Aviation Investigation Final Report

Location:	FARGO, North Dakota	**Accident Number:**	CHI99LA219
Date & Time:	July 8, 1999, 10:15 Local	**Registration:**	N8451E
Aircraft:	Piper PA-32R	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	4 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported the airplane had 70 gallons of fuel (3.5 hours) on board at departure. The flight lasted approximately 3.0 hours. The pilot reported that during the pre-landing checklist, the left fuel gauge indicated 10 to 11 gallons when the engine quit. The pilot switched the fuel selector to the right fuel tank that indicated 8 gallons, but switched the fuel selector back to the left tank since the left fuel gauge indicated more fuel. An engine restart was attempted, but it would not start. The pilot flared several feet high, the stall warning horn sounded, and the airplane landed hard. The inspection of the airplane revealed that the left fuel tank contained .75 gallons of fuel. The right fuel tank was compromised during landing. The fuel gauges were checked by putting 5 gallons of fuel in the left fuel tank and 5 gallons of fuel in the repaired right fuel tank. The right fuel gauge read correctly. The left fuel gauge read 3 gallons. The pilot reported that the left fuel gauge had a history of reading inaccurately on an intermittent basis since 1996. The airplane's listed unusable fuel was 5 gallons.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: fuel starvation due to the pilot's fuel mismanagement and the pilot's misjudgment of the landing flare.

Findings

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

Findings
1. (C) FUEL SYSTEM - STARVATION
2. (C) FUEL MANAGEMENT - IMPROPER - PILOT IN COMMAND
3. ENGINE INSTRUMENTS,FUEL QUANTITY GAGE - UNRELIABLE

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

Occurrence #3: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
4. (C) FLARE - MISJUDGED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Factual Information

On July 8, 1999, at 1015 central daylight time, a Piper PA-32R, N8451E, was substantially damaged during a forced landing two miles from the Hector International Airport, Fargo, North Dakota. The 14 CFR Part 91 flight had departed Des Moines, Iowa, at 0715, en route to Fargo, which was an intermediate stop with a final destination of Lynn Lake, Manitoba, Canada. Visual meteorological condition prevailed and an IFR flight plan had been filed. The airplane was executing the ILS 35 approach when the engine started to sputter and then stopped. The airplane landed in a railroad switching yard. The commercial pilot and three passengers were not injured.

The pilot reported the airplane had 70 gallons of fuel on board due to weight and balance conditions when they departed Des Moines, Iowa. The pilot reported that each tank had 35 gallons of fuel. The pilot reported that he calculated he had 3.5 hours of fuel on board and that the flight would last 2.8 hours. He reported he switched between the left and right fuel tanks every 20 to 25 minutes. The flight lasted approximately 3.0 hours.

The pilot reported that he performed a pre-landing checklist prior to landing and he reported that the left fuel gauge indicated 10 to 11 gallons. He reported that he was on localizer and on glideslope with the airport in sight when the engine quit. The pilot reported that he switched the fuel selector to the right fuel tank that indicated eight gallons. The pilot reported that he thought the engine problem was related to the magneto so he switched the fuel selector back to the left tank since the left fuel gauge indicated more fuel. The pilot attempted to restart the engine but it would not start. The pilot executed a forced landing to a railroad switching yard. He reported he flared several feet high, the stall warning horn sounded, and the airplane landed hard. He reported the right wing was lower than the left wing and the airplane spun around to the right.

The inspection of the airplane revealed the left fuel tank had .75 gallons of fuel. The right fuel tank was compromised during landing. The airplane's pilot's information handbook indicated the unusable fuel was five gallons.

The fuel gauges were checked by putting in five gallons of fuel in the left fuel tank and five gallons of fuel in the repaired right fuel tank. The right fuel gauge read correctly. The left fuel gauge read three gallons.

The pilot reported that the left fuel gauge had a history of reading inaccurately on an intermittent basis since 1996. He reported it had been serviced by a repair facility, but that the left fuel gauge still had an intermittent problem.

Pilot Information

Certificate:	Commercial	**Age:**	64,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	May 6, 1999
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2590 hours (Total, all aircraft), 2000 hours (Total, this make and model), 2500 hours (Pilot In Command, all aircraft), 42 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8451E
Model/Series:	PA-32R PA-32R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R-8113122
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 8, 1999 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	24 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2179 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-540
Registered Owner:	JAMES R. BELL	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FAR ,900 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	10:15 Local	**Direction from Accident Site:**	350°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Broken / 1400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / 19 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	18°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DES MOINES , IA (DSM)	**Type of Flight Plan Filed:**	IFR
Destination:	(FAR)	**Type of Clearance:**	IFR
Departure Time:	07:15 Local	**Type of Airspace:**	Class D

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	46.929256,-96.830123(est)

Administrative Information

Investigator In Charge (IIC):	Silliman, Jim
Additional Participating Persons:	BOB HARRIS; FARGO , ND
Original Publish Date:	June 22, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46741