



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Hernando, MS	<b>Accident Number:</b>	ERA18LA039
<b>Date &amp; Time:</b>	12/02/2017, 1700 CST	<b>Registration:</b>	N481ZK
<b>Aircraft:</b>	Kevin Leue Sparrow Hawk	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Unknown or undetermined	<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The sport pilot and pilot-rated passenger departed in the gyroplane at an unknown time. A hunter in the area of the accident site heard a loud sound similar to a gunshot, but dismissed it as another hunter. He left the area shortly thereafter and while walking, saw a grass fire; authorities who responded found the wreckage, which was about 0.17 miles from the departure airport.

The gyroplane descended through trees at a steep angle and the left main landing gear impacted the ground first; the gyroplane came to rest on its right side and was destroyed as a result of the postcrash fire. Examination of the flight controls, engine, and engine systems revealed no evidence of pre-impact failure or malfunctions that would have precluded normal operation.

A mechanic familiar with the gyroplane reported that the pilot had repaired a fuel tank leak several months before the accident. The day before the accident, the owner reported smelling fuel while in the cabin, but stated that he had not observed any fuel leaks. Whether the pilot identified the source of the fuel smell or made any repairs before the accident flight could not be determined. Autopsy and toxicology testing of the pilot revealed no evidence of physiological impairment or incapacitation. The reason for the gyroplane's steep descent and impact with terrain could not be determined based on the available information.

## Probable Cause and Findings

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

Impact with trees and terrain for reasons that could not be determined based on available evidence.

## Findings

Not determined

Not determined - Unknown/Not determined (Cause)

## Factual Information

### History of Flight

Unknown	Unknown or undetermined (Defining event) Collision with terr/obj (non-CFIT)
Post-impact	Fire/smoke (post-impact)

On December 2, 2017, about 1700 central standard time, an experimental, amateur-built Sparrow Hawk gyroplane, N481ZK, was destroyed when it impacted terrain and was consumed by a postcrash fire near Eagles Ridge Airport (MS9), Hernando, Mississippi. The sport pilot and pilot-rated passenger were fatally injured. The gyroplane was owned by the pilot who was operating it as a Title 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the flight, which departed MS9 at an unknown time.

There were no known witnesses to the departure or the accident. An individual who was hunting near the accident site reported that, about 1700, he heard a loud sound similar to a gunshot, but dismissed it as another hunter. He left the area about dusk and spotted a grass fire. He walked to a nearby home to tell the homeowner to call 911 and report the fire. First responders who arrived to extinguish the fire subsequently located the wreckage of the gyroplane.

### Pilot Information

Certificate:	Sport Pilot	Age:	70, Male
Airplane Rating(s):	None	Seat Occupied:	Unknown
Other Aircraft Rating(s):	Gyroplane	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Sport Pilot None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	06/29/2017
Flight Time:	102 hours (Total, all aircraft)		

## Pilot-Rated Passenger Information

<b>Certificate:</b>	Airline Transport; Commercial	<b>Age:</b>	43, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Unknown
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 Without Waivers/Limitations	<b>Last FAA Medical Exam:</b>	06/19/2017
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	11722 hours (Total, all aircraft)		

The pilot, age 70, held a sport pilot certificate with gyroplane rating, issued June 29, 2017. On the application for that certificate, he reported 102 hours total flight experience.

The pilot-rated passenger, age 43, held an airline transport pilot certificate with a rating for airplane multi-engine land and held commercial privileges for airplane single-engine land. He held type ratings for several transport-category airplanes. His most recent Federal Aviation Administration (FAA) first class medical certificate was issued June 19, 2017, with no limitations. On the application for the medical certificate, he reported 11,722 total hours of flight experience.

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Kevin Leue	<b>Registration:</b>	N481ZK
<b>Model/Series:</b>	Sparrow Hawk	<b>Aircraft Category:</b>	Gyroplane
<b>Year of Manufacture:</b>	2013	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental	<b>Serial Number:</b>	SH2004002K
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	Unknown	<b>Certified Max Gross Wt.:</b>	1580 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Subaru
<b>ELT:</b>		<b>Engine Model/Series:</b>	2.5
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

The two-place gyroplane, serial number SH2004002K, was built in 2013. It was powered by a Subaru EJ-25 engine, which drove a three-bladed, composite, Warp Drive propeller. The gyroplane's fuel cells, made from fiberglass-reinforced polymer resin, were bonded to the cabin floor and walls.

A mechanic familiar with the gyroplane reported that, about 3 or 4 months before the accident, the owner used PRC-type sealant to fix a fuel tank leak. The same mechanic also reported that, the day before the accident, the owner complained to him about smelling fuel while in the cabin, but the owner informed the mechanic there was no fuel leaking from the fuel tank. The mechanic asked the owner whether the gyroplane was equipped with a fuel tank vent, and the owner replied that he was not sure. Whether the pilot identified the source of the fuel smell or made repairs before the accident flight could not be determined.

The gyroplane's maintenance records were not located.

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual Conditions	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	OLV, 402 ft msl	<b>Distance from Accident Site:</b>	13 Nautical Miles
<b>Observation Time:</b>	1650 CST	<b>Direction from Accident Site:</b>	31°
<b>Lowest Cloud Condition:</b>	Few / 25000 ft agl	<b>Visibility</b>	10 Miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	Calm /	<b>Turbulence Type Forecast/Actual:</b>	/ Unknown
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/ Unknown
<b>Altimeter Setting:</b>	30.11 inches Hg	<b>Temperature/Dew Point:</b>	19° C / 2° C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Hernando, MS (MS9)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Hernando, MS (MS9)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	CST	<b>Type of Airspace:</b>	

At 1650, a surface weather observation taken at Olive Branch Airport (OLV), Olive Branch, Mississippi, located about 13 nm north-northeast of the accident site, reported calm wind, 10 miles visibility with few clouds at 25,000 ft, temperature 19°C, dew point 2°C, and an altimeter setting of 30.11 inches of mercury.

## Airport Information

<b>Airport:</b>	Eagles Ridge Airport (MS9)	<b>Runway Surface Type:</b>	N/A
<b>Airport Elevation:</b>	262 ft	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	N/A	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Unknown

MS9 was a public-use airport equipped with a single runway, designated 10/28. The airport common traffic advisory frequency was not recorded and MS9 did not have airport security video.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	1 Fatal	<b>Aircraft Fire:</b>	On-Ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	Unknown
<b>Total Injuries:</b>	2 Fatal	<b>Latitude, Longitude:</b>	34.796667, -89.920833

The gyroplane crashed in a wooded area about 0.17 nautical mile west-southwest of the departure end of runway 28 at MS9. The gyroplane and surrounding area sustained postcrash fire damage. Cut marks in trees in close proximity to the accident site indicated that the gyroplane descended at an approximate 70° to 75° angle to the ground.

According to an FAA inspector who responded to the accident site, the engine was still attached to the airframe and the propeller hub was attached to the engine. All three propeller blades were shattered at varying lengths, and the separated sections were recovered in the immediate vicinity of the main wreckage. The ground adjacent to the propeller displayed ground scars consistent with propeller rotation at impact. Both main rotor blades were attached to the rotor head, although a 3-ft section of one main rotor blade tip was fractured consistent with contact with a nearby tree; the fractured piece was found near the main wreckage beneath a separated section of tree trunk and limbs. One main rotor blade exhibited a smooth radius upward bend and the outboard portion of the blade was resting against a tree trunk, and the other main rotor blade exhibited a sharp radius downward bend with trailing edge buckling.

All flight controls, composite fuselage components, seats, and avionics were extensively heat damaged. The left main landing gear was broken and folded to the right, lying underneath the right main landing gear. Control continuity could not be confirmed due to postcrash fire damage; however, there were no separations at control attach points. Oil and dirt were noted on the propeller hub. The gyroplane was recovered from the accident site for further examination of the engine.

Examination of the engine following recovery revealed extensive heat damage to the fuel metering, ignition, and cooling system components. Following removal of the engine accessories, the crankshaft was rotated by hand and continuity was confirmed throughout the engine. Examination of the valve train, power section, cylinder heads, and pistons revealed no evidence of preimpact failure or malfunction. No lubrication issues were noted.

## Medical And Pathological Information

The Office of the State Medical Examiner, Pearl, Mississippi, performed an autopsy of the pilot. The cause of death was reported as blunt force trauma.

Toxicology testing performed at the FAA Forensic Sciences Laboratory detected no ethanol in vitreous and no tested-for drugs were identified in the blood specimen. The submitted specimens were unsuitable for carbon monoxide analysis and testing for cyanide was not performed.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Timothy W Monville	<b>Report Date:</b>	11/06/2019
<b>Additional Participating Persons:</b>	Allan Crabbe; FAA/FSDO; Jackson, MS		
<b>Publish Date:</b>	11/06/2019		
<b>Note:</b>	The NTSB did not travel to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=96412">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=96412</a>		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).