

NATIONAL TRANSPORTATIONS SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF AIRCRAFT EXAMINATION

-- CEN20LA375 --

A. ACCIDENT

Location: Brighton, Colorado
Date: September 2, 2020
Time: 1213 mountain daylight time
Aircraft: Titan Mustang T-51 (s/n M09HV6COHK0153), N153JW

B. PARTICIPANTS

David Bowling
Chief, Central Region
National Transportation Safety Board
Denver, Colorado

Jason Aguilera
Senior Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

C. ACCIDENT SUMMARY

On September 2, 2020, at 1213 mountain daylight time, a Titan Mustang T-51 airplane, N153JW, was destroyed when it was involved in an accident near Brighton, Colorado. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF AIRCRAFT EXAMINATION

The NTSB did not respond to the accident site.¹ A post-recovery examination was conducted at Beegles Aircraft, Greeley, Colorado, on September 29, 2020. A secondary engine examination was conducted on February 5, 2021.

¹ Travel restrictions due to COVID-19 were in effect at the time of the accident.

Summary of Aircraft Examination

E. DESCRIPTION OF ACCIDENT SITE

The accident site was located 0.59 miles northwest (338°) from the departure end of runway 30 at Van Aire Airport (CO12). The airplane impacted an open field covered with grass and low vegetation. The airplane came to rest upright oriented on a west heading.

F. SUMMARY OF AIRCRAFT EXAMINATION²

Airframe – Titan Mustang T-1 (s/n M09HV6COHK0153)

The forward fuselage and engine cowling were damaged consistent with impact forces. The cockpit area was compromised. Both wings exhibited leading edge crushing consistent with impact. Airframe damage was consistent with impact forces. No evidence of an in-flight structural failure was observed.

All flight control surfaces remained attached to the airframe and were secured via cotter-pin connectors. Control continuity from the cockpit to both ailerons was confirmed. The rudder and elevator control cables were cut to facilitate recovery. Control continuity from the cockpit to the elevators and rudder was otherwise continuous. The wing flap position at the time of the accident could not be determined due to impact damage.

Engine – Honda J35A6 (s/n 1646368)

Propeller – Whirl Wind Propellers 100-4-84

The airplane was equipped with a modified Honda J35A6 engine, configured in a six-cylinder, “V” alignment configuration, a Titan HV6 Autoflight reduction gearbox, and a Whirl Wind 4-bladed, composite propeller.

The reduction gearbox remained secured to the engine; however, the upper portion was dislocated aft consistent with impact forces. A corresponding gap was observed along the mating surface between the gearbox and the engine. The unit was disassembled. Each gear appeared intact; however, metallic debris was present in the gearbox. The engine flywheel, immediately aft of the drive spline and main gear, exhibited a 7-inch long by ¾-inch wide circumferential gouge consistent with engine rotation under power at impact.

The supercharger remained secured to the engine and appeared intact. The intake air filter remained attached to the housing. The filter was crushed but was otherwise intact. The filter media appeared free of debris. The supercharger drive belt was separated at two locations. The separations appeared consistent with tension overload. The supercharger drive initially had binding when the drive pulley was rotated by hand. During disassembly, the lug securing the drive pulley was loosened and the supercharger rotated freely. The intake butterfly valve was undamaged and free to rotate.

The engine was dislocated consistent with impact and the crankcase exhibited localized damage. Borescope examination of each cylinder did not reveal any anomalies with respect to the cylinders, pistons, or valves. Minor debris was observed in cylinder nos. 1, 2 and 6. The timing belt was intact and in proper position on the engine and intact.

² Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

Summary of Aircraft Examination

F. SUMMARY OF AIRCRAFT EXAMINATION

The valve cover was undamaged. The camshafts, rocker arms and valve springs appeared oil wetted and undamaged. The crankshaft appeared intact and all connecting rods remained secured to the shaft. The counter/balance weight was unremarkable. Following removal of the reduction gearbox, the engine rotated freely. Internal engine and valve train continuity were confirmed.

The oil sump (pan) was damaged consistent with impact. The oil pick-up assembly was undamaged. The oil screen was free of debris. The pan contained a small amount of metallic debris. The ignition harness was damaged consistent with impact and could not be functionally tested. The spark plug electrodes were worn but appeared otherwise intact and operational. The plugs were clean; they were not oil or carbon fouled.

The fuel filter housing was dented but appeared otherwise intact. The filter element was intact and free of debris or sediment. The oil filter was deformed. The filter element was intact and free of debris or sediment.

The 4-blade propeller assembly remained attached to the reduction gearbox. Three propeller blades were separated near the root; one blade remained attached. The remaining blade was cracked/delaminated at the root and near two-thirds span. The forward face of the blade exhibited chordwise scratches. The separated blades were located at the accident site. The propeller hub remained attached to the reduction gearbox. A portion of the hub was bent aft and into the forward face of the gearbox housing. Witness marks corresponding to the gearbox attachments were observed on the aft face of the propeller hub.

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