

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22FA239

ON-SITE AND EXAMINATION SUMMARY

April 1, 2023

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A. ACCIDENT

Location: Lind, Washington
Date: July 2, 2024
Time: 1730 Pacific daylight time (PDT)
0030 coordinated universal time (UTC)
Airplane: Air Tractor 602-AT N602GH

B. PARTY MEMBERS

IIC	Eleazar Nepomuceno National Transportation Safety Board Federal Way, Washington
Party Coordinator	Dakota Lowe Air Tractor, Inc Olney, Texas
Party Coordinator	Todd Pryor Federal Aviation Administration - FSDO Spokane, Washington
Accredited Representative	Nora Valee Transportation Safety Board, Canada Longueuil, Quebec
Technical Advisor	Leslie Ederer Pratt & Whitney Canada Corp. Gatineau, Quebec

C. SUMMARY

On July 2, 2022, about 1730 Pacific daylight time, an Air Tractor AT-602, N602GH, was substantially damaged when it was involved in an accident near Lind, Washington. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 137, aerial application.

According to a witness, about 1717, the pilot departed his hangar after refueling and re-loading the hopper for an aerial application flight. Global positioning satellite data revealed that the pilot was applying pesticide in a west to east racetrack pattern (figure 1). The pilot was on a west to east track and while maneuvering at a low altitude over an open field, about 1733, the airplane impacted terrain. Surveillance video footage from a building about 1 nm southwest of the accident site showed that the airplane moved forward about wings level and transitioned into a steep, almost vertical, right turn. About seven seconds later, the airplane

starts a nose down, right wind low decent and then disappears behind a knoll. Shortly after, a plumb of dust is seen.



Figure 1. GPS data plot of aerial application accident flight.

The airplane and engine were recovered to a secure facility in Pullman, Washington. The airframe examination took place on July 11, 2022, followed by an engine examination on March 21-23, 2023, with each respective manufacture party member or technical advisor.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site

The airplane impacted a dirt field about 4.5 nautical miles east from the hangar at an elevation of about 18,83 ft mean sea level. The wreckage debris path was about 190 ft long and oriented on a magnetic heading of about 155 °. The airplane came to rest on upright after it slid upslope (figure 2).



Figure 2. View of accident airplane in an open field.

The first point of impact (FPI) identified was an impression in the ground consistent with the left tire, followed by the left wing and belly of the airplane. The FPI contained the left landing gear and fragmented pieces of fiberglass and fuselage. Ground scars and damage to the airplane were consistent with the airplane impacting terrain in a flat, shallow, left-wing low attitude. A post impact fire did not ensue, but fuel odor was present throughout the debris path, consistent with Jet A fuel. All major components of the airplane were located within the debris field.

2.0 Airframe Examination

The cockpit and forward section of the fuselage sustained impact damage, to include the windscreen. The instrument console sustained forward buckling and compression damage consistent with impact. Multiple gauges from the instrument panel were displaced. The power lever, conditional lever, and propeller lever was each found in the full forward position. Flight control continuity was established for each primary flight control system from the cockpit to each flight control surface, with which included the elevator, rudder, and aileron controls. The left and right wing remained attached to the fuselage and sustained skin buckling throughout its surfaces.

consistent with impact damage. The left flap and aileron separated and came to rest forward of the cockpit, while the right flap and aileron remained partially attached to the left wing. Both flaps and ailerons sustained damage consistent with impact. The empennage partially separated and came to rest vertically on the rudder. The leading edge of both elevators, along with the trailing edge of the rudder sustained compression damage consistent with impact.

3.0 Engine Examination

The powerplant, a Pratt & Whitney PT6A-65AG, serial number PCE-PN0004, remained attached to the engine mounts (figure 3). The reduction gearbox was separated from the engine at the "A" flange.



Figure 3. View of accident airplane attached to engine mounts at the wreckage site.

An engine examination revealed that the engine displayed contact signatures to its internal components consistent with the engine developing power at the time of the impact. Furthermore, the fractures seen throughout the second stage carrier slots were consistent with the engine operating under high power at the time of the accident. There were no indications of any pre-impact mechanical anomalies or failures to the engine or accessories that would have precluded normal operations.

4.0 Propeller Examination

The airplane was equipped with a five-bladed Hartzell reversible propellers. The propeller hub and blade assembly separated from the reduction gearbox at the propellers flange. The second stage carrier No. 5 bearing journal was fractured consistent with tension overload. Each blades remained attached to the propeller hub. Damages to the blades were consistent to the engine operating within a high-power range at the time of the accident.



Figure 4. View of propeller and blade assembly at the wreckage site.

5.0 Pilot Information

Witnesses reported that the pilot was a high time agricultural pilot that flew safely, not taking any unnecessary risks during aerial application flights.

6.0 Aircraft Information

Airframe and engine logbooks revealed that the airplane and engine were in an airworthy condition (figures 5,6,7).

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
Date: 02-10-2022	Hours: 6698.9	Tail: N602GH	
Make: Air Tractor	Model: AT-602	Serial: 602-0401	
Comments: Total Time: 6698.9 -Repacked all wheel bearings -Replaced engine air filter -Replaced firewall fuel filter - Replaced fuel filter in high pressure fuel pump -inspected engine oil filter-Serviced brakes -checked and lubed all flight and engine controls CW AD 2004-15-15 Fuselage Upper Longeron Cracks by inspection per SL195 and will be due in 100hr -CW AD 2005-13-12 Horizontal Stabilizer Eyebolt by torque check per SL129 and will be due in 12 months -CW AD 2009-11-05 Engine Mount Cluster and Gussets by inspection per SL253 and will be due in 100hr -CW AD 21-05-14 Flap Control System by inspection per paragraph (g)(1) and (g)(2). Next inspection per (g) (1) due in 900hr and per (g)(2) due in 345hr I certify that this Aircraft has been inspected in accordance with an Annual inspection and determined to be in airworthy condition. _____ A&P _____			

Figure 5. Excerpt of airframe annual inspection.

 FAA Approved Repair Station No. CP2D750Y Pratt & Whitney Canada Designated Overhaul Facility 211 E Airport Blvd. Tunica, MS. 38676 Ph: 662-357-7360 Fax: 662-357-7361				
Date: 11/May/2017	Hobbs: 4792.5	Engine Model: PT6A-65AG	PCE-PN0004	Acft. Reg. No: N602GH
E.T.S.N.: 4792.5	T.S.O.: N/A	Cycles: Ref. S.B. 13202R5	Starts: N/D Flights: N/D	Acft. Mod/Ser No: AT-602-0401
Received PT6A-65AG S/N PCE-PN0004 as installed on AT602-0401 for a 100 Hour Inspection. Hot Section Inspection and Light Overhaul of Power Section. Performed 100 Hour Inspection in accordance with Pratt & Whitney Maintenance Manual 3032842R56. Inspected 1st. Stg. Compressor Blades for F.O.D., none found. Inspected Filters, Chip Detectors and Last chance screens for debris, none found. Installed New Fuel Pump Outlet filter. Inspected engine mounts in accordance with A.D. 2009-11-05. Inspected Carbon Block. Rotated aircraft batteries. Inspected and serviced propeller with Aeroshell # 6 grease. Inspected Hot Section. Installed New Sealing Rings and segments. Remaining Hot Section found to be in Serviceable condition at this time. Ground segments to required clearance. Performed Covington Light Overhaul on Power Section. Disassembled Power Section. Cleaned, Inspected, N.D.T. and repaired as required in accordance with Pratt & Whitney Overhaul Manual 3032843R47. Installed one Overhauled condition P.T. Blade P/N 3120072-01. Balanced components as required. Cleaned, inspected, flow tested and leak checked Fuel Nozzles. Reassembled engine and safetied. The following accessories were installed in Overhauled condition: Over speed Governor P/N 210963 S/N 2170584, Prop Governor P/N 8210-034 S/N 11502435. Serviced engine with 12 quarts BP2380 Turbine Oil. Performed Ground Performance run and leak check with satisfactory results. Check Balanced Prop, no changes required. The following A.D. was previously complied with thru Pratt & Whitney S.B. 13473R1(Fuel Control). MAINTENANCE RELEASE: This certifies that the work specified above was carried out in accordance with Federal Aviation Regulations and current manufacturer's specifications. In respect to the work performed, the engine/component is approved for return to service. Pertinent details of the repair are on file at this repair station. Authorized Signature: _____ Work Order No: T11205 Date: May 11, 2017				
COVM056 (Rev0 02-14)				

Figure 6. Excerpt of engine 100-hour inspection

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Propeller Inspection Form

Date: 02-10-2022 Hours: 6698.9 Tail: N602GH
 Make: Hartzell Model: HC-B5MP-3C Serial: EVA2058

DATE	REC	Comments:
		Total Time: 6698.9 SMOH: 724.0
		-Dressed nicks in blade leading edge
		-Touched up paint on blades
		-greased hub
		I certify that this Propeller has been inspected in accordance with a 100 hour inspection and determined to be in airworthy condition.
		____ A&P _____

Figure 7. Excerpt of propeller 100-hour inspection

7.0 Meteorological Information

Data at: 0321 UTC 03 Jul 2022

KMWH 030252Z 25006KT 10SM SCT120 29/07 A2969 RMK AO2 SLP047 T02890067 56016
 KMWH 030152Z 28005KT 10SM CLR 29/06 A2970 RMK AO2 SLP050 T02890061
 KMWH 030052Z 23006KT 10SM CLR 30/06 A2971 RMK AO2 SLP054 T03000061
 KMWH 022352Z 24007KT 10SM CLR 30/03 A2974 RMK AO2 SLP065 T03000033 10322 20256 56017
 KMWH 022252Z 24007KT 10SM FEW042 SCT080 BKN120 30/04 A2976 RMK AO2 SLP069 T03000039

Submitted by:

Eleazar Nepomuceno
 Aviation Accident Investigator