



Aviation Investigation Final Report

Location:	HOULTON, Wisconsin	Accident Number:	CHI00LA034
Date & Time:	December 1, 1999, 11:05 Local	Registration:	N2005J
Aircraft:	Taylorcraft F-21	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported, 'The engine developed a bad noise and vibration so I turned it off and looked for a place to land.' He landed in a farm field and the landing gear collapsed during rollout. The inspection of the engine revealed the #1 connecting rod was detached from the crankshaft and the connecting rod cap was missing. One rod cap bolt was intact although bent, and no nut was found on the bolt. The other rod cap bolt was broken with the nut portion missing. The #1 cylinder crankshaft journal was inspected. No discoloring, significant scoring, or other damage was noted. The rod bolts and nuts for cylinders 2, 3, and 4 were inspected for proper installation and torque. All nuts appeared to be properly installed. The nuts were torque checked at 40 lbs. No nuts moved at this torque setting. The overhauled engine had been installed on the airplane on July 15, 1998. The airplane had been flown approximately 50 hours since the major overhaul.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the mechanic failed to torque the rod cap bolt during the major engine overhaul. Factors relating to the accident included the rough field and the collapsed landing gear.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: UNKNOWN

Findings

1. ENGINE ASSEMBLY,CONNECTING ROD BOLT - LOOSE PART/BOLT/NUT/CLAMP/ETC
2. (C) MAINTENANCE,OVERHAUL,MAJOR - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. ENGINE ASSEMBLY,CONNECTING ROD BOLT - FAILURE,TOTAL

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: GEAR COLLAPSED

Phase of Operation: LANDING - ROLL

Factual Information

On December 1, 1999, at 1105 central standard time, a Taylorcraft F-21, N2005J, was substantially damaged during an emergency landing in a farm field near Houlton, Wisconsin, after the airplane experienced a loss of engine power. The 14 CFR Part 91 personal flight departed Lake Elmo (21D), Minnesota, at 1040, on a local flight. The private pilot was not injured. Visual meteorological conditions prevailed and no flight plan was filed.

The pilot reported he was returning to land at Lake Elmo. He reported, "The engine developed a bad noise and vibration so I turned it off and looked for a place to land. I was in farm country. Some smoke came into the cabin. I picked a clear field and landed wings level at stall speeds. The field was very rough. The wheels folded up and I slid 60 feet. Got out of the airplane after turning off the master."

An Airworthiness Inspector from the Federal Aviation Administration inspected the airplane. He reported the inspection of the engine revealed that the case was broken in the area of the number #1 cylinder. He reported, "The #1 connecting rod was detached from the crankshaft and the connecting rod cap was missing. One rod cap bolt was intact although bent, [and] no nut was found on the bolt. The other rod cap bolt was broken with the nut portion missing. The #1 cylinder crankshaft journal was inspected. No discoloring was noted. No significant scoring or other damage was noted." The inspector reported, "The rod bolts and nuts for cylinders 2, 3, and 4 were inspected for proper installation and torque. All nuts appeared to be properly installed. The nuts were torque checked at 40 lbs. No nuts moved at this torque setting."

The overhauled engine had been installed on the airplane on July 15, 1998. The airplane had been flown approximately 50 hours since the major overhaul. The airplane received an annual inspection on July 7, 1999. It had flown approximately 9 hours since the annual inspection.

Pilot Information

Certificate:	Commercial	Age:	70, 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):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	May 10, 1999
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	2026 hours (Total, all aircraft), 654 hours (Total, this make and model), 1836 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Taylorcraft	Registration:	N2005J
Model/Series:	F-21 F-21	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Utility	Serial Number:	1014
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	July 9, 1999 Annual	Certified Max Gross Wt.:	1500 lbs
Time Since Last Inspection:	9 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	883 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, activated	Engine Model/Series:	O-235-L2C
Registered Owner:	DALE O. RUPP	Rated Power:	118 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:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	2 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	50°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	LAKE ELMO , MI (21D)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	10:40 Local	Type of Airspace:	Class E

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:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	45.070087,-92.750045(est)

Administrative Information

Investigator In Charge (IIC):	Silliman, Jim
Additional Participating Persons:	JOHN LYONS; MINNEAPOLIS , MN
Original Publish Date:	March 2, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=47810

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).