

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA208

WRECKAGE EXAMINATION SUMMARY & MAINTENANCE RECORDS REVIEW

June 24, 2024

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A. ACCIDENT

Location: DeLand, Florida
Date: May 2, 2024
Time: 1404 EDT
1804 coordinated universal time (UTC)
Airplane: N848HP, AirCam

B. INVESTIGATIVE TEAM

IIC Timothy W. Monville
NTSB-OAS/ERA
Washington, DC

Party Coordinator Joseph Gramzinski
FAA Flight Standards District Office
Orlando, Florida

C. SUMMARY

On May 2, 2024, about 1404¹ eastern daylight time, an experimental-amateur built amphibious AirCam, N848HP, was substantially damaged when it was involved in an accident near DeLand, Florida. The airline transport pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to Federal Aviation Administration (FAA) Automatic Dependent Surveillance - Broadcast (ADS-B) data and over the air (OTA) recorded audio from the destination airport, the flight departed about 11 minutes earlier from Spruce Creek Airport (7FL6), Daytona Beach, Florida, and proceeded in a westerly direction towards DeLand Municipal Airport-Sidney H Taylor Field (DED). An over the air recording of the DED common traffic advisory frequency (CTAF) recorded a transmission from an unidentified airplane asking and being informed that the active runway at DED was runway 5. The flight continued and flew north of DED at about 600 ft barometric altitude, then made a slight left turn while descending.

Subsequently, a pilot who was flying nearby observed an amphibious airplane begin to "rotate around the vertical axis to the left" quickly losing altitude and impacting the ground.

The accident site was located about 120 ft southeast from the last ADS-B target and about .7 nautical mile and 331° from the approach end of runway 12 at DED.

¹ Based on Preliminary Data. Time subject to change.

There was no recorded distress call on the DED recorded CTAF.

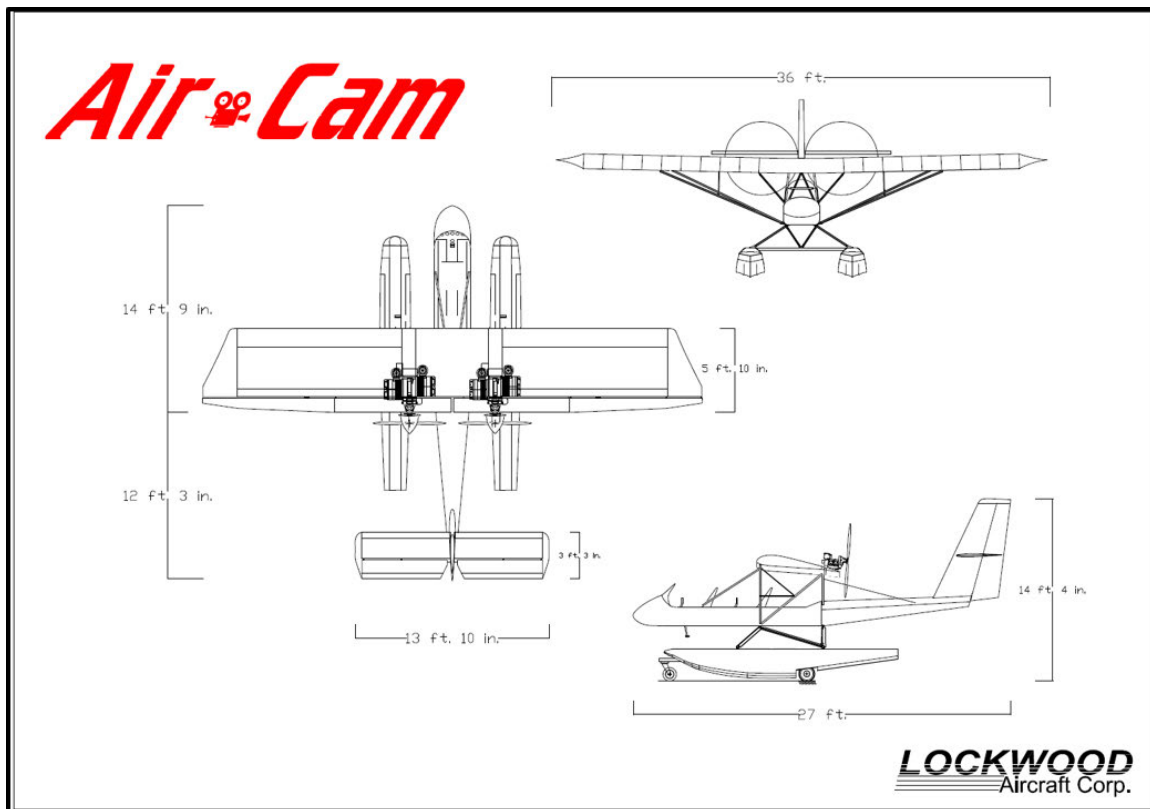
First responders arrived and airlifted the pilot to a hospital for treatment of his serious injuries.

D. DETAILS OF THE INVESTIGATION

1.0. General Airplane Information

1.1. Airplane Description

The amphibious, twin-engine, experimental-amateur built pusher airplane (Figure 1) was powered by Rotax 912 ULS2-01 engines² and equipped with electrically controlled, four-bladed, DUC Flash-2 PVRG propellers with reverse capability³.



²According to the Chief Accident Investigator for Rotax Aircraft Engines, the 912ULS engine was a non-certified engine designated by "UL", with 100 horsepower output, designated by "S". It was also a version 2 configuration, allowing for compatibility with fixed-pitch, ground-adjustable, or electrically controlled constant-speed propellers, designated by "2", and featured an updated cylinder head cooling system, with coolant temperature being monitored instead of relying on the cylinder head material for temperature monitoring, designated by "-01."

³ According to the airplane designer 90% of AirCam's are equipped with fixed pitch propellers.

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Figure 1: Tri-View of Airplane

1.2. Airplane Airworthiness, Flight Test, Modification, Times, and Hour Meter

According to the maintenance records, the airplane's Special Airworthiness Certificate was issued on November 10, 2023 (Figure 2).

YEAR 20 <u>23</u> DATE	RECORDING TACH TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)
11-7-23	0.5			I certify that this aircraft has been inspected with the scope and detail of Appendix D of FAR Part 43 and has been found in condition for safe operation. [Redacted Signature] I have inspected this aircraft and have determined that it meets the requirements for the certificate requested. I have issued a Special Airworthiness Certificate in Experimental Category for the [Redacted] N5044P [Redacted] 11-31-23 Amount of time in service [Redacted] 11-30-23 Date 11/10/2023

Figure 2: Airframe Logbook Entry for Special Airworthiness Certificate Issuance in Experimental Category.

On February 7, 2024, new four bladed, DUC Flash-2 PVRG propeller serial numbers 1315 and 1316 were installed on the left and right engines, respectively (Figure 3). The recorded time at that time was 25.6 hours. There was no record of any maintenance performed to either propeller or propeller control system after installation.

YEAR 20 <u>24</u> DATE	RECORDING TACH TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)
2-7	25.6			Installed DUC Propellers LH Flash-2 PVRG S/N 1315 RH Flash-2 PVRG S/N 1316 ATP [Redacted Signature]

Figure 3: Airframe Logbook Entry for Propeller Installation.

On February 26, 2024, an entry in the Aircraft Logbook signed by the pilot indicated that the prescribed flight test has been completed and the aircraft controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous characteristics or design features and it's safe for operation (Figure 4). The recorded time at that time was 31.2 hours.

1.3. Previous Issue with Both Propellers

A flight instructor (FI) who flew in the accident airplane with the accident pilot (pilot) on April 30, 2024 reported that while on a lake after demonstrating step taxi to the pilot, the pilot was instructed to perform step taxi. After both engines were brought to takeoff power range, the airplane was "static" and did not move. The pilot brought both engines to idle and the FI informed the pilot to cycle the propellers which he did. The pilot then applied takeoff power and the airplane began moving forward with, "no turn, not going backwards, not turning." Additional maneuvers were performed, and the flight then returned to the departure airport and landed uneventfully. The FI debriefed with the pilot what had occurred with respect to the airplane not moving on the water when power was applied and the pilot's response was that he was still, "working out the kinks in the system." The FI informed the pilot to verify, and triple verify that the propellers were in the right position. The FI mentioned that the pilot said he would have the issue addressed⁴.

1.4. Propeller Description

The four-bladed, DUC constant speed, reversable propellers consisted of a spinner, carbon hub, carbon/titanium blade with nearly full-span shielding in leading edge in Inconel®.

1.5. Propeller Blade Pitch Control Mechanism Between Low and High Pitch

Propeller blade pitch control of each propeller between low pitch and high pitch was electrically controlled by a Flybox Avionics PR1-P Propeller Regulator installed side by side on the left side of the pilot's instrument panel. Each propeller regulator was wired to a potentiometer installed on an actuator near the propeller, and did not have data logging capability, but configuration and calibration data are recorded and retained in each propeller regulator.

Each propeller regulator was equipped with a small rectangular display screen, an "Operating Mode Switch that was required to be pulled out and then place in either the "CONSTANT SPEED" or "MANUAL" positions. Manual mode was only to be used when testing the system or in the event of failure or emergency. Each regulator was also equipped with a rpm switch labeled "INC" and "DEC", and a knob with pushbutton that can be rotated to increase or decrease rpm or pressed like a pushbutton to enter a menu or in the various settings. While in manual position and the switch moved to the "INC" position, the propeller pitch decreases and the propeller rpm increases, with a corresponding illumination of the "Min pitch" light emitting diode (LED) on the instrument. While in manual mode and the switch is moved to the "DEC"

⁴ Refer to NTSB Record of Conversation contained in the NTSB Public Docket.
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position, the propeller pitch increases and the propeller rpm decreases, with a corresponding illumination of the "Max pitch" LED on the instrument.

1.6. Propeller Blade Pitch Control For Less than Low Pitch

Propeller blade pitch control of each propeller below the low pitch setting into Beta and reverse was accomplished by placing a left and right three channel "ON/ON" red guarded switch on the pilot's side rail into the "on" position for reverse, which disconnected the Flybox PR1P from the actuator, and then a second 2 channel "ON/OFF/ON" switch to control the propeller pitch to reverse to allow application into reverse for water operations.

1.7. Annunciation of Propeller in Beta

The airplane was equipped with "LH BETA PROP" and "RH BETA PROP" annunciation lights installed on the center and top portion of the instrument panel. The pilot reported that the lights were designed to illuminate when one/both of the red guarded switches was/were in the "on" position for reverse.

2.0. On-Scene Airframe, Avionics, & Propeller Control Systems Examination

2.1. Airframe

Examination of the wreckage was performed by a Federal Aviation Administration airworthiness inspector. As first viewed, the airplane was in a nose-low attitude with the empennage and right wing slightly elevated positions (Figure 6). The left wing and cockpit were extensively damaged.



Figure 6: View of the Wreckage At the Accident Site.

2.2. Avionics Information

The airplane was equipped with a Garmin GDU 460, serial number 7Y9100212 with a Secure Digital (SD) card in the slot. Both were retained and shipped to the NTSB Vehicle Recorder Division for read-out, and were delivered on May 10, 2024.

2.3. Propeller Actuator Position

2.3.1. Left Propeller Actuator Position

Examination of the left propeller actuator revealed it was fully retracted, consistent with reverse position (Figure 7).

2.3.2. Right Propeller Actuator Position

Examination of the right propeller actuator revealed it was in an extended position consistent with cruise position (Figure 8).



Figure 7: Left Propeller Actuator



Figure 8: Right Propeller Actuator

2.4. Propeller Regulator

2.4.1. Left Propeller Regulator

Examination of the left propeller regulator revealed it remained installed in the instrument panel. The Operating Mode Switch was in the "CONSTANT SPEED" Position and the RPM INC/DEC switch was broken (Figure 9).

2.4.2. Right Propeller Regulator

Examination of the right propeller regulator revealed it remained installed in the instrument panel. The Operating Mode Switch was broken and the RPM INC/DEC was centered; the position of the Operating Mode Switch was not determined at that time (Figure 10).



Figure 9: Left Propeller Regulator



Figure 10: Right Propeller Regulator

3.0. Recovery Of Wreckage

The wreckage was recovered by Florida Air Recovery & Storage personnel and secured at their facility in Jacksonville, Florida. Following recovery, the airframe was stored outside with a tarp covering the cockpit while each engine with attached propeller was removed and placed inside storage.

4.0. NTSB Wreckage Follow-Up Examination

4.1. Propeller Blade Angle

4.1.1. Left Propeller Blade Angle

Visual examination of the left propeller blades revealed the blade angle appeared in the reverse range (Figure 11).

4.1.2. Right Propeller Blade Angle

Visual examination of the right propeller blades revealed the blade angle appeared to be in the cruise range (Figure 12).



Figure 11: View of Left Propeller



Figure 12: View of Right Propeller

4.2. Red Guarded Switches For Propeller Cruise and Reverse

4.2.1. Left Red Guarded Switch

Examination of the side rail of the instrument panel housing the left guarded switch revealed the left guard was down, cruise position and the switch remained installed in the panel. A look below the panel at the left switch revealed a piece of tape affixed to it was marked with "R" (Figure 13). Several wires of the switch were fractured either at the terminal fitting or in close proximity to it. The bottom portion of the switch was also impact damaged.

4.2.2. Right Red Guarded Switch

Examination of the side rail of the instrument panel housing the right guarded switch revealed the right guard was down, cruise position and the switch was separated from the panel. A look below the panel revealed the right switch was impact damaged and a piece of tape affixed to it was marked with "L" (Figure 14).



Figure 13: Left Red Guarded Switch



Figure 14: Separated Right Red Guarded Switch

5.0. Pending Investigative Examination(s)/Information

5.1. Garmin GDU 460

Read-out of the Garmin GDU 460 will be performed by the NTSB Vehicle Recorder Division, and the data will be provided to the FAA, US. Party Member (Airframe manufacturer), Technical advisors, and Accredited Representatives.

6.0. PART RETENTION

The only retained parts at the current time are the Garmin GDU 460.

Submitted by:

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