National Transportation Safety Board
Aviation Accident Final Report

Location:	Boynton Beach, Florida	**Accident Number:**	ERA13FA275
Date & Time:	June 8, 2013, 10:02 Local	**Registration:**	N217JP
Aircraft:	Cessna 340A	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Four minutes after taking off on an instrument flight rules flight, during an assigned climb to 4,000 feet, the pilot advised the departure air traffic controller that the airplane was having "instrument problems" and that he wanted to "stay VFR" (visual flight rules), which the controller acknowledged. As directed, the pilot subsequently contacted the next sector departure controller, who instructed him to climb to 8,000 feet. The pilot stated that he would climb the airplane after clearing a cloud and reiterated that the airplane was having "instrument problems." The controller told the pilot to advise when he could climb the airplane. About 30 seconds later, the pilot told the controller that he was climbing the airplane to 8,000 feet, and, shortly thereafter, the controller cleared the airplane to 11,000 feet, which the pilot acknowledged. Per instruction, the pilot later contacted a center controller, who advised him of moderate-to-heavy precipitation along his (northbound) route for the next 10 miles and told him that he could deviate either left or right and, when able, proceed direct to an intersection near his destination. The pilot acknowledged the direct-to-intersection instruction, and the controller told the pilot to climb the airplane to 13,000 feet, which the pilot acknowledged. The pilot did not advise the center controller about the instrument problems.

The airplane subsequently began turning east, eventually completing about an 80-degree turn toward heavier precipitation, and the controller told the pilot to climb to 15,000 feet, but the pilot did not respond. After two more queries, the pilot stated that he was trying to maintain "VFR" and that "I have an instrument failure here." The controller then stated that he was showing the airplane turning east, which "looks like a very bad idea." He subsequently advised the pilot to turn to the west but received no further transmissions from the airplane.

Radar indicated that, while the airplane was turning east, it climbed to 9,500 feet but that, during the next 24 seconds, it descended to 7,500 feet and, within the following 5 seconds, it descended to just above ground level (the ground-based radar altitude readout was 0 feet). The pilot recovered the airplane and climbed it northeast-bound to 1,500 feet during the next 20 seconds. It then likely stalled and descended northwest-bound into shallow waters of a wildlife refuge. Weather radar returns indicated that the airplane's first descent occurred in an area of moderate-to-heavy rain but that the second descent

occurred in light rain. The ceiling at the nearest recording airport, located about 20 nautical miles from the accident site, was 1,500 feet, indicating that the pilot likely climbed the airplane back into instrument meteorological conditions (IMC)before finally losing control.

The investigation could not determine the extent to which the pilot had planned the flight. Although a flight plan was on file, the pilot did not receive a formal weather briefing but could have self-briefed via alternative means. The investigation also could not determine when the pilot first lost situational awareness, although the excessive turn to the east toward heavier precipitation raises the possibility that the turn likely wasn't intentional and that the pilot had already lost situational awareness.

Earlier in the flight, when the pilot reported an instrument problem, the two departure controllers coordinated between their sectors in accordance with air traffic control procedures, allowing him to remain low and out of IMC. Although the second controller told the pilot to advise when he was able to climb, the pilot commenced a climb without further comment. The controller was likely under the impression that the instrument problem had been corrected; therefore, he communicated no information about a potential instrument problem to the center controller. The center controller then complied with the level of service required by advising the pilot of the weather conditions ahead and by approving deviations. The extent and nature of the deviation was up to the pilot with controller assistance upon pilot request. The pilot did not request further weather information or assistance with deviations and only told the center controller that the airplane was having an instrument problem after the controller pointed out that the airplane was heading into worsening weather.

Due to impact forces, only minimal autopsy results could be determined. Federal Aviation Administration medical records indicated that the 16,560-hour former military pilot did not have any significant health issues, and the pilot's wife was unaware of any preexisting significant medical conditions.

The wreckage was extremely fractured, which precluded thorough examination. However, evidence indicated that all flight control surfaces were accounted for at the accident scene and that the engines were under power at the time of impact.

The airplane was equipped with redundant pilot and copilot flight instruments, redundant instrument air sources, onboard weather radar, and a storm scope. The pilot did not advise any of the air traffic controllers about the extent or type of instrument problem, and the investigation could not determine which instrument(s) might have failed or how redundant systems could have been failed at the same time. Although the pilot stated on several occasions that the airplane was having instrument problems, he opted to continue flight into IMC. By doing so, he eventually lost situational awareness and then control of airplane but regained both when he acquired visual ground contact. Then, for unknown reasons, he climbed the airplane back into IMC where he again lost situational awareness and airplane control but was then unable to regain them before the airplane impacted the water.

Probable Cause and Findings

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

The pilot's loss of situational awareness, which resulted in an inadvertent aerodynamic stall/spin after he climbed the airplane back into instrument meteorological conditions (IMC). Contributing to the accident was the pilot's improper decision to continue flight into IMC with malfunctioning flight instrument(s).

Findings

Aircraft	Instrument panel - Failure
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Below VFR minima - Effect on operation
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Personnel issues	Situational awareness - Pilot

Factual Information

History of Flight

Enroute-climb to cruise	Flight instrument malf/fail
Enroute-climb to cruise	Loss of control in flight (Defining event)
Uncontrolled descent	Miscellaneous/other
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On June 8, 2013, at 1002 eastern daylight time, a Cessna 340A, N217JP, was destroyed when it impacted shallow waters of the Loxahatchee National Wildlife Refuge, near Boynton Beach, Florida. The commercial pilot was fatally injured. Instrument meteorological conditions prevailed in the vicinity, and the airplane was operating on an instrument flight rules (IFR) flight plan from Fort Lauderdale Executive Airport (FXE), Fort Lauderdale, Florida, to Leesburg International Airport (LEE), Leesburg, Florida. The business flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to excerpts from the Federal Aviation Administration (FAA) Air Traffic Control Accident Package:

The pilot was cleared to depart FXE utilizing the Fort Lauderdale Three Departure to ARKES intersection, then direct to BAIRN intersection, then as filed [direct to LEE], climb to 2,000 feet, expect 16,000 feet 10 minutes after departure.

At 0945, the pilot was cleared to take off from FXE runway 8, and to then turn left to heading 310 degrees magnetic. After takeoff, the pilot was cleared to contact Miami Departure Control.

At 0947, the pilot advised Miami Departure Control that the airplane was passing 600 feet for 2,000 feet, in a left turn, heading 310 degrees. The departure controller advised radar contact, then cleared the airplane to 4,000 feet, which the pilot acknowledged.

At 0949, the pilot advised that he was having "instrument problems," and that he would like to "head west and stay v-f-r if I can for the climb." The controller confirmed with the pilot that the airplane was on an IFR flight plan, advised him of traffic ahead, told him to fly heading 270, and directed him switch to the next departure frequency, which the pilot acknowledged.

At 0950, the pilot contacted the next departure controller, who directed him to climb the airplane to 8,000 feet. The pilot responded that he would do so once he was clear of a cloud, and reiterated that he had "instrument problems." The controller acknowledged that the pilot would like to keep the airplane at 2,000 feet, and told the pilot to let him know when he could climb the airplane.

About 30 seconds later, the pilot stated that he was climbing the airplane to 8,000 feet, which the controller acknowledged.

Just before 0954, the controller advised the pilot to turn the airplane right to a heading of 350 degrees,

which the pilot acknowledged.

Just before 0956, the controller advised the pilot to climb the airplane to 11,000 feet, which the pilot acknowledged, and at 0958, the controller advised the pilot to contact Miami Center, which the pilot also acknowledged.

The pilot then contacted Miami Center, and reported passing 6,800 feet for 11,000 feet. The controller provided the local barometric pressure, and advised the pilot of moderate to heavy precipitation along his route of flight for the next 10 miles. The pilot was given the option of deviating either left or right, and when able, to proceed direct to BAIRN.

The pilot responded "BAIRN direct when able."

At 0959:48, the controller instructed the pilot to climb the airplane to 13,000 feet, which the pilot acknowledged.

At 1001:44, the controller advised the pilot to climb and maintain 15,000 feet, but did not receive a response. After two more queries, the pilot stated that he was trying to maintain v-f-r, "I have an instrument failure here."

The controller then stated, "I'm showing you turning east. That looks like a really bad idea. If you can, turn back to the west to get out of this stuff a lot quicker, going to the west."

There were no further transmissions from the airplane.

Radar data indicated that at 1000:26, the airplane began a turn from a northerly heading approaching 90 degrees, toward the east, completing it about 1001:01. At 1001:11, the airplane reached its maximum altitude of 9,500 feet, still heading eastbound. By 1001:25, the airplane had descended to 8,100 feet, and by 1001:30, it had descended to 7,900 feet. At 1001:35, the altitude indicated 7,500 feet, and at 1001:40, the altitude indicated 0 feet (ground based altitude readouts are indicated in nearest 100-foot increments).

There was no radar indication at 1001:45, but a renewed eastbound track began with a 0-foot altitude at 1001:50, 300 feet at 1001:55, 600 feet at 1002:00, 1,100 feet at 1002:05 and 1,500 feet at 1002:10. The airplane then turned to the northeast, with the last radar contact at 1,400 feet, at 1002:15.

Pilot Information

Certificate:	Commercial	**Age:**	75
Airplane Rating(s):	Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	August 21, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	16561 hours (Total, all aircraft), 56 hours (Total, this make and model), 44 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft)		

The pilot, age 75, held a commercial pilot certificate with airplane single engine land, multi-engine land and instrument airplane ratings. He also held a flight instructor certificate and was previously a U.S. Air Force pilot.

According to the pilot's logbook, as of June 1, 2013, he had 16,560 total hours of flight time, including 11,166 hours in multi-engine airplanes, 2,702 hours of actual instrument flight time and 736 hours of simulated instrument flight time. In the previous 30 days, the pilot logged 4.3 hours of actual instrument flight time and 11.3 hours of simulated instrument flight time.

The pilot's latest FAA Second Class Medical Certificate was issued on August, 21, 2012, and a review of FAA pilot medical records did not reveal any significant issues.

The pilot's wife indicated that the pilot was on a business trip, but did not know his activities the day and night before the accident or who he may have met with. The pilot's wife also stated that that she was unaware of any significant preexisting medical conditions, and that there was no pressing need for the pilot to return home that day.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N217JP
Model/Series:	340A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	340A0435
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	September 1, 2012 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	4209 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:		**Rated Power:**	280 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

According to the aircraft logbook, the latest annual inspection was completed on September 1, 2012, at an airframe time of 4,209.4 hours. At that time, both engine logbooks indicated that 100-hour inspections were completed, with both engines having 1,392.7 hours of operation since major overhaul.

The aircraft logbook also noted that, as of December 12, 2012, with no airframe hours stated, the flight director was overhauled. Other electronics items were removed for "configuration, interface and alignment with flight director. Autopilot was ground checked and a successful flight check was performed."

On January 25, 2013, at 4,230.2 hours, the left auxiliary fuel pump was removed and replaced with an overhauled pump.

The last logbook entry, on March 18, 2013, at 4,238.6 hours, "complied with visual inspection AD2001-01-16 no defects noted." According to FAA website information, that airworthiness directive applied to exhaust systems on certain Cessna 300 and 400 airplanes.

Photographs of the cockpit, taken in 2009 by a previous pilot when the airplane's registration was N226LD, showed six primary flight instruments forward of the pilot's yoke; an attitude indicator (gyro) over a horizontal situation indicator (gyro) in the center, an airspeed indicator over a turn and slip indicator to the left of those, and an altimeter over a vertical speed indicator to the right. To the right of the altimeter was the autopilot mode selector. To the right of that was a Garmin GNS 530 nav/comm and below that, a Garmin GNS 430 nav/comm. To the right of the GNS 530 was a weather radar, and to the left of the GNS 430, an Insight Strikefinder.

In front of the copilot's yoke, there was another airspeed indicator. To the right of that was another attitude gyro, and the right of that, another altimeter.

According to FAA-H-8083-25, "Pilot's Handbook of Aeronautical Knowledge," an airspeed indicator measures the difference between pitot, or impact air pressure, and static pressure. The altimeter and

vertical speed indicator (rate-of-climb indicator) operate with static air only.

According to the airplane model's Pilot's Operating Handbook (POH),

The airplane had two independent pitot pressure systems, one for the pilot-side airspeed indicator, and one for the copilot-side airspeed indicator. Each system had its own pitot tube located on either side of the airplane nose cap. Heat to each pitot tube could applied via a cockpit switch.

Static pressure for the pilot-side airspeed, altimeter and rate-of-climb indicators was obtained via a normal static source aft of the main cabin door. In the event of normal static air blockage, an alternate source from within the airplane's nose compartment could have been selected by the pilot.

Copilot instruments received static pressure from a completely independent source.

The POH also noted that the proper operation of the airspeed, altimeter and rate-of-climb indicators could be determined by cross-checking the copilot instruments. In addition, "when a climb or descent is initiated, these instruments should indicate an appropriate change. If on change is indicated, it would be reasonable to assume that a static source blockage has occurred and that the alternate static source should be selected. If only the airspeed indicator appears to be affected when a climb or descent is initiated, it would be reasonable to assume that a pitot system blockage has occurred."

A vacuum system was installed to provide a source of vacuum for the vacuum instruments. The system included an engine-driven pump on each engine, a pressure relief valve for each pump, a common vacuum manifold with check valves, a vacuum air filter, and one vacuum suction gauge with failure indicator for left and right. Each vacuum pump would create a vacuum on the common manifold, exhausting the air overboard.

The POH further stated that vacuum air powered the pilot-side horizontal and directional gyros, and the copilot-side horizontal and directional gyros. If one vacuum pump failed, the manifold check valves would isolate the failed pump and the suction indication for the respective pump would move to the failed position. No corrective action was required by the pilot, as the system would automatically isolate the failed vacuum source, allowing normal operation via the remaining operative vacuum pump.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PBI,13 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	50°
Lowest Cloud Condition:		**Visibility**	2 miles
Lowest Ceiling:	Broken / 1500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/ Unknown
Altimeter Setting:	30.06 inches Hg	**Temperature/Dew Point:**	23°C / 23°C
Precipitation and Obscuration:	Heavy - Thunderstorm - Rain		
Departure Point:	Fort Lauderdale, FL (FXE)	**Type of Flight Plan Filed:**	IFR
Destination:	Leesburg, FL (LEE)	**Type of Clearance:**	IFR
Departure Time:	09:45 Local	**Type of Airspace:**	Class G

Surface weather, recorded at West Palm Beach International Airport, West Palm Beach, Florida, located about 060 degrees magnetic, 20 nm from the accident site, at 0953, included wind from 120 degrees true at 7 knots, visibility 2 statute miles, thunderstorm, heavy rain, ceiling 1,500 feet broken, 2,800 feet overcast, temperature 23 degrees C, dew point 23 degrees C, altimeter setting 30.07 inches Hg.

Ground based weather radar indicated that the airplane transitioned from an area of "green" intensity (30-35 dBZ reflectivity- light precipitation) to "yellow" (35-40 dBZ reflectivity – moderate precipitation), then "orange" (40-45 dBZ reflectivity- heavier precipitation) as it was first losing altitude. It then climbed back up into an area of "green" intensity precipitation.

Ground based weather radar also indicated that the airplane's turn to the right was toward heavier precipitation, while a straight course at that time would have initially kept the airplane in lighter precipitation.

There were no convective or non-convective Significant Meteorological Information (SIGMET) advisories active for the accident location at the accident time. There were also no Airmen's Meteorological Information (AIRMET) advisories active for the accident location at the accident time.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	26.51111,-80.404167

The wreckage was located in swampy terrain with water depths varying to about 5 feet. The initial impact point located in the vicinity of 26 degrees 30.48 minutes north latitude, 080 degrees, 24.59 minutes west longitude, or about 1,500 feet north of the last radar position. The wreckage was highly fragmented, and was dispersed along an approximately 320-degree magnetic heading. The first recognizable item at the initial impact point was the left tip tank.

The two engines were recovered, but without a propeller attached to either one. A propeller was eventually located, but was initially unrecoverable. Both engine propeller flanges were fractured, with some material missing as were some flange bolts, and other bolts were sheared off. Neither engine exhibited any evidence of pre-impact failure, nor did either vacuum pump. The cockpit vacuum pressure gauge was found frozen at 5.8 psi.

Subsequent to the departure of the investigative team, additional material, including the one propeller, was recovered. Examination of the additional wreckage occurred on November 5, 2013, with representatives from the airplane and engine manufacturers, with FAA oversight. At the time, all flight control surfaces were accounted for, but flight control continuity could only be partially confirmed due to the amount of fragmentation of the wreckage.

Pitot tubes were not observed, but a pitot tube cover was seen in a box that had been in the airplane.

Additional Information

Flight Planning

According to Lockheed Martin Flight Services (LMFS) Quality Assurance (QA), no [weather briefing] services were provided for N217JP. LMFS QA also noted that DTC (Data Transformation Corporation) DUATS (Direct User Access Terminal Service) also did not provide any services, but that CSC (Computer Sciences Corporation) did have a flight plan on file.

Air Traffic Control Services

During a recorded conversation following the accident between the "Miami Center Operations Manager in Charge" (OMIC), and an air traffic quality control group (QCG) official, the following was stated:

OMIC: "By the time he's telling him, think it's a bad idea to go to the right, the guy had already been

committed going to the right to begin with and got in trouble.

QCG: "All right, so we may have led him down the garden path."

OMIC: "Yeah, by giving him that option and mentioning you can go right or left."

FAA Order JO 7110.65 "Air Traffic Control" states, in part:

"2-6-4. WEATHER…SERVICES

a. Issue pertinent information on observed/reported weather and chaff areas by defining the area of coverage in terms of azimuth (by referring to the 12-hour clock) and distance from the aircraft or by indicating the general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

Weather significant to the safety of aircraft includes such conditions as funnel cloud activity, lines of thunderstorms, embedded thunderstorms, large hail, wind shear, microbursts, moderate to extreme turbulence (including CAT), and light to severe icing.

c. Use the term 'precipitation' when describing radar-derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word 'turbulence' in describing radar-derived weather.

g. When requested by the pilot, provide radar navigational guidance and/or approve deviations around weather or chaff areas. In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes."

Medical and Pathological Information

An autopsy was performed on the pilot at the District 15, State of Florida, Office of the District Medical Examiner, West Palm Beach, Florida. The cause of death was determined to be "multiple blunt traumatic injuries." Non-recovery of internal organs precluded complete examination.

Toxicological testing was performed at the FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma. No blood was available for testing. Ethanol was present in muscle and brain tissue with putrefaction (post-mortem decomposition) noted on the report.

Administrative Information

Investigator In Charge (IIC):	Cox, Paul
Additional Participating Persons:	James Williams; FAA/FSDO; Miramar, FL Ricardo Asensio; Cessna Aircraft Company; Wichita, KS Michael Council; Continental Motors; Mobile, AL
Original Publish Date:	March 24, 2015
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=87126