

Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft and Incident/ Accident Information	Year: 2006	Make: Hawker Beechcraft	Model: 850XP
	Serial number: 258800		Registration: N269AA
Location: Houston, TX		Date: 10-24-23	Time: 1520 CDT
Aircraft Owner		Aircraft Operator	
Whitmore Holdings LLC C/O Messina & Associates Dupage 2700 International Dr. Ste. 300 West Chicago, IL 60185-1658		DuPage Aerospace Corporation, Inc., et al 2755 International Drive West Chicago, IL 60185	
Report Information			
Senior Air Safety Investigator: Ernest C. Hall		Report #: ASI-23-CQ-T	Report date: 02-15-24

Airframe

Impact Sequence and Airframe Structure

Aircraft Wing Information:

The wing unit consists of left and right wings joined by a center section. Each wing consists of front, center and rear spars, and top and bottom skins, to make a box section. Sixteen ribs are installed between the wing root and the wing outboard end of each box section.

A composite winglet is installed to the outboard side of rib 16 to complete the wing structure. The winglet is constructed from composite upper and lower skins and internal spar with a metallic leading edge. The spar and skins are made from woven graphite cloth impregnated with resin. The winglet houses the twin wing navigation light assemblies and a single strobe light assembly (Ref. Figure 1, Sheet 2).

Each wing box section is an integral fuel tank with panels on the top surface to give access to the fuel tank contents gauge transmitters. The bottom surface of the wing has large and small panels which can be removed to give access to fuel, flight controls and other systems.

A three-part leading edge is bolted to the front spar of each wing. Seven anti-icing fluid distributors are installed on the nose of the leading edge. A landing lamp is installed in the leading edge and an anti-icing wing inspection lamp is installed on the left side in the wing to fuselage fairing.

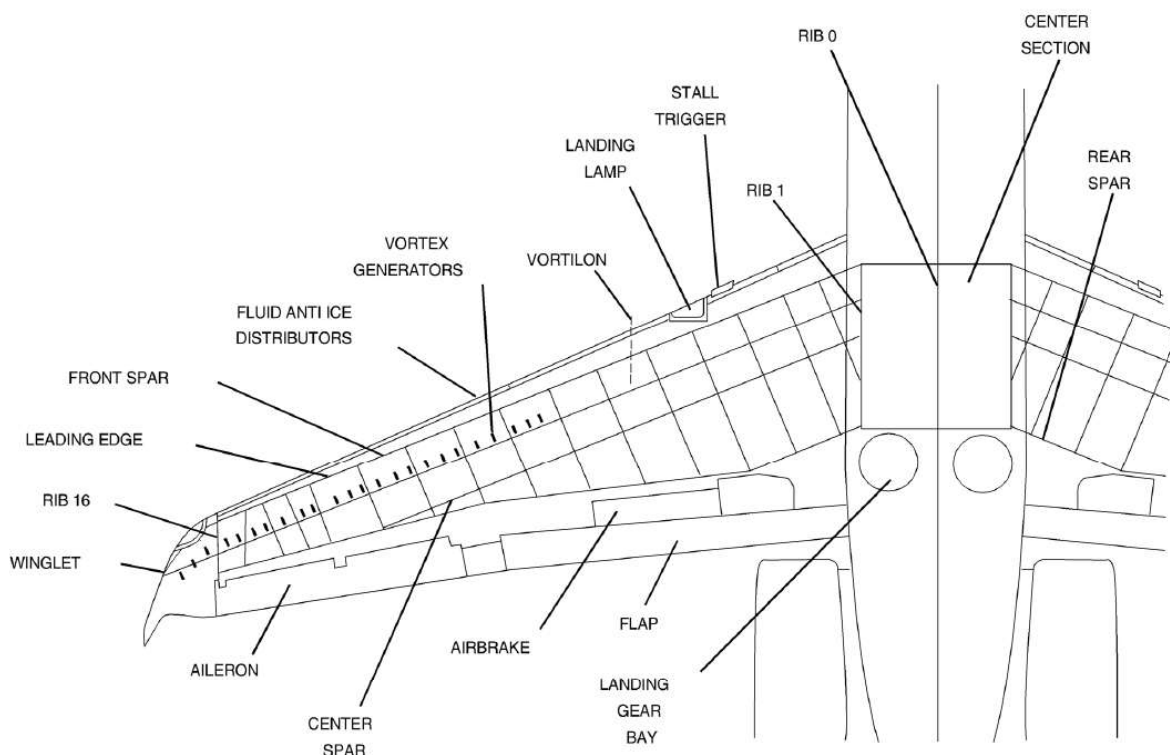
Air flow control devices on each wing consist of a row of vortex generators, a vortilon and a stall trigger. The vortilon is on the bottom surface of the wing leading edge, inboard of the inner end of the row of vortex generators. The stall trigger is attached to the anti-icing distributor inboard of the landing lamp.

Twenty-four vortex generators are attached to the upper surface of the wing and winglet, between the front and rear spar. Numbers 1 thru 21 extend from between ribs 8 and 9 to rib 16, with numbers 22 thru 24 attached to the winglet (Ref. Figure 1, Sheet 2).

On the trailing edge, a double slotted flap extends from the wing to fuselage junction to rib 10. An upper and lower air brake is positioned forward of the flap, in the closed position the air brakes form part of the flap shroud.

The balanced aileron extends from rib 11 to the winglet. Each main landing gear leg is attached to the rear spar bearing blocks. When retracted, the landing gear is enclosed in a bay beneath the fuselage.

The wing is attached to the fuselage by four links. On the right side at the front spar and both sides at the rear spar, single links are used. At the front left attachment there is a double link with vertical and horizontal (lateral) elements. A spigot at the rear spar transmits drag loads from the wing to the fuselage.



AMM 57-00-00, (Figure 1, Sheet 2) Wing

Examination:

A visual examination of the aircraft revealed that the left wing exhibited impact damage. Starting from approximately wing rib 11 (Station 232.5) outboard to wing rib 16 (Station 311.3), the titanium leading edge panel exhibited white paint transfer marks and at wing rib 16, the titanium leading-edge panel exhibited a "V-shape" aft indentation to the wing front spar with sheet metal remnants of the Cessna Mustang.



Cropped - ASI-23-CQ-024 – Left Wing Titanium Leading Edge Panel



ASI-23-CQ-026 – Left Wing Leading Edge

The left-wing winglet remained attached to the left wing. The winglet leading edge exhibited white transfer marks and the navigation light lens was impact separated and pieces of the glass were found in the Cessna Mustang tail cone/stinger. The top section of the winglet, approximately ten inches, was impact separated.



ASI-23-CQ-037 – Left Winglet/Navigation Light Assembly



ASI-23-CQ-041 – Left Winglet Top Separated Section

The left-wing top skin from approximately wing rib 11 and outboard to the winglet, the skin exhibited white paint transfer marks. Two vortex generators between wing rib 13 and rib 15 were bent down, aft, and outboard but remained attached to the wing top skin.

The left-wing bottom skin exhibited two scratch marks approximately a quarter inch wide that extended diagonally from the front wing spar at approximately rib 13 aft to the wing trailing edge and across the aileron and the winglet.



ASI-23-CQ-028 – Left Wing Bottom Skin



ASI-23-CQ-029 – Left Wing Bottom Skin

Research and Testing

The Cockpit Voice Recorder was removed from the aircraft and sent to the NTSB Recorders laboratory for download/readout. The NTSB at some date and time (date and time not provided to this investigator) downloaded/readout the CVR. According to the NTSB Vehicle Recorder Division (RE-40), the CVR did not have the current accident voice/pilot recordings.

An NTSB-led team conducted a CVR and Inertia Switch test on the accident aircraft. See the following:

- The inertia switch was identified, and the terminals were probed for continuity. It was determined to be open loop (the inertia switch was tripped)
- A Textron Aviation Avionics Technician then installed the original CVR into the rack location, ensured that the CVR circuit breaker was engaged, and powered on the aircraft
- The CVR control unit located in the cockpit on the left lower side panel would not power ON the CVR to conduct the self-test after pushing the self-test button
- The annunciator push-to-test button was pressed and verified that there were no annunciators that illuminated “CVR Fail”
- Speaking with an experienced Avionics Technician, we were told that if the CVR control unit would not power ON, an experienced technician would know that the inertia switch was tripped

- To reset the inertia switch, the aircraft power must be ON and can only be done at the switch itself, **not from the cockpit**. Before resetting the inertia switch, we verified that we were receiving 28 VDC leading up to the inertia switch with a good ground, which we saw with a multimeter
- The reset switch was pressed, and a click sound was heard. Immediately, there was continuity across the multimeter (as the loop was closed and power was being received to the CVR)
- The Avionics Technician conducted two self CVR tests from the CVR control unit in the cockpit, both passing. We also talked into the cockpit over the mic to record some audio
- We were told that pilots should press the CVR self-test on the first flight of the morning as per the preflight checklist
- We were also advised that there was a flow of troubleshooting steps through the maintenance manuals and electrical drawings that would eventually get a technician to check the inertia 2g switch

At a later date, the NTSB Vehicle Recorder lab confirmed that the CVR did record.



Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft and Incident/ Accident Information	Year: 2016	Make: Textron Aviation	Model: 510
	Serial number: 510-0468		Registration: N510HM
Location: Houston, TX		Date: 10-24-23	Time: 1520 CDT
Delivery date to first customer: 09-30-16		Engine manufacturer: Pratt and Whitney	
Aircraft Owner		Aircraft Operator	
501 LLC SB 3760 Browns Mill Rd Se Atlanta, GA 30354-2927		Same As Owner	
Report Information			
Senior Air Safety Investigator: Casey J. Love		Report #: ASI-23-CR-T	Report date: 05-08-24

Incident/Accident Information

Investigation Information / Impact Sequence

On 10-25-23, the NTSB-led team from Washington D.C. met in Houston to investigate the accident. Two Textron Aviation investigators were present for the examination, one per aircraft. The Hawker sustained impact damage to the outboard six feet of the left wing. The outboard ten inches of the left winglet was fracture separated and the outboard four inches of wing leading edge was dented. The Mustang sustained impact damage at the aft canted bulkhead and tailcone skin intersection. The Hawker left wing penetrated the stinger skin on the left side and severed the center section of the stinger. The rudder torque tube and rudder sector were fracture separated. The rudder control cables were overload fractured. A section of the aft canted bulkhead, tailcone skin, and vertical stabilizer aft spar were impact separated from the fuselage.

The Cessna 510 was impacted on the left side of the tail section by the left wing of a Hawker 850XP. The skin tears were consistent with the wing penetrating the left side of the tail stinger and exiting the right side, severing a portion of the stinger (Reference Figure 1). The impact damage was isolated to the area of the empennage. The impact damage began at approximate fuselage station 465.00 near the upper left tailcone skin and aft canted bulkhead intersection and extended aft to the tip of the stinger. The impact damage extended from approximate water line 108.00, near the top of the strake attach point, upward to the top of the stinger at water line 116.00. (Reference photographs 1-3)

The impact separated a section of the aft canted bulkhead approximately four inches wide by sixteen inches long (Reference photograph 4). A portion of the upper aft tailcone skin similar in length was fractured along with the bulkhead. A section of the aft horizontal stabilizer spar approximately ten inches in length; common to the rudder sector attach point was torn and bent consistent with the wing impact (Reference photograph 5). The rudder sector mount was torn from the structure at the fastener locations.

The rudder torque tube was fracture separated from the rudder control sector and the rudder (Reference photograph 6). The upper and lower left and lower right rudder control cables were broken in a manner consistent with tensile overload. The upper right rudder control cable remained intact, but the ball end was pulled from the rudder sector. The autopilot rudder servo control cable was fracture separated consistent with tensile overload. The left autopilot cable pulley bracket, with pulley attached, was liberated from the canted bulkhead. The skin on the right side of the rudder approximately eight inches up from the lower rib exhibited wrinkles and deformation. The left lower forward corner of the rudder exhibited a vertical impact signature approximately six inches in length and two inches deep. The left strake was impact fractured from the tailcone stinger and was recovered from the runway along with various sheet metal fragments from the stinger.



Textron Aviation Examination ASI-23-CR-021 (Photograph 1)



Textron Aviation Examination ASI-23-CR-020 (Photograph 2)



Textron Aviation Examination ASI-23-CR-019 (Photograph 3)



Textron Aviation Examination ASI-23-CR-022 (Cropped) (Photograph 4)



Textron Aviation Examination ASI-23-CR-025 (Photograph 5)



Textron Aviation Examination ASI-23-CR-048 (Photograph 6)

Research and Testing

None.