

Benedict V. Ross-Inspectors Statement – Accident Investigation

NTSB Accident No.: ERA23FA138
ATQA: A-SO-19-23-096
SAS PTRS No.: [SO19202304873](#)
Task ID: T-SO19-FY23-0628
Normal Utility - Fix Wing Single Engine
Airworthiness Certificate, Dated: August 12, 2003
Registration: N804ER
Make: 2003 DIAMOND AIRCRAFT IND
Model: DA 40
Serial Number: 40.311
Engine: LYCOMING IO-360 SER
Hobbs: 29.6 Hours
ACTT: 3,126.2 Hours
100 Hour/ Annual Inspection: 02/24/2023, Tach: 3126.4

When: March 5, 2023

Where: Lake Worth, Florida location 26°35'23"North, 80°05'2"West @ 21:25 Hours

What: Part 61, Normal Utility Aircraft 2003 Diamond Aircraft Ind Inc, registration N804ER, serial number 40.311 departed Henderson Kentucky (EHR) with one Certified Instructor Pilot (CFI) and a Student Pilot. Upon arrival at Palm Beach County Park/Lantana Airport (LNA) aircraft made a low pass over runway 10 Right then 90 degree right turn. Loss of control of the aircraft due to aero dynamic stall caused the left wing tip to make contact with the ground, crashing, catching on fire and demolishing the aircraft. CFI Pilot and student pilot did not survive. N804ER Diamond Aircraft was owned and operated by AAMRO Aviation Corporation, [REDACTED] Lake Worth FL.

PIC/CFI Pilot: Fatal
Holland, John Henry IV

[REDACTED]
Delray Beach, FL. [REDACTED]
Pilot Certificate No. [REDACTED]
First Class Medical Certificate: Date of Examination: 02/15/2022
Total Flight Hours: Hrs.

Private Pilot/Student Pilot: Fatal
Marshall, Michael Joseph Jr.

[REDACTED]
Boca Raton, FL. [REDACTED]

FAA Cert. No. [REDACTED]
First Class Medical Certificate: Date of Examination: 01/17/2023
Total Hours: Hrs.

Examination of the aircraft and maintenance issue:

Examination of the accident site revealed a ground scar associated from the left wing consistent with the airplane being on a magnetic heading of 228°. The airplane was upright leaning on its right side on a magnetic heading of 221°. The left wing was fragmented while the right wing was full span. The aft empennage was displaced to the left. The full span of the rudder remained attached. The left elevator counterweight was separated from the elevator but found in close proximity to the resting position of the displaced elevator and aft empennage. All components necessary to sustain flight remained attached or found in close proximity to the main wreckage.

Fire damage was noted to the left front seat and the left side of the instrument panel, and also to the inboard edge of the right front seat, firewall, and slightly to the aft portion of the engine. The propeller was separated from the engine and was partially buried in earth immediately adjacent to the resting position of the engine.

Examination of the left wing revealed it was fragmented which exposed the fuel tanks which were impact damaged. The main spar was fractured. The flap was fragmented into 2 pieces but found in close proximity to the wing. The transfer pins of the transfer lever were nearly parallel to the longitudinal axis of the fuselage. The aileron and flaps pushrods remained attached at each respective control surface and were continuous to the center section of the cabin near the rear main bulkhead where they were connected at their respective bellcranks or idler levers. The jam nut for the flap pushrod near the bellcrank or idler lever was finger loose.

Examination of the right wing revealed it was full span; the wingtip was in close proximity to the end of the wing. The flap appeared to be extended, but the transfer pins attached to the transfer lever appeared to be parallel to the longitudinal axis of the airplane. About 6 gallons of fuel consistent with 100LL were drained from the fuel tank. The flap and aileron remained connected. The flap was separated at the inboard connection at the transfer lever/pins and the outboard hinges; the outboard hinge was displaced aft consistent with impact. All remaining flap hinges remained connected. The flap rod end remained connected to the bellcrank and the flap. The aileron remained connected at all but the outer hinge pin; three of the four hinges remained connected. Continuity was confirmed from the flap and aileron control surfaces to the center of the cabin.

Examination of the elevator flight control revealed continuity from the control surface to the idler lever where the threaded portion of the eye end fitting with spherical bearing exhibited bending overload. The rod was deformed about 90° near the lower fin in the area where the aft empennage was displaced to the left. Examination of the aileron flight control revealed continuity from each control surface to the forward bellcrank which exhibited overload failure. Examination of the rudder flight control system revealed control cable continuity from the cockpit to the rudder lower mounting bracket except the 2 “fuselage” cables and the four “cockpit” cables were cut consistent with recovery.

Examination of the flap actuator revealed it remained structurally attached at the end adjacent to the motor but the structure in that area was fractured³. The flap actuator also remained attached at the idler lever, but the idler lever was structurally separated from the rear main bulkhead and the idler lever assembly, and the connected pushrods was displaced several inches to the right. The threaded portion of the eye end fitting with spherical bearing at the idle lever at the rear main bulkhead was bent. The distance between the actuator attach point at the structure and the idler lever of the flap actuator measured 14.875 inches, which was within limits for flaps retracted. The torsion tube was not fractured, and the transfer pins of the left and right transfer lever were nearly parallel with the longitudinal axis of the airplane also consistent with the flaps retracted.

Examination of the cockpit revealed Throttle at Full forward, Propeller at Full forward and Mixture at Full rich. The Fuel selector Left tank free of obstructions. Some sediment and residual fuel. Screen clean. The Pilot's Circuit Breaker Panel 3 CB's left of starter CB in, all other tripped, Right Circuit Breaker Panel, "ESS ASV." "Flaps", "Horizon", and "Pitot" CB's were tripped. The "Landing" CB was in all other CB's were damaged/separated. Magneto Switch found in the both, Flap Selector-Down Position, but right side of the flap switch guard was pushed to the left. The Left Seat Control Stick not fractured but heat damaged Right Seat Control Stick not fractured. Boost Pump with approximately 1 ounce of fuel drained from pump outlet, slight contaminant particulates found.

Examination of the Lycoming IO-360-M1A engine, serial number (S/N) L-31046-51A revealed the crankshaft flange was fractured but remained connected to the propeller flange. Rotation of the engine using a splined tool inserted at one of the accessory drives revealed crankshaft, camshaft, and valve train continuity. Thumb suction and compression was noted in each cylinder. Borescope inspection of each cylinder revealed no anomalies were noted. Inspection of the oil lubrication system components revealed the oil cooler was crushed. The oil suction screen was clean but the impact damaged oil filter could not be cut open using a standard tool and the oil filter element was not accessed. Inspection of the air induction system revealed the No. 2 cylinder induction pipe was crushed aft against the oil sump and was impact separated from the cylinder. No blockage or obstructions were noted or reported of the air induction system.

Inspection of the exhaust system revealed the No. 2 cylinder exhaust was crushed aft and up. No blockage or obstructions were noted or reported of the exhaust system. Examination of the ignition system revealed both magnetos were impact separated from the engine; pieces of magneto flange remained tightly secured under the hold-down clamp. The top case of the right magneto was displaced slightly and the cap was cracked and displaced; two towers of the cap was impact fractured. Both magnetos were rotated using an electric device and produced spark at all leads. Inspection of the ignition harness revealed impact damage. The harness was not tested using a high tension tester. Inspection of the sparkplugs revealed the No. 2 bottom plug was broken off. Inspection of the plugs using Champion Aviation Check-A-Plug Card AV-27 revealed all electrodes were undamaged and exhibited normal wear. The Nos. 1 and 3 bottom plugs were oil soaked.

Inspection of the engine fuel metering system revealed the No. 2 cylinder injector line was separated from the injector nozzle, but the line was in close proximity to the nozzle. All other lines remained tightly secured to their respective nozzles. The servo fuel injector

(fuel servo) remained attached to the oil sump and air plenum and the mixture control cable remained attached to the mixture control lever that was impact damaged, but the throttle control cable was not attached to the throttle control lever. The end of the throttle control that would have attached to a rod-end exhibited bending overload. The bolt that secured the throttle control to the throttle control lever was in- place, but the throttle control rod-end was not located. The flow divider was free of contaminant and the diaphragm was intact. Examination of the fuel servo inlet screen revealed it was clean; a slight amount of fuel consistent with 100 low-lead drained from the inlet when the fuel line was removed.

Examination of the Hartzell HC-C2YR-1BF propeller, S/N CH39358B revealed both blades remained secured in the propeller hub and the crankshaft flange remained attached to the propeller flange. The blade tip was curled aft about 90° beginning 3 inches from the tip. The leading edge of the blade was polished from about 1/3 span out to the tip. A section of blade was missing at the tip on the trailing edge.

The pilot-rated witnesses reported seeing the airplane on a 10-mile final for runway 10. He reported that he planned to video the airplane's arrival on short final, but reported that at the intersection of runway 10 and 04, which was located about 800 ft from the approach end of runway 10, the airplane started to "go-around." It had descended no lower than 20 to 30 ft above ground level (agl) and did not touch down. He then began to video the flight and reported that the engine was "constantly smooth during the flight" as the airplane flew over runway 10. He noted the airplane climbed no higher than between 200 ft and 250 ft agl, then when at or just past the departure end of the runway when the airplane banked to the right, stalled and rolled inverted.

The student pilot reported that when the flight was at the departure end of runway 10, it made a "sudden 45° right bank" which was not expected. It was at that point of the flight that he and the other witness began video recording with sound. He noted the airplane banked right, the nose leveled off, then entered a steep turn of 60°. When the nose of the airplane pointed towards them, the right wing stalled and the airplane became inverted at the building. He also stated that to him it never sounded like full power, and from the point of landing, he never heard a huge change in engine sound. He also added that the engine sounded ok during the turn to behind the hangars, then it went silent.

Juan Garcia
FAA IIC/Aviation Safety Inspector