National Transportation Safety Board
Aviation Accident Preliminary Report

Location:	Daytona Beach, FL	**Accident Number:**	ERA18FA120
Date & Time:	04/04/2018, 0953 EDT	**Registration:**	N106ER
Aircraft:	PIPER PA28R	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Instructional		

On April 4, 2018, at 0953 eastern daylight time, a Piper PA-28R-201, N106ER, collided with terrain following an in-flight breakup shortly after takeoff from Daytona Beach International Airport (DAB), Daytona Beach, Florida. The airline transport pilot and private pilot were fatally injured, and the airplane was destroyed. The airplane was registered to and operated by Embry-Riddle Aeronautical University and operated under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Day visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the local flight, which departed DAB at 0927.

According to the operator, the private pilot was conducting his commercial pilot single-engine land practical test, and the airline transport pilot was acting as a designated pilot examiner (DPE).

Preliminary radar and voice communication data provided by the Federal Aviation Administration (FAA) revealed that the airplane flew to the southeast after departure; after maneuvering, it returned to DAB. The airplane entered the airport traffic pattern and performed a touch-and-go landing. While climbing out after the takeoff from runway 25L, air traffic control issued the pilot a discrete transponder code, and shortly after, the pilot asked if they could make a left turn to the crosswind leg of the traffic pattern. The controller responded by telling the pilot to continue upwind. Radar data indicated that the airplane climbed to 900 ft mean sea level at a groundspeed of 80 knots on a heading of 240° before radar contact was lost.

According to multiple witnesses, all located within 2,500 ft of the accident site, they saw the airplane flying normally, then watched as the left wing separated from fuselage. The fuselage impacted a field, while the wing descended separately and landed in an adjacent field.

According to FAA records, the pilot, age 25, held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. His most recent FAA second-class medical certificate was issued on June 17, 2016. He reported 201 hours of flight experience as of his most recent logbook entry on March 19, 2018.

According to FAA records, the DPE, age 61, held an airline transport pilot certificate with ratings for airplane single- and multiengine land. In addition, he held a flight instructor certificate with ratings for airplane single- and multiengine and instrument airplane. His most recent FAA second-class medical certificate was issued on April 5, 2017. At that time, he reported 27,600 total hours of flight experience.

According to FAA airworthiness and operator records, the airplane was manufactured on September 17, 2007 and was issued a standard airworthiness certificate in the normal category. It was a single-engine, low-wing, four-place airplane with a 200-horsepower, Lycoming IO-360-C1C6 four-cylinder engine and a McCauley two-blade, constant-speed propeller. The airframe had accumulated 7,690.6 hours of operation at the time of the accident, and 28.3 hours since its most recent annual inspection, which was completed on March 21, 2018.

A surface observation weather report taken at DAB at 0953 indicated the wind was from 260° at 7 knots, the visibility was 10 statute miles, and few clouds at 25,000 ft. The temperature and dew point were 24°C and 19°C, respectively, and the altimeter setting was 30.03 inches of mercury.

The debris path was about 450 ft long, and the debris path began about 2 statute miles southwest of the departure end of runway 25L. The first items along the debris path included a rubber wing root seal and small pieces of window plexiglass, followed shortly thereafter by the left wing. The main wreckage impacted the adjacent field about 200 ft from the wing on a magnetic heading about 230°.

The forward portion of the fuselage, including the engine, exhibited significant impact-related damage. There was a strong odor of fuel at the site, and a large area of grass surrounding the wreckage was discolored. The right wing remained attached to the fuselage. An impression of the right wing leading edge was observed in the ground, and the right wing leading edge surface was crushed aft to the wing spar along the entire span of the wing. The flap and aileron of the right wing remained attached. The right landing gear was in the down and locked position.

The vertical stabilizer, rudder, horizontal stabilator, and trim tab control surfaces remained attached. Rudder control continuity was confirmed from the rudder to the rudder pedals. Elevator control cable continuity was established through cuts made to facilitate the wreckage recovery from the control column to the elevator control surface. Aileron control continuity was confirmed from the right aileron to the control column. Continuity of left aileron control cables was traced from the control column through fracture features consistent with tensile overload separation to the aileron.

The left wing separated from the fuselage near the wing root and exhibited mid-span buckling of the surface skin. The left wing flap remained connected and moved freely with no resistance. The left main landing gear was in the down and locked position. The left wing fuel tank remained intact and contained about 15 gallons of fuel.

The fractured left wing main spar portions, along with the box assembly and attached inboard end of the right wing main spar, were forwarded to the NTSB Materials Laboratory for detailed

examination. Preliminary examination of the left wing main spar revealed that more than 80% of the lower spar cap and portions of the forward and aft spar web doublers exhibited fracture features consistent with metal fatigue (see figure 1).

Figure 1 - Left wing main spar lower cap fracture surface.

The remainder of the lower spar cap, spar web doublers, and upper spar cap displayed fracture features consistent with overstress fracture. The fatigue features originated at or near the outboard forward wing spar attachment bolt hole (see figure 2). None of the surfaces exhibited visible evidence of corrosion or other preexisting damage. The right wing also exhibited fatigue cracks in the lower spar cap at the same hole location extending up to 0.047-inch deep.

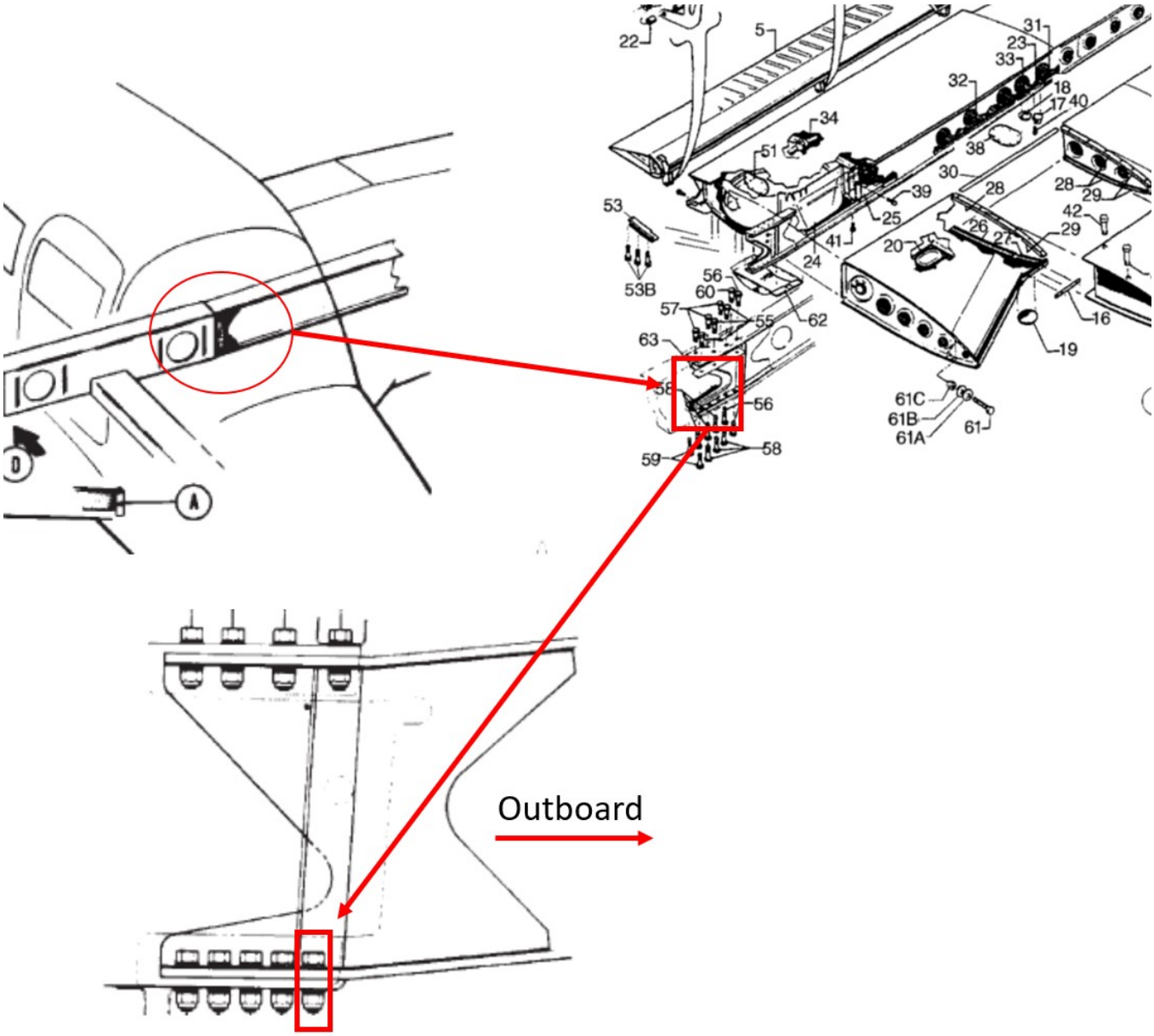

Figure 2 – Exploded view of left wing spar assembly and attachment bolts.

The wreckage was retained for further examination.

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	PIPER	**Registration:**	N106ER
Model/Series:	PA28R 201	**Aircraft Category:**	Airplane
Amateur Built:	No		
Operator:	Embry-Riddle Aeronautical University	**Operating Certificate(s) Held:**	Pilot School (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	DAB, 34 ft msl	**Observation Time:**	0953 EDT
Distance from Accident Site:	0 Nautical Miles	**Temperature/Dew Point:**	24°C / 19°C
Lowest Cloud Condition:	Few / 25000 ft agl	**Wind Speed/Gusts, Direction:**	7 knots, 260°
Lowest Ceiling:	None	**Visibility:**	10 Miles
Altimeter Setting:	30.03 inches Hg	**Type of Flight Plan Filed:**	None
Departure Point:	Daytona Beach, FL (DAB)	**Destination:**	Daytona Beach, FL (DAB)

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	29.158611, -81.085000

Administrative Information

Investigator In Charge (IIC):	Lawrence A Mccarter
Additional Participating Persons:	Matthew Rigsby; FAA AVP; Fort Worth, TX Damian Galbraith; Piper; Vero Beach, FL Thomas Bruno; ERAU; Daytona, FL
Note:	The NTSB traveled to the scene of this accident.