Aviation Investigation Final Report

Location:	Planada, California	**Accident Number:**	LAX04LA170
Date & Time:	March 25, 2004, 09:45 Local	**Registration:**	N478Q
Aircraft:	Cessna 188B	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The airplane experienced a partial loss of engine power and impacted flat terrain while maneuvering over farm fields. The pilot was applying fertilizer to an agriculture field. He was in a climbing turn, about 150 feet above ground level (agl), when he felt the airplane shake as if it was approaching a stall. He advanced the throttle. The engine did not sound normal, and the airplane was not able to maintain altitude. He was over an orchard and directed the airplane towards one of the fields he was working. The pilot said he was over that field, fighting the stall buffet, when the airplane gave up flying, spun over to the right inverted, and nosed down to the ground 50 feet below. The pilot exited, and the airplane was subjected to a post impact fire. A Federal Aviation Administration (FAA) inspector performed a post accident examination of the airplane's engine at the operator's facility. He reported that the engine was a Continental IO-520-D that had folded under the wreckage against the ground, which provided protection from the post accident fire. Extensive heat damage was identified around cylinder number 5, which included local melting of the aluminum around the rocker cover and intake manifold. The number 5 cylinder fuel injector line was free of the fuel injector nozzle. The number 5 cylinder injector fuel line b-nut was found to be only finger tight. Examination of the airplane's maintenance logbook revealed that the engine oil cooler had been removed and replaced on March 12, 2004, approximately 36 flight hours prior to the accident. The FAA inspector said that a common practice used by mechanics was to move or adjust the number 5 cylinder fuel injector line in order to install or uninstall the engine oil cooler.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the partial loss of engine power due to the separation of the number 5 cylinder fuel injector supply line. The fuel line separation was due to company maintenance personnel's failure to

secure the b-nut fitting following maintenance. Factors in the accident were the unsuitable nature of the terrain where the engine problem developed and the pilot's failure to maintain airspeed while attempting to reach a suitable forced landing spot, which led to an inadvertent stall.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: MANEUVERING - AERIAL APPLICATION

Findings
1. (C) FUEL SYSTEM,LINE FITTING - NOT SECURED
2. (C) MAINTENANCE - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
3. (C) FUEL SYSTEM,LINE - SEPARATION

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
4. (F) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
5. STALL - ENCOUNTERED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. TERRAIN CONDITION - CROP
7. TERRAIN CONDITION - OPEN FIELD
8. TERRAIN CONDITION - NONE SUITABLE

Factual Information

On March 25, 2004, at 0945 Pacific standard time, a Cessna 188B, N478Q, collided with terrain during a forced landing following a loss of engine power in the vicinity of Planada, California. T-Craft, Inc., was operating the airplane under the provisions of 14 CFR Part 137. The pilot was not injured, and a post crash fire destroyed the airplane. Visual meteorological conditions prevailed, and a flight plan had not been filed. The flight originated at Chowchilla, California, about 0900.

The pilot stated in his written report that he was applying fertilizer to an agriculture field. He was in a climbing turn after making a pass, and the engine began to run rough. He said that it sounded like the propeller was surging. He was unable to maintain altitude, and he was only about 150 feet above ground level (agl). He said that manifold pressure and rpm seemed good at 25 inches and 2,500 rpm, respectively. He advanced the throttle, but did not feel or hear the engine respond. He did not recall the fuel pressure, oil pressure, or cylinder head temperature.

He was over an orchard, fighting the stall buffet, and directed the airplane towards one of the fields he was working. The pilot said that he was over that field when the airplane gave up flying, spun over to the right inverted, and nosed down to the ground 50 feet below. The airplane flipped back onto the gear upon ground contact. The pilot observed fire on the right side in the fuel tank area, and expedited his egress.

A Federal Aviation Administration (FAA) inspector performed a post accident examination of the airplane's engine at the operator's facility. He reported that the engine was a Continental IO-520-D that had folded under the wreckage against the ground, which provided protection from the post accident fire. The propeller had been completely sheared from the propeller hub retaining bolts. The engine's crankshaft rotated freely and the valve train operated in conjunction with compression on all cylinders. The magnetos were removed and examined. Extensive heat damage was identified around cylinder number 5, which included local melting of the aluminum around the rocker cover and intake manifold. The number 5 cylinder fuel injector line was broken free of the fuel injector nozzle and the fuel distribution manifold. The number 5 cylinder injector fuel line b-nut was finger tight.

Examination of the airplane's maintenance logbook revealed that the engine oil cooler had been removed and replaced on March 12, 2004, approximately 36 flight hours prior to the accident. The FAA inspector said that a common practice used by mechanics was to move or adjust the number 5 cylinder fuel injector line in order to install or uninstall the engine oil cooler.

Pilot Information

Certificate:	Commercial	**Age:**	33,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
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--w/ waivers/lim	**Last FAA Medical Exam:**	December 1, 2003
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 1, 2003
Flight Time:	459 hours (Total, all aircraft), 45 hours (Total, this make and model), 389 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N478Q
Model/Series:	188B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	18802315T
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	January 1, 2004 Annual	**Certified Max Gross Wt.:**	4200 lbs
Time Since Last Inspection:	116 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5330 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Not installed	**Engine Model/Series:**	IO-520-D
Registered Owner:	Thiel AirCare, Inc	**Rated Power:**	285 Horsepower
Operator:	T-Craft Inc.	**Operating Certificate(s) Held:**	
Operator Does Business As:		**Operator Designator Code:**	ZT8G

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMCE,156 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	250°
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.1 inches Hg	**Temperature/Dew Point:**	8°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chowchilla, CA (K2O6)	**Type of Flight Plan Filed:**	None
Destination:	(K2O6)	**Type of Clearance:**	None
Departure Time:	09:00 Local	**Type of Airspace:**	Class E;Class G

Airport Information

Airport:	Chowchilla K2O6	**Runway Surface Type:**	
Airport Elevation:	242 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:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	37.221668,-120.311668

Administrative Information

Investigator In Charge (IIC):	McKenny, Van
Additional Participating Persons:	Larry DeCosta; Federal Aviaiton Administration; Fresno, CA
Original Publish Date:	January 31, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=58973