



# National Transportation Safety Board Aviation Accident Final Report

---

<b>Location:</b>	SUGAR GROVE, IL	<b>Accident Number:</b>	CHI98LA089
<b>Date &amp; Time:</b>	02/01/1998, 1515 CST	<b>Registration:</b>	N830JT
<b>Aircraft:</b>	CHINESE A/F AERO IND DEV CTR PL-1B	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

---

## Analysis

The pilot said the airplane's '...engine stopped...' during initial climbout from takeoff. He said the fuel boost pump was 'ON' and that he checked the throttle and mixture for proper position. The pilot said he turned to avoid colliding with power lines and a road. He said the engine started and ran for about 3-seconds when the airplane was about 25 ft above the ground. The pilot said he banked the airplane toward runway 09, and the engine stopped a second time. He said he '...leveled the wings and let [the] plane settle in.' On-scene investigation revealed no preaccident mechanical anomaly with the airframe or engine that would have prevented flight. The spark plugs were black and sooty. The pilot said moderate rain was falling, and the temperature and dew point were 36 and 34 deg Fahrenheit, respectively. According to icing probability charts, the airplane was operating in conditions conducive to severe carburetor icing at cruise power. The airplane did not have a conventional carburetor heat system. Heat for the carburetor was obtained from the engine oil cooler that was about 14-inches forward and above the carburetor. Air flowing through the oil cooler was used to prevent carburetor ice by heating the carburetor's exterior.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: inadequate design of the carburetor heat system by the manufacturer, and subsequent carburetor ice, which resulted in loss of engine power and a forced landing. Factors relating to the accident were: carburetor icing (weather) conditions, and obstructions and uneven terrain in the emergency landing area.

## Findings

---

Occurrence #1: LOSS OF ENGINE POWER

Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (F) WEATHER CONDITION - CARBURETOR ICING CONDITIONS
2. (C) ANTI-ICE/DEICE SYSTEM, CARBURETOR/HEAT - INADEQUATE
3. (C) ACFT/EQUIP, INADEQUATE DESIGN - MANUFACTURER
4. (C) FUEL SYSTEM, CARBURETOR - ICE

-----

Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

-----

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

### Findings

5. (F) TERRAIN CONDITION - HIGH OBSTRUCTION(S)
6. MANEUVER TO AVOID OBSTRUCTIONS - PERFORMED - PILOT IN COMMAND
7. (F) TERRAIN CONDITION - ROUGH/UNEVEN

## Factual Information

On February 1, 1998, at 1515 central standard time (cst), a Chinese A/F Aero Industries Development PL-1B, N830JT, piloted by a commercial pilot, was substantially damaged during a collision with the ground while maneuvering for a forced landing. The pilot reported a total loss of engine power during the airplane's departure climb following takeoff from runway 18 at the Aurora Municipal Airport, Sugar Grove, Illinois. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 flight was not operating on a flight plan. The pilot and passenger reported no injuries. The flight departed Sugar Grove, Illinois, at 1512 cst.

The pilot said that he was doing touch and go landings with the accident occurring on his third or fourth time around. He said that he took off on runway 18 and started to climb. The pilot said that he was climbing out at 100-feet above the ground when the "... engine stopped... ." He said the boost pump was "ON" and that he checked the throttle, mixture, and boost pump selectors after the engine stopped running. The pilot said he "... turned west to avoid [a] road and wires." According to the pilot, the engine started and ran for about 3-seconds when the airplane was about 25-feet above the ground. The pilot said he "...thought [he] could make runway 9...", and banked the plane toward the runway. During this maneuvering the engine stopped running a second time. The pilot said he "...leveled the wings and let [the] plane settle in." The airplane collided with the ground and came to rest facing south.

The right main gear was folded under the airplane and the nose wheel was sheared off. The fuselage had wrinkling at the firewall and behind the cockpit. The outboard half of the left wing was bent upward about 45-degrees. The right wing was bent upward about 15-degrees at the wing root. Its leading edge was crushed upward and aft.

The on-scene investigation revealed no pre-accident mechanical anomalies with the airframe, engine, magnetos or fuel system that would prevent flight. The spark plug electrodes were black and sooty in appearance. The propeller had one blade bent aft approximately 5-degrees at the midpoint. The fuel smelled similar to autogas. There was a tablespoon of fuel obtained from the carburetor float bowl. The fuel line between the carburetor and fuel pump was cracked.

The PL-1B's design for the carburetor heat system is to use radiant heat from the oil cooler. There is an air scoop for the carburetor at the front of the airplane's cowl that extends aft and is attached to the carburetor throat opening. The oil cooler is located aft and above the air scoop inlet. Air enters through the oil cooler's opening and passes over the oil cooler. The warmed air from the radiant heat of the oil cooler then travels about 14-inches to the carburetor body. This is the only means available to the pilot for prevention or elimination of carburetor ice.

On the day of the accident the temperature and dew point was 36 and 34-degrees Fahrenheit respectively. There was also moderate rain at the time of the accident. According to the FAA's carburetor icing probability chart, the airplane was operating in conditions conducive to serious icing at cruise power settings.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	58, Male
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	07/18/1996
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	803 hours (Total, all aircraft), 196 hours (Total, this make and model), 2 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	CHINESE A/F AERO IND DEV CTR	<b>Registration:</b>	N830JT
<b>Model/Series:</b>	PL-1B PL-1B	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Experimental	<b>Serial Number:</b>	61-1042
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	12/08/1997, AAIP	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	1006 Hours	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-320-E2A
<b>Registered Owner:</b>	JOSEPH L. LESCH	<b>Rated Power:</b>	150 hp
<b>Operator:</b>	JOSEPH L. LESCH	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ARR, 706 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1518 CST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	4 Miles
Lowest Ceiling:	Overcast / 2300 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	2° C / 1° C
Precipitation and Obscuration:			
Departure Point:	(ARR)	Type of Flight Plan Filed:	None
Destination:	(ARR)	Type of Clearance:	VFR
Departure Time:	1512 CST	Type of Airspace:	Class D

## 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:	

## Administrative Information

Investigator In Charge (IIC):	FRANK S GATTOLIN	Report Date:	05/29/1998
Additional Participating Persons:	TOM DUELLMAN; WEST CHICAGO, IL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinquiry@ntsb.gov">pubinquiry@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).