



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety Alaska Region

Examination Summary

February 25, 2020
Dillingham Airfield, Hawaii

A. Accident

NTSB Number: ANC20FA024
Location: Mokuleia, Hawaii
Date: February 22, 2020
Aircraft: Ector Cessna 305A, S/N 2035
Engine: Continental O-470-11B, S/N T-101575

B. Background

On February 22, 2020, about 0920 Hawaii standard time, a Cessna Ector 305A, N65070, collided with terrain after takeoff from Dillingham Airfield (HDH), Mokuleia, Hawaii. The commercial pilot and airline transport pilot sustained fatal injuries, and the airplane was substantially damaged. The airplane was owned by Honolulu Soaring Club Inc. and was being operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a local instructional flight. Visual meteorological conditions prevailed, and no flight plan had been filed. The local flight departed about 0905.

According to multiple witnesses, the airplane took off on runway 8 and completed one lap in the pattern. The first landing was “rough,” and the tail wheel bounced up and down and the airplane came to an abrupt stop on the runway. The engine was shut down and the rear seated instructor pilot disembarked. He walked around the airplane and then stopped alongside the front seated pilot and talked to him for a while. The

instructor pilot then boarded the airplane and the engine was started and the airplane took off again. Witnesses reported that after the airplane cleared the runway surface, the airplane yawed hard right and drifted south toward the tree line. A pilot who witnessed the flight stated that the airplane was “obviously in distress and not in control.” Some witnesses reported the engine sound diminishing as the airplane approached the trees, and then surge again as the airplane flew over the tree line and then the engine sound went quiet. One witness saw the airplane turn right, then rapidly roll left and descend to the ground in a nose low attitude.

C. Participants in Examination

NTSB Investigator-in-Charge (IIC)
FAA
Mechanic (Detailed exam)

Noreen Price
Joseph Monfort
Steve VanHorn

D. On Scene Examination

The Federal Aviation Administration investigator-in-charge arrived on scene soon after the accident on February 22. The NTSB arrived on scene the following morning on February 23 at 0800. The accident area was roped off and security was provided by the local police department and Department of Transportation security personnel.

The wreckage had been taken partially apart by emergency response personnel for access to the front cockpit area. The top of the cabin, sidewalls and wings were cut and moved apart. Refer to figure 1 for a photograph of the wreckage before disassembly.



Figure 1. Wreckage at the accident scene. (Source: Honolulu Police Department)

The wreckage was located in a field of long grass about 1000 ft south of the runway near an access road. The airplane came to rest slightly nose down, upright on the fuselage in a slightly left wing down attitude heading about 100°. All major components were located at the scene. The forward fuselage and left wing leading edge sustained significant crush damage. The propeller was separated from the engine at the flange and located in a 6 inch depression about 4 ft in front of the wreckage. See figure 2.



Figure 2. Propeller and ground depression.

One propeller blade was straight with no damage and the other was bent back about 40° at the midspan with minor leading edge scratches. The fuselage exhibited buckling on the left side mid-section and the engine was displaced to the left. The left wing fuel tank was breached with fuel leaking from the wing section. A few gallons of fuel were present in the right wing fuel tank and the fuel was free of contamination and had characteristics of avgas.

The flight controls in the cockpit were unmovable due to crush damage of the fuselage floor. The elevator control cables were continuous and connected. The aileron controls were continuous from the control stick to the wing roots where the left wing root cables exhibited clean cuts and the right-wing cable exhibited broomstraw signatures at the separation, consistent with overload separation. The front flap handle was in the down (retracted) position and the rear flap handle was removed by responders. The left rudder cable was separated at the rudder pulley area behind the rear seat floor with a combination of severely frayed and fractured strands with tension overload signatures. The under floor pulley bracket had a cotter pin extended with metal shavings evident in the thick grease like debris around the pulley. See figure 3.

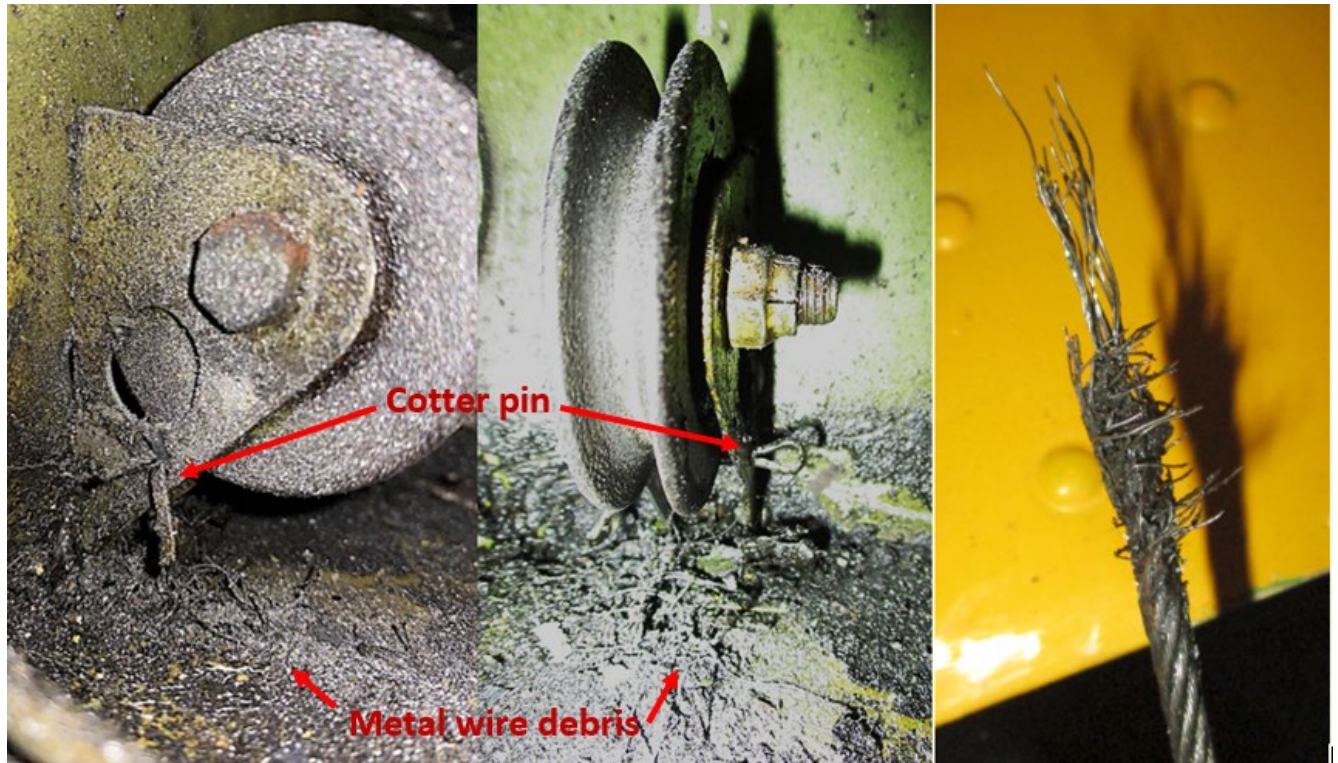


Figure 3. Left rudder cable pulley, bracket and rudder cable forward fractured end.

The forward cockpit engine throttle lever was full forward, mixture and carburetor heat were full aft. The fuel selector was in the left position. The aft engine controls indicated the throttle lever full aft and bent inward, the mixture was $\frac{3}{4}$ forward and carburetor heat was in the aft position. The left side of the fuselage where the controls were mounted was buckled outward. The engine controls were connected and continuous to the engine.

E. Detailed Wreckage Examination



Figure 4. Wreckage during detailed examination.

The wreckage was recovered to a hangar at the airfield and examined by the NTSB IIC with the assistance of a mechanic. The airplane exhibited extensive corrosion damage on the engine cylinder cooling fins, wing surfaces, elevator control rod connections, elevator trim chain and control rod, tailwheel assembly, rudder control rod connections, and ignition harness leads. See figure 5.

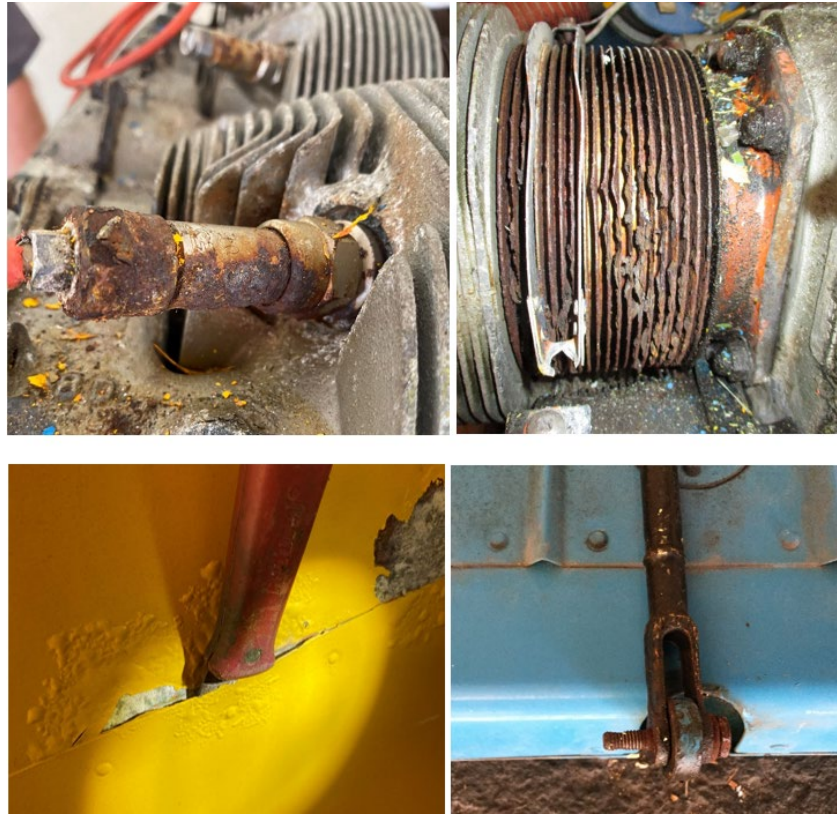


Figure 5. Photographs of evident corrosion.

The three pulleys in the under-floor area each had thick black grease deposits. The elevator cables and right rudder cable had multiple frayed cables and shiny degraded areas that indicated excessive wear. The right- and left-wing aileron cables in the area of the upper fuselage pulleys also exhibited areas of frayed strands. See figures 6 and 7. The left rudder cable bracket, pulley and cable sections at the separation were removed and sent to the NTSB material laboratory for examination.

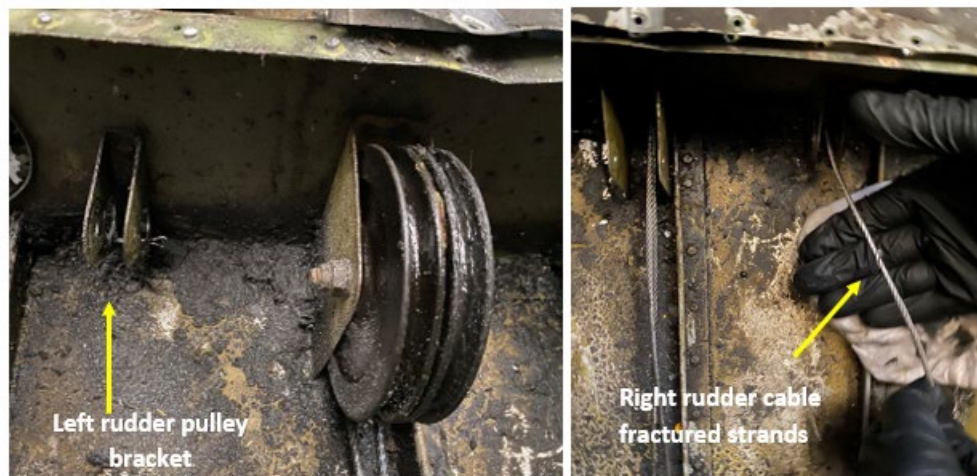
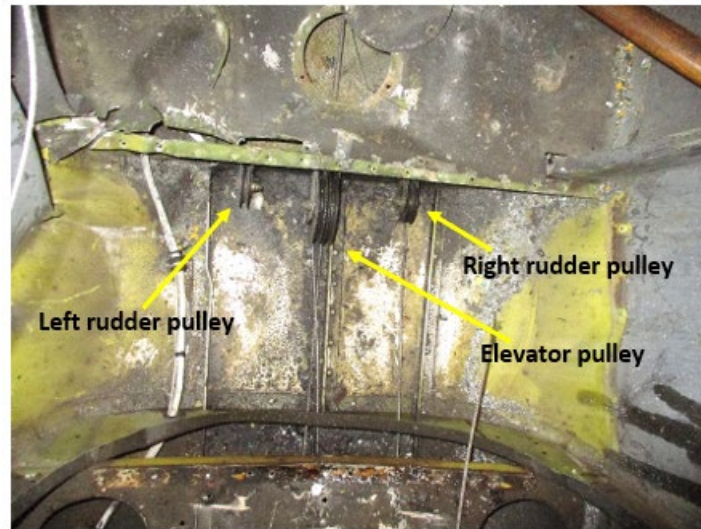


Figure 6. Under floor pulley area.

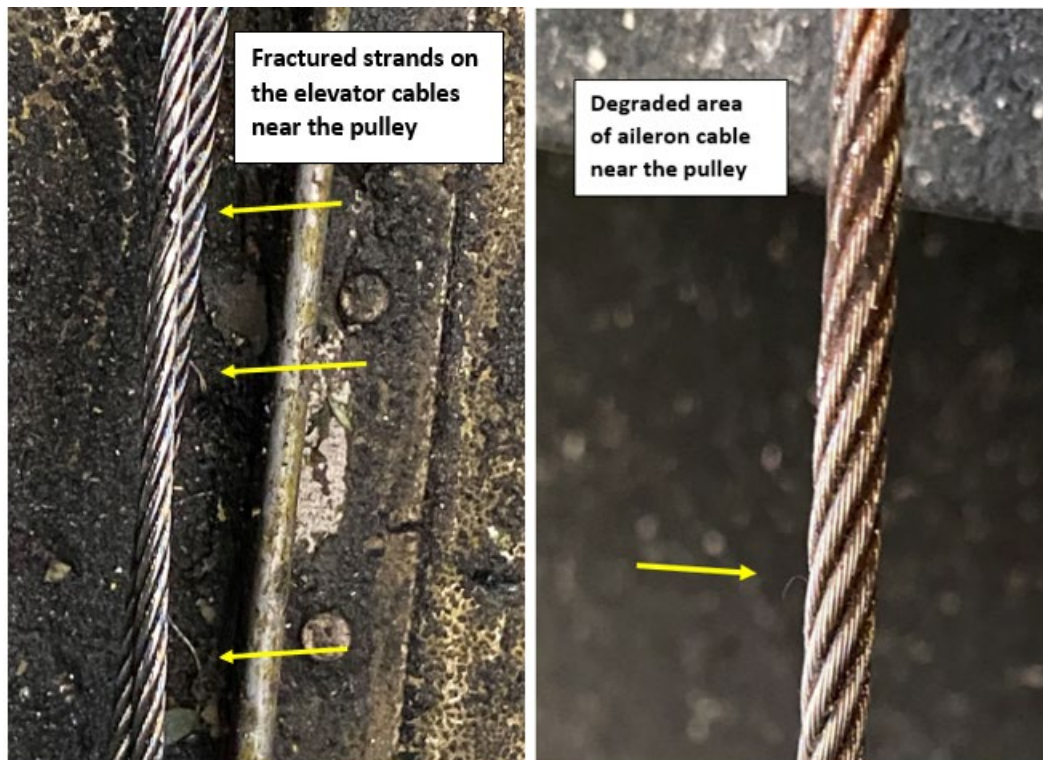


Figure 7. Fractured and damaged flight control cables.

The ailerons and flaps were attached and the control rods and cables were continuous to the recovery separations at the wings. The empennage was intact with elevators, trim tab and rudder securely attached. The control surfaces moved smoothly by hand.

Engine



Figure 8. Continental O-470 engine during the examination.

The engine airframe mounts were fractured. The case and cylinders were intact with corrosion evident on the cooling fins and some connections. The accessories were attached. The left and right magnetos housings were fractured and ignition lines partially cut near the connections. The magnetos were removed and rotated by hand. Ignition spark was produced at each terminal. The crank shaft was rotated manually

through an accessory drive. The upper spark plugs were removed and thumb compressions were good when the crank shaft was rotated. The lower and upper spark plugs exhibited normal wear signatures. The piston heads and cylinder walls exhibited normal wear signatures. The rocker covers were removed. Oil was present and the rockers moved appropriately when the crank shaft and cam shaft were rotated.

The engine oil was grey in appearance. The oil filter screen had a moderate amount of non-metallic debris present. See figure 9.



Figure 9. Oil filter screen.

The airframe fuel filter and bowl contained a small amount of dirt like debris, as well as the gasket area of the bowl, which may indicate the debris intruded into the filter during the impact or recovery. See figure 10.



Figure 10. Fuel filter.

The carburetor was intact with the mixture, throttle and carburetor heat control cables securely connected. The airbox indicated upward crush damage. The finger fuel filter was removed and indicated minor debris that would not have restricted fuel flow. The carburetor bowl has some fuel in it and some dirt like debris was present at the bottom and around the gasket area. The accelerator pump functioned normally and the pontoons were intact.

F. Additional Information

The engine and airframe logbooks were provided to the investigator by the company mechanic. The logbooks indicated that the most recent inspection was a 100 hour completed on September 16, 2019, at a tach time of 3094.1 and TSO of 1493.9 hours.

G. Summary

The fuselage, wing and engine damage was consistent with a nose down impact with some right rotation. The engine examination evidence indicate no anomalies that would have prevented normal operation. The propeller signatures were indicative of slow rotation at impact. The amount of dirt like debris in the fuel filters likely would not have prevented fuel flow to the engine. Flight control continuity was established, however, the separation of left rudder cable in the area of a pulley that had metal debris around it was a significant finding. The cable's fractured ends had bent back strands surrounding the fractures, which is indicative of abnormal abrasion. Other flight control cables also exhibited abnormal wear that was beyond airworthiness limits in the area of cable pullies. The extensive amount of corrosion throughout the airplane is not unusual for high humidity salty environments, but also indicated poor maintenance practices for mitigating such effects.