



Aviation Investigation Final Report

Location:	Colorado City, Texas	Accident Number:	FTW03LA199
Date & Time:	August 20, 2003, 08:15 Local	Registration:	N3872J
Aircraft:	Cessna T188C	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The 2,910-hour pilot reported that while maneuvering to return to a field he was performing aerial application on, the engine lost power. The pilot added that he saw three sets of power lines directly in front of his position and pitched up to avoid hitting them. As the airplane crossed over of the third set of power lines, "the airplane stalled" and impacted terrain in a "left wing and nose low" attitude. Examination of the engine revealed that the crankshaft was fractured at the cheek for the number two cylinder. A metallurgical examination of performed on the crankshaft revealed that a fracture initiated from at least two distinct origins in the fillet between the number 3 cheek and number 2 main journal, with beach marks throughout. The edge of the fractured surface was smeared. The reason for the failure of the crankshaft was undetermined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to failure of the crankshaft. A contributing factor was low altitude flight.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: MANEUVERING - AERIAL APPLICATION

Findings

1. (C) ENGINE ASSEMBLY, CRANKSHAFT - FAILURE

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

2. MANEUVER TO AVOID OBSTRUCTIONS - INITIATED - PILOT IN COMMAND

3. (F) ALTITUDE - LOW

4. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #4: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

5. TERRAIN CONDITION - GROUND

Factual Information

On August 20, 2003, 0815 central daylight time, a Cessna T188C, single-engine agricultural airplane, N3872J, was substantially damaged during a forced landing following a loss of engine power while maneuvering near Colorado City, Texas. The airplane was owned and operated by S&V Aerial Inc., of San Angelo, Texas. The commercial pilot, sole occupant of the airplane, was not injured. 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 originated from Colorado City Airport, near Colorado City, Texas, approximately 0800.

The 2,910-hour pilot reported in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) that while maneuvering to return to a field he was performing aerial application on, the engine lost power. As the pilot terminated his aerial application run and looked for a suitable place to land, he turned on the fuel boost pump, advanced the throttle to full power, and set the mixture to rich. Subsequently, he saw three sets of power lines directly in front of his position and pitched up to avoid hitting them. As he crossed over of the third set of power lines, "the airplane stalled" and impacted terrain in a "left wing and nose low" attitude. The airplane came to rest upright within a cotton field.

Examination of the airplane by an Federal Aviation Administration (FAA) inspector revealed that both main landing gears were separated, the left rear wing spar was damaged, and the left side of the empennage was buckled aft of the cabin. Further examination revealed both fuel tanks were "almost" full of fuel.

Review of the aircraft maintenance records revealed the engine was last overhauled on April 2, 1998. The number five cylinder was replaced on October 31, 2001. The number four, five, and six cylinders, pistons, and rings were replaced on October 10, 2002. The most recent annual inspection was performed on May 6, 2003.

The Continental TSIO-520-T(1) engine, serial number 515431, was examined by a representative of Teledyne Continental Motors on September 10, 2003, under the supervision of the FAA inspector, at a maintenance facility near Seminole, Texas. Examination of the engine revealed that the crankshaft, part number 649130DU, serial number K209195N, was fractured at the cheek for the number two cylinder.

On November 24, 2004, at the facilities of Teledyne Continental Motors, near Mobile, Alabama, a metallurgical examination was performed on the crankshaft under the supervision of an FAA inspector. The examination revealed that a fracture initiated from at least two distinct origins in the fillet between the number 3 cheek and number 2 main journal, with beach marks throughout. The edge of the fractured surface was smeared. The reason for the failure of the crankshaft was undetermined.

Pilot Information

Certificate:	Commercial	Age:	34, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Center
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical—no waivers/lim.	Last FAA Medical Exam:	March 11, 2003
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 20, 2002
Flight Time:	2910 hours (Total, all aircraft), 372 hours (Total, this make and model), 2880 hours (Pilot In Command, all aircraft), 38 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N3872J
Model/Series:	T188C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Utility; Restricted (Special)	Serial Number:	03679
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	May 6, 2003 Annual	Certified Max Gross Wt.:	4200 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2148.2 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Not installed	Engine Model/Series:	TSIO-520-UB
Registered Owner:	S&V Aerial Inc.	Rated Power:	310 Horsepower
Operator:		Operating Certificate(s) Held:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	SWW,2380 ft msl	Distance from Accident Site:	23 Nautical Miles
Observation Time:	08:06 Local	Direction from Accident Site:	270°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / 16 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.09 inches Hg	Temperature/Dew Point:	25°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Colorado City, TX (T88)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	07:30 Local	Type of Airspace:	Class E

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:	32.390838,-100.850517(est)

Administrative Information

Investigator In Charge (IIC):	Casanova, Hector
Additional Participating Persons:	Stanley P Hinds; Federal Aviation Administration; Lubbock, TX
Original Publish Date:	February 24, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=57738

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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](#).