



# Aviation Investigation Final Report

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<b>Location:</b>	Galena, Kansas	<b>Accident Number:</b>	CEN13LA280
<b>Date &amp; Time:</b>	May 14, 2013, 10:50 Local	<b>Registration:</b>	N57719
<b>Aircraft:</b>	Piper PA-36-285	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Powerplant sys/comp malf/fail	<b>Injuries:</b>	1 Minor
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

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## Analysis

Shortly after takeoff, the pilot noticed a decrease in the engine's oil pressure. The engine then sustained a total loss of power, and the airplane collided with terrain during the forced landing. An examination of the engine revealed that the No. 2 piston had failed. In addition, each of the spark plugs had two washers installed, instead of one, and the oil filter contained many metal particles. The two washers likely altered the detonation characteristics of the pistons, causing them to overheat. As the No. 2 piston degraded, metal particles collected in the oil filter. Maintenance records indicate that the engine was overdue for a recommended oil change; the deteriorating piston would likely have been detected during an oil change. The mechanic who performed the last annual inspection was not aware that additional spark plug washers had been installed on the engine.

## Probable Cause and Findings

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

The loss of engine power due to improper maintenance by an unknown individual that led to the degradation and deterioration of the No. 2 piston, which was undetected because of overdue maintenance.

## Findings

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<b>Aircraft</b>	Recip eng cyl section - Failure
<b>Personnel issues</b>	(general) - Other

## Factual Information

### History of Flight

<b>Enroute-cruise</b>	Powerplant sys/comp malf/fail (Defining event)
<b>Enroute-cruise</b>	Loss of engine power (total)
<b>Emergency descent</b>	Collision with terr/obj (non-CFIT)

On May 14, 2013, about 1050 central daylight time, a Piper PA-36-285 airplane, N57719, conducted a forced landing near Galena, Kansas. The commercial pilot sustained minor injuries. The airplane sustained substantial damage to the fuselage. The airplane was registered to and operated by Four States Sky Ag Inc. under the provisions of 14 Code of Federal Regulations Part 137 as an agricultural application flight. Visual meteorological conditions prevailed for the flight, which operated without a flight plan. The local flight departed the Swalley Airpark (78KS), Baxter Springs, Kansas, about 1045.

According to a statement provided by the pilot to the responding Federal Aviation Administration (FAA) inspectors, the airplane had departed 78KS and he had just began to level off when he noticed a decrease in oil pressure. The engine experienced a total loss of power before the pilot could set up for a forced landing. The airplane collided with terrain in an open field.

An examination of the engine conducted by the FAA inspectors revealed that the number 2 cylinder piston had failed. A large amount of aluminum particles were observed in the oil and the oil filter. Each spark plug had two spark plug washers. Maintenance records determined that the recommended oil change time had been exceeded. The mechanic that performed the last annual inspection stated he had not installed the extra spark plug washers and was not aware of their presence on the engine. It could not be determined who installed the additional spark plug washers.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	48
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Single
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	June 23, 2012
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>			

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N57719
<b>Model/Series:</b>	PA-36-285	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	36-7660041
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	1
<b>Date/Type of Last Inspection:</b>	January 24, 2013 Annual	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>	176.2 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2958.8 Hrs at time of accident	<b>Engine Manufacturer:</b>	CONT MOTOR
<b>ELT:</b>		<b>Engine Model/Series:</b>	6-285-A
<b>Registered Owner:</b>	FOUR STATES SKY AG INC	<b>Rated Power:</b>	285 Horsepower
<b>Operator:</b>	FOUR STATES SKY AG INC	<b>Operating Certificate(s) Held:</b>	Agricultural aircraft (137)
<b>Operator Does Business As:</b>	FOUR STATES SKY AG LLC	<b>Operator Designator Code:</b>	4SAG

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KJLN,981 ft msl	<b>Distance from Accident Site:</b>	9 Nautical Miles
<b>Observation Time:</b>	10:53 Local	<b>Direction from Accident Site:</b>	60°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	14 knots / 22 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	220°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.02 inches Hg	<b>Temperature/Dew Point:</b>	26°C / 11°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Baxter Springs, KS (78KS)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Baxter Springs, KS (78KS)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:45 Local	<b>Type of Airspace:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Minor	<b>Latitude, Longitude:</b>	37.068889,-94.664718(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Aguilera, Jason
<b>Additional Participating Persons:</b>	Jerry Unruh; FAA FSDO; Wichita, KS
<b>Original Publish Date:</b>	March 13, 2014
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=86906">https://data.ntsb.gov/Docket?ProjectID=86906</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).