Aviation Investigation Final Report

Location:	Lincoln, Nebraska	**Accident Number:**	CHI06CA169
Date & Time:	June 26, 2006, 16:12 Local	**Registration:**	N983T
Aircraft:	Beech 35-33	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The airplane was substantially damaged during a forced landing following a loss of engine power on final approach. The pilot and one passenger were uninjured. The flight instructor sustained minor injuries. A second passenger sustained serious injuries. The instrument instructional flight departed about 1300. The accident occurred at 1612 while the airplane was on final approach to intended destination airport. The pilot stated that the flight proceeded normally with a deviation due to an active Military Operations Area (MOA) en route. He noted that winds aloft were about 10 knots from 9 to 10 o'clock relative to the direct flight route. The winds were estimated to add 10 to 15 minutes to the flight time. On final approach, about 1-1/2 miles from the runway, the "engine died with no warning." The pilot noted that the fuel selector was set to the right main tank at the time of the loss of power. The crew subsequently switched to the left tank and activated the auxiliary fuel pump in an unsuccessful effort to restore engine power. A post accident inspection recovered one quart of fuel from the right main fuel tank and 3-1/2 gallons from the left main fuel tank. The fuel tanks did not appear to have been compromised during the accident sequence. The pilot stated that the flight departed with the main tanks topped off, 44 gallons useable, and the auxiliary fuel tanks empty. The flight plan filed with the Federal Aviation Administration showed an estimated time en route of 3 hours and total fuel on-board of 4 hours and 30 minutes. The flight prior to the accident flight was over the same course, except in the opposite direction. According to information provided by the pilot and the fixed base operator at the departure airport, the prior flight lasted approximately 2 hours and 40 minutes. The airplane was fueled with 41 gallons. Performance data provided by the manufacturer indicated that the expected fuel burn at 7,000 feet pressure altitude was: 12.9 gallons-per-hour (gph) at 75-percent power; 11.5 gph at 65-percent power, and 9.8 gph at 55-percent power. The prior owner of the accident aircraft stated he normally planned a fuel burn of 14 gph when he flew the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to fuel exhaustion as a result of inaccurate fuel consumption calculations and inadequate monitoring of the remaining fuel quantity en route. A contributing factor was the inadequate supervision of the instructional flight by the flight instructor.

Findings

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

Findings
1. (C) FLUID,FUEL - EXHAUSTION
2. (C) FUEL CONSUMPTION CALCULATIONS - INACCURATE - FLIGHTCREW
3. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - FLIGHTCREW
4. (F) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)

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

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

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

The airplane was substantially damaged during a forced landing following a loss of engine power on final approach. The pilot and one passenger were uninjured. The flight instructor sustained minor injuries. A second passenger sustained serious injuries. The instrument instructional flight departed Tradewind Airport (TDW), Amarillo, Texas, about 1300. The accident occurred at 1612 while the airplane was on final approach to Lincoln Municipal Airport (LNK), Lincoln, Nebraska.

The pilot stated that the flight proceeded normally direct to LNK with a deviation due to an active Military Operations Area (MOA) en route. He noted that winds aloft were about 10 knots, from 9 to 10 o'clock relative to the direct flight route. The winds were estimated to add 10 to 15 minutes to the flight time. On final approach at LNK, about 1-1/2 miles from the runway, the "engine died with no warning." The pilot noted that the fuel selector was set to the right main tank at the time of the loss of power. The crew subsequently switched to the left tank and activated the auxiliary fuel pump in an unsuccessful effort to restore engine power.

A post accident inspection recovered one quart of fuel from the right main fuel tank and 3-1/2 gallons from the left main fuel tank. The fuel tanks did not appear to have been compromised during the accident sequence.

The pilot stated that the flight departed with the main tanks topped off and the auxiliary fuel tanks empty. Fuel capacity of both main tanks was 50 gallons total, of which 44 gallons were useable. The flight plan filed with the Federal Aviation Administration showed an estimated time en route of 3 hours and total fuel on-board of 4 hours and 30 minutes.

The flight prior to the accident flight was from LNK to TDW. The accident flight was the return flight. According to information provided by the pilot and the fixed base operator at TDW, the flight from LNK to TDW lasted approximately 2 hours and 40 minutes. The airplane was fueled with 41 gallons at TDW.

Performance data provided by the manufacturer indicated that the expected fuel burn at 7,000 feet pressure altitude was: 12.9 gallons-per-hour (gph) at 75-percent power; 11.5 gph at 65-percent power, and 9.8 gph at 55-percent power. The prior owner of the accident aircraft stated he normally planned a fuel burn of 14 gph when he flew the airplane.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	71,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	January 1, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 1, 2005
Flight Time:	3333 hours (Total, all aircraft), 374 hours (Total, this make and model), 2964 hours (Pilot In Command, all aircraft), 17 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Private	**Age:**	41,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 1, 2005
Flight Time:	82 hours (Total, all aircraft), 10 hours (Total, this make and model), 30 hours (Pilot In Command, all aircraft), 16 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N983T
Model/Series:	35-33	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	CD-190
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 1, 2005 Annual	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5177 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-470-J
Registered Owner:	On file	**Rated Power:**	225 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LNK,1201 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	15:54 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Few / 7000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / 20 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	27°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Amarillo, TX (TDW)	**Type of Flight Plan Filed:**	IFR
Destination:	Lincoln, NE (LNK)	**Type of Clearance:**	IFR
Departure Time:	13:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Lincoln Muni LNK	**Runway Surface Type:**	Asphalt;Concrete
Airport Elevation:	1219 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	35	**IFR Approach:**	Visual
Runway Length/Width:	5400 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor, 2 None	**Latitude, Longitude:**	40.851112,-96.759445

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Russell Timmerman; FAA-Lincoln FSDO
Original Publish Date:	October 3, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64206

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