Aviation Investigation Final Report

Location:	Nashville, Pennsylvania	**Accident Number:**	ERA12FA120
Date & Time:	December 22, 2011, 17:25 Local	**Registration:**	N48BS
Aircraft:	Cessna 441	**Aircraft Damage:**	Substantial
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Toward the end of a 6 hour, 20 minute flight, during a night visual approach, the pilot flew the airplane to a left traffic pattern downwind leg. At some point, he lowered the landing gear and set the flaps to 30 degrees. He turned the airplane to a left base leg, and after doing so, was heard on the common traffic frequency stating that he had an "engine out." The airplane then passed through the final leg course, the pilot called "base to final," and the airplane commenced a right turn while maintaining altitude. The angle of bank was then observed to increase to where the airplane's wings became vertical, then inverted, and the airplane rolled into a near-vertical descent, hitting the ground upright in a right spin. Subsequent examination of the airplane and engines revealed that the right engine was not powered at impact, and the propeller from that engine was not in feather. No mechanical anomalies could be found with the engine that could have resulted in its failure. The right fuel tank was breeched; however, fuel calculations, confirmed by some fuel found in the right fuel tank as well as fuel found in the engine fuel filter housing, indicated that fuel exhaustion did not occur. Unknown is why the pilot did not continue through a left turn descent onto the final approach leg toward airport, which would also have been a turn toward the operating engine. The pilot had a communication device capable of voice calls, texting, e-mail and alarms, among other functions. E-mails were sent by the device until 0323, and an alarm sounded at 0920. It is unknown if or how much pilot fatigue might have influenced the outcome.

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 minimum control airspeed after a loss of power to the right engine, which resulted in an uncontrollable roll into an inadvertent stall/spin. Contributing to the accident was the failure of the airplane's right engine for reasons that could not be

determined because no preexisting mechanical anomalies were found, and the pilot's subsequent turn toward that inoperative engine while maintaining altitude.

Findings

Aircraft	(general) - Inoperative
Personnel issues	Incorrect action performance - Pilot
Personnel issues	Decision making/judgment - Pilot
Aircraft	Airspeed - Not attained/maintained

Factual Information

History of Flight

Approach-VFR pattern base	Powerplant sys/comp malf/fail
Approach-VFR pattern base	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On December 22, 2011, at 1725 eastern standard time (EST), a Cessna 441, N48BS, was substantially damaged when it impacted terrain near Nashville, Pennsylvania, while approaching York Airport (THV), Thomasville, Pennsylvania. The commercial pilot was fatally injured. Night visual meteorological conditions prevailed. The airplane had been operating on an instrument flight rules (IFR) flight plan from Long Beach Airport - Daugherty Field (LGB), Long Beach, California, to THV; however, the pilot had cancelled the flight plan and was proceeding visually via the airport traffic pattern at the time of the accident. The personal flight was operating under the provisions of 14 Code of Federal Regulations Part 91.

According to the pilot's wife, he was joining the rest of the immediate family, who had previously arrived via a commercial flight for the Christmas holidays with relatives.

Air traffic control information indicated that the airplane departed LGB about 1105 (0805 Pacific standard time) and climbed to 33,000 feet. About 1522, it climbed to 35,000 feet, and about 1639, it began a descent. At 1707, the pilot cancelled the IFR flight plan with New York Center, and at 1716, he terminated flight following with Harrisburg Approach Control.

Radar data indicated that at 1719, the airplane was about 24 miles west of THV at 1,700 feet. The airplane continued eastbound, and entered a 45-degree left downwind for runway 35. The airplane subsequently turned onto a left base, then slightly overshot runway centerline before commencing a right turn and disappearing from radar.

An airport employee stated that the pilot radioed for airport advisories, and about 4 or 5 minutes later, he saw the airplane on the [left] base leg for runway 35. When the airplane was about midway through the base leg, the pilot transmitted that he had an "engine out." The airplane did not then turn onto the final approach leg, but continued through it, heading east. The pilot then called "base to final," quickly followed by the airplane turning [right], to the south, then to the west. The employee saw the angle of bank increase to where the airplane's wings were vertical, then inverted, and saw the airplane then make at least 1 ½ "rolls" and descend in a near-vertical descent.

Another witness saw the airplane flying "awfully slow," and subsequently saw it turn to the left.

The airplane then nosed over and began to dive and spin, "snap rolling nose down, tail up." The witness also noted that although the sky was dark, it was not yet pitch black.

Measurements of plotted radar positions versus time indicated an approximate ground speed of 112 knots during the downwind leg, slowing to 102 knots at the beginning of the left base leg. During the subsequent right turn, the ground speed slowed to about 75 knots while the airplane maintained altitudes of 1,100 to 1,200 feet.

The airplane was equipped with an Enhanced Ground Proximity Warning System (EGPWS), which, according to the NTSB Specialist's Factual Report, records data on non-volatile memory for the 20 seconds prior to a warning and 10 seconds afterwards.

The report also noted that the event which most likely triggered the EGPWS recording was an "Excessive Rate of Descent Warning." Consistent data prior to the airplane's rapid descent included an uncorrected altitude of about 1,100 feet as the airplane was turning to the right, and a ground speed of about 78 knots through the beginning of the airplane's final descent.

PERSONNEL INFORMATION

The pilot, age 38, held a commercial pilot certificate with ratings for airplane single engine land and multiengine land airplane, and instrument airplane. According to the last entry in the pilot's logbook, appearing to have been written during the accident flight, the pilot had flown 1,409 total hours with 951 hours of that being in multi-engine airplanes and 463 "turbine" hours. Between the pilot's latest insurance application and his logbook, it was estimated that he had flown 502 hours in airplane make and model.

The pilot had last completed a flight review on January 28, 2011 in a "Cessna Conquest II." His latest FAA third class medical certificate was dated November 7, 2011.

The pilot had a communication device capable of voice calls, texting, email and alarms, among other functions. Emails were sent by the device until 0323 (EST), and an alarm sounded at 0920.

AIRCRAFT INFORMATION

The airplane was powered by two Honeywell (Garrett/AiResearch) TPE331-10N-535S turboprop single fixed shaft engines, flat-rated at 635 shaft horsepower each.

Each engine powered a four-bladed, hydraulically operated constant speed Hartzell propeller with feathering and reverse pitch capability.

According to the aircraft logbooks, the latest Phase 2 maintenance inspection was completed on July 1, 2011, at 5,890 airplane hours, and 514 hours since major overhaul of both engines. The hour meter indicated 2,874 hours at the time.

- Systems and Controls -

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

Minimum control speed (Vmca)

- "Vmca is the minimum flight speed at which the airplane is directionally and laterally controllable…in accordance with Federal Aviation Regulations. Airplane certification conditions include one engine becoming inoperative; not more than 5-degree bank toward the operative engine; takeoff power on [the] operative engine; landing gear up; flaps in takeoff position; and most critical center-of-gravity."

- The POH also noted that Vmca was 91 knots indicated airspeed (KIAS).

- The POH also included an FAA-approved Flight Manual Supplement for the installation of a "441 Vortex Generator Kit;" however, Vmca remained at 91 KIAS.

- The Supplement further noted that 76 KIAS was the maximum-weight stalling airspeed in the landing configuration.

Wing Flap System

- The POH stated that the hydraulically controlled flap actuator was controlled by the wing flap position switch which incorporated a select amount of wing flaps desired. "With the wing flaps set at UP, T.O., APPR or LAND positions, the corresponding inboard wing flap extensions are 0 degrees, 10 degrees, 20 degrees and 30 degrees.

- The outboard wing flaps were mechanically linked to the inboard sections, extending at a slower rate. When the inboard wing flaps were fully extended (30 degrees), the outboard wing flaps were extended 20 degrees.

Power Levers

Per the POH, '"The power lever controls engine operation in the beta and propeller governing modes. Beta mode is used during ground operation only. In beta mode, the propeller blade angles are controlled hydraulically by the power levers. In propeller governing mode, the power lever controls fuel flow, either electrically in normal mode operation or hydromechanically in manual mode operation, and the propeller blade angles are governor controlled to maintain proper engine speed.

Prior to landing in normal (computer) mode engine operation, with the condition levers in TAKEOFF, CLIMB AND LANDING and the power lever at flight idle, engine fuel flow assumes a scheduled value to obtain predictable drag during landing. In manual mode, the flight idle

position will provide significantly more drag due to the lower fixed fuel flow scheduling."

The POH also discussed the "Electronic Fuel Computers" (EFCs), also known as electronic engine controls (EECs) by the engine manufacturer. The POH noted that there was one EFC for each engine and that each EFC regulated fuel flow and engine speed through output signals to the fuel control unit and the propeller governor. The POH further noted that the EFC had a self monitoring feature that automatically transferred control from "normal" to "manual" in the case of loss of power lever electrical input, low voltage, and disagreement within the computer between the power requested and the output to the fuel control. The protection was restricted to specific operating ranges of the power lever and condition lever.

Negative Torque Sensing (NTS) System

Per the POH, the NTS system operated automatically, with no controls for the pilot.

"Negative torque occurs when the propeller drives the engine rather than the engine driving the propeller. When negative torque does occur, the propeller pitch will automatically increase toward the feather position to a level that will reduce the drag of the windmilling propeller. Negative torque can occur during any normal operation when the fuel flow schedule is excessively low and will not support the engine power requirements to maintain positive torque. Negative torque sensing will always occur during an engine failure before the propeller is feathered, and during low altitude normal mode operation at flight idle."

The Garrett TPE331-8/-9 Maintenance Manual further noted that, "the NTS system effects a movement of the propeller blades automatically toward their feathered position (should the engine suddenly lose power while in flight) and precisely modulates the propeller- blade pitch angle during a propeller-windmilled engine air-start."

Propeller and Control

Per the POH, each propeller was hydraulically actuated, constant speed and full-feathering.

"The propeller governing system is interconnected with the NTS system (and the fuel control system electrically in normal mode.) Engine oil pressure, feathering springs and propeller blade counterweights are used to set the propeller blade angles. Engine oil pressure is increased by the propeller governor and transferred to the propeller hub through a beta tube. The propeller counterweights and feathering spring attempt to move the propeller blades to full feather while the oil pressure attempts to move the propeller blades to reverse pitch. Propeller blade angle can thus be set as desired by use of the power and condition levers, which control the amount of oil pressure exerted in the propeller hub.

Feathering the propeller is achieved by dumping oil pressure in the propeller hub assembly. This can be accomplished by stopping the engine-driven oil pump (engine shutdown) or by positioning the condition lever to EMERG SHUTOFF. The EMERG SHUTOFF position of the

condition lever will actuate the manual fuel shutoff valve to shut down the engine and then dump the propeller oil pressure to feather the propeller."

Fuel Control

Per the POH, the fuel control system provided filtered and metered fuel to the engine.
"The fuel control system is regulated by the electronic fuel control for 'normal mode' operation, and by a manual backup system for manual mode operation.

When operating in manual mode, the pilot directly controls the engine fuel schedule with the power lever, which is mechanically connected to the propeller pitch control and hydro mechanical unit. When operating in manual mode, some of the refinements of normal mode are not available."

- Normal Procedures: Before Landing -

13. Wing Flaps – LAND below 180 knots.
14. Approach Speed – 99 KIAS at 9360 pounds.

- Emergency Procedures (Amplified Procedures) -

Engine Failure in Flight (Speed Below Vmca)

(Memory Items)
1. Power Lever – RETARD as required to stop turn.
2. Aileron and Rudder – AS REQUIRED toward operative engine to maintain straight-ahead flight.
3. Pitch Attitude – LOWER NOSE to accelerate above 91 knots.
(Non-Memory Item)
4. Accomplish procedures for Engine Failure During Flight (Speed Above Vmca)

Engine Failure During Flight (Speed Above Vmca)

(Memory Items)
1. Engine Power – ADJUST as required.
2. Inoperative Engine – DETERMINE. Idle engine same side as idle foot; also, torque and EGT will be low.
a. Condition Lever – EMER SHUT-OFF.
b. Firewall Shutoff – PUSH to close.
3. Landing Gear – UP.
4. Wing Flaps – UP above 115 KIAS.

METEOROLOGICAL INFORMATION

Weather, recorded at 1753, included calm wind, clear skies, visibility 10 statute miles, temperature 7 degrees C, dew point 4 degrees C, and altimeter 30.02 inches Hg.

According to U.S. Naval Observatory data, sunset occurred at 1645 and the end of civil twilight occurred at 1716. There was no moon illumination at the time of the accident.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located on open, rolling terrain, about 145 degrees magnetic, 1.56 statute miles from THV runway 35, in the vicinity of 39 degrees, 53.53 minutes north latitude, 076 degrees, 51.11 minutes west longitude. There was no wreckage path, and ground indentations matching the positions of the extended landing gear, and the nose and tail of the airplane were consistent with an almost vertical descent, and an initial ground impact heading of about 060 degrees magnetic. There were then no ground marks, consistent with the airplane having bounced once, then coming to rest heading about 090 degrees magnetic.

The airplane's tail section was broken off to the left, and the left wing outboard of the left engine was broken forward. The aft portion of the right wing root was pushed into the fuselage, and the landing gear were fractured upwards. The overall damage noted was consistent with an airplane having been in a right-turning flat spin when it initially impacted the ground.

There was no evidence of either an in-flight or post-flight smoke or fire.

Flight control continuity was confirmed from all flight control surfaces to the front of the damaged cabin area, where there was cable impingement. The flap handle was in approach, and the flap actuator position equated with the flaps being extended approximately 30 degrees.

The left engine throttle was near flight idle, and the right engine throttle was full forward; however, the effects of ground impact on their positions could not be determined. Both condition levers were in the EMERG SHUT-OFF position, but according to a witness, they were pulled to that position after initial responders smelled fuel. The responder who shut off the condition levers stated that he did not touch the throttles.

About 4 gallons of fuel were drained from the right fuel tank; however, the tank and the fuel hopper were breached. There was also an odor of fuel in the soil beneath the wing. Fuel quantity from the left fuel tank could not be determined due to the extent of damage to the tank and to the wing. When the wing was lifted, fuel flowed from a breach near the wingtip.

The right propeller did not exhibit any outward signs of significant power at impact. Two of the four propeller blades exhibited no damage while the other two had some bending, but no significant chordwise scratching. The right propeller did not appear to have been in feather at impact; however, by the following day, the blades had moved toward the feather position.

The left propeller exhibited significant damage. Two of the four propeller blades were broken off at the hub, while the third blade was dangling loose in the hub and the fourth blade was bent in a direction opposite normal rotation.

The hour meter indicated 2,955 hours.

Both engines, both propellers, and several other items were retained for further examination:

- Engines -

The engines were disassembled and examined at the manufacturer's facility under NTSB oversight. The extent of damage to the engines precluded any attempt to run them.

- The right engine exhibited some impact damage, but no debris ingestion. No preexisting mechanical anomalies were noted that would have prevented normal operation. In addition:

Fuel was found within the engine fuel pump filter housing; however, with fractured fuel lines and couplings, fuel was missing from within some of the lines.

There were static witness marks on the first stage compressor impeller shroud between the 9 and 12 o'clock positions aft, looking forward (ALF). There were also rub/chatter marks between the 3 and 6 o'clock positions that corresponded to slight leading edge scoring on four vanes of the first stage compressor impeller.

The first stage also revealed about 45 degrees of rotational scoring on the aft hub with corresponding scoring on the inner diameter of the crossover duct housing seal area.

The second stage compressor housing exhibited 90 degrees of rub with corresponding scoring on the leading edges of five second stage compressor impeller vanes.

The planetary gear assembly, Negative Torque Sensor (NTS) quill shaft, and the fuel pump drive shaft were undamaged.

- The left engine also exhibited impact damage, but with debris ingestion, and metal spray deposits on turbine rotors and stators. No preexisting mechanical anomalies were noted that would have precluded normal operation. In addition:

The first stage impeller vanes were bent opposite the direction of rotation.

Fuel was found within the engine fuel pump filter housing; however, a fractured fuel manifold precluded fuel system continuity.

Earthen debris was adhered the surfaces of the first stage compressor impeller shroud, and

there were rub marks from the 3 to 6 o'clock positions ALF, with corresponding rotational scoring on the impeller shroud line edge.

Rotational scoring was on the aft hub through 360 degrees with corresponding scoring on the crossover duct housing seal.

Rotational scoring was on the forward hub through 360 degrees with corresponding scoring on the inlet housing.

All first stage compressor vane leading edges were bent opposite the direction rotation at the tip.

The planetary gear mounting holes in the planet carrier mount feet were elongated with corresponding displacement of the mounting dowels in the diaphragm housing.

The NTS quill shaft was undamaged and the fuel pump drive shaft were undamaged.

- Propellers -

Both propellers were examined by the manufacturer's air safety investigator, under NTSB oversight, at the wreckage storage facility. According to the manufacturer's report:

- The right propeller was at low pitch position and not feathered, and blade damage indicated little or no rotational energy.

- The left propeller was also at low pitch position, not feathered, and was rotating, but at low power.

No preexisting mechanical anomalies that would have precluded normal operation were noted with either propeller.

- Propeller Governors -

Both propeller governors were examined at the manufacturer under NTSB oversight.

- The right engine governor could not be functionally tested due to impact damage. The main body was disassembled and inspected, with no preexisting anomalies noted that would have prevented normal operation.

- The left engine governor was functionally tested with no anomalies noted that would have prevented normal operation.

- Fuel Flow Indicator -

The fuel flow indicator, which was not original equipment, indicated a full fuel setting of 475 gallons, and that 370 gallons were used.

An estimate of fuel consumption was also made by the engine manufacturer which indicated sufficient fuel was onboard to complete the trip, and the fixed base operator where the airplane last obtained fuel prior to the flight indicated that the fuel tanks were topped off.

- Fuel Flow Divider Functional Tests -

The fuel flow dividers from both engines were functionally tested with oversight provided by the FAA Los Angeles Certification Office. Pretesting inspection of both dividers' filter revealed no debris present in either screen, with subsequent testing of both dividers yielding "satisfactory" results.

- Electronic Fuel Controls -

The EFCs (EECs) were first tested under NTSB oversight:

- The right engine EFC initially indicated that the 80 percent speed output could not be driven by the unit.

- In addition, no adjustment could be made of the maximum speed or maximum power potentiometers of the unit.

- After removal and reinsertion of the A6 circuit card assembly, the maximum speed and power adjustments functioned properly, and all testing of the EFC was completed with satisfactory results.

- Unknown, was whether the anomaly had been present before the accident or as a result of it. According to Honeywell personnel, had the anomaly been present prior to the accident, "the engine would have remained at a flight idle power setting regardless of the physical position of the power lever above flight idle." In addition, "this would not have caused a shutdown of the engine nor would it have resulted in a speed reduction below the pilot's setting for the approach (likely 100 percent if following the published approach procedures.)"

- The left engine EFC was minimally tested to provide a comparison to the anomaly noted in the right EFC.

The EFCs were later partially disassembled under FAA oversight:

- For the right engine, the P1 connector on the motherboard was slightly displaced along one edge, and the P9 connector was displaced along one edge. During a continuity check of the P9 connector and pins 2A and 2B, it was found that a small movement of the wire bundle attached to the P9 connector resulted in a discontinuity in the connection. It is unknown whether the

anomalies noted occurred before the accident, or occurred as a result of it.

- For the left engine, no anomalies were noted that would have precluded normal operation.

- Annunciator Panel -

Both annunciator panels were examined, with some evidence of filament sagging on several bulbs consistent with aging. There were also a number of bulbs found with broken filaments; however, there was no evidence of hot filament stretching found on any of the bulbs.

- Fuel Pumps -

The right main and right auxiliary fuel pumps were tested at the airframe manufacturer under FAA oversight. Both pumps produced similar pressure and flow results within allowed range utilizing less than maximum amperage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was completed on the pilot at Forensic Pathology Associates, Allentown, Pennsylvania, with cause of death determined to be "blunt impact."

Toxicological testing was subsequently performed by the FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma, with no anomalies noted.

ADDITIONAL INFORMATION

According to FAA Advisory Circular 61-21A:

"When an engine fails after becoming airborne, the pilot should hold heading with rudder and simultaneously roll into a bank of at least 5 degrees toward the operating engine. In this attitude, the airplane will tend to turn toward the operating engine, but at the same time, the asymmetrical power resulting from the engine failure will tend to turn the airplane toward the 'dead' engine."

The Circular also states, "Due to variations in performance, limitations, etc., of many light twins, no specific flightpath or procedure can be proposed that would be adequate in all engine-out approaches. In most light twins, however, a single-engine approach can be accomplished with the flightpath and procedures almost identical to a normal approach and landing."

Pilot Information

Certificate:	Commercial	**Age:**	38,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 7, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 28, 2011
Flight Time:	1409 hours (Total, all aircraft), 502 hours (Total, this make and model), 1207 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N48BS
Model/Series:	441	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4410125
Landing Gear Type:	Retractable - Tricycle	**Seats:**	10
Date/Type of Last Inspection:	July 1, 2011 AAIP	**Certified Max Gross Wt.:**	10415 lbs
Time Since Last Inspection:	105 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	5995 Hrs at time of accident	**Engine Manufacturer:**	Garrett (Honeywell)
ELT:	Installed	**Engine Model/Series:**	TPE331-10N
Registered Owner:	On file	**Rated Power:**	635 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	THV,495 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	325°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	7°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Long Beach, CA (LGB)	**Type of Flight Plan Filed:**	IFR
Destination:	Thomasville, PA (THV)	**Type of Clearance:**	None
Departure Time:	08:05 Local	**Type of Airspace:**	

Airport Information

Airport:	York THV	**Runway Surface Type:**	Asphalt
Airport Elevation:	495 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	35	**IFR Approach:**	None
Runway Length/Width:	5188 ft / 100 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	39.892223,-76.851943

Administrative Information

Investigator In Charge (IIC):	Cox, Paul
Additional Participating Persons:	David Sakmar; FAA/FSDO; Harrisburg, PA Henry Soderlund; Cessna Aircraft Company; Wichita, KS John Eller; Honeywell International; Phoenix, AZ Tom McCreary; Hartzell Propeller; Piqua, OH
Original Publish Date:	April 25, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82559