Aviation Investigation Final Report

Location:	Homer, Louisiana	**Accident Number:**	CEN17LA228
Date & Time:	June 9, 2017, 08:30 Local	**Registration:**	N335JT
Aircraft:	Thompson Angel Hawk II	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot reported that, during the accident flight, he planned to take off and circle the experimental, amateur-built airplane above the runway to check engine operation. Just after takeoff, the engine began sputtering. He made a left 180° turn to return to the runway and during the turn, the engine experienced a total loss of power. He stated that the airplane stalled when he was in the turn and he did not have enough time to recover before impacting the ground. The airplane had accumulated about 47 hours of run time and was in the initial flight test stage when the accident occurred.

The pilot reported that he had been having trouble with increased cylinder head temperatures on the converted automotive engine. The engine had experienced a total loss of power during a previous flight, but the pilot was able to land the airplane without incident. Following that event, he replaced some ignition system components and adjusted the valves. He was then able to start the engine and reported that it "ran fine" during subsequent test runs.

Postaccident examination of the airplane revealed that the fuel mixture was not adjustable in the cockpit. Examination of the engine revealed that there was melted plastic material inside the distributor rotor and the distributor drive shaft. The condition of the spark plugs was consistent with an overly lean fuel mixture and/or high temperature operation. It is likely that the melted distributor rotor was the result of the engine's high operating temperatures; the degradation of the distributor and its drive shaft would have resulted in a shift in ignition timing and a subsequent loss of engine power.

Probable Cause and Findings

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

A total loss of engine power due to the engine's unresolved high operating temperatures, which resulted in failure of the distributor rotor and drive shaft, and the pilot's failure to maintain airspeed during the subsequent forced landing, which resulted in an aerodynamic stall and loss of control.

Findings

Aircraft	Magneto/distributor - Damaged/degraded
Aircraft	(general) - Related operating info
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Capability exceeded
Personnel issues	Aircraft control - Pilot
Personnel issues	(general) - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Initial climb	Loss of engine power (total) (Defining event)
Approach	Aerodynamic stall/spin
Landing	Collision with terr/obj (non-CFIT)

On June 9, 2017, about 0830 central daylight time, an amateur built Angel Hawk II airplane, N335JT, collided with terrain during a forced landing near the Homer Municipal Airport (5F4), Homer, Louisiana. The pilot/airplane builder was seriously injured, and the airplane was substantially damaged. The airplane was registered to a private individual and was being operated by the pilot as a 14 *Code of Federal Regulations* Part 91 personal flight. Visual flight rules conditions existed near the accident site at the time of the accident, and a flight plan had not been filed for the local flight. The airplane departed 5F4 just before the accident.

The pilot reported that he had been having trouble with increased cylinder head temps on the engine, a VW Type 1. During one flight, the engine popped and quit when he was on downwind and he landed the airplane back on the runway. He couldn't get the engine to restart. He replaced some ignition system components and adjusted the valves which were too tight. He was then able to start the engine and it ran fine during run-up tests.

The plan for the accident flight was takeoff and circle above the runway to make sure the engine was running ok. Just after takeoff, the engine began sputtering. He made a left 180° turn to return to the runway and during the turn, the engine lost all power. He stated that the airplane stalled when he was in the turn and he did not have enough time to recover before contacting the ground.

The engine was originally a Volkswagen 1.6L Type 1, which had been converted by the pilot to a variation of the Volkswagen 1.9L Type 4. The fuel mixture adjustment was pre-set at the carburetor and not adjustable in the cockpit. The ignition system included a single battery, ignition coil, centrifugal advance distributor, points, condenser and one spark plug per cylinder. The lubrication system had an added external sump attached beneath the oil drain with steel braided hose connecting to a "spin-on" type oil filter mounted on the firewall. The engine had about 47 hours of operating time since new.

A postaccident examination of the engine was conducted by a Federal Aviation Administration airworthiness inspector. The examination revealed there was melted plastic material inside the distributor rotor and the distributor drive shaft. The inspector reported that the condition of the spark plugs was indicative of a lean fuel mixture/high temperature operation. The engine timing could not be determined.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	69,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	None	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 2, 2016
Flight Time:	946 hours (Total, all aircraft), 47 hours (Total, this make and model), 800 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Thompson	**Registration:**	N335JT
Model/Series:	Angel Hawk II	**Aircraft Category:**	Airplane
Year of Manufacture:	2009	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	001
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	November 1, 2016 Annual	**Certified Max Gross Wt.:**	1200 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	47 Hrs at time of accident	**Engine Manufacturer:**	Thompson
ELT:	Installed, not activated	**Engine Model/Series:**	VW Tape I
Registered Owner:		**Rated Power:**	70 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:	MNE,278 ft msl	**Distance from Accident Site:**	19 Nautical Miles
Observation Time:	13:35 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	22°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Homer, LA (5F4)	**Type of Flight Plan Filed:**	None
Destination:	Homer, LA (5F4)	**Type of Clearance:**	None
Departure Time:	08:27 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Homer Municipal Airport 5F4	**Runway Surface Type:**	
Airport Elevation:	244 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 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	32.789722,-93.006385(est)

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Michael Stanley; FAA; Baton Rouge, LA
Original Publish Date:	November 15, 2018
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95366