National Transportation Safety Board
Aviation Accident Final Report

Location:	Holmen, WI	**Accident Number:**	CEN16FA295
Date & Time:	07/28/2016, 1138 CDT	**Registration:**	N54PM
Aircraft:	MOONEY M20J	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The commercial pilot was conducting a personal instrument flight rules cross-country flight in day instrument meteorological conditions. As the airplane neared the destination airport, the center air traffic controller working the flight cleared the airplane for an instrument landing system approach, vectored the airplane onto a course to intercept the localizer, and instructed the pilot to contact the airport's air traffic control tower. The pilot established contact with the tower controller and requested radar vectors to intercept the localizer. The tower was not radar-equipped so the tower controller instructed the pilot to change frequencies back to the center air traffic controller for radar vectors. The pilot responded to the instruction, but there were no further radio transmissions from the pilot on the center frequency or the tower frequency. The airplane impacted terrain on a south heading about 5.6 miles north/northeast of runway 18. The wreckage path length, separation of airplane structure, and component damage were consistent with a high-speed, uncontrolled impact with terrain. Examination of the airplane wreckage confirmed flight control continuity, and the propeller displayed signatures consistent with engine power at the time of impact. The attitude indicator gyro exhibited rotational signatures, and the engine-driven vacuum pump exhibited torsional overstress consistent with operation at the time of impact. The wreckage did not display any mechanical anomalies that would have precluded normal airplane operation. An autopsy of the pilot was not performed, and no toxicology samples were available for testing. The pilot's logbook showed that his most recent instrument proficiency check took place about 3 years before the accident and that he did not meet recent instrument flight experience requirements for flight in instrument meteorological conditions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's loss of airplane control during an instrument approach. Contributing to the accident was the pilot's lack of instrument flight proficiency.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)
	Recent instrument experience - Pilot (Factor)
Environmental issues	Ceiling/visibility/precip - Effect on operation

Factual Information

History of Flight

Approach-IFR initial approach	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On July 28, 2016, about 1138 central daylight time, a Mooney M20J, N54PM, impacted terrain near Holmen, Wisconsin, while being vectored for an instrument approach to runway 18 at La Crosse Regional Airport (LSE), La Crosse, Wisconsin. The commercial pilot sustained fatal injuries, and the airplane was destroyed by impact forces. The airplane was registered to and operated by the pilot under Title 14 *Code of Federal Regulations (CFR)* Part 91 as a personal flight that was operating on an instrument flight rules flight plan. Day instrument meteorological conditions prevailed at the time of the accident. The flight originated from Willmar Municipal Airport-John L Rice Field (BDH), Willmar, Minnesota, at 1024 and was destined for LSE.

A friend of the pilot stated that the pilot planned the flight a "few weeks" earlier. The friend reported that the pilot was going to pick him up at LSE and that they were going to fly to Appleton, Wisconsin, to buy tickets for the Oshkosh air show and then fly to Oshkosh, Wisconsin. The friend said that he received a text message from the pilot at 1013 stating that he was ready for takeoff from BDH and would be in the air in about 10 minutes. According to the friend, the flight departed at 1024. He stated that, according to Flightaware, the flight was to land at 1137.

Minneapolis Center provided radar vectors to the pilot for the final approach course for the instrument landing system (ILS) runway 18 approach and then was instructed to contact LSE Air Traffic Control Tower (ATCT). The pilot contacted LSE ATCT and reported that the airplane was over Mindi (Mindi was the locator outer marker for the ILS runway 18 approach and was located 6.6 miles north of runway 18.) The pilot then asked for radar vectors for the localizer. LSE ATCT instructed the pilot to maintain 4,000 feet and to contact Minneapolis Center for radar vectors. The pilot acknowledged the instruction. There were no further radio transmissions from the pilot.

A witness near the accident site stated that he heard the airplane going very fast about 1145 or 1150. He added that the weather was "bad," it was "misting." and the clouds were lower than 700 ft above ground level. He stated that he heard the engine running but could not tell where the engine sound was coming from. The engine then "quit." After the airplane's engine quit, 3 to 4 minutes elapsed and then he heard a "boom."

Pilot Information

Certificate:	Commercial	**Age:**	55, 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 2 With Waivers/Limitations	**Last FAA Medical Exam:**	01/01/2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	11/29/2015
Flight Time:	1455.5 hours (Total, all aircraft), 1019.8 hours (Total, this make and model), 1376.5 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 1.2 hours (Last 24 hours, all aircraft)		

The pilot's logbook showed that his last instrument proficiency check, as specified in 14 *CFR* Part 61 section 57(d), which included a 1.0 hour biennial flight review, was dated September 7, 2013, and was conducted in the accident airplane. The last filled-in page of the pilot's logbook had flight entries dated from August 1 to May 31 with no year(s) entered; the previous logbook page had its last entry dated July 31, 2014. There was an endorsement at the back of the pilot's logbook for a biennial flight review that was dated November 29, 2015.

Title 14 *CFR* 61.57(c)(1) states that a person may act as pilot in command under IFR or weather conditions less than the minimums prescribed for VFR only if:

"Within the 6 calendar months preceding the month of the flight, that person performed and logged at least the following tasks and iterations in an airplane, powered-lift, helicopter, or airship, as appropriate, for the instrument rating privileges to be maintained in actual weather conditions, or under simulated conditions using a view-limiting device that involves having performed the following—

(i) Six instrument approaches.

(ii) Holding procedures and tasks.

(iii) Intercepting and tracking courses through the use of navigational electronic systems."

Title 14 *CFR* 61.57(d) states that "a person who has failed to meet the instrument experience requirements of paragraph (c) for more than six calendar months may reestablish instrument currency only by completing an instrument proficiency check. The instrument proficiency check must consist of the areas of operation and instrument tasks required in the instrument rating practical test standards."

According to the Federal Aviation Administration publication, "Instrument Proficiency Check (IPC) Guidance," regulations for the biennial flight review require a minimum of 1 hour of ground training and 1 hour of flight training. The publication states that, while Part 61.57(d)

does not stipulate a minimum time requirement for the IPC, a good rule of thumb is to plan at least 90 minutes of ground time and at least 2 hours of flight time for a solid evaluation of the pilot's instrument flying knowledge and skills. The publication further states that, depending on the pilot's level of instrument experience and currency, the instructor administering the IPC may want to plan on two or more separate sessions to complete an IPC. For pilots with little or no recent instrument flying experience, it is a good idea to schedule an initial session in an appropriate aircraft training device.

Aircraft and Owner/Operator Information

Aircraft Make:	MOONEY	**Registration:**	N54PM
Model/Series:	M20J	**Aircraft Category:**	Airplane
Year of Manufacture:	1988	**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	24-1677
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	02/04/2016, Annual	**Certified Max Gross Wt.:**	2740 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3294 Hours as of last inspection	**Engine Manufacturer:**	Textron Lycoming
ELT:	C91 installed, activated	**Engine Model/Series:**	IO-360-A3B6D
Registered Owner:	Pilot	**Rated Power:**	200 hp
Operator:	Pilot	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	LSE, 656 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	1053 CDT	**Direction from Accident Site:**	20°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	Overcast / 700 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	360°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	21°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Willmar, MN (BDH)	**Type of Flight Plan Filed:**	IFR
Destination:	La Crosse, WI (LSE)	**Type of Clearance:**	IFR
Departure Time:	1024 CDT	**Type of Airspace:**	

Airport Information

Airport:	La Crosse Regional Airport (LSE)	**Runway Surface Type:**	
Airport Elevation:	656 ft	**Runway Surface Condition:**	
Runway Used:	N/A	**IFR Approach:**	ILS
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	43.978889, -91.213611

The accident site was located about 5.6 miles north/northeast of runway 18 at LSE at an elevation of 805 ft msl. The wreckage path was about 800 ft in length and oriented on a north/south heading in a grass/corn field. The fuselage, wings, empennage, control surfaces, engine, and propeller were present along the wreckage path. At the northern edge of the

wreckage path about a 35-ft-long by 6- to 10-ft-wide area of corn stalks were cut at an angle of about 45°, sloping down toward the east. The southern edge of the wreckage path contained the engine, which was separated from the airframe. The fuselage was located about 80 ft south of the cut corn stalks and was upright. The left and right wings were located about 6 ft north and 45 ft east of the fuselage, respectively. There was no evidence of soot or fire on the airframe, engine, or terrain.

Examination of the flight controls confirmed flight control continuity from the wing and empennage control surfaces to the cockpit controls through separations of the control system that were consistent with overload. The wing flaps were in the 0° position.

The base of the propeller hub was attached to the engine crankshaft with all the attachment bolts in place. The upper portion of the propeller hub was broken off, and its pieces were located along the wreckage path. The hub fracture surfaces exhibited 45° granular fracture faces consistent with overstress. Both propeller blades were separated from the hub. One propeller blade was buried near corn stalks near the northern edge of the wreckage path, and the other propeller blade was located about 35 ft from the corn stalks. Both propeller blades exhibited leading edge damage and chordwise scratching consistent with propeller rotation/engine power at impact.

The instrument panel was located about 37 ft south from the fuselage. The flight instruments were separated from the panel and were located along the wreckage path. The attitude indicator, which was vacuum driven, was broken apart exposing the gyro casing and gimbals. The gyro was separated from the casing and was not found during recovery of the airplane wreckage. The gyro casing showed circumferential smearing/scoring and was attached to the pitch and roll gimbals.

The engine-driven vacuum pump was attached to the engine accessory section. Removal of the vacuum pump showed that the vacuum pump's drive teeth were intact, but the drive was separated from its opaque plastic coupling, with separation features consistent with torsional overstress. The coupling exhibited counterclockwise witness marks (the drive rotates counterclockwise during engine operation as viewed from the rear of the engine).

The engine did not exhibit any mechanical anomalies that would have precluded engine operation.

Medical And Pathological Information

An autopsy was not performed, and no toxicology samples were available for testing. During the pilot's most recent aviation medical exam, no concerns were reported by the pilot and no significant issues were identified by the aviation medical examiner.

Administrative Information

Investigator In Charge (IIC):	Mitchell F Gallo	**Report Date:**	02/12/2018
Additional Participating Persons:	Ray Yank; Federal Aviation Administration; MKE FSDO; Milwaukee, WI		
Publish Date:	11/28/2018		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=93720		