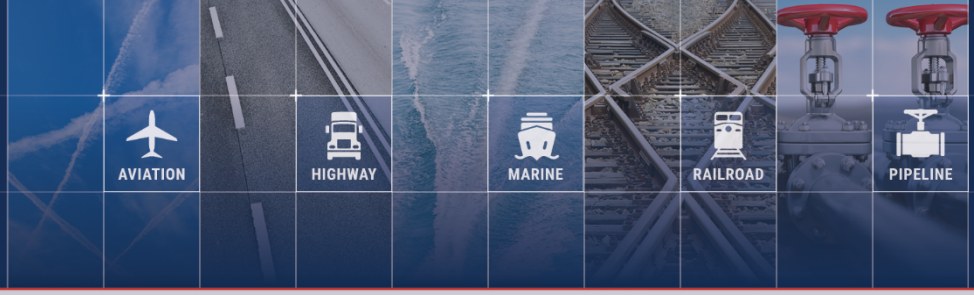

Aviation Investigation Factual Report

Location:	WEST MILTON, Ohio	**Accident Number:**	IAD97FA022
Date & Time:	November 15, 1996, 18:00 Local	**Registration:**	N8468H
Aircraft:	Piper PA-34-220T	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

HISTORY OF FLIGHT

On November 15, 1996, about 1800 eastern standard time, a Piper PA-34-220T, N8468H, owned and operated by the private pilot, collided with terrain in the vicinity of West Milton, Ohio, after declaring an in-flight emergency with approach control at Dayton International Airport, Dayton Ohio. The pilot and one passenger, the sole occupants, received fatal injuries, and the aircraft was destroyed. Visual meteorological conditions prevailed and no flight plan was filed. The personal flight departed Brookville Airpark in Brookville, Ohio about 1750, and was conducted under Title 14 CFR Part 91.

According to a witness, the pilot's flight instructor, the pilot and passenger were flown by him to Brookville Airpark to pick up the airplane which was dropped off on November 11, 1996 to have a navigational Global Positioning System (GPS) unit installed. Ground witnesses stated the pilot had difficulty starting his airplane because of a low battery. Additionally, he was observed after starting the airplane, taxiing a short distance and shutting down the engine, exiting the airplane, walking to the back of it and examining the elevators. According to the unicom operator he heard the pilot ask his instructor over the unicom frequency, what flap settings to use for takeoff and told his instructor that he was stopping to check his trim. Two minutes after the takeoff the pilot reported to his instructor that he was having problems with his trim.

After takeoff, the pilot stated to the flight instructor that he was having problems with his trim and was heading for Dayton. Before contacting the Dayton Airport, the pilot stated the airplane had a full deflection of elevator down trim and he was having difficulty holding his altitude. The instructor asked if he had pulled the circuit breaker for the trim and the pilot answered yes. According to the flight instructor, he and the pilot remained in communication with each other until he switched over to Dayton. Shortly after that the airplane impacted into a farm field in a near vertical attitude.

PERSONNEL INFORMATION

Entries in the pilot's logbook indicated that he obtained his private certificate and single engine land rating on January 19, 1988. He also held a multi-engine land rating which he obtained on September 23, 1996. A third class medical was issued to the pilot on April 3, 1995, with the limitation to possess glasses for near vision. Entries in the pilot's logbook indicated that he had accumulated 626 hours total flight time, 56 hours total multi-engine time in this airplane, with 13 hours as pilot in command. The last entry into the logbook was dated October 15, 1996. According to the flight instructor the pilot was meticulous about his airplane and always did a thorough pre-flight inspection. Additional pilot information is contained on page 3 of this

form, under the heading First Pilot Information.

AIRCRAFT INFORMATION

N8468H, a Piper PA-34-220T was a seven seat, twin engine, cabin class airplane. It was registered to the pilot on August 20, 1996. On November 11, 1996, the airplane was flown to Brookville Airpark to have a Global Positioning System (GPS) installed. The King KLN 89 GPS unit was wired to the number one VOR and the autopilot in such a manner that the GPS could be coupled to the autopilot. According to the technician, after installation the system was checked on the ground and found to be operational. The technician stated that a test flight was needed but had not been accomplished prior to the accident flight.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. Additional meteorological information may be obtained in this report on page 4 under the section titled Weather Information.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was found in an empty freshly plowed corn field, GPS Coordinates North 39 degrees 57 minutes, 09 seconds, and West 084 degrees, 22 minutes 24 seconds. The airplane wreckage was found in an open, harvested, and plowed farm field. A three foot deep crater was observed in the field, about 50 west of the main wreckage. The crater contained pieces of aluminum and composite material similar to that found in the main wreckage. Airplane debris was found scattered about 250 feet east of the main wreckage along a magnetic azimuth of about 077 degrees. The debris consisted mainly of papers and items of mass, i.e., radio's, instruments, electronic components, propeller blades, landing gear components, and engine components. Examination on scene of the King KNS 200 autopilot, and the King KLN 89 GPS, found them destroyed by impact.

The fuselage, wings, and empennage exhibited accordion like damage along the longitudinal axis of the airplane. Both wings, ailerons, flaps, vertical stabilizer, horizontal stabilizers and engines were separated from their attachment points. The left wing main spar was separated at its attachment points. The left main spar from the engine nacelle inboard to its attachment point was bent upwards about 70 degrees, and the entire main spar was twisted 45 degrees. The entire leading edge of the left wing was crushed aft to the main spar and ripped away including the rivet line. A portion of the left aileron was found attached to the center hinge. A portion of the left flap was found attached to the center attachment point.

The right wing main spar was separated at the outboard edge of the nacelle and at the wing attachment points. Nearly all wing skin was ripped from the wing. The nacelle was found crushed upwards, and the wing was bent upwards approximately 80 degrees from the nacelle, outboard. A portion of the flap remained attached but was bent upwards at the center

attachment point. The aileron had separated.

The top portion of the vertical stabilizer had separated, and the leading edge was crushed. The right horizontal stabilizer was bent downward about 90 degrees, and the entire leading edge was crushed aft. The left horizontal stabilizer was bent downward about 45 degrees. The stabilizer trim tabs were found attached. The stabilizer trim jackscrew was found fully extended, consistent with a full nose down position. The cabin, cockpit and empennage were destroyed by impact.

MEDICAL AND PATHOLOGICAL INFORMATION

Post mortem examinations of the pilot and the passenger were performed by the Montgomery County Coroner's Office on November 17, 1996. A toxicological examination of the pilot was performed by the Federal Aviation Administration on November 19, 1996. According to the report, post mortem ethanol was detected in the pilot's muscle fluid.

TESTS AND RESEARCH

The elevator trim jackscrew assembly was sent to the NTSB Materials Laboratory Division for examination. The jackscrew was found jammed in the extended position consistent with the elevator trim in the full nose down position. Examination of the assembly found that the jam was a result of impact damage.

The elevator and elevator trim cables were sent to the NTSB Materials Laboratory Division for testing. Both elevator cables appeared to have been cut at one end and had a clevis or fork on the other. Along both the cables, there was a turnbuckle and a red elevator trim block to which the autopilot trim cable was attached. Both were heavily stretched and deformed.

Six pieces of elevator trim cable were examined at the laboratory. Microscopic examination showed that all fractures of the cables were consistent with overstress separations. The broken ends of the wires showed typical overstress features such as 45 degree fracture planes, cup cone fractures, necking and dimpled fracture surfaces. Some of the trim cable showed deformations near the fractures consistent with rubbing of the wires or the wires being squeezed together under high loads. There were dents and reduced cross sections close to the fracture.

ADDITIONAL INFORMATION

Examination of the Pilot Operating Handbook under emergency procedures states that the electric pitch trim can be disengaged by:

Pressing the Autopilot Disconnect Trim Interrupt switch and hold down until recovery can be made, then turn off the Avionics Master Switch and manually retrim the airplane using the manual trim control wheel.

In addition to the disconnect emergency procedure there is a caution which states:

When the autopilot is engaged, manual application of a force to the pitch axis of the control wheel for a period of three seconds or more will result in the autotrim system operating in the direction to create a force opposing the pilot. This opposing mistrim force will continue to increase, as long as the pilot applies a force to the control wheel, and will ultimately overpower the autopilot. If the autopilot is disengaged under these conditions, the pilot may be required to exert control forces in excess of 50 pounds to maintain the desired aircraft attitude. The pilot will have to maintain this control force while he manually retrims the aircraft.

On November 19, 1996 an interview was conducted with the certified repairman who installed the GPS. The interview was conducted in the presence of a FAA Representative, Piper Representative, NTSB, and an Allied Signal Representative. The following is a summary of that interview.

He stated that he was a certified repairman, certificate number 2482031. He said that he had spoken with the pilot on Monday November 11, and informed him that he had received the GPS unit he had ordered and told him to bring his airplane to his facility and he would do the installation. The pilot delivered the airplane that afternoon. The repairman stated that he checked over the airplane and found that the pilot wanted the GPS installed into the center stack. He stated that there was no room and agreed to install the GPS above the Radar on the right hand side, and move the ADF to the bottom of the center stack. The repairman stated that he asked the pilot for the logbooks, and the pilot stated that he had forgotten them and would send them overnight. The repairman stated that they never came.

According to the repairman, Allied Signal sent the wrong GPS, they sent a KLM 89B instead of a KLM 89, so installation was delayed until the KLM 89 was delivered which was on Friday. He stated that the pilot wanted the GPS Coupled into the autopilot. The repairman said that he told the pilot he would show him how it worked when he came to pickup the airplane.

The repairman stated that he completed the installation on Thursday. He called the pilot and told him the paper work was not done, however he could fly without the GPS connected. He installed the GPS into the rack and pulled the breaker. He ground checked the GPS and autopilot. He said he saw the yoke turn right and left several times. He connected the GPS into the altitude encoder on the transponder to feed altitude information to the GPS. He said he did not run the trim nor did he check the trim or move the trim wheel. He said that when he tested the autopilot he did not notice any trim deviations. The repairman stated the he completed the installation of the GPS however, he stated that he pulled the breaker, but did not tie rap it. He said the paperwork was not completed from the FAA. He did a visual inspection of all the wiring under the panel, vacuumed the interior, and replaced the co-pilots seat.

The repairman stated that he had to leave to attend a funeral prior to the pilot arriving to pickup his airplane. He said he informed the pilot that he would not be there and to leave a

check at the front desk before he left with his airplane.

When asked if a test flight was required and performed on the airplane following the installation, the repairman stated that a test flight was required by the Federal Aviation Regulations (FAR), but had not been performed because the paperwork was not complete.

FAR 91.407(b) states no person may carry any person (other than a crewmember) in an aircraft that has been maintained, rebuilt, or altered in a manner that may have appreciably changed its flight characteristics or substantially affected its operation in flight until an appropriately rated pilot with a least a private pilot certificate flies the aircraft, makes an operational check of the maintenance performed or alteration made, and logs the flight in the aircraft records.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 3, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	626 hours (Total, all aircraft), 56 hours (Total, this make and model), 485 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8468H
Model/Series:	PA-34-220T PA-34-220T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-8233038
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	August 8, 1996 Annual	**Certified Max Gross Wt.:**	4200 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	TSIO-360-KB
Registered Owner:	JOHN LINCOLN WEST	**Rated Power:**	360 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	3°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BROOKVILLE (I62)	**Type of Flight Plan Filed:**	None
Destination:	LIMA (AOH)	**Type of Clearance:**	None
Departure Time:	00:00 Local	**Type of Airspace:**	Class C

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	39.950923,-84.319442(est)

Administrative Information

Investigator In Charge (IIC):	Wilson, Butch
Additional Participating Persons:	LEON A AWALT; DANIELLE PINNERI; REGAN H CAMPBELL;
Report Date:	November 18, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=28121