



Aviation Investigation Final Report

Location:	Hettinger, North Dakota	Accident Number:	CEN11LA541
Date & Time:	July 30, 2011, 10:00 Local	Registration:	N90181
Aircraft:	WEATHERLY AVIATION CO INC 620B	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The agricultural airplane was maneuvering at 500 feet above ground level when the engine lost power, and oil immediately covered the windscreen. During the forced landing, the airplane impacted a dirt berm and came to rest in a ditch. A postaccident examination of the engine showed a hole in the side of the No. 5 cylinder, which is located at the bottom of the engine. The examination also revealed that several of the connecting rods, including the No. 5 master rod, were broken. There was no evidence in the engine of scoring, thermal damage, or oil starvation. Due to the extent of the engine damage, the initial failure mode could not be determined. At the time of the accident, the engine had accumulated 43 hours since major overhaul.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Internal failure of the engine for undetermined reasons.

Findings

Aircraft	(general) - Failure
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Maneuvering	Loss of engine power (total) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On July 30, 2011, approximately 1000 central daylight time, a Weatherly Aviation Company 620B single-engine airplane, N90181, sustained substantial damage following a loss of engine power while maneuvering near Hettinger, North Dakota. The commercial pilot was not injured. The airplane was registered to and operated by Air Dakota Flite, Hettinger, North Dakota. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 137 aerial application flight. The local flight departed approximately 0950.

According to the pilot, while maneuvering at 500 feet above ground level, the engine lost power and oil immediately covered the windscreen. The pilot initiated a forced landing to a road. During the forced landing, the main landing gear collided with a dirt berm on the side of the road, and the airplane entered a ditch. The airplane came to rest upright and the pilot exited the airplane. An examination of the airplane showed the firewall was damaged.

A review of the airplane's maintenance records revealed the Pratt & Whitney R-985 AN-14B radial engine (serial number 13084) underwent its most recent annual inspection on July 5, 2011, at a total time of 5,274 hours, and 15.4 hours since major overhaul. At the time of the accident, the engine had accumulated 43 hours since major overhaul.

According to the Federal Aviation Administration (FAA) inspector who responded to the accident site, the airplane was involved in an accident in 2009. During that accident, the engine separated from the airframe. After that accident, the engine received a major overhaul that was completed on December 29, 2009. There is no record in the NTSB database regarding an accident involving N90181 in 2009.

On October 18, 2011, the engine was examined and disassembled at the facilities of Tulsa Aircraft Engines, Tulsa, Oklahoma, under the supervision of two FAA inspectors. Examination of the engine showed a hole in the side of the number 5 cylinder, which is located at the bottom of the engine. The examination also revealed that several of the connecting rods, including the master rod were broken. The number 5 cylinder is the engine's master rod cylinder. Additionally, there was no evidence in the engine of scoring, thermal damage, or oil starvation. Due to the damage in the engine, the initial failure mode could not be determined.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	70, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	May 17, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	September 15, 2009
Flight Time:	24000 hours (Total, all aircraft), 1500 hours (Total, this make and model), 23800 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	WEATHERLY AVIATION CO INC	Registration:	N90181
Model/Series:	620B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Utility	Serial Number:	1613
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	July 5, 2011 Annual	Certified Max Gross Wt.:	4000 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1315 Hrs at time of accident	Engine Manufacturer:	Pratt & Whitney
ELT:	Not installed	Engine Model/Series:	R-985-AN-14B
Registered Owner:	AIR DAKOTA FLITE	Rated Power:	450 Horsepower
Operator:	AIR DAKOTA FLITE	Operating Certificate(s) Held:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.06 inches Hg	Temperature/Dew Point:	24°C / 16°C
Precipitation and Obscuration:			
Departure Point:	Hettinger, ND (HEI)	Type of Flight Plan Filed:	None
Destination:	Hettinger, ND (HEI)	Type of Clearance:	None
Departure Time:	09:50 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	46.015556,-102.655555(est)

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	Brent Allen; Federal Aviation Administration; Fargo, ND
Original Publish Date:	March 27, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81378

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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](#).