

Inspector Statement

Name: Michael Garland Van Dinter
Address: Aircraft Hangar
Felts Field Spokane Wa
Phone: [REDACTED]
Date: 6/19/2019, at 09:16 PM
Subject: N2839V

Met with Mr. Garland Van Dinter to review logbooks. Aircraft was within annual inspection date 9/23/2018 @ 5073.7 hours. 14.2 hour on Hour Meter since annual. Mechanic have document complying with AD2002-21-13

Pilot stated he departed Deer Park Airport in a climbing RH turn to the east. Landing gear and flaps were retracted at about 400" AGL in a RH turn he noted a loud bang and vibration. The vibration ceased and the aircraft was controllable so he continued a slow RH turn and headed south to Felts field and made a straight in approach, wind were calm and no traffic.

Pilot noted some oil canning noise with gear extension but landed with no further incident.

On investigation pilot noted the damage to the fuselage and believes it was caused by something striking his aircraft in flight.

I went with owner to his hangar and inspected the aircraft. There is no bird residue or any marks in damaged area that confirmed any kind of bird or object struck aircraft.

I found substantial damage to the RH side of the empennage beginning just forward of Fuselage Station FS 256 at bottom with extensive skin and structure deformation spiraling forward and upward along the RH fuselage from bottom forward of FS 256 to just forward of FS 205 at the top of the empennage. The damage involves one completely severed bulkhead and two significantly cracked bulkheads, several longitudinal stringers and stiffeners bent and substantial skin damage that resulted in cracks forming along the entire spiral path.

Referred to AD2002-21-13 Figure 1 and Figure 2 to identify 5 of the skin part numbers involved.

From Figure 1 the The RH side is Items 8, 9, 11,12 and 18
From Figure 2 the part numbers are:

- (8) 35-410009-12 .025 Alclad Aluminum,
- (9) 35-410009-2 .016 Alclad Aluminum
- (11) 35-4100010-18???
- (12) 35-410010-2 .016 Alclad Aluminum
- (18) 35-410011-2 .016 Alclad Aluminum

Over 2/3 of the empennage RH side from FS 256 bottom to top at FS 205 has significant deformation. Only the LH side empennage structure was not deformed. Owner pointed out that he polishes the aircraft with a power buffer and some depression around LH empennage stringers and seams may be from buffer pressure applied.

Pictures taken of internal structure show that the bulkhead at FS 256 is undamaged and the twisting deformation begins at the lower surface just forward of this bulkhead. Bulkhead at FS 256 was changed in 1996, because of complete bulkhead inflight failure contributed to flutter, to a B35 part number bulkhead, which added a second sheet metal layer to the bulkhead assembly. Pictures taken show a riveted together sheet metal bulkhead. Additional stiffness appears to have strengthened that area and all twisting loads are transmitted forward with no signs of deformation aft of this bulkhead. The Ruddervators are firmly attached to this bulkhead and when force is applied up and down all flexing is transmitted forward through to the empennage structure. There is considerable amount of empennage flexing when pushing up and pulling down on the RH ruddervator and the structure pops and moves in and out with applied force up and down. I took a video of the movement and audio captured the sounds.

Pictures show that the Bulkhead at FS 232 is broken at second stringer up from bottom and is severely cracked at fourth stringer from bottom.

Pictures show that bulkhead at FA 205 is wrinkled and cracked at 4th stringer up from bottom

Pictures show that the lower skins forward of FS 256 are badly deformed and cracked and that the upper skins forward of FS256 to FS 205 are deformed and cracked.

BRUCE STEPHANSON
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