



Aviation Investigation Final Report

Location:	Modena, New York	Accident Number:	ERA16LA065
Date & Time:	December 12, 2015, 12:00 Local	Registration:	N9410
Aircraft:	DEHAVILLAND TIGER MOTH DH 82A	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (partial)	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During the initial climb after takeoff, the airplane experienced a partial loss of engine power. The pilot attempted to return to the runway; however, the airplane was not able to maintain altitude and struck trees about 1/4 mile from the airport.

Postaccident examination of the engine revealed that the cylinder's exhaust valve was stuck open and that the No. 1 cylinder produced little to no compression when the crankshaft was rotated. The loss of compression on the No. 1 cylinder would have resulted in a partial loss of engine power and airplane's inability to maintain altitude. Disassembly of the left magneto revealed that its breaker spring was fractured, but investigators were unable to determine whether the left magneto failed before or during the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A partial loss of engine power due to a stuck No. 1 cylinder exhaust valve.

Findings

Aircraft

Recip eng cyl section - Malfunction

Aircraft

Magneto/distributor - Damaged/degraded

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On December 12, 2015, about 1200 eastern standard time, a DeHavilland Tiger Moth DH-82A, N9410, was substantially damaged during a forced landing after takeoff from Old Orchard Airpark (2NK9), Modena, New York. The pilot and a passenger were not injured. Visual meteorological conditions prevailed and no flight plan had been filed for the personal flight that was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

The pilot reported that he conducted a pre-takeoff engine run, which included an operational check of the magnetos with no anomalies noted. The airplane subsequently experienced a 200-rpm reduction in engine power during the initial climb after takeoff from runway 18. The pilot attempted to return to the runway; however, the airplane was not able to maintain altitude and struck trees about 1/4-mile from the airport.

The airplane was manufactured in 1940 and equipped with a DeHavilland Gipsy Major 1C, 145-horsepower engine

Postaccident examination of the airplane by a Federal Aviation Administration inspector revealed that the airplane sustained substantial damage to both wings, the empennage, and the fuselage. When the inspector rotated the engine crankshaft, continuity was observed to the accessory section and compression was attained on all cylinders with exception of the forward (No. 1) cylinder, which produced "little to no compression." Due to the engine's disposition, the inspector was unable to check the ignition system for proper operation. No further examination of the engine was performed.

The pilot further reported that subsequent teardown of the engine revealed that the No. 1 cylinder exhaust valve was stuck in the open position. In addition, disassembly of the left magneto revealed that the "breaker spring" was fractured. The pilot stated that the loss of compression to one of the four engine cylinders alone would have resulted in a forced landing; however, he believed that the combination of the loss of compression on the No. 1 cylinder and the failure of the left magneto resulted in the loss of engine power that the airplane experienced during the accident flight.

Pilot Information

Certificate:	Commercial	Age:	66, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	June 9, 2014
Occupational Pilot:	No	Last Flight Review or Equivalent:	May 7, 2014
Flight Time:	2300 hours (Total, all aircraft), 650 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	DEHAVILLAND	Registration:	N9410
Model/Series:	TIGER MOTH DH 82A	Aircraft Category:	Airplane
Year of Manufacture:	1940	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	DE-941
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	October 15, 2019 Annual	Certified Max Gross Wt.:	1825 lbs
Time Since Last Inspection:	10 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	6260 Hrs as of last inspection	Engine Manufacturer:	DEHAV ENG
ELT:	Installed	Engine Model/Series:	GIPSY MAJOR
Registered Owner:	On file	Rated Power:	145 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	POU,166 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	11:53 Local	Direction from Accident Site:	30°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/ Unknown
Wind Direction:		Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.11 inches Hg	Temperature/Dew Point:	16°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Modena, NY (2NK9)	Type of Flight Plan Filed:	None
Destination:	LaGrangeville, NY (44N)	Type of Clearance:	None
Departure Time:	12:00 Local	Type of Airspace:	Class G

Airport Information

Airport:	OLD ORCHARD AIRPARK 2NK9	Runway Surface Type:	
Airport Elevation:	660 ft msl	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	41.662776,-74.074447(est)

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Scott M Gillson; FAA Albany FSDO; Latham, NY
Original Publish Date:	December 3, 2020
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92435

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).