

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN24FA024

## **AIRPLANE EXAMINATION**

10/27/2023

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## **A. ACCIDENT**

Location: Manitowoc, WI  
Date: 10/25/2023  
Time: 1829:29 CDT  
2329:29 UTC  
Airplane: Amateur-Built Lancair 320, N320P

## **B. AIRPLANE EXAMINATION**

|                   |                                          |
|-------------------|------------------------------------------|
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## **C. SUMMARY**

On October 25, 2023, at 1829 central daylight time, an amateur-built Lancair 320 airplane, N320P, was destroyed when it was involved in an accident near Manitowoc, Wisconsin. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 91 personal flight.

The pilot held an airline transport pilot certificate for multiengine land airplanes with commercial privileges for single engine land airplanes. He held type ratings for B-737, DC-9, CV-640, and CV-600 airplanes. He also held a flight instructor certificate with single-engine airplane, multiengine airplane, and instrument airplane ratings.

ADS-B data indicated that the accident flight originated from the Jesse Viertel Memorial Airport, near Boonville, Missouri, at 1545. The airplane flew north-northwest in a straight line toward the Wisconsin Door County peninsula. The airplane then descended and turned toward the Ephraim/Gibraltar Airport (3D2), near Ephraim, Wisconsin. The airplane did not land at 3D2 and proceeded toward the south-southwest. According to the airport manager at the Manitowoc County Airport, near Manitowoc, Wisconsin (MTW), the airport's pilot-controlled lighting

system activated at 1825. The airplane was about 15 miles north of the airport at this time. When the airplane was about 12 miles north of MTW, it turned to the south and became aligned with runway 17 at MTW. The accident site was located about 2.5 miles north of the approach end of runway 17 at MTW. The final ADS-B target was recorded at 1829:29. ADS-B data recorded the airplane's transponder code as 1200 for the entire flight indicating that it was operating as a visual flight rules flight.

Weather conditions recorded at MTW about 3 minutes prior to the flight were: Wind from 040 degrees at 5 knots; 1-3/4 miles visibility; mist; broken ceiling at 400 feet above the ground; overcast ceiling at 2,000 feet above the ground; temperature 13 degrees Celsius; dew point 13 degrees Celsius; altimeter setting 30.06 inches of mercury. About 16 minutes after the accident the recorded weather at MTW was: Wind from 040 degrees at 8 knots; 1 mile visibility; mist; overcast ceiling at 400 feet above the ground; temperature 13 degrees Celsius, dew point 13 degrees Celsius; altimeter setting 30.06 inches of mercury.

## **D. DETAILS OF THE EXAMINATION**

### **1.0 Accident Site**

The accident site consisted of trees and a small lake. The airplane initially impacted trees and most of the wreckage came to rest in the lake. Various airframe pieces were found around the perimeter of the lake. The Manitowoc County Sheriff's Office dive team assisted in removing the wreckage from the lake. The fuselage and engine were recovered from the lake to the lake shore.

### **2.0 Airframe Examination**

#### **2.1 Fuselage**

Once removed from the lake, the airframe was examined. The fuselage was broken into 2 pieces at a location just forward of the empennage. The broken tail piece remained partially attached to the forward fuselage by the rudder cables and elevator pushrod. The canopy frame was fractured but portions remained attached to the fuselage. Pieces of the canopy transparency were found in various locations around the lake shore. The forward fuselage was fractured but remained predominately intact.





## 2.2 Empennage

The vertical tail and rudder were intact and remained attached to the aft fuselage. All rudder hinges were intact. The right horizontal tail and elevator were intact, and all hinges were intact. The left horizontal stabilizer and elevator were separated at a point just outboard of the fuselage. Portions of the separated horizontal and elevator, including the stabilizer and elevator tips were found along the lake shore. The hinges were intact.





## 2.3 Wings

The wing design consisted of stub wings that extended to just outboard of the main landing gear. The outboard wing panels were attached to this stub section. On the accident airplane, the stub wing structure remained attached to the fuselage. The right stub wing upper skin was separated from the structure. The left stub wing had the upper and lower skins partially separated but remained partially attached at the trailing edge.

A portion of the right outboard wing main spar remained attached to the stub wing spar. The right wing outboard of the stub wing was fragmented. The right

wingtip navigation light was found at the edge of the lake.



A portion of the left outboard wing main spar remained attached to the stub wing spar. The left wing outboard of the stub wing was fragmented. The left wingtip from about 2 feet inboard of the tip was found along the lake shore. The left navigation light was found in the wingtip.



## **2.4 Landing Gear**

The landing gear was found in the retracted position.

## **2.5 Cockpit**

The cockpit was predominately intact but with significant impact damage. The left instrument panel contained a Dynon EMS-D120. The right instrument panel contained a Dynon D10A

## **2.6 Fuel/Fuel System**

The fuel selector handle was bent from impact forces and appeared to be positioned to the right-wing fuel tank. The selector had marking indicating each wing had a 16-gallon fuel capacity. Both wing fuel tanks were breached and fragmented with portions of the wing skins comprising the fuel tank boundaries found scattered around the lake. Both wing fuel caps and filler necks were found in the debris around the lake. The forward upper fuselage skin contained a fuel cap and appeared that it could have had a header fuel tank, but the fuel selector had no marking for a header tank.

## **2.7 Other Systems**

The elevator control system was intact from the control sticks to the elevator. There was a bend and kink in the elevator pushrod where the aft fuselage was broken, but the pushrod was initially one continuous piece when extracted from the lake. During the examination the pushrod separated into 2 pieces.

The rudder pedals and rudder cable system was intact except for 2 cable breaks. One cable break was at the left cockpit left rudder pedal, and the other break was at the right cable just ahead of the swaged fitting that attached the cable to the right side of the rudder. Both of these breaks exhibited signatures consistent with overload failure.

The fuel system consisted of 16-gallon wing tanks in each wing for a total capacity of 32 gallons. This was evidenced by the 3-position fuel selector in the cockpit that was labeled 16 gallons on each tank. The 3 positions were left-off right and the selector was found past the detent for the right position.

## **3.0 Engine Examination**

The engine was supported by its lifting eye and the upper set of spark plugs were removed. The engine was free to rotate and water was expelled from the cylinders upon initial rotation after removal from the lake. The engine rotated freely with no abnormalities in rotation detected. The No. 1 cylinder rocker cover was removed, and the engine again rotated. Movement of both No. 1 cylinder valves was noted during rotation. Thumb compression was verified on all 4 cylinders. Both magnetos were removed from the engine. The left magneto, which was equipped with an impulse coupling, produced spark on all spark plug leads with hand rotation of the input shaft. The right magneto, which was not equipped with an impulse coupling, did not produce spark with hand rotation of the input shaft. An electric drill was used to spin the input shaft at higher speed and spark was observed on all 4 spark plug leads. Engine throttle, mixture, and propeller control continuity was verified. The propeller control was connected but the mounting bracket was impact damaged. The fuel injection distribution cover was removed with no anomalies noted. Fuel was present inside the distributor.





#### **4.0 Propeller Examination**

The propeller was a 2-blade constant speed propeller with metal blades. Both blades had chordwise scratching on the forward faces of both blades. One blade exhibited rearward bending with a slight s-bend. The other blade exhibited rearward bending. Both blades exhibited slight twisting toward low pitch. Several tree branches were found that have slicing and paint transfer consistent with propeller impact.

#### **5.0 Pilot Information**

The pilot was a 57-year-old male who had ATP AMEL; COMMERCIAL PRIVILEGES ASEL, FLIGHT INSTRUCTOR; GROUND INSTRUCTOR; RATINGS B-737, DC-9. He reported civil flight experience that included 26,400 total and 300 hours in last six months as of his last FAA medical exam dated 8/26/2023. This pilot was 72 inches tall and weighed 226 lbs. at the time of the last exam. The pilot was issued a First Class Medical Certificate with the following limitation: "Must use corrective lenses to meet vision standards at all required distances."

## **6.0 Aircraft Information**

The airplane was a 2-place amateur-built airplane with a single low-wing and retractable landing gear. It seated 2 in a side-by-side arrangement. The canopy was a tip-forward design. The airframe was predominately constructed of sandwich composite construction with foam cores. It was powered by a Lycoming IO-320-B series engine.

According to FAA registration information the pilot purchased the airplane on March 16,2021.

## **7.0 Meteorological Information**

The METAR reports for the airport located 2.5 miles south of the accident site, before and after the accident time were:

SPECI KMTW 252345Z AUTO 04008KT 1SM BR OVC004 13/13 A3005 RMK AO2=  
SPECI KMTW 252326Z AUTO 04005KT 1 3/4SM BR BKN004 OVC020 13/13 A3006  
RMK AO2=

Submitted by:

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