



Memorandum For Record

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NTSB Accident Number: ERA21LA068

The NTSB did not respond to the accident site due to Covid 19 restrictions. According to the Federal Aviation Administration (FAA) inspector, none of the observed items exhibited any evidence of in-flight or postcrash fire.

Examination of the left wing revealed it was fractured in three main pieces and located beyond crater #2. The aileron had separated into multiple pieces; a ~7' outboard portion, the remaining inboard portion was in two pieces, the leading edge to appx mid span and the associated trailing edge. The outboard aileron hinge remained attached to the wing and had a portion of the aileron attached to it. The inboard piece of aileron remained attached to its hinge which was attached to the wing. The flap was attached and intact. The flap actuator measurement equated to the flap being retracted. No blockage was observed in the pitot tube opening. The leading edge of the outboard portion piece of left wing appeared to be undamaged and did not have any dirt on it, with little to no dirt on the top or bottom surfaces. The inboard section of the leading edge was crushed aft and did have dirt on it. The fuel tank was breached.

Examination of the right wing revealed it was fractured in two main pieces; the wing walk area which was in crater #2 and the remainder of the wing. Much of the leading edge was crushed aft. The aileron was intact and remained attached. The flap was partially attached – the inboard attach point was buried in crater 2 with the inboard portion of the wing. The flap actuator was not located.

Examination of the wreckage revealed both stabilizers were structurally separated from the empennage and both elevators were separated from each stabilizer.

Examination of the left stabilizer revealed it was full span and the inboard portion aft of the main spar was twisted down about 90°. Examination of the fracture surfaces of the forward and aft spars revealed no evidence of preimpact failure or malfunction. The stabilizer forward spar was twisted. The left elevator was fractured into multiple pieces; the tip was not located. The

outboard and middle hinge structure were pulled out of the left elevator and were attached through the hinge point to the left stabilizer, while the torque fitting was structurally separated and not located. The left elevator tab assembly was separated from the elevator but the full span of the elevator tab assembly was accounted for. A section of control cable remained attached the tab assembly. The hinge remained attached to the tab and had evidence of being pulled out of the skin.

Examination of the right stabilizer revealed it was full span and compression wrinkles were noted in the upper wing skin from about midspan inboard. Examination of the fracture surfaces of the forward and aft spars revealed no evidence of preimpact failure or malfunction. The stabilizer forward spar was twisted, and the outboard hinge normally attached to the aft spar was structurally separated. The middle hinge was fractured consistent with overload fracture, and the torque fitting was structurally separated and not located. The right elevator was also fractured into multiple pieces. The right elevator tab assembly was separated from the elevator but the full span of the elevator tab assembly was accounted for. A section of control cable remained attached the tab assembly. The right elevator tab hinge remained attached to the tab and its rivets had torn through the elevator skin.

The ruddervator trim tab actuator was between 5° and 10° tab trailing edge up.

Examination of the differential flight control mechanism revealed it was structurally separated from the tail structure. A fractured section of differential cable attach link remained attached to one end of the rudder control cable assembly part number (P/N) NAS304-33-0247¹ while the cable remained attached at the other side. Both differential tail control rods P/N 35-524106-6 were fractured (overload) at each rod end which remained attached to the left and right differential tail control arm. All other cables remained attached.

Examination of the flight controls for pitch revealed the cockpit portions of the cables were in multiple pieces and all cable separations exhibited signatures consistent with tension overload. A loose elevator control cable, or the up elevator control cable was recovered and examined which revealed the turnbuckle eye, part number AN165-22RL was fractured near the turnbuckle which was bent. That section of cable and fractured turnbuckle eye was retained for examination by the NTSB Materials Laboratory.

Examination of the flight controls for yaw revealed the rudder cables had pulled out of the forward bellcrank. The retaining balls were still on the ends of the cables.

Examination of the flight controls for roll revealed the left aileron primary control “up” cable remained attached to the bellcrank near the control surface; the section of the “up” cable in the cockpit was not identified. The “up” cable exhibited evidence of tension overload about 12 inches inboard of the turnbuckle. Examination of the right aileron primary control “up” cable revealed it remained attached to the chain in the cockpit and also at the bellcrank near the control surface, but the cable terminal was fractured near the turnbuckle outside of the safety wire wrap on the aileron side of the turnbuckle. The cable terminal of the opposite end of the turnbuckle was bent about 90°. The aileron balance cable had sections of fractured bellcrank attached at

¹ Figure 30 Index 39 of Model 35 Parts Catalog

both ends but the cable was continuous; the turnbuckles were intact. Examination of the right aileron bellcrank near the control surface revealed it was in place and the stop had been pulled into the “up” stop structure. The entire length of right aileron primary control cable was excised either from the airplane or from the recovery bags and retained for examination by the NTSB Materials Laboratory. The push/pull tubes connecting the bellcranks to each aileron control surface were fractured in each wing.