Aviation Investigation Final Report

Location:	Monclova, Ohio	**Accident Number:**	CEN19MA312
Date & Time:	September 11, 2019, 02:39 Local	**Registration:**	N24DR
Aircraft:	Convair 440	**Aircraft Damage:**	Destroyed
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 125: 20+ pax,6000+ lbs		

Analysis

The accident occurred during the second of a two-leg nonscheduled cargo flight. The initial leg of the flight departed the preceding evening. The pilots landed about 3.5 hours later for fuel and departed on the accident flight an hour after refueling. The flight entered a cruise descent about 39 miles from the destination airport in preparation for approach and landing. The pilots reported to air traffic control that they were executing a wide base and were subsequently cleared for a visual approach and landing. The landing clearance was acknowledged, and no further communications were received. No problems or anomalies were reported during the flight. The airplane was briefly established on final approach before radar contact was lost.

The airplane impacted trees and terrain about 0.5 mile short of the runway and came to rest in a trucking company parking lot. A postimpact fire ensued. Damage to the landing gear indicated that it was extended at the time of impact. The position of the wing flaps could not be determined. Disparities in the propeller blade angles at impact were likely due to the airplane's encounter with the wooded area and the impact sequence. No evidence of mechanical anomalies related to the airframe, engines, or propellers was observed.

A review of air traffic control radar data revealed that the airplane airspeed decayed to about 70 to 75 kts on final approach which was at or below the documented aerodynamic stall speed of the airplane in the landing configuration.

Although there was limited information about the flight crew's schedules, their performance was likely impaired by fatigue resulting from both the total duration of the overnight flights and the approach being conducted in the window of the circadian low. This likely resulted in the flight crew's failure to maintain airspeed and recognize the impending aerodynamic stall conditions.

Probable Cause and Findings

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

The flight crew's failure to maintain the proper airspeed on final approach, which resulted in an inadvertent aerodynamic stall and impact with trees, and terrain. Contributing to the accident was the flight crew's fatigue due to the overnight flight schedule.

Findings

Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Capability exceeded
Personnel issues	Aircraft control - Flight crew
Personnel issues	Lack of sleep - Flight crew
Personnel issues	Circadian rhythms or jetlag - Flight crew

Factual Information

History of Flight

Approach-IFR final approach	Collision with terr/obj (non-CFIT) (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On September 11, 2019, at 0239 eastern daylight time, a Convair 440 airplane, N24DR, was destroyed when it was involved in an accident near Monclova, Ohio. Both pilots were fatally injured. The airplane was operated under Title 14 *Code of Federal Regulations* Part 125 as a nonscheduled cargo flight.

The flight crew initially departed Laredo International Airport (LRD), Laredo, Texas, about 1838 central time the evening before the accident and arrived at Millington/Memphis Airport (NQA), Millington, Tennessee, about 2210 central time. The airplane was refueled before it departed NQA at 2314 for the accident flight.

Air traffic control position data depicted the airplane proceed direct to Toledo Express Airport (TOL), Toledo, Ohio, after departure from NQA at a cruise altitude of 7,000 ft mean sea level. About 39 miles southwest of TOL, the airplane entered a cruise descent in preparation for approach and landing. At 0225, the flight was handed off to TOL tower and instructed to descend to 3,000 ft. At 0233, the TOL tower controller instructed the flight crew to descend and maintain 2,100 ft. At 0235, the flight crew informed the controller that they were flying a wide base, and the controller cleared the pilots for a visual approach to runway 25. The airplane was about 5 miles southeast of TOL at that time.

At 0236, the controller cleared the pilots to land. The landing clearance was acknowledged, and no further communications from the airplane were received. No problems or anomalies were reported by the flight crew during the flight. The airplane became briefly established on final approach before radar contact was lost. The airplane impacted trees and terrain and came to rest in a trucking company parking lot short of the runway 25 arrival threshold.

A review air traffic control radar data performed by a National Transportation Safety Board (NTSB) aircraft performance specialist revealed that the airplane airspeed decayed to about 70 to 75 kts on final approach. The data depicted a flight path consistent with small bank angles through the end of the data. The airplane flight manual noted the zero thrust (power off) aerodynamic stall speed for the airplane in the landing configuration (landing gear and wing flaps extended) was about 75 kts.

Pilot Information

Certificate:	Airline transport	**Age:**	69,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	May 16, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 22, 2019
Flight Time:	8000 hours (Total, all aircraft), 10 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Commercial	**Age:**	72,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	September 3, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 22, 2019
Flight Time:	11287 hours (Total, all aircraft), 10 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

The pilots' logbooks were not available to the National Transportation Safety Board during the investigation. Flight times were obtained from their most recent Federal Aviation Administration medical certificate applications. Daily flight logs corresponding to the airplane, dated March 2018 to July 2019, indicated that the pilots were paired together for every flight during that time. The logs reflected 175.1 hours during the preceding 1 year, 3.9 hours within the preceding 90 days, and 0.2 hours within the 30 days preceding the accident. The pilots accumulated an additional 6 hours of flight time during the flights from LRD to NQA to TOL.

Aircraft and Owner/Operator Information

Aircraft Make:	Convair	**Registration:**	N24DR
Model/Series:	440 No Series	**Aircraft Category:**	Airplane
Year of Manufacture:	1957	**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	393
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	February 23, 2019 AAIP	**Certified Max Gross Wt.:**	49700 lbs
Time Since Last Inspection:	39.2 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	47742.4 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	C126 installed	**Engine Model/Series:**	R2800-52W
Registered Owner:	On file	**Rated Power:**	2200 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	Other operator of large aircraft
Operator Does Business As:	On file	**Operator Designator Code:**	FEIB

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	TOL,683 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	02:52 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.13 inches Hg	**Temperature/Dew Point:**	24°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Millington, TN (NQA)	**Type of Flight Plan Filed:**	IFR
Destination:	Toledo, OH (TOL)	**Type of Clearance:**	IFR
Departure Time:	23:14 Local	**Type of Airspace:**	Class C

Airport Information

Airport:	Toledo Express TOL	**Runway Surface Type:**	Asphalt
Airport Elevation:	683 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	10599 ft / 150 ft	**VFR Approach/Landing:**	Traffic pattern

Glidepath information to runway 25 was provided by a four-light precision approach path indicator (PAPI) system and an instrument landing system (ILS).

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	41.596389,-83.783889

The airplane struck trees about 0.65 mile northeast of the runway arrival threshold. The initial strikes were about 55 ft above ground level and consistent with a right bank angle of about 20°. Multiple tree breaks were observed along the flightpath through the wooded area east of the accident site. The airplane flightpath was oriented on a westerly heading and continued through the wooded area. The airplane came to rest in a trucking company parking lot about 0.50 mile from the threshold and near the extended centerline of the runway. A postimpact fire ensued.

The wreckage was intermingled with the trucks and trailers parked in the lot. The top and side of a parked tractor trailer exhibited propeller strikes. In addition, portions of airplane structure were located in the woods immediately east of the accident site and along the flightpath leading to the final wreckage location.

The main fuselage and cargo area (including the cargo), portions of the right and left wings, main landing gear, nose landing gear structure, flight deck, engine nacelles, and left engine exhibited extensive postimpact fire damage. Damage to the landing gear indicated that it was extended at the time of impact. The position of the wing flaps could not be determined due to the impact and postimpact fire damage. An examination of the airframe revealed no evidence of a preimpact structural failure.

The left (No. 1) engine and propeller assembly came to rest on the ground against the aft side of a semi-tractor trailer. Both the engine and propeller were damaged by impact forces and

the postimpact fire. The fire consumed the portions of the engine accessories and multiple cylinders, which prevented a full engine teardown. However, there was no evidence of a preimpact failure in the crankcase or cylinders that remained intact. The left propeller blades exhibited bending opposite the direction of rotation. The left propeller assembly was disassembled and no anomalies consistent with a preimpact failure or malfunction were observed. The left propeller blade shim spider impacts indicate that the propeller blades were at angles between 41-44°. The presence of multiple propeller strike marks at the accident site after the airplane had encountered the wooded area, including propeller strikes on a semi-tractor trailer, was consistent with the engine producing power at the time of impact.

The right (No. 2) engine was separated from the wing and came to rest in the trucking company parking area. The right propeller was separated from the engine consistent with impact forces and located in the main debris field. The fracture surfaces on the front case were jagged and dimpled consistent with overload failure. The right propeller blades exhibited bending opposite the direction of rotation, and teardown examination of the propeller assembly did not reveal any anomalies consistent with a preimpact failure or malfunction. The right propeller blade spider shim impact marks indicated that the blades were at angles between 26-27° when the airplane impacted the trees/ground. The overload fracture of the engine accessory case and the low propeller blade angles at the time of impact are consistent with the engine producing power.

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Zoltan Vidacs; FAA Flight Standards; North Olmsted, OH Douglas Zabawa; Pratt & Whitney; East Hartford, CT Brian Kerluke; Convair Technical Support Beverly Harvey; TSB
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