



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Council Bluffs, IA	<b>Accident Number:</b>	CEN16FA062
<b>Date &amp; Time:</b>	12/10/2015, 1153 CST	<b>Registration:</b>	N145JR
<b>Aircraft:</b>	PIPER PA46 500TP	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Controlled flight into terr/obj (CFIT)	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The private pilot was conducting a personal cross-country flight. Shortly after takeoff, the pilot told the air traffic controller that he needed to return to the airport due to an attitude heading reference system (AHRS) "miscommunication." Air traffic control radar data indicated that, at that time, the airplane was about 1.75 miles north of the airport on a southeasterly course about 2,000 ft. mean sea level. About 20 seconds after the pilot requested to return to the airport, the airplane began to descend. The airplane subsequently entered a right turn, which appeared to continue until the final radar data point. The airplane struck power lines about 3/4 of a mile from the airport while maneuvering within the traffic pattern. The power lines were about 75 ft. above ground level.

A postaccident examination of the airframe and engine revealed no preimpact mechanical malfunctions or failures that would have precluded normal operation. Although the pilot reported a flight instrumentation issue to air traffic control, the investigation was unable to confirm whether such an anomaly occurred based on component testing and available information. Examination of the standby airspeed indicator revealed that the link arm had separated from the pin on the rocking shaft assembly; however, it likely separated during the accident sequence. No other anomalies were observed. Functional testing indicated that the standby airspeed indicator was likely functional and providing accurate airspeed information to the pilot throughout the flight. Finally, examination of the left and right annunciator panel bulb filaments associated with the left fuel pump advisory revealed that they were stretched, indicating that the left fuel pump advisory indication annunciated at the time of the accident; however, this likely occurred during the accident sequence as a result of an automatic attempt to activate the left fuel pump due to the loss of fuel pressure immediately after the left wing separated.

Toxicology testing of the pilot detected low levels of three different sedating antihistamines; however, antemortem levels could not be determined nor could the underlying reason(s) for the pilot's use of these medications. As a result, it could not be determined whether pilot

impairment occurred due to the use of the medications or the underlying condition(s) themselves.

Although the pilot reported a flight instrumentation issue, this problem would not have affected his ability to control the airplane. Further, the pilot should have been able to see the power lines given the day/visual weather conditions. It is possible that the pilot become distracted by the noncritical anomaly, which resulted in his failure to maintain clearance from the power lines.

## Probable Cause and Findings

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

The pilot's failure to maintain clearance from power lines while returning to the airport after becoming distracted by a noncritical flight instrumentation anomaly indication.

### Findings

<b>Aircraft</b>	Altitude - Not attained/maintained (Cause)
<b>Personnel issues</b>	Aircraft control - Pilot (Cause) Attention - Pilot (Cause)

## Factual Information

### History of Flight

Approach-VFR pattern base	Controlled flight into terr/obj (CFIT) (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On December 10, 2015, at 1153 central standard time, a Piper PA46-500TP airplane, N145JR, impacted power lines and terrain near Council Bluffs, Iowa. The pilot was fatally injured. The airplane was substantially damaged. The airplane was registered to Airsea Charters Inc. and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the departure airport about the time of the accident, and the flight was operated on an instrument flight rules flight plan. The flight originated from Eppley Airfield (OMA), Omaha, Nebraska, about 1150 and was destined for Perry Stokes Airport (TAD), Trinidad, Colorado.

At 1150, the OMA tower controller cleared the pilot for takeoff and instructed him to fly a 320-degree heading. At 1152:12, the pilot stated that he "needed to return to Eppley." The controller instructed the pilot to enter a right downwind for runway 32R. When asked if he required any assistance, the pilot replied, "negative." The pilot reported that the AHRS had a "miscommunication." (Within the context of the avionics installed on the airplane, AHRS likely referred to the attitude and heading reference system.) At 1153, the controller inquired if the pilot could accept a short approach. The pilot accepted and was subsequently cleared to land. The controller indicated that another airplane was on a 4-mile final for the runway at that time. No further communications were received from the pilot.

Air traffic control (ATC) radar data depicted the airplane entering a right turn after takeoff. At the time that the pilot requested to return to the airport, the airplane was located about 1.75 miles north of the airport on a southeast course, at an altitude of about 2,000 ft mean sea level (msl). The airplane paralleled the runway on a downwind traffic pattern leg. About 20 seconds after requesting to return, the airplane began a descent. The airplane subsequently entered a right turn which appeared to continue until the final radar data point. The final data point was recorded at 1153:36, with an associated altitude of 1,100 ft msl. The data point was located about 400 ft northeast of the accident site.

A witness reported observing the airplane as he was driving southbound on Highway 29. The landing gear extended as the airplane was flying southbound at a "low" altitude immediately east of the highway. The airplane subsequently made a "sharp turn" to the west and struck power lines running along the east side of the highway. The airplane came to rest in the center median area between the north and southbound lanes of the divided highway about 3/4 of a mile east of the airport.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	65, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land; Single-engine Sea	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 With Waivers/Limitations	<b>Last Medical Exam:</b>	12/16/2014
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	08/16/2015
<b>Flight Time:</b>	4840 hours (Total, all aircraft), 280 hours (Total, this make and model), 4701 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Within the preceding one year, the pilot had logged 296.7 hours in airplanes and an additional 20.0 hours in a flight simulator/flight training device. Of that flight time, 280.7 hours were in the accident airplane. All of the pilot's logged flight time within 90 days of the accident was in the accident airplane. The pilot had completed the Federal Aviation Administration (FAA) Wings Program, Advanced Level – Phase 2, which met the requirements of a flight review.

## Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	PIPER	<b>Registration:</b>	N145JR
<b>Model/Series:</b>	PA46 500TP	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2003	<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	4697166
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	08/07/2015, Annual	<b>Certified Max Gross Wt.:</b>	5092 lbs
<b>Time Since Last Inspection:</b>	33 Hours	<b>Engines:</b>	1 Turbo Prop
<b>Airframe Total Time:</b>	1047.3 Hours	<b>Engine Manufacturer:</b>	P&W CANADA
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	PT6A-42
<b>Registered Owner:</b>	AIRSEA CHARTERS INC	<b>Rated Power:</b>	850 hp
<b>Operator:</b>	AIRSEA CHARTERS INC	<b>Air Carrier Operating Certificate:</b>	None

The current owner purchased the airplane in January 2011; the accident pilot signed the registration application. In January 2013, the airplane was involved in a nose landing gear

collapse and runway excursion event during landing. Maintenance records noted that the engine was removed, disassembled, inspected and repaired. It was subsequently reinstalled in August 2013. An overhauled propeller assembly was installed at that time.

Airplane records indicated that the most recent maintenance was completed on December 8, 2015, at 1,047.2 hours. Three discrepancies were noted related to that maintenance work, including (1) loss of airspeed indication at altitude; (2) propeller deice inoperative; and (3) air noise at the cabin door near the retract cable. The maintenance records indicated that the propeller heat control module was replaced and sealant was applied to the cabin door. In addition, the left and right moisture drains were checked; no water was observed. No further action was documented related to the loss of airspeed discrepancy. The airplane was subsequently returned to service.

The pilot's wife reported accompanying the pilot on a trip to Steamboat, Colorado, about one week before the accident. On December 6th, approximately one hour into the return flight to OMA, the airplane "started to act erratically." The pilot turned the autopilot off and descended to a lower altitude. The remainder of the flight proceeded without further incident. The pilot informed her that there was an inconsistency in the instrument indications that would need to be checked when they landed.

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual Conditions	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	OMA, 985 ft msl	<b>Observation Time:</b>	1152 CST
<b>Distance from Accident Site:</b>	1 Nautical Miles	<b>Direction from Accident Site:</b>	298°
<b>Lowest Cloud Condition:</b>	Few / 1500 ft agl	<b>Temperature/Dew Point:</b>	13° C / 3° C
<b>Lowest Ceiling:</b>	None	<b>Visibility</b>	10 Miles
<b>Wind Speed/Gusts, Direction:</b>	16 knots/ 23 knots, 290°	<b>Visibility (RVR):</b>	
<b>Altimeter Setting:</b>	29.65 inches Hg	<b>Visibility (RVV):</b>	
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Omaha, NE (OMA)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Trinidad, CO (TAD)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	1150 CST	<b>Type of Airspace:</b>	Class C

## Airport Information

<b>Airport:</b>	Eppley Airfield (OMA)	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	985 ft	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	32R	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	8500 ft / 150 ft	<b>VFR Approach/Landing:</b>	Full Stop; Precautionary Landing; Traffic Pattern

Glideslope guidance to runway 32R was available from a precision approach path indicator (PAPI). An instrument landing system (ILS) was also installed on runway 32R.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	41.292222, -95.867222

The accident site was located about 3/4 of a mile east of the OMA runway 32R threshold in the center median area between the north and southbound traffic lanes of Interstate 29. The median was an open area consisting of grass and vegetation. The airplane struck power lines and a support arm about 75 ft above ground level. The power lines were about 520 ft northeast of the accident site. The airplane came to rest inverted. The main wreckage consisted of the fuselage, inboard two-thirds of the right wing, empennage, and engine. The left wing had separated at the wing root and was located about 15 ft west of the main wreckage. The propeller had separated from the engine and was located about 30 ft north of the main wreckage. The right wingtip and fragments of the outboard right wing were located in the vicinity of the power lines.

A post-accident examination of the airframe and engine did not reveal any anomalies consistent with a pre-impact failure or malfunction. A detailed summary of the airframe and engine examinations is included with the docket material associated with this accident case.

## Medical And Pathological Information

An autopsy of the pilot was conducted at the Iowa State Medical Examiner's Office. The pilot's death was attributed to blunt force injuries sustained in the accident.

The FAA Civil Aerospace Medical Institute toxicology report stated:

Chlorpheniramine detected in Urine

0.007 (ug/ml, ug/g) Chlorpheniramine detected in Blood (Cavity)

Dextromethorphan detected in Urine

Dextromethorphan NOT detected in Blood (Cavity)

Dextrorphan detected in Urine

Dextrorphan detected in Blood (Cavity)

Diphenhydramine detected in Urine

Diphenhydramine detected in Blood (Cavity)

3.663 (ug/ml, ug/g) Doxylamine detected in Urine

0.085 (ug/ml, ug/g) Doxylamine detected in Blood (Cavity)

Chlorpheniramine, diphenhydramine, and doxylamine are sedating antihistamines available in a variety of over-the-counter allergy products and sleep aids. Dextromethorphan is a cough suppressant also available over-the-counter. It is not considered impairing in normal doses.

## Tests And Research

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Examination of the data acquisition unit revealed no engine exceedance events or engine trend monitoring entries related to the accident flight. Engine trend data are not recorded until the airplane is stabilized in cruise flight at or above 15,000 ft.

Examination of the annunciator panel light bulbs revealed that the left and right bulb filaments associated with the L Fuel Pump advisory indication were stretched. In addition, the right bulb filament associated with the Fuel Pressure caution indication exhibited minor stretching; the left bulb filament appeared to be intact. The remaining bulb filaments were either intact or broken, but none appeared to be stretched. A stretched filament is consistent with the bulb being illuminated at the time of the accident. According to the Pilot's Operating Handbook, with the electric fuel boost pumps in AUTO mode, the left and right boost pumps will be activated when the engine fuel pressure drops below 9 pounds per square inch gauge (psig) for any reason, and will remain on until the fuel pressure increases to 12 psig.

Examination of the standby airspeed indicator revealed that the link arm had separated from the pin on the rocking shaft assembly. No other anomalies were observed. The link arm was re-attached and the indicator was tested. Functional testing determined that the airspeed indications were within the test procedure limits with one exception: at 160 knots, during the decreasing airspeed portion of the test, the indication was 164 knots, which was one knot above the specification limit of 163 knots.

Examination of the attitude heading and reference system (AHRS) units, the air data computer (ADC) units, and the magnetometers did not reveal any anomalies; although, the testing was limited by the capabilities of the test bench. Each unit appeared to be functional and provided valid information. The AHRS units were tested independently and provided attitude (roll,

pitch, heading) and acceleration information. The output data appeared to correspond to the orientation of the unit. The ADC units provided valid airspeed and altitude information. The test bench did not support simultaneous testing of the units. As a result, evaluation of any potential miscompare annunciations was not possible.

## Additional Information

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Review of the avionics manufacturer's documentation did not reveal any annunciation defined as a "miscommunication" message. However, the primary flight display (PFD) may display a Miscompare Annunciation (MISCOMP) in relation to altitude, airspeed, pitch, or roll data. A MISCOMP annunciation is normally displayed when the airspeed received by each PFD differs by more than 10 knots. For pitch and roll attitude data, a MISCOMP message is normally displayed when the data differs by 5 degrees and 6 degrees, respectively. An altitude MISCOMP annunciation is normally provided when the altitudes differ by 200 feet or more.

## Administrative Information

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<b>Investigator In Charge (IIC):</b>	Timothy Sorensen	<b>Adopted Date:</b>	06/13/2017
<b>Additional Participating Persons:</b>	Cody Mason; FAA Flight Standards; Lincoln, NE Michael McClure; Piper Aircraft, Inc.; Mc Kinney, TX Thomas Berthe; Pratt & Whitney Canada; Longueuil, QC		
<b>Publish Date:</b>	06/13/2017		
<b>Note:</b>	The NTSB traveled to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92430">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92430</a>		

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