



National Transportation Safety Board Aviation Accident Final Report

Location:	Marion, Indiana	Accident Number:	CEN18FA132
Date & Time:	April 2, 2018, 15:09 Local	Registration:	N511AC
Aircraft:	Cessna 525C	Aircraft Damage:	Substantial
Defining Event:	Ground collision	Injuries:	5 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

A single-engine airplane was taking off from runway 15 about the same time that a multi-engine business jet landed on a nearly perpendicular runway (runway 22). The single-engine airplane, piloted by a private pilot, was departing on a local flight. The jet, piloted by an airline transport pilot, was rolling down the runway following a straight-in visual approach and landing. The single-engine airplane collided with the empennage of the jet at the intersection of the two runways. Witnesses in the airport lounge area heard the pilot of the single-engine airplane announce on the airport's universal communications (UNICOM) traffic advisory frequency a few minutes before the accident that the airplane was back-taxiing on the runway. The pilot of the jet did not recall making any radio transmissions on the UNICOM frequency and review of the jet's cockpit voice recorder did not reveal any incoming or outgoing calls on the frequency. The pilots of both airplanes were familiar with the airport, and the airport was not tower controlled.

The airport had signage posted on all runways indicating that traffic using the nearly perpendicular runway could not be seen and instructed pilots to monitor the UNICOM. A visibility assessment confirmed reduced visibility of traffic operating from the nearly perpendicular runways. The reported weather conditions about the time of the accident included clear skies with 4 miles visibility due to haze. Both airplanes were painted white.

It is likely that the pilot of the jet would have been aware of the departing traffic if he was monitoring the UNICOM frequency. Although the jet was equipped with a traffic collision avoidance system (TCAS), he reported that the system did not depict any conflicting traffic during the approach to the airport. Although the visibility assessment showed reduced visibility from the departing and arrival runways, it could not be determined if or at what point during their respective landing and takeoff the pilot of each airplane may have been able to see the other airplane. In addition to the known reduced visibility of the intersecting runways, both airplanes were painted white and there was reported haze in the area, which could have affected the pilots' ability to see each other.

Probable Cause and Findings

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

The failure of both pilots to see and avoid the other airplane as they converged on intersecting runways. Contributing to the accident was the jet pilot's not monitoring the airport's traffic advisory frequency, known reduced visibility of the intersecting runways, and hazy weather condition.

Findings

Personnel issues	Lack of action - Pilot
Personnel issues	Lack of action - Pilot of other aircraft
Environmental issues	(general) - Contributed to outcome
Environmental issues	(general) - Contributed to outcome
Personnel issues	Lack of communication - Pilot

Factual Information

History of Flight

Landing-landing roll	Collision during takeoff/land
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On April 2, 2018, at 1709 eastern standard time, a Cessna 150 airplane, N5614E, collided with a Cessna 525 business jet, N511AC, at Marion Municipal Airport (MZZ), Marion, Indiana. The private pilot and one passenger onboard the Cessna 150 sustained fatal injuries, and the airplane was destroyed. The airline transport pilot and four passengers onboard the Cessna 525 were not injured, and the airplane was substantially damaged. Visual meteorological conditions prevailed in the area at the time of the accident. Both flights were being conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. The Cessna 525 flight originated from Jackson, Michigan, on an instrument flight rules (IFR) flight plan for the business flight and was performing a visual landing approach to runway 22; the Cessna 150 was departing runway 15 on a local visual flight rules personal flight.

The pilot of the Cessna 525 stated that he cancelled his IFR flight plan with air traffic control about 5 to 10 miles from MZZ. He stated that he did not recall announcing his approach to land at MZZ on the airport's universal communications (UNICOM) frequency and that the airplane's traffic collision avoidance system did not show any traffic at the airport. He also stated that he did not see the Cessna 150 during the straight-in visual approach to runway 22 nor did he see it during the landing roll. He landed the airplane on runway 22 and while approaching the intersection with runway 15 during the landing roll, the pilot thought that he saw something out of the right cockpit window; at the same time, he felt the airplane yaw. The pilot stopped the airplane, turned it around, taxied back toward intersection, and stopped. The four passengers aboard the Cessna 525 all reported that they did not see the Cessna 150 on the approach or during the landing roll.

There were three witnesses to the accident, all located in the airport lounge within hearing distance of the base UNICOM radio. Two of the witnesses stated that they heard the pilot of the Cessna 150 announce on the UNICOM a few minutes before the accident that the airplane was back-taxiing on runway 15. Each witness reported that the Cessna 150 had just become airborne when it collided with the empennage of the Cessna 525 at the intersection of runways 15 and 22. The Cessna 525 was equipped with a cockpit voice recorder (CVR). The CVR recording did not reveal any incoming or outgoing radio transmissions on the MZZ UNICOM frequency.

Pilot Information

Certificate:	Airline transport	Age:	70,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	May 1, 2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	June 24, 2017
Flight Time:	35437 hours (Total, all aircraft), 2537 hours (Total, this make and model), 35237 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

The pilot of the Cessna 150 held a private pilot certificate with a rating for airplane single-engine land. His most recent third-class Federal Aviation Administration (FAA) medical certificate was issued on May 3, 2017. According to entries in his pilot logbook, he had a total flight experience of 71.9 hours, with 10.7 hours in the Cessna 150.

The pilot of the Cessna 525 held an airline transport pilot certificate with ratings for airplane single- and multi-engine land and instrument airplane. He also held a flight instructor certificate with ratings for airplane single, and multi-engine. He reported a total flight experience of 35,437 hours, with 2,537 hours in the Cessna 525.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N511AC
Model/Series:	525C C	Aircraft Category:	Airplane
Year of Manufacture:	2012	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	525C0081
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	March 9, 2018 Annual	Certified Max Gross Wt.:	17100 lbs
Time Since Last Inspection:	13 Hrs	Engines:	Turbo jet
Airframe Total Time:	2537 Hrs at time of accident	Engine Manufacturer:	Williams
ELT:	C126 installed, not activated	Engine Model/Series:	FJ44-4A
Registered Owner:		Rated Power:	3621 Lbs thrust
Operator:	On file	Operating Certificate(s) Held:	None

The Cessna 150 was a two-seat, high-wing airplane manufactured in 1958. It was powered by a Continental O-200 engine equipped with a McCauley propeller. According to maintenance logbooks, its

most recent annual inspection was completed on January 1, 2018, at a total airframe time of 4,035 hours. The pilot had recently purchased the airplane on January 25, 2018. The airplane was painted white.

The Cessna 525 was a 10-seat, low-wing, business jet manufactured in 2012. It was powered by two Williams turbojet engines. According to maintenance logbooks, its most recent annual inspection was completed on March 9, 2018, at a total airframe time of 2,524 hours. The airplane was based at MZZ and was operated as a company airplane for Avis Industrial Corporation. The airplane was painted white.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	MZZ, 858 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	16:55 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear	Visibility	4 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.01 inches Hg	Temperature/Dew Point:	5°C / -1°C
Precipitation and Obscuration:			
Departure Point:	Jackson, MI (JXN)	Type of Flight Plan Filed:	IFR
Destination:	Marion, IN (MZZ)	Type of Clearance:	IFR
Departure Time:	16:30 Local	Type of Airspace:	Class G

The recorded weather at MZZ at 1655 included wind from 140°; at 9 knots, 4 statute miles visibility with haze, clear skies, temperature 5°C, dew point -1°C, and an altimeter setting of 30.01 inches of mercury.

Airport Information

Airport:	Marion Municipal Airport MZZ	Runway Surface Type:	Asphalt
Airport Elevation:	858 ft msl	Runway Surface Condition:	Dry
Runway Used:	15	IFR Approach:	None
Runway Length/Width:	3456 ft / 100 ft	VFR Approach/Landing:	None

The airport was not tower-controlled. At the departure and arrival ends of runways 15/33, there was a sign posted, "Traffic Using Runway 4/22 Cannot Be Seen, Monitor Unicom 122.7." At the departure and arrival ends of runways 4/22, there was a sign stating, "Traffic Using 15/33 Cannot Be Seen, Monitor Unicom 122.7."

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 None	Latitude, Longitude:	40.490833,-85.679725

The Cessna 150 came to rest on its right side in the grass adjacent to runway 15 on a 110° magnetic heading. The wreckage exhibited extensive fire damage. The left wing displayed leading edge crush damage along its span. All flight control surfaces were attached, and flight control cable continuity was established from the control surfaces to the cockpit. The wing flap and elevator trim positions could not be determined due to impact damage. The fuel selector handle and valve were found fire-damaged and their positions could not be determined. Both fuel tanks were compromised and fire-damaged. Impact damage prevented examination of the environmental systems, the transponder, and the emergency locator transmitter (ELT). The cabin section was destroyed by the postimpact fire. The two lap belt buckles were found latched. The engine had severe fire damage. Examination revealed no evidence of any pre-impact abnormalities of the airframe or engine.

The Cessna 525 was on runway 22 on a 40° magnetic heading. The empennage was separated from the fuselage and came to rest in the grass adjacent to runway 22. The rudder remained attached to the vertical stabilizer and the elevator remained attached to the horizontal stabilizer. The right engine nacelle displayed impact damage. Leading edge crush damage was observed on the vertical stabilizer. There was no damage to the rest of the airplane. Flight control cable continuity was established from the control surfaces to the cockpit. No pre-impact abnormalities were noted.

Additional Information

A small unmanned aircraft system was used to map and conduct viewpoint flights of the crossing runways, infield area, and impact area. About 1,400 high-resolution photos and videos were gathered and processed to create a visibility assessment. The assessment confirmed the visibility restrictions that were posted on airport signage at the approach and departure ends of the runways.

Medical and Pathological Information

The Northeast Indiana Forensic Center, Fort Wayne, Indiana, performed an autopsy on the Cessna 150 pilot; the cause of death was multiple blunt force injuries. Toxicology testing was performed by the FAA. Tests were negative for carbon dioxide and alcohol; 50.33 (ug/ml, ug/g) Acetaminophen (Tylenol) was present, which was not considered impairing.

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Dale Hoff; FAA FSDO; Indianapolis, IN Terry Dill; FAA FSDO; Indianapolis, IN Ricardo Arsenio; Cessna; Wichita, KS
Original Publish Date:	April 13, 2020
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=96969

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).