Aviation Investigation Final Report

Location:	Frankfort, Michigan	**Accident Number:**	CEN09LA502
Date & Time:	July 31, 2009, 14:26 Local	**Registration:**	N337BA
Aircraft:	Cessna 337F	**Aircraft Damage:**	Substantial
Defining Event:	Miscellaneous/other	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was observed taxiing from the ramp to the runway with its rear engine not running and the rear propeller appearing to be feathered. The witness who observed this also saw the airplane begin its takeoff run on the runway, where it lifted off, appeared to stay low in ground effect, and then started a shallow climb. The airplane appeared very low over the trees at the end of the runway, and then appeared to stall and hit the trees. Earlier, another witness, who was preparing to depart himself, said he saw the pilot working on the airplane's rear engine. The witness stated that the pilot told him that an oil leak was coming from the flange where the oil filter attached and that it was a significant leak. The witness asked the pilot if he needed a local mechanic and the pilot explained he wanted to do the work himself. The pilot said he planned to get enough oil pressure in the rear engine to feather the propeller. The pilot stated that he planned to depart with only the front engine. An examination of the airplane wreckage and the engines revealed no evidence of any pre-impact anomalies, other than what was noted with the rear engine. A placard in the airplane stated, “Do not initiate single engine takeoff.”

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot intentionally attempting to take off with an inoperative engine, which lead to the airplane's inability to maintain airspeed in the initial climb, resulting in a stall and impact with trees.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	(general) - Attain/maintain not possible

Factual Information

History of Flight

Takeoff	Miscellaneous/other (Defining event)
Takeoff	Collision with terr/obj (non-CFIT)

On July 31, 2009, about 1426 eastern daylight time, a Cessna 337F, N337BA, operated by a private pilot, sustained substantial damage when the airplane impacted trees and terrain after takeoff from runway 33 (4,050 feet by 75 feet, asphalt) at the Frankfort Dow Memorial Field (FKS), near Frankfort, Michigan. A post impact ground fire occurred. Visual meteorological conditions prevailed at the time of the accident. The personal flight was being conducted under the provisions of 14 CFR Part 91 without a flight plan. The pilot on board the airplane sustained serious injuries. The flight was originating from FKS at the time of the accident and was destined for the Washington Island Airport, near Washington Island, Wisconsin.

A witness, who was preparing to depart from FKS, saw the pilot had the cowlings off the rear engine and was working on the accident airplane. The witness stated that the pilot told him that an oil leak was coming from the flange where the oil filter attached and it was a significant leak. The pilot explained that he was en-route to Washington Island, Wisconsin. The witness said, "I asked him if he needed a local mechanic as I knew there was a list of them available in the terminal. The pilot explained he wanted to do the work himself and had tools available at his hanger at Washington Island. He told me that he planned to get enough oil pressure in the rear engine to feather the prop, then he planned to depart with only the front engine. I inquired specifically whether the plane was capable of climbing out from take off and he said yes if the plane was lightly loaded. ... I asked him whether he planned to go straight across the lake or keep to the coastline around the bridge and the [Upper Peninsula] of Michigan even though it was much farther. He didn't indicate his intent."

Another witness, interviewed by a Federal Aviation Administration (FAA) inspector, stated that he saw the Cessna taxi from the ramp to runway 33 with the rear engine not running and the rear propeller appearing to be feathered. The airplane started to slowly accelerate until it appeared to be near the wind sock, where the aircraft aborted the run and rolled to the end of the runway. The airplane turned around and made a high power run back down runway 15, which also was aborted, and the airplane rolled to the end of the runway and turned around again. The airplane then began its takeoff run on runway 33 where it lifted off, appearing to stay low in ground effect, and then started a shallow climb. As the airplane reached the trees off the end of the runway, it appeared very low over the trees, and then appeared to stall and hit the trees.

The pilot held a private pilot certificate with single-engine, multi-engine, and instrument airplane ratings. His last application for a medical certificate was on June 3, 2005, and FAA

records showed that he indicated that he had accumulated 1,567 hours of total flight time.

The airplane, N337BA, was a 1972 Cessna 337F, Skymaster, serial number 33701434. It was a six-place, multi-engine, high-wing airplane powered by two six-cylinder, 210-horsepower, Teledyne Continental Motors (TCM) model IO-360-C engines which were installed in a push-pull configuration, one in front of the cabin and one behind it. The front engine had serial number 060710-R, and the rear engine had serial number 51888-71C.

An examination of the airplane wreckage and the engines revealed no evidence of any pre-impact anomalies, other than what was noted with the rear engine. A placard within the wreckage stated, “Do not initiate single engine takeoff.”

TCM service bulletin SB94-2, in part, stated:

Replacement of the oil filter adapter stud P/N 632373 with P/N 653489
or P/N 653490, as applicable, is required when:

1. The stud is found to be loose or installed beyond the stud setting height limits set forth in this service bulletin; or

2. The oil filter adapter is removed from the engine; or

3. The engine is overhauled.

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Previously, TCM received field reports that the oil filter mounting stud on the oil filter adapter housing of some engines have become loose allowing the stud to screw into the housing and provide less than the specified stud extension. To correct this situation, TCM has incorporated new design oil filter mounting studs. These studs are designed with an incomplete thread which ensures proper installation depth by providing a positive mechanical stop.

Once the stud indicated in SB94-2 was replaced, SB94-2 further directed that a .125 inch high "S" be stamped in an indicated location on the adapter flange to show that the bulletin has been complied with.

Cessna service bulletin MEB93-1, in part, stated:

Reports have been received of the engine oil filter adapter being found loose or separated from the engine due to improper installation of the adapter retaining nut or fretting of associated threads.

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COMPLIANCE

Mandatory

A. Initial Inspection:

Should be accomplished within the next 50 hours of operation or 12 months, whichever occurs first.

B. Repetitive Inspections:

1. An inspection of the oil filter adapter exterior for oil leakage and security shall be accomplished after any engine oil filter adapter maintenance, oil filter change or any other maintenance activity that would affect this area.

2. An inspection of the oil filter adapter attach threads and related engine case threads and bypass valve, if installed, shall be accomplished every 600 hours of operation, at major engine disassembly or engine overhaul.

The wreckage showed the front engine's propeller sustained S-bending blade damage and a separated blade tip. Photographs of the rear engine's propeller and spinner showed no damage consistent with rotation and the propeller in a position near feather. Further examination revealed that the adapter retaining nut was deformed consistent with tool marks. The adapter's flange was not marked with an "S" as indicated in SB94-2.

The pilot was sent an accident report form and a completed one has not been received by the NTSB.

Pilot Information

Certificate:	Private	**Age:**	54,Male
Airplane Rating(s):	Single-engine land; Multi-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 With waivers/limitations	**Last FAA Medical Exam:**	June 3, 2009
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	1567 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N337BA
Model/Series:	337F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	33701434
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	4630 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	CONT MOTOR
ELT:	C91 installed	**Engine Model/Series:**	IO-360-C
Registered Owner:	On file	**Rated Power:**	210 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:	FKS,633 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	14:37 Local	**Direction from Accident Site:**	150°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	20°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Frankfort, MI (FKS)	**Type of Flight Plan Filed:**	None
Destination:	Washington Isld, WI (2P2)	**Type of Clearance:**	None
Departure Time:	14:26 Local	**Type of Airspace:**	

Airport Information

Airport:	Frankfort Dow Memorial Field FKS	**Runway Surface Type:**	Asphalt
Airport Elevation:	633 ft msl	**Runway Surface Condition:**	
Runway Used:	33	**IFR Approach:**	None
Runway Length/Width:	4050 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	44.625278,-86.200836(est)

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	William M Naymick; Federal Aviation Administration; Grand Rapids, MI Michael L Koonce; Cessna Aircraft Company; Wichita, KS Jason D Lukasik; Teledyne Continental Motors, Inc.; Mobile, AL
Original Publish Date:	July 22, 2010
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Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74466