



National Transportation Safety Board Aviation Accident Final Report

Location:	MACOMB, IL	Accident Number:	CHI00LA085
Date & Time:	03/01/2000, 1900 CST	Registration:	N9552T
Aircraft:	Cessna 210	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Minor, 1 None

Flight Conducted Under: Part 91: General Aviation - Ferry

Analysis

A Cessna 210 sustained substantial damage on impact with rough terrain during a forced landing following an in-flight loss of power. The pilot rated passenger reported minor injuries and the pilot was uninjured. A bank repossessed the airplane. The bank was informed that the engine was reportedly making metal. The bank's broker requested a ferry permit from the FAA for being out of annual only. An aircraft purchase agreement was completed between the bank, the aircraft broker, and the pilot rated passenger for the buyer of record. The agreement stated, 'Aircraft sold as-is, where is.' The bank's representative said that no representations were made to the purchasers, that no reports of the airplane status were passed on to the purchasers, and that the ferry permit was faxed to his location. A special flight permit limitation stated that '1. Carriage of persons other than essential crewmembers is prohibited.' The accident pilot said that his medical certificate had been expired at the time of the accident. The pilot rated passenger was an Airframe and Powerplant mechanic. The passenger endorsed the airplane's logbook, 'I have inspected this aircraft [and] found it to be airworthy for a one time ferry flight in accordance with this ferry permit.' The accident engine was examined and found to have a hole in its case near the number two cylinder. Disassembly revealed silver colored and silver and copper colored debris in the oil sump pan. The oil screen assembly was found secured by twisted safety wire. That safety wire was coated with oil like substance and a dust like substance was found adhering those twists. The screen and oil cooler contained debris. The crankshaft's cheek was found separated between the number two connecting rod and the number two main bearing. The cheek was discolored and deformed. The number two main bearing was found with its left half not in place. The aft crankshaft section was sent to the Materials Laboratory for detailed examination. The lab report stated, 'Fracture features for the fatigue region emanated from multiple origins on the surface of the aft radius of the second main journal, with primary initiation approximately in the center of the origin area. The boundary of the fatigue region was obliterated by mechanical damage. The surface of the aft second main journal cheek radius was scored and burnished. Ladder cracks were also observed in the cheek radius.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the inadequate maintenance inspection prior to the ferry flight by the pilot/mechanic rated passenger who endorsed the airplane as airworthy, the shift in the number two main bearing left half, and the fractured crankshaft. A factor was the rough/uneven terrain and the ferry permit's procedures not followed by the pilot in command.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE - NORMAL

Findings

1. (C) ENGINE ASSEMBLY, BEARING - SHIFTED
2. (C) MAINTENANCE, INSPECTION - INADEQUATE - OWNER/PILOT MECHANIC
3. (C) ENGINE ASSEMBLY, CRANKSHAFT - FRACTURED
4. (F) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings

5. (F) TERRAIN CONDITION - ROUGH/UNEVEN

Factual Information

HISTORY OF FLIGHT

On March 1, 2000, about 1900 central standard time, a Cessna 210, N9552T, piloted by a commercial pilot, sustained substantial damage on impact with rough terrain near a fence line during a forced landing following an in-flight loss of power near Macomb Municipal Airport, Macomb, Illinois. The ferry flight was operated under 14 CFR Part 91. Visual meteorological conditions prevailed at the time of the accident and the flight was not operating on a flight plan. The pilot rated passenger reported minor injuries and the pilot was uninjured. The flight originated from Joliet Regional Airport, near Joliet, Illinois, at about 1730 and was enroute to Wichita Mid-Continent Airport, near Wichita, Kansas.

A representative of a Fixed Base Operator (FBO), where the accident airplane was hangared at Frankfort Airport, near Frankfort, Illinois, stated, "The aircraft landed at the Frankfort airport in late June possibly early July. The pilot was a man who identified himself as only 'J.D.' J.D. had not made prior arrangements with airport management to hangar the aircraft prior to arriving. ... J.D. said that he was looking for a corporate size hangar so that he would have enough space so that a couple mechanics that he knew could change the engine. I informed him that this would not be possible unless he provided us with a certificate of insurance or he allowed our mechanics to assist in the engine change. ... Prior to this, he told me that the aircraft was producing a considerable amount of metal. ... I also recall that when J.D. landed, he was asking an aircraft that was in the pattern if there was any other aircraft in the pattern and if they would mind if he did a straight in approach, because he was concerned about having to do a go around." The representative said, "We were expecting to start the job in mid November and around that time, we moved the aircraft to our maintenance hangar. Towards the end of November, a man who represented himself as a private investigator that was working for an attorney ... came to the airport looking for N9552T. Later that day, I talked to [the attorney] on the phone. He informed me that he was hired by [a bank] to repossess N9552T and he faxed me a copy of replevin.... At this time, I showed the aircraft to the private investigator and informed him of the condition of the aircraft as reported by J.D. A few weeks later, I was approached by [a representative of the bank]. He was given access to the aircraft, which was still in the maintenance shop, and I told him exactly what J.D. had said about the condition of the aircraft. I told him that the aircraft was in the maintenance shop for an engine change and that the engine was producing metal. I offered our services to verify the condition of the aircraft. I also told him that I had a mechanic that could sign the aircraft off for a one-time ferry flight, if need be. He then informed me that he had talked to [an aircraft broker], located in Janesville WI, about taking a look at the aircraft and possibly flying it to Janesville to be sold. I told him that I thought that it would be wise to have the aircraft looked at by a mechanic before any flight. This was due to the reported condition of the aircraft and the fact that it had not flown in six months. His comment to me was, 'that he was sure that [the aircraft broker] knew what he was doing and that they might like to have a mechanic around whenever [the aircraft broker] came to Frankfort.'"

A Federal Aviation Administration (FAA) inspector stated, "On March 1, 2000 a ferry permit was requested by a banks agent for service.... The information given to this office indicated that the ferry permit was necessary to fly the aircraft which did not have a current Annual Inspection. The aircraft would be flown from Frankfort Illinois, to Los Angeles, California, where Annual Inspection would be performed by the new owner." (See appended FAA Form

8130-6, APPLICATION FOR AIRWORTHINESS CERTIFICATE.)

On March 1, 2000, an aircraft purchase agreement was completed between the bank, the aircraft broker, and the pilot rated passenger for the buyer of record. The agreement stated, "Aircraft sold as-is, where is." (See appended agreement.)

The representative of the bank said that no representations were made to the purchasers, that no reports of the airplane status were passed on to the purchasers, and that the ferry permit was faxed to his location.

A special flight permit limitations for this airplane stated that "1. Carriage of persons other than essential crewmembers is prohibited."

The FBO representative stated, "It just so happened that I was in Frankfort on March 1st and I saw a few guys looking at the airplane. It appeared that they were looking over the aircraft and its general condition." The airplane was flown from Frankfort Airport to Joliet Regional Airport, near Joliet, Illinois.

A lineman at the FBO at Joliet Regional Airport said, "The plane came in and a one of the men asked if we could jump start the plane if needed. I put 51 gallons of 100LL and it only holds 65 gallons. I also put 35-40 psi of air in each tire. They added 3 qts of 100-50 SAE Aeroshell oil and took two quarts for later. They had just gotten the plane from Frankfort airport and were still unsure on how to work somethings like the gear doors and such. I did have to jump their plane so they could leave. It was around 5:30 pm."

The pilot stated, "Departed Joliet IL approx 5:00 climbed to 4500 everything normal, then climbed to 6500, while cruising near Macomb, IL engine quit, called center, they suggested one airport then I spotted beacon and center said it was closer so I turned towards it maintained glide speed but landed short of runway in plowed field."

INJURIES TO PERSONS

The sheriff's accident report indicated "that [the passenger] broke his right middle finger."

PERSONNEL INFORMATION

The pilot was an instrument rated commercial pilot. He held a flight instructor rating for single engine airplanes. He stated that he had a total of 1,387 hours of flight time, 400 hours of flight time in this make and model, and 523 hours of flight time at night. He said that his medical certificate had been expired at the time of the accident. The pilot held an Airframe mechanics rating.

The pilot rated passenger was a private pilot and held an Airframe and Powerplant mechanic rating.

AIRCRAFT INFORMATION

The aircraft was a Cessna 210, production date of March 24, 1960, serial number 57352. According to airplane logbook entries, the last annual inspection was performed on February 5, 1999. On that date, the airplane had a recorded tachometer time of 4,198 hours. An entry in the logbook dated March 1, 1999 stated, "I have inspected this aircraft [and] found it to be airworthy for a one time ferry flight in accordance with this ferry permit." The entry was endorsed with the name and mechanics certificate number of the pilot rated passenger. (See appended logbook pages.)

METEOROLOGICAL INFORMATION

At 1853, the Burlington Regional Airport, near Burlington, Iowa, weather was: Wind 290 degrees at 4 knots; visibility 10 statute miles; sky condition clear; temperature 6 degrees C; dew point -1 degree C; altimeter 30.18 inches of mercury.

TESTS AND RESEARCH

On March 29, 2000, the accident engine, marked IO470E(13) s/n CS88696.73.E.R, was disassembled and examined at Macomb, Illinois. General observations revealed a hole in the case on its upper side near the number two cylinder. The examination revealed silver colored and silver and copper colored debris in the oil sump. (See appended photo.) The debris was consistent with bearing material. The debris was deformed in a curved fashion that was similar to the radius between the crankshaft journal and cheek. Chrome cylinders were found installed in the number one and four positions. The oil screen assembly was found secured by twisted safety wire. That safety wire was coated with an oil like substance and a dust like substance was found adhering between those twists. The removed screen revealed debris, similar in color to the debris found in the sump. The oil cooler was removed and debris, similar in color to the sump debris, was found. The crankshaft's cheek was found separated between the number two connecting rod and the number two main bearing. The mating surfaces of the separation revealed areas of discoloration and deformation of metal in a semicircular pattern. The aft section of the separated crank was found angularly displaced from its centerline position at the point of separation. The number two connecting rod cap was found deformed and held in its location by one of its two bolts. The number two main bearing was found with its right half in place and its left half not in place. The fuel pump was rotated by hand and expelled a liquid when rotated. Both magnetos produced spark when rotated.

The aft crankshaft section was sent to the National Transportation Safety Board's Materials Laboratory for detailed examination. The lab report stated, "Fracture features for the fatigue region emanated from multiple origins on the surface of the aft radius of the second main journal, with primary initiation approximately in the center of the origin area. The boundary of the fatigue region was obliterated by mechanical damage. The surface of the aft second main journal cheek radius was scored and burnished. Ladder cracks were also observed in the cheek radius." (See appended National Transportation Safety Board Materials Laboratory report.)

ADDITIONAL INFORMATION

The parties to the investigation included the FAA and Teledyne Continental Motors.

The engine parts were shipped back to an owner's representative

Pilot Information

Certificate:	Commercial	Age:	47, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Unknown Expired	Last FAA Medical Exam:	
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	1387 hours (Total, all aircraft), 400 hours (Total, this make and model), 1265 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N9552T
Model/Series:	210 210	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	57352
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	02/05/1999, Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-470E
Registered Owner:	CATHERINE JOHNSON	Rated Power:	260 hp
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Dusk
Observation Facility, Elevation:	BRL, 698 ft msl	Distance from Accident Site:	17 Nautical Miles
Observation Time:	1853 CST	Direction from Accident Site:	309°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	290°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	6°C / -1°C
Precipitation and Obscuration:			
Departure Point:	JOLIET, IL (JOT)	Type of Flight Plan Filed:	None
Destination:	WHICHITA, KS (ICT)	Type of Clearance:	None
Departure Time:	1730 CST	Type of Airspace:	Class G

Airport Information

Airport:	MACOMB MUNICIPAL AIRPORT (MQB)	Runway Surface Type:	
Airport Elevation:	705 ft	Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 1 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	EDWARD F MALINOWSKI	Report Date:	04/19/2001
Additional Participating Persons:	ROBERT E SCOTT; SPRINGFIELD, IL GEORGE M HOLLINGSWORTH; RESTON, VA		
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 pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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