



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	PORT HURON, MI	<b>Accident Number:</b>	CHI94LA327
<b>Date &amp; Time:</b>	09/14/1994, 0846 EDT	<b>Registration:</b>	CFSMO
<b>Aircraft:</b>	PIPER PA-60-602P	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	4 Serious

**Flight Conducted Under:** Part 91: General Aviation - Business

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## Analysis

AS THE AIRPLANE APPROACHED 22,000 FT, THE PILOT REPORTED THAT BOTH ENGINES STOPPED RUNNING WITHIN SECONDS OF EACH OTHER. DURING THE EMERGENCY LANDING APPROACH THE AIRPLANE COLLIDED WITH TREES. ON-SCENE INVESTIGATION REVEALED NO MECHANICAL ANOMALIES WITH THE ENGINES. THE FUEL SYSTEM WAS EMPTY, OTHER THAN TRACES OF FUEL FOUND IN THE LEFT AND RIGHT ENGINE'S FUEL INJECTOR SERVOS AND FLOW DIVIDERS. BOTH WING FUEL TANK CAPS O-RINGS WERE HARDENED AND HAD FLAT SPOTS ON THEM. THE CAPS' OPENING TABS WERE ABLE TO BE OPENED AT 8 AND 3 LBS OF FORCE, RESPECTIVELY. THE COMPANY HOLDING THE AIRPLANE'S TYPE CERTIFICATE STATES AN OPENING FORCE OF 16 LBS OF FORCE IS REQUIRED. THE COMPANY'S ANNUAL INSPECTION CHECKLIST REQUIRES THAT THE TABS BE CHECKED. NO RECORD OF THIS BEING ACCOMPLISHED WAS FOUND IN THE AIRFRAME LOGBOOK. THE PILOT OPERATING HANDBOOK STATES THAT THE FUEL CAP TAB TENSION MUST BE CHECKED DURING THE PREFLIGHT INSPECTION.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: INADEQUATE PREFLIGHT BY THE PILOT RESULTING IN FUEL EXHAUSTION. INADEQUATE MAINTENANCE AND INSPECTION WAS A FACTOR CONTRIBUTING TO THE ACCIDENT.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL  
Phase of Operation: CRUISE - NORMAL

### Findings

1. (F) FUEL SYSTEM,CAP - IMPROPER
  2. (F) MAINTENANCE,ANNUAL INSPECTION - INADEQUATE - OTHER MAINTENANCE PERSONNEL
  3. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
  4. (C) FLUID,FUEL - EXHAUSTION
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Occurrence #2: FORCED LANDING  
Phase of Operation: EMERGENCY DESCENT/LANDING

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: EMERGENCY DESCENT/LANDING

### Findings

5. OBJECT - TREE(S)

## Factual Information

On September 14, 1994, at 0846 eastern daylight time (EDT), a Piper PA-60-602P, Canadian registry, C-FSMO, registered to FCF Bowers, Incorporated of Stratford, Ontario, Canada, and piloted by a Canadian private pilot, was destroyed when it collided with trees and terrain during a power off forced landing. The 14 CFR Part 91 flight was operating on an IFR flight plan. Instrument meteorological conditions prevailed at the time of the accident. The pilot and three passengers were seriously injured. The flight originated from Stratford, Ontario, Canada, at 0805 EDT.

According to the pilot, he departed Stratford with 165 gallons of fuel on board. He encountered "Fairly solid IMC from 3,000 to 18,000 feet... ." During the last 1,000 feet of climb the pilot said he noted "...a slight power loss and [he] began scanning instruments, gauges, and switches." The pilot continued, "Before reaching 22,000 feet the right engine stopped--within seconds the left engine quit." He said the airplane descended 18,000 feet in three minutes. He said he attempted to restart the engines two or three times. The pilot said the airplane broke out of the clouds at 3,000 feet into rain, fog, and one mile visibility. C-FSMO collided with trees and brush before coming to rest against a large tree. Witnesses said that the airplane exploded when it struck the trees. The airplane's center fuselage, inboard wing sections, including the inboard sections of the fuel tank, and engines burned during the post crash fire.

During an interview with the pilot he stated a total loss of power occurred 30 to 40 minutes after takeoff. He said he couldn't recall if the fuel tank gauges were showing low fuel or empty. He said he could not recall if the fuselage center tank's low fuel warning light had illuminated.

The on-scene investigation was conducted by a Federal Aviation Administration (FAA) Principal Maintenance Inspector (PMI). An examination of the engines revealed no mechanical anomalies that would prevent them from producing power. The PMI said he had not found fuel in the left and right fuel filter elements, fuel supply lines, and injector lines. He said he had found traces of fuel in the left and right engine's fuel injector servos and flow dividers.

The fuel distribution manifold that is located within the fuselage center tank was fire damaged. The main fuel solenoid valves on the manifold were found in the open position. The PMI said the open solenoid valves matched the fuel selector switch position. Examination of the airplane's left and right wing fuel tank caps revealed "O" rings that were hardening with flat spots on them. The fuel tank caps opening tabs could be moved with eight and three pounds of pressure respectively. According to the airplane's manufacturer, the fuel cap tabs should require 16 pounds of force (+/- three pounds) to place them in the open position. The left fuel tank cap's "O" ring was collapsed.

According to the airplane's present type certificate holder, a wing surface negative pressure of 0.57 pounds per square (psi) inch could prevent the wing tanks from feeding the fuselage center tank. The manufacturer's representative said that it would take less pressure than 0.57 psi to create the same situation when the fuel tanks were less than full.

Airplane service bulletins and an FAA Airworthiness Directive were issued for the negative fuel tank pressure problem as it pertained to the 601 model of the airplane. The present type certificate holder said that the 602P model had not been produced when these modifications had been published. He said the 602P had the fuel cap changes made before it was introduced

into the marketplace. The 602P maintenance manual said that the fuel cap tab tension must be checked during each annual inspection. This inspection was not found in C-FSMO's airframe logbook. The pilot's operating handbook shows that the tabs must be hand checked for stiffness during the pilot's preflight inspection.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	59, Male
<b>Airplane Rating(s):</b>	Multi-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt
<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>	04/29/1994
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	1174 hours (Total, all aircraft), 42 hours (Total, this make and model), 1066 hours (Pilot In Command, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	PIPER	<b>Registration:</b>	CFSMO
<b>Model/Series:</b>	PA-60-602P PA-60-602P	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	62P087581650
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	12/02/1993, Annual	<b>Certified Max Gross Wt.:</b>	6315 lbs
<b>Time Since Last Inspection:</b>	97 Hours	<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	1841 Hours	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-540-A1A5
<b>Registered Owner:</b>	FCF BOWER, INC.	<b>Rated Power:</b>	350 hp
<b>Operator:</b>	FCF BOWER, INC.	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 650 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0830 EDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	1 Miles
Lowest Ceiling:	Broken / 600 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:			
Departure Point:	STRATFORD, ONT, CD (NM4)	Type of Flight Plan Filed:	IFR
Destination:	CHICAGO, IL (CGX)	Type of Clearance:	IFR
Departure Time:	0805 EDT	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Serious	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	4 Serious	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	FRANK S GATTOLIN	Report Date:	04/25/1995
Additional Participating Persons:	BUD WARNER; BELLEVILLE, MI		
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:pubinq@ntsb.gov">pubinq@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> .		

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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](#).