auxiliary wing tanks including the bladders of the auxiliary tanks and the tape used to cushion the bladders.

Both fuel selector handles were observed in the right main position. The selector handles were separated from the fuel selector valves and the valves were not located. Due to the condition of the wreckage, the position was unreliable.

Three fuel caps were observed closed and secured.



Fuel selector handles, TAI On-site ASI-DK-164

Landing Gear System Condition and Controls			
Gear position:	Nose: Undetermined	Left: Undetermined	Right: Undetermined
Actuator position:	Nose: Not applicable	Left: Undetermined	Right: Undetermined
Landing gear selector:	Undetermined		Aux gear control: Undt
Environmental System Controls and Read Outs			
Cabin heater:	Undt	Cabin vent:	Undt
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?
Pitot heat:	Undetermined		Stall heat:
	Undetermined		Undetermined
De-ice:	Surface: Undetermined	Propeller: Undetermined	Windshield: Not applicable
Anti-ice:	Surface: Not applicable	Propeller: Not applicable	Windshield: Undetermined
ELT Information			
Installed?	S/B	Manufacturer:	Undt
		Model:	Undt
		Type:	Undt
Serial number:	Undt	Battery due date:	Undt
		Armed:	Undetermined
		Activated:	Undetermined

Remarks:

All 3 landing gear struts were located approximately halfway through the wreckage path. Portions of the landing gear control rods, the manual extension system and the gearbox were observed. The ELT was observed highly fragmented.



Portion of landing gear gearbox, TAI On-site ASI-DK-055

Cabin and Equipment/Furnishings

Restraint System Information						
Seat	Occupied	Restraint type	Restraint used	Condition	Manufacturer	
1	Yes	Undetermined	Undt	Not located	Undetermined	
2	No	Undetermined	N/A	Not located	Undetermined	
3	No	Undetermined	N/A	Not located	Undetermined	
4	No	Undetermined	N/A	Not located	Undetermined	
5	No	Undetermined	N/A	Not located	Undetermined	
6	No	Undetermined	N/A	Not located	Undetermined	

Seat Condition Information					
Seat	Orientation	Feet intact	Back intact	Base intact	Rail intact
1	Forward facing	No	No	No	No
2	Forward facing	No	No	No	No
3	Forward facing	No	No	No	No
4	Forward facing	No	No	No	No
5	Forward facing	No	No	No	No
6	Forward facing	No	No	No	No

Remarks:

Several seat frames were observed along the wreckage path and exhibited thermal damage.

Instrument Panel

Navigation Instruments							
Analog primary instruments				Autopilot type: Undetermined			
Suction gage: Undetermined		Magnetic compass: Undetermined		Clock: Undetermined			
	Left side	Right side		Left side	Right side		
Airspeed:	See below	Undt	Turn coordinator (airplane):	Undt	Undt		
Attitude (pitch):	Rolled	Undt	Turn coordinator (ball):	Undt	Undt		
Attitude (roll):	Rolled	Undt	Heading indicator:	Undt	Undt		
Altimeter:	Undt	Undt	Heading "bug":	Undt	Undt		
Altimeter setting:	30.03	Undt	Vertical speed indicator:	+200'	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							
Master battery: Undetermined				Stand-by battery: Undetermined			
Left alternator: Undetermined				Right alternator: Undetermined			
Avionics 1: Undetermined				Avionics 2: 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: Undetermined			Right magneto: Undetermined			
Right engine:	Left magneto: Undetermined			Right magneto: Undetermined			

Remarks:

A radio was observed with thermal damage and soot on the left side.



Radio, TAI On-site ASI-18-DK-177

Powerplant Description

Engine Instruments					
Hour meter: Undetermined					
	Left engine	Right engine		Left engine	Right engine
Tach RPM:	Undt	Undt	CHT:	Undt	Undt
Manifold press:	Undt	Undt	Fuel press:	Undt	Undt
Oil press:	Undt	Undt	Fuel flow:	Undt	Undt
Oil temp:	Undt	Undt	Ammeter:	Undt	Undt
EGT:	Undt	Undt	Voltmeter:	Undt	Undt
Left Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Throttle:	Undetermined	Undetermined	Cowl flaps:	Undetermined	Undetermined
Mixture:	Undetermined	Undetermined	Carb heat:	Not applicable	Not applicable
Propeller:	Undetermined	Undetermined	Primer:	Undetermined	
Right Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Throttle:	Undetermined	Undetermined	Cowl flaps:	Undetermined	Undetermined
Mixture:	Undetermined	Undetermined	Carb heat:	Not applicable	Not applicable
Propeller:	Undetermined	Undetermined	Primer:	Undetermined	
Engine Condition					
	Left engine		Right engine		
Engine attached to airframe:	No		No		
Propeller attached to engine:	No		No		
Engine compression:	Undetermined		Undetermined		
Vacuum pump drive shaft:	Undetermined		Undetermined		
Valve train continuity:	Undetermined		Undetermined		
Engine Fuel System Condition					
	Left engine		Right engine		
Fuel pump drive shaft:	Undetermined		Undetermined		
Fuel injectors:	Undetermined		Undetermined		
Fuel control inlet screen:	Undetermined		Undetermined		
Distribution valve screen:	Undetermined		Undetermined		

Engine Magneto Condition						
		Left engine			Right engine	
Left magneto attached:		Undetermined			Undetermined	
Left magneto spark:		Undetermined			Undetermined	
Right magneto attached:		Undetermined			Undetermined	
Right magneto spark:		Undetermined			Undetermined	
Left Engine Spark Plug Condition (per Champion Check-A-Plug Card)						
	1	2	3	4	5	6
Top	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
Bottom	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
Right Engine Spark Plug Condition (per Champion Check-A-Plug Card)						
	1	2	3	4	5	6
Top	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
Bottom	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined

Remarks:

The left and right engine cowlings were located in the wreckage path. Neither of the cowlings displayed any soot or thermal damage. The engines were not examined on-site.

Propellers

Both propellers detached from their respective engines and were observed with substantial chordwise scratching and leading edge damage on one propeller assembly and minimal chordwise scratching on the other assembly.

Research & Testing

The engines were examined on 03-19-19 by an engine manufacturer investigator at the storage facility. Both engines sustained substantial impact damage. According to the engine manufacturer investigator, there were no pre-impact anomalies that would have prevented normal operation. One vacuum pump was recovered. The internal vanes were intact but the outer case was impact damaged preventing full rotation of the vacuum pump.

A wreckage layout and review was conducted on 03-19-19 and 03-20-19 that included an NTSB Fire and Explosions investigator. The majority of the cockpit section was not observed, the cockpit floor section exhibited heavy soot and varying levels of thermal damage. Two small sections of broomstrawing were evident on the walls of the pedestal. The majority of the carpet was recovered and exhibited light thermal damage, but the damage did not extend through the thickness of the carpet. The cockpit avionics wiring exhibited no signs of electrical arcing, beading, pitting or fused wire conductors. The only damage to wire bundles in the cockpit area was consistent with mechanical damage. The recovered avionics and instruments exhibited limited thermal damage and soot, mainly to the exterior. None of the instruments exhibited obvious signs of arcing. One Comm/Nav unit exhibited a localized burn pattern on the bottom of the unit. Soot and light to moderate thermal damage to the circuit board was observed, but the thermal damage did not appear to extend beyond the localized area. Small fragments of the circuit breaker panel face plate and surrounding panel were recovered. It displayed heavy thermal damage and delamination; no identifiable circuit breakers were recovered.



Broomstrawing, NTSB photo



Cockpit floor, NTSB photo

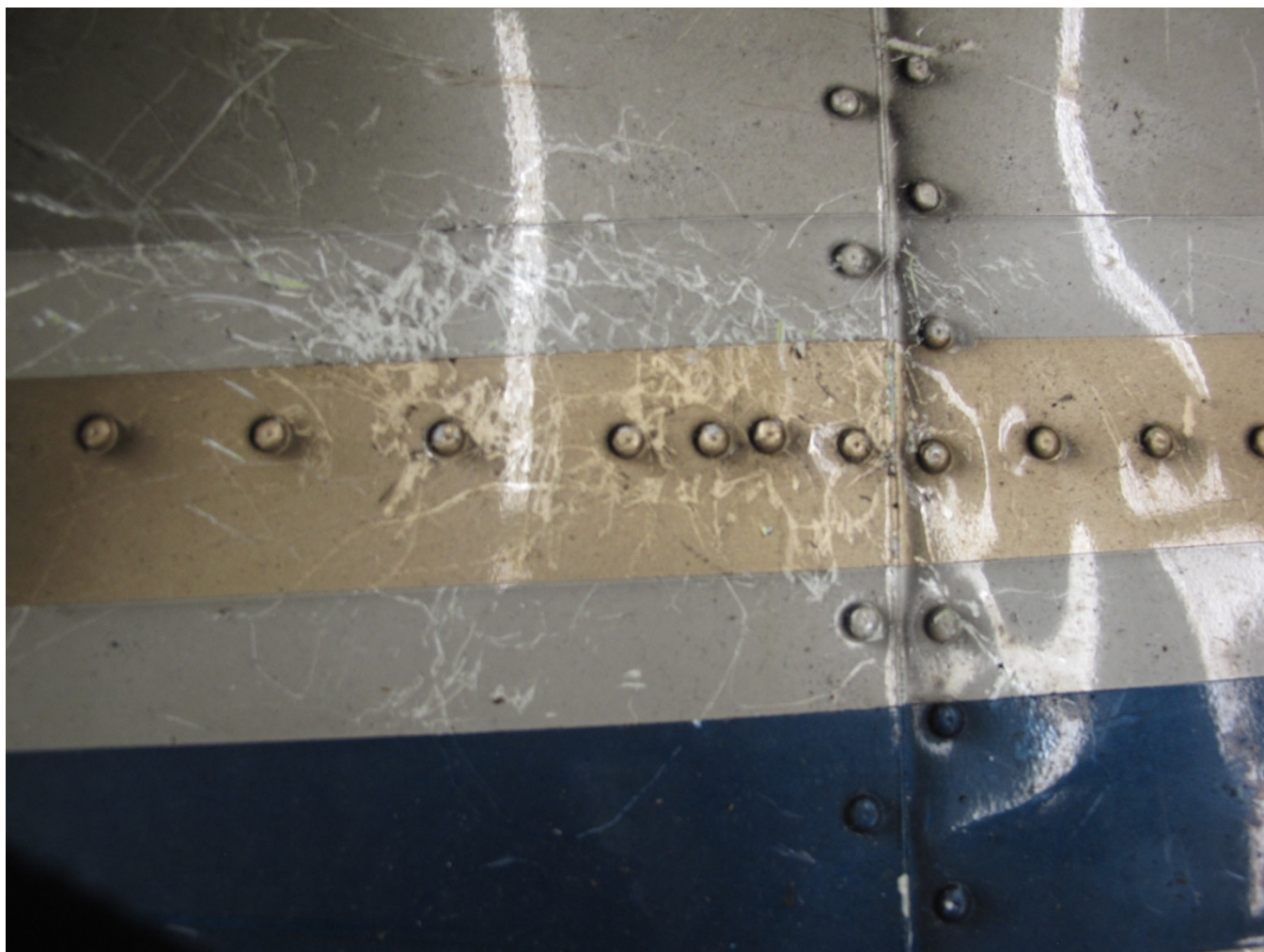


Comm/Nav unit with localized thermal damage, TAI Wreckage Review, ASI-18-DK-032



Remnants of circuit breaker panel, NTSB photo

Two sections of the fuselage were recovered which displayed the registration number on both sides of the airplane. The left section exhibited impact damage and heavy soot with varying levels of soot trailing along the rivet lines. The right side exhibited similar impact damage with slightly less soot trailing. No other thermal damage was observed on these sections. The empennage sustained significant impact damage with varying degrees of soot on all surfaces, no other thermal damage was observed. Both wings exhibited significant impact damage and fragmentation. Fragments of the left wing exhibited heavy soot over the outboard surfaces with localized areas of thermal damage. The right wing exhibited less soot and no observable thermal damage. However, fragments of the tip tanks did not exhibit significant soot. The recovered sections of the engine cowlings displayed no thermal damage. The inboard fragments of the wings exhibited no thermal damage and little soot. Fragments of the fuel system components exhibited no significant thermal damage. Small sections of the fuel bladders exhibited no sign of thermal damage.



Soot trailing along rivets, left fuselage, NTSB photo

The cabin heater exhibited impact damage, some localized thermal discoloration and light soot on the outer case. No internal thermal damage was observed. Polymeric materials on the flapper valve and thermostat inside the exhaust duct were located, and no evidence of elevated temperatures or soot internal to the recovered exhaust ducting was observed.



Cabin Heater, TAI Wreckage Review, ASI-18-DK-027



Heater internal flapper valve, TAI Wreckage Exam, ADI-18-DK-029