
National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA084	11/23/2016 1415 CST	Regis# N155WB	Pensacola, FL	Apt: Ferguson 82J
Acft Mk/Mdl AMERICAN LEGEND AIRCRAFT CO	Acft SN AL-1172	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending	
Eng Mk/Mdl CONTINENTAL O-200-D4B	Acft TT 1141	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091	
Opr Name: JAMES E. WILSON	Opr dba:	Aircraft Fire: NONE		AW Cert: LTSP

Events

1. Landing-landing roll - Loss of control on ground

Narrative

The student pilot reported that he must have inadvertently pressed down on the right brake during the landing roll. The airplane veered off the runway to the right into soft grass and nosed over.

The airplane sustained substantial damage to the right wing lift strut and empennage.

The pilot reported no preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16LA101	05/06/2016 1200 PDT	Regis# N2AN	San Bernardino, CA	Apt: N/a
Acft Mk/Mdl ANTONOV AN2		Acft SN 43798	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PZL ASH 62 IR		Acft TT 2924	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: AMERICAN AIRPOWER HERITAGE FLYING MUSEUM		Opr dba: CONFEDERATE AIR FORCE		Aircraft Fire: NONE AW Cert: SPE

Summary

The commercial pilot was entering the airport traffic pattern for landing during a familiarization flight. He reported that he turned on the carburetor heat, switched the fuel tank selector to the right fuel tank, and shortly thereafter, the engine experienced a total loss of power. The pilot attempted numerous times to restart the engine but was unsuccessful. After realizing that he would not be able to reach the runway, he decided to make a forced landing to a small field. During the landing approach, the airplane contacted a power line, nosed over, and came to rest inverted, resulting in substantial damage to the wings and fuselage. During the postaccident examination of the airplane, about 16 ounces of water were removed from the fuel system. Water was present in the lower gascolator, the fine fuel filter (upper gascolator), and subsequent fuel line to the carburetor inlet. A brass screen at the carburetor inlet and 2 carburetor fuel bowl thumb screens also contained corrosion, water, and rust.

The approved aircraft inspection checklist called for washing the carburetor and main fuel filter every 50 hours and cleaning and/or replacing the fine fuel filter every 100 hours. The fine fuel filter is not easily accessible and not able to be drained during a preflight inspection. The mechanic who completed the most recent inspection stated that he did not drain or check the fine fuel filter. The last logbook entry that specifically stated the fuel filters were cleaned was about 4 years before the accident.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The mechanic's failure to inspect the fine fuel filter gascolator as required during the most recent inspection, which resulted in a total loss of engine power due to fuel contamination.

Events

1. Enroute - Fuel contamination
2. Emergency descent - Loss of engine power (total)
3. Emergency descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Task performance-Maintenance-Scheduled/routine maintenance-Maintenance personnel - C
2. Aircraft-Aircraft systems-Fuel system-Fuel filter-strainer-Not serviced/maintained - C

Narrative

On May 06, 2016, about 1200 Pacific daylight time, an ANTONOV AN2 airplane, N2AN, sustained substantial damage during a forced landing, following a reported loss of engine power during approach to the San Bernardino International Airport, San Bernardino, California. The airplane was owned by the American Airpower Heritage Flying Museum, and was being operated by the pilot as a familiarization flight under the provisions of 14 Code of Federal Regulations Part 91. The commercial pilot and sole passenger were not injured. Visual meteorological conditions prevailed and no flight plan had been filed for the flight. The airplane departed the Cable Airport, Upland, California, about 1145.

In a telephone conversation with the National Transportation Safety Board investigator-in-charge, the pilot stated that the flight was a familiarization flight for a new member of their chapter of the Commemorative Air Force. The flight departed the Cable airport and flew east along the mountains, headed to San Bernardino. They contacted the San Bernardino tower and were instructed to enter the crosswind for runway 24. As part of the before landing checklist, the pilot turned on the carburetor heat and switched the fuel tank selector to the right fuel tank. Shortly thereafter, the engine lost all power. The pilot attempted numerous times to restart the engine, but was unsuccessful.

The pilot realized that he would not be able to reach the airport, and decided to make a forced landing to a small field in a residential area. During the landing approach, the airplane contacted a power line. After touching down in the field the airplane nosed over and came to rest inverted, which resulted in substantial damage to the wings and fuselage.

During the NTSB examination of the airplane, about 16 ounces of water was removed from the fuel system. Water was present in the lower gascolator, the fine fuel filter (upper gascolator), and subsequent fuel line to the carburetor inlet. A brass screen at the carburetor inlet and 2 carburetor fuel bowl thumb screens also contained corrosion, water and rust. (See Photo 1.)

National Transportation Safety Board - Aircraft Accident/Incident Database

The approved aircraft inspection checklist called for washing the carburetor and main fuel filter every 50 hours and cleaning and/or replacing the fine fuel filter every 100 hours. The fine fuel filter located halfway up the firewall on the left side of the aircraft is not easily accessible and not in a position to be drained prior to flight. The mechanic that completed the most recent inspection stated that he did not drain or check the fine fuel filter. The last logbook entry that specifically stated the fuel filters were cleaned was in September 2012.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA048 12/03/2016 851 EST Regis# N218D Goshen, IN Apt: N/a
Acft Mk/Mdl ARION AIRCRAFT LLC LIGHTNING Acft SN 152 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl JABIRU 3300A Acft TT 394 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: PILOT Opr dba: Aircraft Fire: NONE
AW Cert: LTSP

Summary

The sport pilot reported that, before departing on a cross-country flight, he contacted the flight service station for a weather briefing for his flight route. He then conducted a preflight inspection of the airplane, started it to allow it to warm up, and ran the carburetor heat before departing. The climb to cruise at 2,000 ft was normal. The pilot reported that, about 10 miles from the departure airport, the engine started to run "rough" and that he applied carburetor heat. When this did not have any effect on engine performance, he decided to return to the departure airport. He added that, during the return, the engine "power was very poor" and that the airplane was losing altitude rapidly. The pilot spotted a clear field nearby and performed a soft-field landing approach. Upon landing, the gear dug into the soft plowed field. The airplane continued forward on its belly, which resulted in substantial damage. The weather conditions were conducive to the accumulation of serious icing at any power setting. Although the pilot reported that he used carburetor heat, it is likely that the ice had already accumulated to the degree that the carburetor heat was insufficient to melt the ice and restore full engine power. An examination of the airplane and engine did not reveal any preimpact anomalies.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A partial loss of engine power due to carburetor icing and the subsequent forced landing on a rough/soft field.

Events

1. Enroute - Other weather encounter
2. Enroute - Loss of engine power (total)
3. Emergency descent - Off-field or emergency landing
4. Landing - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Contributed to outcome - C
2. Environmental issues-Physical environment-Runway/land/takeoff/taxi surface-Soft surface-Contributed to outcome

Narrative

On December 3, 2016, about 0851 eastern standard time, an Arion Aircraft LLC, Lightning LS-1 airplane, N218D, impacted soft terrain during a forced landing following an inflight loss of engine power near Goshen, Indiana. The pilot and his passenger were uninjured. The airplane sustained substantial fuselage damage. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Day visual meteorological conditions prevailed for the flight, which did not operate on a flight plan. The flight originated from the Goshen Municipal Airport (GSH), near Goshen, Indiana, about 0840 and was destined for the Ankeny Regional Airport (IKV), near Ankeny, Iowa.

According to the pilot, he contacted the flight service station for a weather briefing along his route of flight to IKV. He conducted a preflight inspection of the airplane. About 0825, the pilot loaded the airplane and started it to allow it to warm up. About 0830, the airplane was taxied to runway 27. The pilot performed flight checks that allowed the operating temperatures to continue to warm and he "ran the carburetor heat again just prior to departing." About 0835, he departed from the runway on a 270 heading. The climb to cruise at 2,000 feet was normal and he subsequently transitioned to cruise. About 9 to 10 nautical miles from GSH the engine started to run "rough" and the pilot applied carburetor heat. This did not improve engine performance, so he decided to return to GSH where he started to line up for a downwind for runway 27. The engine continued to sputter with carburetor heat applied. Engine "power was very poor" and the airplane was losing altitude rapidly. The pilot then thought that the airplane may be able to make runway 9. He subsequently realized the airplane was too low for that approach and with little power, the airplane would not be able to make the field where it would end up in the trees or fence short of runway 9. The pilot spotted a clear field that he could turn into and have an up wind landing. He called common traffic advisory frequency at GSH about 0852 and announce a mayday call that indicated where the airplane was landing. The pilot performed a soft field landing approach and slowed as much as possible heading back on 270 heading. He knew that the fields were recently tilled and would be very soft and muddy due to recent rains. The pilot attempted to fly just above the surface as long as possible and keeping the nose up. On landing the gear dug into the very soft plowed field and the airplane continued forward on its belly. The pilot indicated that it was a very short amount of time from when he "called in and actually landed the plane."

At 0853, the recorded weather at GSH was: Wind 260 degrees at 5 knots; visibility 10 statute miles; sky condition overcast clouds at 2,800 feet; temperature 1 degree C; dew point -3 degrees C; altimeter 30.33 inches of mercury.

The temperature and dew point spread were plotted on a carburetor icing probability chart. Their intersection was within the serious icing at any power setting envelope.

A Federal Aviation Administration Inspector conducted an on-scene investigation of the accident airplane. He established flight control continuity existed. He observed that the fuel filters, one for each tank, were mounted in the aircraft cabin under the seats. The filters appeared clean and contained a liquid consistent with 100 low lead aviation gasoline. Some engine components sustained impact damage and the engine could not be test run. However, no preimpact anomalies were detected.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA14LA344 07/10/2014 940 EDT Regis# N128LS Melbourne, FL Apt: N/a
Acft Mk/Mdl COSTRUZIONI AERONAUTICHE TECNA Acft SN 076 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 912ULS Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: FIRST LANDINGS AVIATION Opr dba: Aircraft Fire: NONE
AW Cert: LTSP

Summary

The private pilot departed on a cross-country flight in the light sport airplane. After leveling off at a cruise altitude about 2,500 ft, the pilot turned off the electric fuel pump and saw an initial decrease in fuel pressure followed by a return to the normal range. About 5-10 minutes later, the engine began to run rough, and the pilot turned on the electric fuel pump. The engine ran smoothly for a short time then experienced a total loss of power, and the pilot conducted a forced landing to a dirt road.

A postaccident test run of the engine revealed no anomalies when the engine was operated at low rpm. The engine could not be run at full power due to the damage sustained to its mounts during the forced landing. Based on the available information, the reason for the loss of engine power could not be determined.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power during cruise flight for reasons that could not be determined based on the available information.

Events

1. Enroute-cruise - Loss of engine power (total)
2. Emergency descent - Off-field or emergency landing
3. Landing - Hard landing

Findings - Cause/Factor

1. Not determined-Not determined-(general)-(general)-Unknown/Not determined - C

Narrative

On July 10, 2014, about 0940 eastern daylight time, a Costruzioni Aeronautiche Tecna P2004 Bravo, N128LS, was substantially damaged during a forced landing following a total loss of engine power near Melbourne, Florida. The private pilot was not injured. Visual meteorological conditions prevailed, and no flight plan was filed for the flight, which departed Orlando Apopka Airport (X04), Apopka, Florida, and was destined for Merritt Island Airport (COI), Merritt Island, Florida. The personal flight was operated under the provisions of Title 14 Code of Federal Regulations Part 91.

The pilot stated that a preflight inspection and engine run-up check revealed no anomalies. The takeoff was normal, and he climbed the airplane to a cruise altitude of 2,500 feet. Upon establishing the airplane in cruise flight, the pilot turned off the electric fuel pump and observed the fuel pressure gauge indicate an initial decrease, followed by an increase to the normal range. About five to ten minutes later, the engine began to run rough, and the pilot turned on the electric fuel pump. The engine ran smoothly for a short time, then experienced a total loss of power. The pilot subsequently conducted a forced landing to a dirt road.

The airplane was examined at the accident site by a Federal Aviation Administration inspector. The inspector stated that the wing fuel tanks each contained about 3 gallons of fuel, and that the engine firewall had sustained substantial damage. The airplane was then moved to X04 to facilitate further examination. Electrical power was applied to the airplane, and the operation of the electric fuel pump was verified. Fuel was plumbed to the engine, and the engine started and ran smoothly at low rpm with no anomalies observed. The engine could not be run at full power due to damage sustained to the engine mounts during the forced landing.

The 0953 weather observation at Melbourne International Airport (MLB), about 14 nautical miles southeast of the accident site, included clear skies, 10 miles visibility, wind from 190 degrees at 5 knots, temperature 28 degrees C, dew point 23 degrees C, and an altimeter setting of 30.14 inches of mercury.

The pilot held a private pilot certificate with a rating for airplane single-engine land. His most recent FAA third-class medical certificate was issued in January 2012. His total flight experience, as well as flight experience in the accident airplane make and model, was not determined.

The airplane was manufactured in 2006, and was equipped with a Rotax 912ULS, 100hp, reciprocating engine. The airplane's maintenance history was not determined. At the time of the accident, the airplane had accumulated 1,451.4 total hours.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA14LA316	06/29/2014 917 EDT	Regis# N957MD	Peachtree City, GA	Apt: Atlanta Regional FFC
Acft Mk/Mdl CZECH SPORT AIRCRAFT AS PIPER	Acft SN P1001022	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl ROTAX 912ULS	Acft TT 114	Fatal 0	Ser Inj 1	Flt Conducted Under: FAR 091
Opr Name: JOHN RITCHEY	Opr dba:	Aircraft Fire: NONE	AW Cert: LTSP	

Summary

The private pilot, who was aware that the light sport airplane's engine had not been functioning normally, took off to fly to another airport where an engine-specific mechanic was located. Downloaded avionics data indicated that, during the airplane's initial climb after takeoff, engine rpm decreased about 14%. Beyond the end of the runway, about 50 ft above ground level, the airplane's pitch attitude increased to about 19°, while roll increased to about 28°. The airplane exceeded its critical angle of attack and entered an aerodynamic stall, impacting the ground in a nose-low attitude. Due to his injuries, the pilot could not recall the accident sequence of events or his actions after takeoff. Subsequent examination of the engine revealed that the spark plugs were mostly black in color and some were encrusted with debris. It is likely that, during the takeoff, a fouled spark plug did not provide adequate voltage to the firing tip, and a cylinder did not fire properly. Fouled spark plugs are consistent with a very rich fuel mixture; however, the reason for the rich mixture could not be determined.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's use of excessive pitch and roll following a partial loss of engine power on takeoff, which resulted in an exceedance of the airplane's critical angle of attack and a subsequent aerodynamic stall. Contributing to the accident was an excessively rich fuel/air mixture, which resulted in spark plug fouling and the partial loss of engine power, and the pilot's decision to take off with known engine problems.

Events

1. Initial climb - Loss of engine power (partial)
2. Emergency descent - Off-field or emergency landing
3. Emergency descent - Aerodynamic stall/spin
4. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Capability exceeded
2. Personnel issues-Action/decision-Action-Incorrect action performance-Pilot - C
3. Aircraft-Aircraft systems-Fuel system-Fuel distribution-Incorrect service/maintenance - F
4. Personnel issues-Psychological-Personality/attitude-Confidence/reliance on equip-Pilot - F

Narrative

HISTORY OF FLIGHT

On June 29, 2014, at 0917 eastern daylight time, a Czech Sport Aircraft Piper Sport, N957MD, was substantially damaged during a forced landing in Peachtree City, Georgia. The private pilot was seriously injured. Visual meteorological conditions prevailed, and no flight plan had been filed for the flight from Atlanta Regional Airport - Falcon Field (FFC), Peachtree City, Georgia, to Newnan Coweta County Airport (CCO), Atlanta, Georgia. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to the pilot's wife, and due to the extent of his injuries, the pilot was not able to recall "anything from that day," except that there was a loss of engine power for unknown reasons.

According to a witness, she was watching the airplane take off [from runway 31] and it became clear that the airplane was not going to clear the trees beyond the runway. The airplane veered to the right, like it was trying to turn around, "but fell like a rock nose first into the ground."

In a recorded television interview, a golfer who had been with a group on a nearby golf course stated that he saw the airplane taking off from the airport, and that the engine was "sputtering just like it was out of gas or not hitting on all cylinders." He thought the airplane was returning to the runway and was headed for some trees when it suddenly turned and dove nose-first into the ground.

The golfers raced to the airplane, and when they arrived, they saw fuel on the ground. They tried to extricate the pilot who could not move and remained secured via a seat belt. One of the golfers turned the ignition off and removed the keys. The pilot was subsequently removed and taken to the hospital.

National Transportation Safety Board - Aircraft Accident/Incident Database

AIRCRAFT INFORMATION

The airplane was powered by a Rotax 912ULS carbureted engine, driving a three-blade composite propeller.

According to the pilot's wife, the pilot's father originally owned the airplane. When he passed away in 2013, the pilot's mother gave it to the pilot.

Maintenance records indicated that, on October 20, 2011, at 36.3 hours of operation, a condition inspection was performed on the airplane. At 67 hours of operation (no date noted), another condition inspection was performed. At the time, the spark plugs were replaced. On November 20, 2013, at 93.2 hours of operation, another condition inspection was performed. At the time, the spark plugs were "cleaned, gapped and tested."

On December 2, 2013, the accident pilot's brother and a flight instructor flew the airplane. According to the flight instructor, the accident pilot's brother made the takeoff, and shortly thereafter, a "couple" hundred feet in the air, the engine rpm started decreasing to about 3,000 rpm. The engine deceleration was rapid and the engine never quit, but the flight instructor thought it was beginning to seize, and it "sounded horrible." He thought from what he saw on the engine analyzer, that there was a partial loss of power from the right side of the engine. The flight instructor took control of the airplane and subsequently flew a teardrop pattern back to the runway without further incident. The flight instructor was not sure if the airplane would have maintained altitude since the engine rpm was continuing to decrease and he was more concerned with making it back to the runway safely.

After landing, a witness advised the flight instructor that the engine had been blowing black smoke out of the exhaust. Other individuals stated that the engine likely had a stuck or sunk carburetor float. However, subsequent examination by a mechanic revealed no anomalies except that the dark appearance of the spark plug electrodes indicated that the fuel mixture had been burning rich. The flight instructor had a mechanic clean the spark plugs, and they drained fuel from the sumps, after which, there were no further difficulties with engine power that he knew of until hearing about the accident. There was no airplane logbook entry regarding the cleaning of the spark plugs.

After that incident, the flight instructor flew with the accident pilot's brother a couple more times in a local traffic pattern. There were some engine cooling issues, with cooling fluid coming out of an overflow valve, but after the cooling system was "burped," there were no further issues.

The flight instructor also noted that several months prior to the accident flight, on March 2, 2014, he and the accident pilot flew the airplane about 3 hours from Spruce Creek, Florida, to FFC. During that flight, the airplane performed "flawlessly."

The flight instructor further stated that the airplane had originally utilized automotive gasoline (MOGAS). With no MOGAS available, they utilized 100LL aviation gasoline to fly to Peachtree. Upon arrival, someone came up to them and said he had one or two of the same type of airplanes and knew of a mechanic to use.

The flight instructor suggested to the accident pilot that he get a Rotax engine specialist to go through the engine at the next inspection. The accident pilot said he was going to get a flight instructor and mechanic, but the flight instructor did not know if he ever did. The flight instructor also noted that the accident pilot was an excellent pilot who utilized "correct" procedures.

According to the responding Federal Aviation Administration inspector, a local flight instructor who flew with the pilot twice in the airplane stated that both times they flew together, the fuel pressure gauge read "high." After the second flight, the flight instructor told the pilot that he needed to "get that fixed before we fly again." The flight instructor spoke with the pilot at a later date, and the pilot stated that he was working on getting the fuel pressure gauge repaired.

According to the pilot's wife, the airplane was evaluated for safe flight to CCO by a mechanic in order to conduct a thorough maintenance review in the mechanic's hangar.

The mechanic stated that a couple of weeks before the accident, the pilot had called him, noting that the mechanic was certified on the Rotax engine, and that he would like to bring his airplane over to the mechanic's airport (CCO) so the mechanic could look at the engine. The mechanic advised to bring it over when he could.

Within the next couple of weeks, or several days before the accident, the mechanic and about five other mechanics were working on a DC-3 on the upper ramp at FFC. He heard the pilot's airplane take off, and at that time, the engine "didn't sound right." He added, a Rotax 912 engine normally had a hum to it, but that engine sounded abnormal.

The next day, the mechanic was back working on the DC-3 and went over to meet the pilot for the first and only time. They had a discussion about the airplane and the engine. The mechanic told the pilot that the engine did not sound correct on the previous flight. During the discussion about the engine and in just looking it over, the oil dip stick was pulled and no oil registered on the dip stick. The propeller was turned through about 7-8 times at least twice, with no oil ever showing on the dip stick. The pilot said, "I can assure you there is oil in the engine." The mechanic left at that point, never looked into the oil tank to see if it had oil in it, and did not evaluate the airplane as safe for flight.

A representative of the engine manufacturer noted that it was possible for an engine to be turned over 10 to 15 times before an indication of oil would show on a dipstick. The key was to listen for a "gurgling" sound before checking the dipstick.

PILOT INFORMATION

The pilot, age 55, held a private pilot certificate. He reported 111 hours of total flight time, with 18 hours in airplane make and model.

AIRPORT INFORMATION

Runway 31 was 5,219 feet long and 100 feet wide, at an elevation of 807 feet. Published airport information indicated 60-foot trees, 500 feet from the end of the runway and 525 feet right of centerline. Internet satellite views of the airport revealed a road that was perpendicular to the runway, about 575 feet from runway end, with small trees on either side in the vicinity of the extended runway centerline. Beyond the road was a golf course, and beyond that, a lake.

METEOROLOGICAL INFORMATION

Weather, recorded at the airport at 0853, included clear skies, calm winds, temperature 25ø C, dew point 22ø C, and an altimeter setting of 30.24 inches Hg.

WRECKAGE AND IMPACT INFORMATION

Photographs of the airplane revealed that it came to rest on the shoulder of the road that ran perpendicular to the runway. The airplane exhibited severe front end crushing.

The airplane was later moved to a recovery facility where, on August 29, 2014, an additional examination was conducted under NTSB oversight. Upon initial examination, the Rotax 912US engine, serial number 6776264, exhibited impact damage, including damage to the oil system pump and oil tank. Both carburetors were displaced, and the coolant radiator was crushed and breached.

Two of the three composite propeller blades were found broken off from the hub.

The engine was subsequently removed from the airframe and further examined on a workbench. Crankshaft continuity, piston movement, and cylinder compressions were confirmed.

When the NGK DCPR8E spark plugs were removed, the electrodes were found to be black and some were encrusted with debris.

The lubrication system was breached and most of the oil had drained. However, there was no evidence of inadequate lubrication within the engine.

The propeller gearbox was inspected for condition, modifications, proper components, smooth operation and for any unusual sounds or other discrepancies, with no anomalies noted.

Fuel was supplied to the engine via an engine-driven pump and an electric-driven supplemental pump. The electric fuel pump was an automotive design that functioned when tested without any anomalies noted. The mechanical fuel pump was the original fuel pump that came from Rotax. It was recommended to be replaced with a new-style pump per Rotax Service Bulletin 912-063UL due to possible malfunction.

The engine was subsequently prepared for an engine run. Due to the extent of impact damage, the carburetor for cylinders Nos. 2 and 4 was replaced with a carburetor from another engine, and the exhaust muffler, oil tank, carburetor air box, and coolant radiator were removed. The ignition wires were modified to

operate the engine safely, and connected to the airplane's rotary switch for starting and stopping the engine. The original spark plugs were used. The fuel system was simplified with the use of a suction hose from a fuel canister. The electric fuel pump and airframe gascolator were not utilized, and the remaining propeller blade was cut off.

A fork lift was used as a makeshift engine test stand and the engine was secured to the forks. A battery was connected to the starter of the engine, and the rotary switch was turned to start the engine. The throttles were manipulated by hand and the engine ran for several minutes at varying rpm settings until it was manually shut off by turning the rotary switch to the off position. No anomalies were noted during the engine test run. The maximum rpm obtained could not be quantified.

ADDITIONAL INFORMATION

Electronic Devices

The airplane was equipped with several electronic devices with downloadable data. Data from those devices revealed that the airplane impacted the ground about 1 minute, 10 seconds after the application of takeoff power.

About 10 seconds after the application of takeoff power, engine rpm stabilized in excess of 3,800 rpm, and during that time, the nose of the airplane assumed a takeoff attitude of about 9-10 degrees. Groundspeed rose to about 60 knots, while indicated airspeed was 57 knots.

Forty seconds after the application of power, the engine rpm dropped about 400 rpm, then recovered 300 rpm, then gradually diminished over the next 30 seconds to a final recorded rpm of 3,237, when the data stopped recording. Concurrent with the final rpm recorded, data indicated that the airplane's nose was raised to 19 degrees in a right turn of 28 degrees. Ground speed dropped to 48 knots while the indicated airspeed dropped to 42 knots. Latitude-longitude positions of the airplane then became constant, and indicated the airspeed dropped to 24 knots, consistent with the airplane having had entered an aerodynamic stall.

Additional data parameters revealed: 1) the airplane climbed to a maximum of about 50 feet above runway end elevation, 2) both fuel flow and fuel pressure remained relatively constant throughout the flight, 3) the No. 1 cylinder head temperature was relatively constant through the first half of the flight, but had gained an additional 50 C by the end of the flight (the other cylinders were not instrumented), 4) the No. 1 exhaust gas temperature climbed about 700C as the takeoff progressed, then dropped 600 C after the engine rpm began to drop, 5) the No. 2 cylinder head temperature climbed about 500 C as the takeoff progressed, then dropped 200 C after the engine rpm began to drop (Nos. 3 and 4 cylinders were not instrumented for exhaust gas temperature), and 6) the electronic tachometer time was 114.65 hours.

Service Bulletin 912-065 R1

On November 13, 2014, Rotax issued mandatory service bulletin (SB) 912-065 R1 to check carburetor float buoyancy on affected part numbers. The reason for the SB was stated as, "Due to a deviation in the manufacturing process some floats could absorb more fuel thus having more weight. This leads to a loss of float buoyancy and wrong regulation of the fuel in the float chamber. Possible effects may be a rough engine during running, especially at low speeds and under circumstances loss of performance and/or fuel leakage in the area of the carburetor."

The accident engine had been sold and was not available for additional examination subsequent to the release of SB 912-065 R1; however, a representative of Rotax confirmed that the engine, as shipped from the factory, did not contain floats with a part number that was identified in the SB.

According to the spark plug manufacturer's website, "a spark plug is considered fouled when the insulator tip becomes coated with a foreign substance such as fuel, oil or carbon. This makes it easier for the voltage to follow along the insulator nose, leach back into the metal shell and ground out rather than bridging the gap normally." In addition, "once a spark plug is fouled, it will not provide adequate voltage to the firing tip and that cylinder will not fire properly."

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA157 04/14/2016 822 EDT Regis# N197PS Mansfield, OH Apt: Mansfield Lahm Regional Airpor MFD
Acft Mk/Mdl CZECH SPORT AIRCRAFT AS PIPER Acft SN P1001062 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 912ULS Acft TT 371 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: PILOT Opr dba: Aircraft Fire: NONE

Summary

The airline transport pilot/owner was conducting a personal cross-country flight. The pilot stated that, after the main landing gear touched down, he eased the backpressure on the control stick and that the nose landing gear (NLG) then separated from the airplane. The airplane slid on the runway surface. Postaccident examination of the airplane revealed that the NLG had fractured at a weld area. An airplane manufacturer service bulletin (SB) called for periodic inspection of the NLG for cracks in the weld area every 25 hours. The pilot reported that the NLG had accumulated a total time in service of 371 hours at the time of the accident and that it was last inspected 31 flight hours before the accident.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to inspect the nose landing gear (NLG), which resulted in a crack going undetected and the subsequent separation of the NLG at the weld area during landing.

Events

1. Landing-flare/touchdown - Part(s) separation from AC
2. Landing-flare/touchdown - Loss of control on ground
3. Landing-flare/touchdown - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft systems-Landing gear system-Nose/tail landing gear-Failure - C
2. Personnel issues-Task performance-Inspection-Scheduled/routine inspection-Pilot - C

Narrative

On April 14, 2016, at 0822 eastern daylight time, a Czech Sport Aircraft AS Piper Sport, N197PS, impacted runway 32 during landing at Mansfield Lahm Regional Airport (MFD), Mansfield, Ohio. The nose landing gear separated at a weld, which resulted in the airplane nose impacting the runway. The airplane sustained substantial damage to the engine firewall. The pilot was uninjured. The airplane was registered to and operated by the pilot under 14 Code of Federal Regulations Part 91 as a personal flight that was not operating on a flight plan. The flight departed from Columbia Airport, Columbia Station, Ohio at 0745 and was destined to MFD.

The pilot stated that after the main landing gear touch down at an airspeed of about 55 knots, he began to ease backpressure on the control stick. As the backpressure eased, the nosewheel landing gear strut separated from the airplane. The airplane slid on the runway for about 150 feet and the nosewheel/strut remained about 30 feet behind the airplane and along the runway centerline.

Postaccident examination of the nose landing gear, part number SG0270N, by a Federal Aviation Administration Aviation Safety Inspector revealed that it had fractured at a weld.

According to a logbook entry dated August 18, 2014, at an engine total time since new of 196.6 hours, the nose landing gear was inspected in accordance with a Czech Sport Aircraft AS service bulletin, SB-CR-016. There were no subsequent logbook entries citing compliance with SB-CR-016.

The pilot reported that the nose landing gear accumulated a total time in service of 371 hours at the time of the accident and was last inspected 31 hours in service before the time of the accident. The airplane and engine total times in service at the time of the accident were 371 hours.

Czech Sport Aircraft AS service bulletin, SB-CR-016, dated October 9, 2013, Inspection of the Landing Gear Leg for all SportCruiser aircraft with the [nose landing gear] (NLG) SG0270N, all Piper Sport aircraft with the NLG SG0270N installed, and all PS-28 Cruiser aircraft with the NLG SG0270N installed, stated:

"Some Sport Cruiser / Piper Sport / PS-28 Cruiser aircraft have developed cracks in the bottom side of the lower section of the nose landing gear. The cracks develop on the nose landing gear assembly along the weld of the tube and the bracket. Furthermore, on several aircraft bending of the pivot connecting the fork with leg was discovered and cracks from holes of bolts on the fork. To address this potentially unsafe condition, a repetitive inspection is required of the bottom side of the lower section, in the area of the weld of the tube, the bracket and the pivot and the fork in the place of the bolts mounting the fork to the landing gear."

National Transportation Safety Board - Aircraft Accident/Incident Database

The compliance with SB-CR-016 was cited as:

A. Before next flight after issue of this bulletin.

B. Periodically at each 25 FH or 50 cycles whatever occurs first check as described in documents [1] for PS-28 Cruiser and [2] for Sport Cruiser (see REFERENCES).

C. During pre-flight check (see POH, Section 4, 4.1 Pre-flight check, Inspection Check List, Point 4 - Nose gear) visually inspect pivot (see the picture on the Page 3 of 4 of this Service Bulletin) and verify that there is no evidence of cracks or bending.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA263 07/09/2016 940 CDT Regis# N9912S Newark, IL Apt: Cushing Field Ltd Airport 0C8
Acft Mk/Mdl EVOLUTION TRIKES REVO-NO SERIES Acft SN 1002 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 912ULS Acft TT 94 Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: ATKINSON, RANDALL Opr dba: Aircraft Fire: NONE
AW Cert: LTSP

Summary

The student pilot was conducting his fourth solo flight in the weight-shift aircraft and was landing on a private turf runway in light wind conditions. A witness stated that the aircraft initially appeared to track straight down the runway after landing; however, shortly thereafter, it started to oscillate to the left and right. The oscillations increased until the aircraft rolled over and came to rest on its side. An examination of the aircraft did not reveal any preimpact malfunctions or anomalies that would have precluded normal operation. Although the pilot only had a total of 16.75 flight hours and less than 2 hours solo, it could not be determined why he lost control of the aircraft after landing.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The student pilot's failure to maintain directional control on landing. Contributing to the accident was the pilot's lack of flight experience.

Events

1. Landing-landing roll - Loss of control on ground
2. Landing-landing roll - Nose over/nose down

Findings - Cause/Factor

1. Personnel issues-Action/decision-(general)-(general)-Student/instructed pilot - C
2. Personnel issues-Experience/knowledge-Experience/qualifications-Total experience-Student/instructed pilot - F

Narrative

HISTORY OF FLIGHT

On July 9, 2016, about 0915 central daylight time, an Evolution Trikes Revo, weight-shift aircraft, N9912S, impacted terrain at the Cushing Field Ltd Airport (0C8), Newark, Illinois. The student rated pilot, sole occupant, was fatally injured and the aircraft was substantially damaged. The aircraft was registered to and operated by a private individual, under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Day visual meteorological conditions prevailed at the time.

A witness who was in an airplane positioned in the traffic pattern observed the accident. The witness stated that the accident aircraft landed on runway 36. Initially, the aircraft appeared to track straight down the runway, when the aircraft started to oscillate left and right. The oscillations then increased until the aircraft rolled over. The pilot was taken to a local hospital and was initially listed in critical condition before he succumbed to his injuries.

The responding Federal Aviation Administration (FAA) inspector reported that the aircraft came to rest on its side. The aircraft sustained substantial damage to the wing and fuselage; the examination of the aircraft did not reveal any pre-impact malfunctions.

PILOT INFORMATION

The pilot held a student pilot certificate and was operating under the sport pilot medical rules. A review of the pilot's logbook revealed he had accumulated 16.75 total flight hours, with 1.75 solo, in the accident aircraft. The logbook revealed three solo flights before the accident flight.

AIRCRAFT INFORMATION

The accident aircraft was an Evolution Trikes Revo. The aircraft has a strut-braced hang glider-style high-wing, weight-shift controls, two-seats-in-tandem, tricycle landing gear, and a single-engine in the pusher configuration. The aircraft was powered by a reciprocating Rotax four cylinder 912ULS engine and a fixed pitch propeller. A review of the aircraft's maintenance records revealed the last condition inspection was completed on February 8, 2016 with an aircraft total time of 93.5 hours. A review of FAA records revealed the aircraft received its Special Airworthiness Certificate in the Special Light Sport - Weight Shift Control Aircraft category on February 7, 2011. The student pilot purchased the aircraft in March 2016; however, at the time of the accident, the aircraft registration had not been updated in the FAA's database.

METEOROLOGICAL INFORMATION

At 0915, the automated weather observation facility located at the Morris Municipal Airport - James R. Washburn Field (C09), about 10 miles southeast of the accident site recorded; wind calm, 10 mile visibility, broken clouds at 1,900 ft, temperature 71 degrees Fahrenheit (F), dew point 62 degrees F, and a barometric pressure of 30.02 inches of mercury.

AIRPORT INFORMATION

The Cushing Field Ltd Airport (0C8), is a privately owned airport, open to the public, located 2 miles southwest of Newark, Illinois. Pilots are to use the CTAF (Common Traffic Advisory Frequency) for communications. The airport has a single turf runway 18/36; 2,831 ft by 180 ft. The airport is at an elevation of 640 ft mean sea level.

WRECKAGE AND IMPACT INFORMATION

The wreckage came to rest on its right side, on the grass runway. Substantial damage was noted to the aircrafts fiberglass fuselage/fairing. Several tubing members for the wing were either bent or broken during the collision with the ground. The fabric wing was also torn.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Coroner, DuPage County, Illinois conducted an autopsy on the pilot. The cause of death was determined to be "cervical spinal injuries".

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, conducted toxicological testing on the pilot. The specimens were not tested for cyanide. The test was negative for carbon monoxide and ethanol. The test was positive for Fentanyl in lung and blood.

Fentanyl is an opioid medication. Fentanyl is used as part of anesthesia to help prevent pain after surgery or other medical procedure. A review of medical records revealed that the fentanyl was administered during medical treatment, after the accident.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR17FA091	04/27/2017 1350 PDT	Regis# N192NG	Keene, CA	Apt: N/a
Acft Mk/Mdl NANCHANG CJ6A		Acft SN 3051217	Acft Dmg: DESTROYED	Rpt Status: Prelim Prob Caus: Pending
Eng Mk/Mdl IVANCHENKO M14P			Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: GILBERT THOMAS GUTIERREZ		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Events

1. Enroute-descent - Loss of control in flight

Narrative

On April 27, 2017, about 1350 Pacific daylight time, a Nanchang CJ6A, N192NG, was destroyed when it impacted terrain near Keene, California. The private pilot, sole occupant of the airplane, was fatally injured. The airplane was registered to G&C CJ6 LLC, and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed in the area at the time of the accident and no flight plan was filed for the personal flight. The cross-country flight originated from the Apple Valley Airport, Apple Valley (APV), California, about 1255, with an intended destination of Porterville, California.

Information provided by friends of the pilot, who were part of a four-airplane formation flight revealed that the flight originally departed from Phoenix, Arizona earlier in the morning, with a fuel stop at APV. Following lunch and a brief delay for weather, the flight of four departed APV, enroute to Porterville. As the flight neared Tehachapi, California, they were at an altitude of about 7,500 feet mean sea level (msl), maintaining separation from an overcast to broken cloud layer throughout the area. As they passed Tehachapi, the flight began a shallow descent. During the descent, the lead pilot lost sight of the accident pilot, who was positioned in the number two position (left of the lead pilot, in a diamond formation) and asked the accident pilot if he was ok. The accident pilot responded to the lead pilot that he was ok.

A short time later, the lead pilot asked the accident pilot a second time if he was ok, in which the pilot responded he was. Subsequently, the pilot who was in the slot position (in trail of the lead pilot) reported that the accident pilot was behind his position and lower, and eventually lost sight of him and maneuvered to reestablish visual contact unsuccessfully. The pilot who was flying in the number 3 position (right side of lead), reported shortly after that the pilot in the slot position lost sight of the accident pilot, he observed the accident pilot fly into a cloud layer while in a wings level, slightly nose low attitude, behind and lower than his position. The formation flight never reestablished radio or visual contact with the accident pilot.

A witness who was in a vehicle nearby the accident reported that they observed an airplane descend from a cloud layer in an almost vertical attitude until they lost sight of it behind a mountain.

Examination of the accident site revealed that the airplane impacted hilly terrain about 5.5 miles northwest of the Tehachapi Airport. The airplane came to rest in an almost vertical attitude on a heading of about 249 degrees magnetic. All of the major structural components of the airplane were located within about 100 feet of the main wreckage. The wreckage was recovered to a secure location for further examination.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN14FA266	06/01/2014 1222 CDT	Regis# N176FD	Stevens Point, WI	Apt: Stevens Point Municipal STE
Acft Mk/Mdl YAKOVLEV YAK-55M		Acft SN 930810	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl VEENEYEV M14P		Acft TT 215	Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: WILLIAM M. COWDEN		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Summary

The pilot was performing an aerobatic flight at an airshow event when the accident occurred. The flight team manager witnessed the accident and reported that the airplane entered an intentional inverted flat spin at the apex of an inside loop maneuver. The airplane completed more than 3 rotations in the inverted flat spin before recovering into a dive. The team manager then saw the airplane pitch up and enter an "aggressive" left turn. A review of ground-based video footage confirmed the sequence of events reported by the team manager and showed that, after the pitch up and left roll, the airplane entered a nose-low, descending left spiral that continued to ground impact. The observed flight path was consistent with an accelerated aerodynamic stall after the pilot had recovered from the inverted spin at a low altitude. The airplane cockpit was equipped with an aft-facing video camera that captured the pilot and his flight control movements. A review of the available cockpit footage confirmed that the pilot remained conscious throughout the accident flight and that the ailerons, elevator, and engine had responded to his control inputs. Although the rudder was obstructed from view in the video by the pilot's helmeted head, his observed leg movements were consistent with expected rudder inputs throughout the flight. Further, a postaccident examination of the airplane did not reveal any mechanical anomalies that would have precluded normal operation.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain airplane control during the aerobatic flight, which resulted in the airplane exceeding its critical angle of attack and entering an accelerated stall at a low altitude.

Events

1. Maneuvering-aerobatics - Loss of control in flight
2. Maneuvering-aerobatics - Aerodynamic stall/spin
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Capability exceeded - C

Narrative

HISTORY OF FLIGHT

On June 1, 2014, about 1222 central daylight time, a Yakovlev YAK-55M airplane, N176FD, was substantially damaged when it impacted terrain during an aerobatic flight over the Stevens Point Municipal Airport (STE), Stevens Point, Wisconsin. The airline transport pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 without a flight plan. Day visual meteorological conditions prevailed for the local airshow demonstration flight that departed about 1220.

The flight team manager, who provided the public announcement during the aerobatic flight, reported that the flight began with the airplane rolling inverted shortly after liftoff on runway 21 and making a shallow inverted climb past show center. The airplane then rolled upright before entering a 90° turn away from show center and the crowd. The airplane continued to climb as it turned to a heading opposite that of the takeoff runway, turned back to the runway heading, and reentered the aerobatic box. The airplane rolled inverted before it entered a 45° dive toward show center. The airplane then completed several descending aileron rolls before it rolled wings level and entered a near vertical climb. At the apex of the climb/loop, the airplane entered an inverted flat spin. The flight team manager stated that the pilot normally entered the inverted flat spin at 3,000 ft above ground level (agl) and completed three rotations before recovering in a vertical dive with a 4-5 g pullup at show center; however, on the accident flight, the pilot appeared to enter the inverted spin about 500 ft lower than normal and complete more than 3 rotations before recovering into a dive. According to the flight team manager, the airplane then pitched up and entered an "aggressive" left turn that resulted in an accelerated aerodynamic stall.

A review of ground-based video footage showed that the airplane had completed 3-1/2 rotations in the inverted flat spin before it entered a near-vertical dive. The airplane pitched up momentarily before it developed a rapid left roll. The airplane subsequently entered a nose-low, descending left spiral that continued to ground impact.

PERSONNEL INFORMATION

National Transportation Safety Board - Aircraft Accident/Incident Database

According to Federal Aviation Administration (FAA) records, the 47-year-old pilot held an airline transport pilot certificate with single engine land and sea, multiengine land, and instrument airplane ratings. The pilot was type-rated for the Airbus A320, Boeing 757, Boeing 767, McDonnell Douglas DC-9, and Douglas DC-3 transport category airplanes. He also held a glider rating. The single engine land and sea airplane ratings were limited to commercial privileges. The glider rating was limited to private privileges. The pilot's last aviation medical examination was completed on March 24, 2014, when he was issued a first-class medical certificate with no restrictions or limitations. On September 16, 2013, the pilot completed an evaluation flight and was issued a Statement of Aerobatic Competency. A search of FAA records showed no previous accidents, incidents, or enforcement proceedings. His last flight review, as required by 14 CFR Part 61.56, was completed on May 12, 2014.

The pilot's flight history was established using his pilot logbook. His most recent logbook entry was completed on May 28, 2014, at which time he had accumulated 8,266.1 hours total flight time, of which 3,628.5 hours were listed as pilot-in-command. According to the logbook, the pilot had accumulated 3,608.8 hours in single-engine airplanes, 4,649.7 hours in multi-engine airplanes, and 4.7 hours in gliders. The pilot had flown 184.2 hours during the 90 days before the accident, 36 hours in the month before the accident, and 0.8 hours during the 24-hour period before the accident. The pilot had accumulated 107.6 hours in the accident airplane make/model. According to available documentation, the pilot had completed one aerobatic training flight in his authorized aerobatic practice box during the 8-month period before the accident. The single aerobatic training flight was completed on May 28, 2014, in the accident airplane.

AIRCRAFT INFORMATION

The airplane was a 1993 Yakovlev YAK-55M, serial number 930810. It was an aerobatic single-place, single-engine airplane with a fixed conventional landing gear. The airplane was powered by a 360-horsepower, 9-cylinder Vendeneyev M14P radial engine, serial number KR0312035. The engine provided thrust through a constant-speed, three-blade, MT-Propeller MTV-9-B-C propeller, serial number 110600. The airplane had a maximum allowable takeoff weight of 2,150 pounds. The pilot purchased the airplane on October 17, 2010. The airplane was issued an FAA experimental category airworthiness certificate for the purpose of exhibition and associated operating limitations on December 7, 2010.

According to the airplane maintenance records, the most recent condition inspection was completed on September 29, 2013. At the time of that inspection, the airframe and engine had accumulated 214.5 hours total time. The propeller had accumulated 51.4 hours total time. The last recorded maintenance was an engine oil change that was completed on May 22, 2014. A postaccident review of the maintenance records found no history of unresolved airworthiness issues. The recording hour (Hobbs) meter was damaged during the accident, and a definitive reading could not be obtained.

METEOROLOGICAL INFORMATION

At 1215, an automated surface weather observation station located at STE reported: wind 200ø at 14 knots, gusting 21 knots; broken cloud ceilings at 2,900 ft agl and 3,600 ft agl; 10 miles surface visibility; temperature 26ø Celsius; dew point 19ø Celsius; and an altimeter setting of 29.90 inches of mercury.

AIRPORT INFORMATION

The Stevens Point Municipal Airport, located about 3 miles northeast of Stevens Point, Wisconsin, was served by two asphalt runways, runway 3/21 (6,028 ft by 120 ft) and runway 12/30 (3,635 ft by 75 ft). The airport elevation was 1,110 ft mean sea level.

WRECKAGE AND IMPACT INFORMATION

The accident site was located alongside a dirt road in a wooded area about 260 yards northeast of the runway 30 threshold. The elevation of the accident site was 1,095 ft. The main wreckage consisted of the entire airplane, which was orientated on a northwest heading. The wreckage was found in an upright position, and there was no appreciable wreckage debris path. The observed tree damage and the lack of a lateral debris path were consistent with a near vertical impact. All observed structural component failures were consistent with overstress separation, and there was no evidence of an inflight or postimpact fire. Flight control continuity was confirmed from all flight control surfaces to their respective cockpit controls. The engine was found in a 2.5 ft deep impact crater and remained partially attached to the firewall. Three engine cylinders had partially separated from the crankcase, which prevented the engine from being rotated. After removing several cylinders, an internal examination did not reveal any mechanical discontinuities within the engine drivetrain. The No. 1 magneto exhibited impact damage that prevented a functional test. The No. 2 magneto provided a spark on all leads when rotated. All three propeller blades were fragmented,

National Transportation Safety Board - Aircraft Accident/Incident Database

consistent with the engine producing power at the time of impact. The postaccident examination of the airplane did not reveal any mechanical anomalies that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

At the request of the Portage County Coroner, an autopsy was performed on the pilot at the University of Wisconsin-Madison School of Medicine and Public Health, located in Madison, Wisconsin. The cause of death was attributed to multiple blunt-force injuries sustained during the accident. The FAA Bioaeronautical Sciences Research Laboratory located in Oklahoma City, Oklahoma, performed toxicology tests on samples obtained during the autopsy. The toxicological test results were negative for ethanol and all drugs and medications.

TESTS AND RESEARCH

A Garmin GPSMAP 396, serial number 67014609, was recovered from the wreckage and examined at the NTSB Vehicle Recorder Laboratory. The non-volatile data was recovered through a memory-chip recovery process. The final dataset was recorded on May 31, 2014, and was associated with a 0.8-hour flight from Menomonie Municipal Airport (LUM) to STE. The Garmin GPSMAP 396 device did not contain any data associated with the accident flight.

A GoPro Hero 3+ digital video camera, serial number 30C3CDE, was recovered from the wreckage and examined at the NTSB Vehicle Recorder Laboratory. A forensic recovery of the memory card revealed eight video files. Seven of the eight video files were not associated with the accident flight. The remaining video file contained 4 minutes 37 seconds of video footage from the accident flight.

A review of the available video footage established that the camera was mounted on the glare shield facing aft toward the pilot. The pilot's helmeted head, torso, hips, upper legs, and knees were in the field-of-view. Also visible were the pilot control stick, the inboard portions of both ailerons, the outboard portions of both horizontal stabilizers, and both elevator horns/counterbalances. The vertical stabilizer and rudder were obscured by the pilot's helmeted head. The video camera also recorded audio that detected changes in wind and engine noise during the accident flight.

A review of the video footage established that the flight controls were moving in conjunction with the pilot's control inputs and that he closed and locked the canopy before takeoff. The pilot initiated the takeoff by advancing the engine power lever gradually with his left hand. The airplane became airborne in a level attitude while over the runway 21 centerline. About 8 seconds after liftoff, the pilot activated the smoke system with his right thumb on the control stick, and the airplane briefly entered a slight climb before it rolled to the right into an inverted attitude. The inverted airplane was slightly left of the runway 21 centerline. The pilot then pushed the control stick forward to initiate an inverted climb. During the inverted climb, the pilot turned the airplane away from the showline and eventually rolled the airplane upright and continued in a climbing left turn onto a downwind for runway 21. While on the downwind, the pilot made a radio call and activated the airplane's smoke system several times. The airplane continued to climb on the left crosswind and eventually turned upwind for runway 21.

At 03:53 (mm:ss) into the recording, the pilot made a radio call, activated the smoke system, and rolled the airplane inverted. After rolling inverted, the airplane continued to fly level briefly before the pilot applied aft control stick with both hands to establish a descending flight path of about 45°. The airplane then completed 2-1/2 right aileron rolls while descending, and smoke was observed trailing the airplane's flight path. By 04:06, the airplane was upright and wings level. The airplane then entered an inside loop maneuver. While the airplane was ascending, the two intersecting runways were visible outside the airplane's canopy. The longitudinal axis of the airplane appeared to be about 20° offset to the runway 3/21 centerline. At 04:17, the pilot reduced engine throttle, and the recorded audio track was consistent with a partial reduction in engine power. About 1 second later, the unrestrained portion of the pilot's shoulder harness straps (strap ends) fell toward the top of the airplane's canopy indicating the airplane had entered a negative-g environment. The pilot applied slight forward control stick with his right hand. By 04:19, the pilot further reduced the engine throttle and applied additional forward control stick input. The airplane's heading remained offset about 20° from the runway 3/21 centerline. The elevator horns/counterbalances showed that the elevator was near maximum deflection as the control stick approached the full forward position. The pilot then applied a left rudder input while holding the control stick in the full forward position. The observed smoke trail was consistent with the airplane yawing. By 04:27, the airplane was established in an inverted spin and had completed one rotation. The pilot was still holding full forward stick with some right aileron input. The airplane completed several rotations while in the inverted spin before the pilot began to move the control stick forward and applied right rudder. The airplane's rotation rate began to slow, and by 04:31, the control stick was being held in a neutral pitch position. The elevator was observed in a neutral position when compared to the horizontal stabilizer. The pilot then moved the control stick to the right, and both ailerons were observed to move in conjunction with the control stick position. The shoulder harness straps were still floating, consistent with the airplane still in a negative-g environment. The pilot was holding the control stick with a clenched right hand. At 04:32, the pilot applied a rapid left aileron and left rudder control input. The ailerons were observed to respond to the control stick movement. The shoulder harness straps were no longer floating, consistent with

the airplane in a positive-g environment. The airplane rotation stopped, and there was an increase in engine noise.

About a second after the rotation had stopped, the pilot quickly centered the control stick before moving the control stick aft. The elevator was observed to move in conjunction with the control stick movement. The ailerons appeared to be in a neutral position as the airplane pitched up from a nose-low descent toward level flight. Within the next 2 seconds, the horizon became visible behind the airplane. The upright airplane was banked slightly to the right as the airplane neared a level flight attitude. At 04:34, the pilot moved his head to look over his right shoulder. The airplane continued to pitch up and subsequently entered a level climb. The pilot then turned his head back toward the center of the cockpit, his right hand was still firmly gripping the control stick, and his left hand was on the engine throttle. Runway 3/21 was observed directly behind the airplane and perpendicular to the airplane's flight path. The airplane then entered an abrupt left roll with a positive pitch angle. The pilot had not commanded the left roll with aileron or rudder control input. The control stick position was consistent with an aft pitch and a neutral roll input. The observed positions of the ailerons and elevator were consistent with the control stick position.

The video footage was analyzed frame-by-frame, and the left roll rate appeared to increase rapidly between frames. The pilot was still gripping the control stick with his right hand while his left hand remained on the engine throttle. As the left roll developed, the pilot moved the control stick to the right and partially reduced the aft pitch. The airplane continued to roll left, and the runway 30 threshold markings became visible below the airplane. During the left roll, the pilot added additional right roll control and further reduced the aft pitch input. The ailerons and elevator responded to the control stick movement. Throughout the left roll, the pilot was looking forward, and his right hand remained on the control stick and his left hand on the engine throttle. At 04:37, the video footage ended with the airplane still airborne and rolling to the left. The airplane had rolled beyond 90° to the horizon and the runway 30 threshold markings were still visible under the airplane. The final impact sequence was not recorded by the video camera. However, during the final seconds of recorded video, the pilot's body positioning, active head movements, and flight control movements were consistent with him being conscious. Additionally, the review of the available video footage confirmed that the pilot had remained conscious throughout the aerobatic flight.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR17FA089	04/23/2017 912 PDT	Regis# N6190	Paso Robles, CA	Apt: Bonel 95CA
Acft Mk/Mdl APPLEBY NIEUPOINT 28-NO SERIE		Acft SN AA102	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
			Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: C C AIR CORP		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Events

1. Approach-VFR pattern downwind - Loss of control in flight
-

Narrative

On April 23, 2017, about 0912 Pacific daylight time, an experimental Appleby Nieuport 28, N6190, sustained substantial damage when it impacted terrain about 1/2 mile east of the Bonel Airport (95CA) near Paso Robles, California. The airline transport pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. Visual meteorological conditions prevailed, and no flight plan had been filed. The local personal flight departed from 95CA about 0907.

A witness, located at 95CA, reported observing the airplane in a steep nose down attitude just prior to losing sight of it at the tree tops, and shortly before it impacted the ground. Another witness located about 1 mile south of 95CA, observed the airplane turn to downwind and then he heard the engine "stumble" a couple of times.

Examination of the accident site by the National Transportation Safety Board (NTSB), investigator-in-charge (IIC), revealed that all major structural components and primary flight controls of the airplane, were located at the accident site.

The airplane was recovered to a secure facility for further examination.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA16LA156 04/13/2016 1230 EDT Regis# N5AQ Deland, FL Apt: Bob Lee Flight Strip 1J6
Acft Mk/Mdl ATKINSON EAGLET-NO SERIES Acft SN 005 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl HACKER A200 Acft TT 50 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: JOHN CHARTER Opr dba: Aircraft Fire: NONE
AW Cert: SPE

Summary

The sport pilot of the experimental, amateur-built motorglider reported that, after takeoff, the primary engine experienced a total loss of power about 75 ft above ground level, and the secondary engine was unable to maintain the motorglider's altitude. The pilot tried to make a 180° turn back to the airport, but the motorglider lost altitude and struck the top of pine trees. The primary engine was a 17-hp reciprocating engine designed for use in model aircraft, and the secondary engine was an electric motor. Both engines were necessary to produce enough power for takeoff. The pilot stated that, after takeoff, the motorglider encountered turbulence, which likely resulted in the separation of the primary engine's ignition plug.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power during initial climb due to a separation of the ignition plug.

Events

1. Prior to flight - Aircraft maintenance event
2. Initial climb - Powerplant sys/comp malf/fail
3. Initial climb - Loss of engine power (total)
4. Emergency descent - Off-field or emergency landing
5. Landing - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft power plant-Ignition system-(general)-Failure - C
2. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F

Narrative

On April 13, 2016, about 1230 eastern daylight time, an experimental amateur-built Eaglet motorglider, N5AQ, was substantially damaged when it impact trees shortly after takeoff from Bob Lee Flight Strip (1J6), Deland, Florida. The sport pilot incurred minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which was operated under the provisions of Title 14 Code of Federal Regulations Part 91. The flight was originating at the time of the accident.

The pilot report that after takeoff, the main reciprocating pusher engine failed about 75 feet above ground level and the secondary electric motor was unable to maintain the motorglider's altitude. The pilot tried to make a 180-degree turn back to the airport, but the motorglider lost altitude and contacted the top of pine trees. The tail of the motorglider caught the top of a tree, preventing it from colliding with the ground. The motorglider was approximately 1 foot off the ground when the pilot unlatched his seatbelt and jumped to the ground.

The pilot also reported that he had installed a DLE-170 cubic centimeter, 17 horse power engine and ignition system on the motorglider. He believed that during takeoff, he encountered moderate turbulence and the engine ignition system disconnected. He stated he believed that the certified motorglider was an ultralight and he did not need approval to modify it or keep paperwork, logbooks, and flight logs. The installed engine was designed for model airplanes.

The pilot reported that he held a sport pilot certificate and had accrued 130 total hours flight experience, with 40 hours in the same make and model as the motorglider.

Examination of the motorglider by an NTSB investigator revealed that the wing leading edges were cracked from tree limb contact. The left elevator was fractured off the hinges and the right elevator leading edge was crushed by contact with tree limbs. The canopy was broken in several pieces. The pilot had removed and transported the engine and ignition system prior to the examination, and they were not available for examination.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA251	04/30/2017 1715	Regis# N164JB	Wheatland, WY	Apt: N/a
Acft Mk/Mdl BENDER JOSEPH KIT ROTOWAY-NO		Acft SN 6763	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: BEN HILTY		Opr dba:		Aircraft Fire: NONE

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR15LA084 01/11/2015 1427 PST Regis# N8080S Prineville, OR Apt: Prineville S39
Acft Mk/Mdl BRUCT J MYERS RV-9A Acft SN 90836 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl EGFENFELLNER SUBARU H6 Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: BRUCE J MYERS Opr dba: Aircraft Fire: GRD
AW Cert: SPE

Summary

A witness observed the private pilot departing in his experimental, amateur-built airplane. He stated that, after rotation, the airplane climbed in a nose-high attitude and drifted left of the runway centerline. Upon reaching an altitude about 1,000 ft above ground level, the airplane's right wing dipped, and the airplane descended in a right spin and impacted a parallel taxiway. The airplane was mostly consumed by a postcrash fire. Subsequent examination revealed that the canopy had been ejected clear of the airframe on impact, and the canopy lock appeared in the open position. The elevator trim tab was found in the nose-up trim position; however, due to the severity of the fire and impact damage, the reason for or relevance of these findings could not be determined. Although the pilot was being treated for several medical conditions that he had not reported to the Federal Aviation Administration, it is unlikely that the conditions or their treatment contributed to the circumstances of this accident.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain adequate airspeed and his exceedance of the airplane's critical angle of attack during the climb, which resulted in an aerodynamic stall/spin.

Events

1. Initial climb - Loss of control in flight
2. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Incorrect use/operation - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
3. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C

Narrative

HISTORY OF FLIGHT

On January 11, 2015, about 1427 Pacific standard time, an experimental amateur-built Bruce J Myers (Vans) RV-9A, N8080S, collided with terrain at Prineville Airport, Prineville, Oregon. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot sustained fatal injuries, and the airplane was destroyed during the accident sequence. The cross-country personal flight was departing with a planned destination of Bend, Oregon. Visual meteorological conditions prevailed, and no flight plan had been filed.

The Assistant Manager of the Prineville Airport, who held a private pilot certificate, stated that the pilot arrived in the airplane about 0930 on the morning of the accident, after being unable to land at his intended destination of Madras, Oregon, due to bad weather. Upon landing, the pilot noticed that the nosewheel tire was flat. He borrowed the airport's loaner car, and returned to his home base airport in Bend, Oregon, to retrieve tools and a replacement inner tube. He repaired the tire, and prior to departure, he discussed the deteriorating weather conditions with the airport manager. The pilot then loaded his tools into the airplane, and taxied to the run-up area.

The manager reported that he was seated at the window of his office. He had a clear view of the entire length of runway 33 during the accident sequence. He observed the pilot perform an engine run-up, then a standard takeoff roll. He saw no other traffic in the air or on the ground, and after rotation the airplane climbed in a nose-high attitude, and drifted left of the runway centerline. After reaching about 1,000 ft agl, the right wing dipped, and it descended in a right spin, impacting the parallel taxiway to runway 28. He noticed an airplane make one pass over the crash site after approaching the airport from the northwest. That airplane did not make a radio call, and left the area after the pass.

Another pilot on the airport noted that the weather was marginal, with a ceiling of about 1,500 feet above ground level. It was raining, and the winds were calm.

PERSONNEL INFORMATION

No personal flight records were located for the 73-year-old pilot. The National Transportation Safety Board investigator-in-charge (IIC) obtained the aeronautical experience listed in this report from a review of the Federal Aviation Administration (FAA) airmen medical records on file in the Airman and Medical Records

National Transportation Safety Board - Aircraft Accident/Incident Database

Center. The pilot reported on his medical application in June 2013 that he had a total time of 960 hours, with 40 hours logged in the previous 6 months.

AIRPLANE INFORMATION

FAA records indicated that the experimental amateur-built, low-wing, fixed-gear airplane, serial number 90836, was built by the pilot, and issued a special airworthiness certificate in January 2007; the airplane was powered by an Eggenfellner Subaru H-6 converted automobile engine. No maintenance logbooks were recovered.

METEOROLOGICAL CONDITIONS

An aviation routine weather report (METAR) for Prineville, was issued at 1415 PDT, it stated: wind calm; visibility 6 miles; light unknown precipitation; sky 2,900 feet scattered, 3,400 feet scattered, 3,900 feet scattered; temperature 5/41 degrees C/F; dew point 3/37 degrees C/F; and altimeter 30.09 inches of mercury.

Similar conditions including a confirmation of light rain were reported at Roberts Field Airport, Redmond, Oregon, 12 miles west, with further deterioration throughout the day.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest on the north taxiway parallel to runway 10/28, 4,500 ft north-northwest of where the airplane initiated the takeoff roll. Fire had consumed the entire cabin and fuselage structure forward of the empennage, along with both fuel tanks and the underside of both wings. The upper wing surfaces were heavily charred and remained partially attached to the wing spar. The elevator control push-pull tube remained attached to its control arm on the elevator torque tube, and both rudder cables remained attached to their respective rudder horns. The remaining flight controls had been consumed by fire. The airplane was equipped with an electrically driven electrical elevator trim system. The elevator trim tab was observed in the tab down (nose-up) position. The steel frame of the sliding canopy was located separate from the main wreckage; its rear locking tangs were undamaged, and the forward lower canopy latch handle was found a position 45 degrees relative to the airframe centerline, corresponding to the "open" position. The canopy skirt and associated fuselage canopy track hardware was consumed by fire.

MEDICAL AND PATHOLOGICAL INFORMATION

The Oregon State Police Medical Examiner Division completed an autopsy. They determined that the cause of death was blunt force head trauma. No significant natural disease was identified.

The FAA Forensic Toxicology Research Team performed toxicological testing of specimens of the pilot.

The report contained the following findings for tested drugs: Desmethylertraline detected in liver, 2.723 (ug/ml, ug/g) Desmethylertraline detected in blood (heart), Sertraline detected in liver; and 0.531 (ug/ml, ug/g) Sertraline detected in blood (heart). There were no findings for ethanol.

The NTSB's medical officer reviewed the pilot's certified medical records on file with the FAA, the autopsy report, and personal medical records. The medical officer prepared a factual report, which is part of the public docket for this accident. The review revealed that the pilot had reported no chronic medical conditions and no chronic medication use to the FAA. However, toxicology testing identified sertraline in liver and heart blood. According to personal medical records, the pilot had longstanding asthma, impaired glucose metabolism (prediabetes), gastroesophageal reflux disease, mild hypertension, depression, and generalized anxiety disorder. His doctor had prescribed Fluticasone Propionate and Sertraline for many years, and both a burnt Fluticasone Propionate, and undamaged Albuterol Sulfate, inhaler canisters were located at the accident site. At his last primary care visit, in March 2014, his conditions were stable.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA329 08/18/2016 1530 CDT Regis# N576RV Pekin, IL Apt: Pekin Muni C15
Acft Mk/Mdl COLLINS RV6A Acft SN 72293 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl LYCOMING O-320-H2AD Acft TT 380 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091
Opr Name: PILOT Opr dba: Aircraft Fire: NONE
AW Cert: SPE

Summary

The private pilot stated that, before takeoff, he waited with the engine running for about 10 minutes while other traffic departed. While waiting, he unlatched the canopy to allow air into the cockpit; however, he failed to re-secure the canopy before takeoff. Just after the airplane lifted off the runway, the canopy tilted up, and, while attempting to close it, the pilot "got distracted and neglected to fly the airplane." The airplane experienced an aerodynamic stall and impacted terrain. The pilot reported there were no mechanical malfunctions or anomalies that would have precluded normal operation.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to latch the canopy before takeoff, and his subsequent distraction and failure to maintain control while attempting to close the open canopy, which resulted in an aerodynamic stall.

Events

1. Takeoff - Miscellaneous/other
2. Takeoff - Loss of control in flight
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Action/decision-Action-Forgotten action/omission-Pilot - C
2. Personnel issues-Psychological-Attention/monitoring-Task monitoring/vigilance-Pilot - C
3. Aircraft-Aircraft structures-Doors-Passenger/crew doors-Related operating info - C
4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
5. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Capability exceeded - C

Narrative

On August 18, 2016, about 1530 central daylight time, an experimental amateur-built Collins RV6A airplane, N576RV, impacted terrain during takeoff from runway 27 at the Pekin Municipal Airport (C15), near Pekin, Illinois. The private pilot sustained serious injuries. The airplane was substantially damaged during the impact. The airplane was registered to and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Day visual meteorological conditions prevailed in the area about the time of the accident, and the flight was not operated on a flight plan. The flight was originating from C15 at the time of the accident and was destined for the Whiteside County Airport-Jos H Bittorf Field, near Sterling/Rockfalls, Illinois.

According to an initial first-responder, the pilot indicated that he had forgotten to latch the canopy. The canopy opened during the takeoff and the airplane subsequently impacted terrain.

After the accident, the pilot made an emergency radio call over C15's common traffic advisory frequency, which went unanswered. The pilot made a cell phone call and was able to reach a representative from the fixed base operator (FBO) who subsequently went to the accident site and notified emergency responders. The pilot was taken to a hospital for the serious injuries he sustained.

The pilot indicated in his accident report that a jet delayed his takeoff. He reported the outside air temperature was over 90 degrees and he unlatched the canopy to get air into the cockpit. The jet departed after 10 minutes. The pilot subsequently departed and about 30 feet above ground he noticed the canopy was unlatched. He attempted to close the latch, got distracted, and did not maintain airplane control.

At 1454, the recorded weather at the General Downing - Peoria International Airport, near Peoria, Illinois, was: Wind 210 degrees at 12 knots; visibility 10 statute miles; sky condition clear; temperature 31 degrees C; dew point 22 degrees C; altimeter 30.01 inches of mercury.

The FBO employee indicated that a crucial thing to be taken away from this accident is that the local radio frequency at small town airports should be able to be heard in every room of the FBO or airport office.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR15LA001	10/03/2014 1330	Regis# N51TG	Council, ID	Apt: Council Muni U82
Acft Mk/Mdl GASTON THOMAS D THUNDER		Acft SN EITM027	Acft Dmg: DESTROYED	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl FALCONER V-12			Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: GASTON THOMAS D		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Summary

The pilot/builder had not flown his experimental amateur-built airplane for several months while he performed a top overhaul of the engine. During the first flight after completion of the overhaul, a witness observed the pilot start the airplane, complete an engine run-up, and take off uneventfully. Shortly thereafter, the pilot radioed that he was having an engine oil pressure issue and was returning to the airport. The witness then observed the airplane on the downwind leg of the traffic pattern. The airplane turned onto the base leg about "1/2 mile closer than normal," and, upon turning onto the final leg of the traffic pattern, began a series of descending S-turns. The airplane then made a "hard" right turn away from the runway and impacted rocky terrain. The airplane was destroyed, and the pilot was fatally injured.

Postaccident examination of the engine revealed foreign material in the oil consistent with the remnants of blue paper shop towels. This contamination was likely the cause of a low oil pressure indication. Recorded data indicated that the engine experienced a loss of oil pressure about two minutes before the accident. All other recorded parameters revealed no anomalies, with the engine indicating about 2,000 rpm at the time of impact, which may suggest that the pilot was trying to limit internal damage to the engine by reducing its power setting. Given the witness account of the airplane turning onto the base leg closer than normal, it is possible that the observed s-turns on the final leg of the approach, as well as the turn away from the runway, were an attempt to lose altitude and speed so that the airplane could be landed on the runway. It is likely that the pilot's preoccupation with the low oil pressure indication contributed to a loss of control while maneuvering for landing. Toxicological testing of the pilot was positive for diphenhydramine; however, there was no evidence to suggest that this may have contributed to the accident.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain control while maneuvering for landing following a loss of oil pressure. Contributing to the accident was foreign material contamination of the oil system due to improper maintenance.

Events

1. Approach-VFR pattern final - Unknown or undetermined
2. Maneuvering - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Task performance-Maintenance-Repair-Maintenance personnel - C
2. Aircraft-Fluids/misc hardware-Fluids-Oil-Fluid condition - C
3. Environmental issues-Physical environment-Terrain-Rough terrain-Contributed to outcome - F

Narrative

****This report was modified on March 20, 2017. Please see the docket for this accident to view the original report.***

HISTORY OF FLIGHT

On October 3, 2014, about 1330 mountain daylight time (MDT), an experimental Thomas D Gaston, Thunder Mustang, N51TG, crashed during approach to landing at the Council Municipal Airport, Council, Idaho. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The airline transport pilot was the sole occupant, and sustained fatal injuries; the airplane was destroyed by impact forces. The local personal flight departed Council at an undetermined time. Visual meteorological conditions prevailed, and no flight plan had been filed.

Witnesses reported that during a flight after the pilot had performed maintenance on the engine, the pilot radioed that he was having an engine oil pressure issue, and was returning to the airport.

One witness observed the airplane flying a normal pattern until he turned base closer to the airport than normal. He then observed the airplane as it turned on to final making descending "S" turns, he then saw the airplane make a very hard right turn towards the North-Northeast about 100 feet above the ground. He watched the airplane as it flew away from the airport when he lost sight of it.

National Transportation Safety Board - Aircraft Accident/Incident Database

PERSONNEL INFORMATION

A review of Federal Aviation Administration (FAA) airman records revealed that the 75-year old pilot held an airline transport pilot certificate with ratings for airplane single-engine land, multiengine land, and instrument airplane. The pilot also held a repairman experimental aircraft builder certificate.

The pilot held a third-class medical certificate issued on June 30, 2014. It had the limitations that the pilot must wear corrective lenses for distant vision, and possess glasses for near vision.

No personal flight records were located for the pilot. The investigator in charge obtained the aeronautical experience listed in this report from a review of the FAA airmen medical records on file in the Airman and Medical Records Center located in Oklahoma City, Oklahoma. The pilot reported on his medical application that he had a total time of 18,500 hours with 25 hours logged in the last 6 months.

AIRCRAFT INFORMATION

The airplane was an experimental amateur built Thomas D Gaston, Thunder Mustang, serial number EITM027. A review of the airplane's logbooks revealed that the airplane had a total airframe time of 222.8 hours at the last conditional inspection dated July 1, 2013.

The last entry in the aircraft logbook was dated October 2, 2014, the day before the accident. The entry was for a conditional inspection, and was signed by the pilot/builder but no aircraft times were recorded in the entry.

The engine was a Falconer V-12, serial number 12027. Total time on the engine at the last inspection was unrecorded, and could not be determined; time since major overhaul was 0.0 hours. The engine logbook had an entry dated October 2, 2014, stating the engine was test run, and safe for flight.

The engine was equipped with two MoTec M48 Engine Control Units (ECU). The units were recovered and sent to the NTSB recorders lab for download.

COMMUNICATIONS

The accident pilot was overheard on the airport UNICOM frequency by witnesses at the airport. The pilot reported he was returning due to low oil pressure. No other communication from the pilot was heard.

WRECKAGE AND IMPACT INFORMATION

Investigators from the FAA examined the wreckage at the accident scene. The accident site was in a rocky field, about 1/3 of a mile northwest of the approach end of runway 17.

The first identified point of contact (FIPC) was a ground scar. The airplane impacted the ground at a shallow angle, and the fuselage broke apart as it slid approximately 60 feet along a heading of 318ø true. The engine broke loose from the airframe and slid another 15 feet. The gear reduction case and propeller hub continued another 25 feet with one blade intact and largely undamaged. There was no rotational damage noted to the propeller.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was completed at the request of the Adams County Coroner on October 4, 2014. The coroner ruled the manner and cause of death to be a result of blunt force trauma due to an aircraft accident. No significant natural disease was identified by autopsy. The FAA's Bioaeronautical Research Sciences Laboratory, Oklahoma City, Oklahoma, performed toxicological testing of specimens of the pilot.

Analysis of the specimens contained no findings for carbon monoxide, and volatiles. They did not perform tests for cyanide.

The report contained the following findings for tested drugs: 0.034 (ug/ml) diphenhydramine detected in blood cavity..

TESTS AND RESEARCH

The airplane engine was equipped with two engine control units (ECU) which were recovered and sent to the NTSB recorders lab for download. The NTSB lab specialist submitted a factual report which is attached to the docket for this accident.

A summary of the findings of the ECU's revealed that the engine lost oil pressure 110 seconds prior to the accident. The recorded engine RPM increased and decreased in correlation with the recorded throttle position throughout the flight. The engine RPM at impact was 2,000 RPM. All the other recording parameters appeared normal until time of impact.

Examination of the recovered engine was conducted on October 7, 2015, at the facilities of Air Transport Inc. in Phoenix Arizona. A report of the examination is attached to the accident docket.

No evidence of preimpact mechanical malfunction was noted during the examination of the recovered engine.

The lower oil pan was removed and the bottom end of the engine was visually examined with no signs of thermal damage or oil starvation identified.

A foreign substance was found in the oil pan and throughout the oil cavity consistent with shredded blue paper shop towels which had been mixed in with the oil.

Review of the aircraft records revealed limited entries as to the detail of work being done on the airframe or engine.

Additional information regarding the work done on the airplane or engine by the pilot/mechanic was obtained by conversations with witnesses without any supporting documents from the aircraft records.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ANC16FA065	09/10/2016	1630 AKD	Regis# N62905	Anchorage, AK	Apt: N/a
Acft Mk/Mdl HEFTY POLAR CUB			Acft SN 0001	Acft Dmg: DESTROYED	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl LYCOMING O-320-A2A				Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: CURT HEFTY			Opr dba:		Aircraft Fire: GRD
					AW Cert: SPE

Events

1. Maneuvering - Loss of control in flight

Narrative

HISTORY OF FLIGHT

On September 10, 2016, about 1630 Alaska daylight time, a float-equipped, experimental amateur-built, Hefty Polar Cub airplane, N62905, was destroyed following a loss of control and subsequent impact with tree-covered terrain in a residential neighborhood in Anchorage, Alaska. The private pilot, the sole occupant, was fatally injured. The airplane was registered to and operated by the pilot as a personal local flight under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed. The flight reportedly originated in southwest Anchorage from Jewell Lake about 1500, but the actual departure time and flight route are unknown.

According to family and friends of the pilot, the purpose of the flight was to fly over a proposed hunting site near Willow, Alaska, and then return to Anchorage. The friend related that the pilot and a group of friends were planning a fly-in hunt later in the week.

During on-scene interviews conducted by the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on the day of the accident, multiple witnesses consistently reported that they observed the airplane complete two, low-level, high-speed, 360° right turns over a residential neighborhood. The witnesses said that the airplane's first 360° turn was accomplished at an altitude between 150 and 200 ft above ground level, but the second turn was much lower. One homeowner stated that, as the airplane passed over his home, it was about 50 ft above his roofline. The witnesses also reported that the airplane's bank angle increased significantly on the second 360° right turn. One pilot-rated witness estimated that the airplane's bank angle was in excess of 60° during the second 360° turn. Multiple witnesses reported hearing the airplane's engine operating in a manner consistent with high power settings throughout both 360° turns.

Witnesses near the accident site reported that, as the airplane completed the second, steep, 360° right turn, the nose of the airplane pitched down, and it began a rapid nose-down descent. The engine rpm then increased significantly, and the wings rolled level just before the airplane impacted a stand of tall trees adjacent to a home. During the collision sequence, the airplane's floats were severed, and the airplane subsequently descended onto a neighborhood road, coming to rest inverted. A postimpact fire ensued about 30 seconds after impact, which quickly engulfed the entire airplane.

During a brief on scene interview with the NTSB IIC, a family member, along with a friend of the pilot, both reported that it was highly unusual and uncharacteristic behavior for the pilot to be flying as witnesses described.

PERSONNEL INFORMATION

The pilot, age 75, held a private pilot certificate with an airplane single-engine land rating; he did not hold a single-engine sea rating. In addition, he held a Federal Aviation Administration (FAA) repairman certificate specifically for the accident airplane. The pilot's most recent third-class, special issuance medical certificate, was issued on May 23, 2007, and contained the limitation: "Not valid for any class after May 31, 2008."

On the pilot's application for medical certificate, dated May 23, 2007, he indicated that his total aeronautical experience was about 2,200 flight hours. No personal flight records were located for the pilot.

AIRCRAFT INFORMATION

The airplane, which bears a resemblance to a Piper PA-11, had a rectangular, welded steel-tube structure that was covered with fabric. The wings, rudder, and horizontal stabilizer were all fabric covered. At the time of the accident, the airplane was equipped with a set of EDO 2000-series floats.

National Transportation Safety Board - Aircraft Accident/Incident Database

According to archived documents on file with the FAA certification office located in Oklahoma City, the airplane was built by the pilot from a set of purchased plans and was issued an FAA experimental airworthiness certificate with operating limitations on May 22, 1996. At the time the airworthiness certificate was issued, the airplane was equipped with a Continental Motors C-90-12-F engine.

At the time of the accident, the airplane was equipped with a Lycoming O-320-A2A engine, serial number L-9126-27, and a Catto composite propeller. No installation documentation for either the engine or propeller was located.

No aircraft maintenance records were located for the accident airplane. According to family members of the pilot, the airframe and engine logbooks were likely on board the airplane at the time of the accident. According to a family friend, the accident pilot performed all of the maintenance on the accident airplane.

METEOROLOGICAL INFORMATION

The closest official weather observation station to the accident site was located at the Ted Stevens Anchorage International Airport, about 10 miles to the east. On September 10, 2016, at 1553, the station was reporting, in part: wind 230ø at 4 knots; visibility 10 statute miles; ceiling and clouds, few at 2,500 ft; temperature 63ø F; dew point 43ø F; altimeter 30.14 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

Responding fire department and police personnel reported that, upon arrival, they discovered the inverted and burning wreckage on a neighborhood road, which was surrounded by tall trees. All of the airplane's major components were found at the main wreckage site. The airplane's longitudinal axis was oriented on a heading of 035ø magnetic. Flight control continuity was established from the respective flight controls to the cabin area.

The airplane's first impact point was a stand of tall spruce trees about 120 ft from the wreckage point of rest. Broken tree branches and small portions of aircraft fabric that remained in the treetops marked the area.

The next impact point was a second stand of tall trees about 100 ft from the wreckage point of rest. The airplane's two EDO 2000-series floats were found entangled and suspended in the stand of tall trees.

The right wing was displaced slightly aft of its normal orientation to the fuselage, and the fabric on the underside of the wing was burned away. The aileron and flap remained attached to the wing, and the right flap appeared to be up. The leading edge of the right wing was slightly crushed and flattened in an aft direction, from about midspan to the wingtip. The inboard end of the wing and the right fuel tank were fire damaged.

The left wing was displaced aft about 45ø from its normal orientation to the fuselage, and most of the fabric had burned away. The aileron and flap remained attached to the wing, and the left flap appeared to be up. The leading edge at the outboard end of the wing was flattened and crushed aft, with downward curling of the wingtip. The inboard end of the wing was extensively fire damaged, and the left fuel tank was incinerated.

The entire cockpit, baggage area, and fuselage extending to the vertical stabilizer were consumed by fire. Both wing lift struts remained attached to their respective wing and fuselage attach points.

The propeller hub assembly remained connected to the engine crankshaft, but the composite propeller blades were obliterated due to impact damage. The engine had impact and fire damage to the underside and front portion. Continuity of the drive train was established at the tachometer drive fitting on the accessory case when the propeller hub was moved by hand. The engine's four spark plugs were examined and were dry with no unusual combustion signatures. The carburetor received impact damage. The engine control cables were either attached, or broken, at their respective carburetor control arms.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted under the authority of the Alaska State Medical Examiner, Anchorage, Alaska. The cause of death for the pilot was attributed to blunt force injuries. The autopsy also identified extensive lacerations of the aorta, heart, and liver. There was no soot identified in the tracheobronchial tree.

National Transportation Safety Board - Aircraft Accident/Incident Database

The FAA Bioaeronautical Sciences Research Laboratory performed toxicological examinations, which revealed 48% carboxyhemoglobin (carbon monoxide) in the pilot's blood. Additionally, amlodipine, metoprolol, naproxen, and rosuvastatin were detected in the pilot's blood and urine.

Carbon monoxide is an odorless, tasteless, colorless, nonirritating gas formed by hydrocarbon combustion. Carbon monoxide binds to hemoglobin with much greater affinity than oxygen, forming carboxyhemoglobin; elevated levels result in impaired oxygen transport and utilization. Early symptoms of carbon monoxide exposure may include headache, malaise, nausea, and dizziness. Carboxyhemoglobin levels between 10% and 20% can result in confusion, impaired judgment, and difficulty concentrating.

Nonsmokers may normally have up to 3% carboxyhemoglobin in their blood; heavy smokers may have levels of 10% to 15%. Family members and friends reported that the pilot was a nonsmoker.

Amlodipine is a prescription blood pressure medication also called Norvasc. Metoprolol is a beta blocking prescription medication, often called Lopressor or Toprol, that is used to treat high blood pressure and to prevent heart attacks in patients with coronary artery disease. Naproxen is an anti-inflammatory analgesic available over the counter with a variety of names, including Aleve. Rosuvastatin is a prescription medication to treat high cholesterol and is commonly marketed with the name Crestor. None of these medications adversely affect performance.

According to the NTSB chief medical officer's review of the pilot's autopsy and medical records obtained from the Veteran's Administration Hospital, Joint Base Elmendorf-Richardson, Anchorage, he had a history of hypertension, high cholesterol, coronary artery disease, and bladder neck obstruction. A copy of the NTSB' chief medical officer's factual report is available in the public docket for this accident.

TESTS AND RESEARCH

On December 2, 2016, after being notified by the FAA's Bioaeronautical Sciences Research Laboratory of the elevated level of carboxyhemoglobin in the pilot's blood, the NTSB IIC recovered the accident airplane's exhaust system for a detailed examination. The airplane's exhaust system consisted of a muffler covered by an exterior shroud assembly that provided ducted heat to the airplane's cockpit, cabin, and engine carburetor heat system. During the exhaust system examination, the NTSB IIC peeled open the shroud assembly, which revealed a severely degraded and damaged muffler can assembly. The muffler can was cracked around most of its circumference near the inlet portion of the muffler. The entire muffler assembly was then sent to the NTSB's Materials Laboratory for further examination.

The examination revealed that portions of the muffler can material were missing and that areas adjacent to the missing material had white, oxidized exhaust deposits. Cracks and corrosion on the interior surface of the exterior shroud in an area under a riveted doubler were also seen. A copy of the NTSB's Materials Laboratory Factual Report is included in the public docket for this accident.

ADDITIONAL INFORMATION

FAA Advisory Circular (AC) 91-59A, "Inspection and Care of General Aviation Aircraft Exhaust Systems," emphasizes the safety hazards of poorly maintained aircraft exhaust systems and highlights points at which exhaust system failures occur. In addition, the AC stresses the importance of having carbon monoxide detection equipment installed. Due to the extensive postcrash fire damage to the airplane, the NTSB was unable to determine if the accident airplane was equipped with any type of carbon monoxide detection equipment.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA171	03/21/2017 1700 CDT	Regis# N23RT	Oronogo, MO	Apt: N/a
Acft Mk/Mdl JOHN GOODMAN AIR CAMPER		Acft SN 002	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
Eng Mk/Mdl CONTINENTAL O-200		Acft TT 3	Fatal 0 Ser Inj 1	Flt Conducted Under: FAR 091
Opr Name: JOHN W GOODMAN		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Events

1. Initial climb - Loss of engine power (partial)
-

Narrative

On March 21, 2017, about 1700 central daylight time, an experimental amateur built Goodman Air Camper, N23RT, registered to the pilot/owner, sustained substantial damage when it impacted the ground following a partial loss of engine power near Oronogo, Missouri. The private pilot, who the sole occupant, sustained serious injuries. The flight was being conducted under the provisions of Federal Code of Regulations Part 91. Visual meteorological conditions prevailed and a flight plane was not filed. The flight originated at 1659 from a private airstrip near Oronogo, Missouri.

This airplane was taking off to the north from a private grass runway located on the property of the aircraft owner. The pilot stated that after takeoff, he noticed that he was losing power from the engine and made a turn to the south in an attempt to make it back to the airport. The engine continued to lose power and as the pilot attempted to make a turn to line up for landing. The aircraft lost airspeed and stalled. The aircraft contacted low trees approximately 330 feet from the end of the runway, then continued in a northwest direction before colliding with small trees. The right wing contacted the ground in a nose down attitude about 240 feet from the end of the runway.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA183	03/09/2017 1626 EST	Regis# N24188	Hendersonville, NC	Apt: N/a
Acft Mk/Mdl JOHNSON JERRY WAG AERO/SPT	Acft SN 1206	Acft Dmg: DESTROYED	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl CONTINENTAL 85	Acft TT 600	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091	
Opr Name: IRLAND V. BROWN	Opr dba:		Aircraft Fire: GRD	
			AW Cert: SPE	

Events

2. Landing - Loss of control on ground

Narrative

According to the Federal Aviation Administration (FAA), the pilot reported that he attempted to land on his private airstrip, but "landed long" due to "gusty crosswind conditions". Upon touchdown, a gust of wind lifted the right wing, which resulted in the right wheel lifting off the ground. He then performed a go-around, and reported that due to the "high angle of attack" while attempting to clear trees and power lines, he did not have visibility out of his front windscreen. Subsequently, the airplane struck a tree and two power lines. The airplane descended impacting the ground, and was consumed by a fire started by the severed powerlines.

The airplane sustained substantial damage to both wings, fuselage and empennage.

The FAA inspector reported that the pilot stated there were no pre-accident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

The automated weather observation system about 7 nautical miles from the accident site, about the time of the accident, reported the wind at 190ø at 14 knots, gusting to 19 knots. The pilot landed to the southwest.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16LA114	05/20/2016 1100	Regis# N50NE	Fruitland, UT	Apt: N/a
Acft Mk/Mdl MICHAEL BURTON CALIDUS		Acft SN C00240	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 914		Acft TT 350	Fatal 0 Ser Inj 2	Flt Conducted Under: FAR 091
Opr Name: MARC CAMPBELL		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPX

Summary

After fueling the gyroplane, the private pilot and passenger embarked on a cross-country flight over rugged and mountainous terrain. The pilot reported that, as the gyroplane approached a ridge, about 200 ft above its peak, it encountered strong downdrafts and then descended into a box canyon. Unable to climb the gyroplane to clear terrain, the pilot guided it over a river at the base of the canyon until he could see a landing spot on the shore. As he approached the site and initiated the landing flare, the right wheel struck a boulder, and the gyroplane rolled over and then came to rest in the river. The canyon in which the gyroplane came to rest was at an elevation of about 7,300 ft mean sea level (msl), and the canyon walls rose about 1,000 ft above the accident site to the north and south. The gyroplane's demonstrated maximum operating altitude was 10,000 ft, and the pilot's intended flight route would have required clearing mountain peaks that were at an elevation of 8,200 ft msl. The pilot reported that there were no mechanical malfunctions or failures with the gyroplane. Local wind conditions, along with the rugged terrain, likely resulted in mechanical turbulence and strong downdrafts along the flight route, and it is likely that the weather conditions affected the gyroplane's ability to achieve a positive climb rate. Given the weather conditions and the gyroplane's maximum operating altitude of 10,000 ft, the pilot demonstrated improper judgment by attempting such a flight. The pilot stated that he could have avoided the accident if he had approached the mountain ridge at a higher altitude. The accident site was inaccessible to first responders, which resulted in the pilot's blood being drawn about 5 hours following the accident. Toxicological testing revealed strong evidence that he had used marijuana at some point before the accident. Although he had no significant active drug (tetrahydrocannabinol [THC]) in his blood at the time it was drawn, it could not be determined how much THC was in this blood at the time of the accident. Therefore, it could not be determined if impairment due to marijuana use contributed to the pilot's poor decision-making.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper judgment in conducting a flight in a gyroplane over mountainous terrain near its demonstrated maximum operating altitude and his subsequent failure to maintain adequate clearance with terrain during cruise flight in turbulent weather conditions.

Events

1. Enroute-cruise - Turbulence encounter
2. Enroute-cruise - Loss of lift
3. Emergency descent - Off-field or emergency landing
4. Landing-flare/touchdown - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Altitude-Not attained/maintained - C
3. Aircraft-Aircraft oper/perf/capability-Aircraft capability-Climb capability-Attain/maintain not possible - C
4. Environmental issues-Physical environment-Terrain-Mountainous/hilly terrain-Effect on operation - C
5. Environmental issues-Conditions/weather/phenomena-Turbulence-Terrain induced turbulence-Effect on operation - C
6. Personnel issues-Physical-Impairment/incapacitation-Illlicit drug-Pilot

Narrative

HISTORY OF FLIGHT

On May 20, 2016, about 1100 mountain daylight time, an experimental amateur-built Michael Burton (AutoGyro GmbH) Calidus, N50NE, collided with mountainous terrain near Fruitland, Utah. The gyroplane was registered to the builder and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and passenger were seriously injured, and the gyroplane sustained substantial damage. The cross-country personal flight departed Duchesne Municipal Airport, Duchesne, Utah, about 1015, with a planned destination of Spanish Fork Airport-Springville-Woodhouse Field, Spanish Fork, Utah. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot reported that they departed from Glenwood Springs Municipal Airport, Glenwood Springs, Colorado, earlier that morning and stopped at Duchesne for fuel. They then departed west towards Spanish Fork on a route over the Wasatch Mountain Range. As they approached the last ridge, about 200 ft above its peak, they encountered strong downdrafts and the gyroplane descended 500 ft and into a box canyon. Unable to out-climb the terrain, the pilot guided the gyroplane over a river at the base of the canyon until he could see a landing spot on the shore. As he approached the site and initiated the landing flare, the

right wheel struck a boulder and the gyroplane rolled over, coming to rest in the river.

A witness, who was fishing in the river, called 911 after climbing to a peak where he was able to acquire cell phone reception. Due to the remoteness of the site, the pilot and passenger were not recovered until later in the afternoon.

The gyroplane came to rest within a canyon, at an elevation of about 7,300 ft mean sea level. The canyon walls rose about 1,000 ft above the accident site to the north and south. The projected route of flight would have required clearance over rugged 8,200 ft peaks, about 5 miles north of the 9,420 ft summit of Baldy Mountain.

About the time of the accident, a weather observation station located at Carbon County Regional Airport/Buck Davis Field, 37 miles south-southeast of the accident site and at an elevation of 5,957 ft, reported wind from 170 degrees at 20 knots gusting 25 knots. About the same time, at Provo Municipal Airport, 38 miles west at an elevation of 4,497 ft, wind was reported from 130 degrees at 15 knots, gusting to 22 knots.

The gyroplanes Pilot Operating Handbook specified a maximum demonstrated operating altitude of 10,000 ft. The pilot reported that the gyroplanes maximum gross weight was 1,256 pounds, and the that the weight at the time of the accident was 1,100 pounds.

The pilot stated that the gyroplane did not experience any mechanical malfunctions or failures, and that the accident could have been avoided if he had approached the mountain ridge at a higher altitude.

The Federal Aviation Administration Bioaeronautical Research Laboratory performed toxicology tests on a sample of blood that was collected from the pilot at 1546 on the day of the accident. Results identified 0.0111 ug/ml of tetrahydrocannabinol carboxylic acid (THC-COOH) in his blood. Tetrahydrocannabinol carboxylic acid (THC-COOH) is the primary metabolite of tetrahydrocannabinol (THC), the main psychoactive compound in marijuana. The report did not document the presence of THC. The reporting cutoff for THC was 0.001 ug/ml.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA16LA010 10/12/2015 1835 EDT Regis# N176FB Kylertown, PA Apt: Private NONE
Acft Mk/Mdl MURRAY BLAIR L FREE BIRD CLASSIC-LI Acft SN 42014 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl HIRTH 3203 Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: BLAIR MURRAY Opr dba: Aircraft Fire: NONE
AW Cert: SPX

Summary

The private pilot/owner had recently completed the experimental, amateur-built airplane and was conducting the first test flight. The pilot had completed two circuits around his private airstrip before witnesses saw the airplane approaching to land. While on final approach about 50-100 ft above the ground, the airplane suddenly descended and impacted terrain. Of the three witnesses who saw the accident, two stated that the airplane nosed over to ground contact, and one stated that the left wing dropped before the airplane nosed over. Two other individuals heard the engine "rev up" before impact but did not observe the accident. The airplane impacted terrain short of the runway in a nearly vertical, nose-down attitude and sustained extensive damage to the engine, fuselage, wings, and empennage. The tail of the airplane was twisted and bent forward over the fuselage, and there did not appear to be any forward momentum of the airplane at impact, consistent with an aerodynamic stall/spin. The witness accounts of the airplane's nose or wing dropping were also consistent with entry into a stall/spin. Given that the accident flight was the pilot's first flight in the airplane, he was likely unfamiliar with its flight characteristics, and, during the approach for landing, the pilot allowed the airspeed to decay. The airplane subsequently exceeded its critical angle of attack and entered an aerodynamic stall/spin.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain sufficient airspeed during approach for landing, which resulted in an inadvertent aerodynamic stall/spin. Contributing to the accident was the pilot's lack of flight experience in the accident airplane make and model.

Events

1. Approach-VFR pattern final - Loss of control in flight
2. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - C

Narrative

On October 12, 2015, at 1835 eastern daylight time, an experimental amateur-built Free Bird Classic airplane, N176FB, was destroyed while maneuvering to land at the pilot's private airstrip near Kylertown, Pennsylvania. The private pilot was fatally injured. The airplane was registered to and operated by the pilot as a 14 Code of Federal Regulations (CFR) Part 91 personal flight. Visual meteorological conditions existed near the accident site at the time of the accident, and no flight plan was filed. The flight originated from the private airstrip about 1815.

The pilot's son stated that his father had recently built the airplane and this was his first flight. Several witnesses heard the airplane flying circuits around the private airstrip. One witness said the airplane was preparing to land and was about 50 ft above the ground in a level flight attitude when it suddenly nosed over. The witness did not see the impact but heard the crash and immediately responded to the site. Another witness said the airplane made two circuits around the airstrip and was coming into land. While on final approach in a level attitude, at an altitude of about 100 ft above the ground, the right wing suddenly "flipped up" about 90 degrees and the airplane descended toward the ground. The witness did not see the impact, but heard the engine rev up just before the airplane hit the ground. Other witnesses also heard the engine rev up before impact.

The airplane came to rest on a road in a steep, nose-down attitude about 500 yds short of the runway. There was no post-impact fire. A review of photos taken by law enforcement shortly after the accident revealed the cockpit and fuselage were crushed, and both wings and the empennage were damaged. The empennage, including the tail control surfaces, were twisted and bent forward over the fuselage.

A Federal Aviation Administration (FAA) inspector performed a postaccident examination of the wreckage. He stated that the left wing, engine, and the right wing fuel-tank had separated from the airframe and the right wing was "torn apart" which prohibited a complete examination of the flight control system. There were no flight-data recording avionics installed in the airplane. A review of the maintenance logbooks revealed that the FAA issued the airplane a special airworthiness certificate on August 27, 2015. At that time, the airplane had "0" hours.

The 83-year old pilot held a private pilot certificate for airplane single-engine land and was a certified repairman, experimental-aircraft builder. A review of his

National Transportation Safety Board - Aircraft Accident/Incident Database

logbook revealed he had a total of 682 flight hours and had completed a flight review with a flight instructor on September 16, 2015. The pilot's last FAA third-class medical certificate was issued in 2005.

An autopsy was conducted by the J.C. Blair Memorial Hospital Laboratory. The cause of death was reported as blunt force trauma. The FAA's Civil Aerospace Medical Institute performed forensic toxicology testing on specimens from the pilot, and the results were negative for all items tested.

Weather reported at Clearfield-Lawrence Airport (FIG), Clearfield, Pennsylvania, about 17 miles west of the accident site at 1855, was wind variable at 5 knots, visibility 10 miles, and clear skies.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA257 05/04/2017 1123 Regis# N832SD Englewood, CO Apt: Centennial APA
Acft Mk/Mdl NELSON SYDNEY VANS ACFT Acft SN 80832 Acft Dmg: SUBSTANTIAL Rpt Status: Prelim Prob Caus: Pending
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: JAMES GEYMAN Opr dba: Aircraft Fire: NONE

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA15LA244	06/06/2015 1405 EDT	Regis# N323RP	Monroe, NC	Apt: Charlotte-monroe Executive EQY
Acft Mk/Mdl RADDATZ STEVE RV 8		Acft SN 81238	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl LYCOMING IO-360		Acft TT 561	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: OZERO HUTCHINS, JR.		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Summary

The airline transport pilot stated that he made a "normal" landing in the tailwheel airplane and that the airplane began to veer right. The pilot applied rudder correction, but the airplane continued to the right, departed the runway, and traveled down an embankment. Examination of the runway revealed tire skid marks from the main landing gear consistent with the airplane touching down to the right of centerline, slightly angled toward the right side of the runway. The skid marks continued right, and departed the paved surface at an approximate 90° angle. There were no skid marks from the tailwheel. The pilot later stated that when the airplane was lifted, the tailwheel was unlocked, but the investigation could not determine whether it was unlocked before the accident or during the accident sequence. The pilot noted that postaccident maintenance of the airplane revealed no anomalies with the braking system.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain directional control during the landing.

Events

1. Landing-landing roll - Runway excursion

Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Directional control-Not attained/maintained - C

Narrative

On June 6, 2015, about 1405 eastern daylight time, an experimental amateur-built RV8, N323RP, was substantially damaged when it veered off the runway while landing at Charlotte-Monroe Executive Airport (EQY), Monroe, North Carolina. The airline transport pilot was not injured. Visual meteorological conditions prevailed, and a visual flight rules flight plan had been filed but not activated. The personal flight, which originated at Tuscaloosa Regional Airport (TCL), Tuscaloosa, Alabama, was operating under the provisions of 14 Code of Federal Regulations part 91.

The pilot reported that upon a "normal" touchdown on runway 5, the airplane veered to the right, departed the runway and went down an embankment. The pilot further noted that when the airplane was lifted, the tailwheel was not locked; however, no evidence was provided that the tailwheel was unlocked prior to the landing, or whether it became unlocked in the course of the accident sequence. In addition, the pilot did not state that the airplane drifted to the right after the tailwheel touched down.

Photographs of skid marks consistent with the main landing gear tires showed that the airplane landed right of the runway centerline, angling toward the right, then turned further toward the right, and exited the runway about a 90° angle. The skid marks continued along the runway, and as the airplane turned, the right wheel skid marks became "chatter marks." There were no marks from the tailwheel.

In a follow-up email, the pilot noted that he "applied rudder correction and that looks like where the skid marks started." He also noted, "no report of brake problems from the people that are rebuilding the airplane."

Winds, recorded at the airport at 1253, were calm, at 1353, no winds were recorded, and at 1453, winds were from 040° true at 9 knots.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16LA122 05/23/2016 945 PDT Regis# N481TJ Lodi, CA Apt: Lodi 103
Acft Mk/Mdl RANS S 5 Acft SN 92-189 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 503 Acft TT 237 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: DAVID HARDWICK Opr dba: Aircraft Fire: NONE
AW Cert: SPE

Summary

The student pilot reported that, during cruise flight in the experimental light sport airplane, he encountered moderate turbulence. Shortly thereafter, the engine experienced a total loss of power. Following an uneventful landing in an open field, the pilot found that a fuel line was pinched between his seat and the fuselage. After repositioning the fuel line, he was able to start the engine and took off to return to the airport. While in the airport traffic pattern, his seat shifted, and the engine lost power a second time. The pilot initiated a forced landing to a nearby road; however, just before touchdown, the pilot "banked hard left" to avoid hitting a vehicle on the road. The airplane subsequently experienced an aerodynamic stall and impacted the ground.

Postaccident examination of the airplane revealed that the fuel line located behind the pilot's seat could be compressed by hand. Movement of the seat allowed for the fuel line to be pinched, resulting in an interruption of fuel flow to the engine. After installing a new propeller, a test run of the engine was completed with no anomalies observed.

ÿ

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power due to fuel starvation as the result of a pinched fuel line. Contributing to the accident was the pilot's maneuvering just before landing, which resulted in the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall.

♂

Events

1. Approach-VFR pattern downwind - Loss of engine power (total)
2. Landing-landing roll - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft systems-Fuel system-Fuel distribution-Design - C
2. Aircraft-Fluids/misc hardware-Fluids-Fuel-Not specified - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - F
4. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - F

Narrative

On May 23, 2016, about 0945 Pacific daylight time, a Rans S-5, N481TJ, sustained substantial damage to the fuselage when it impacted the ground near Lodi Airport (103), Lodi, California following a loss of engine power. The student pilot, the sole occupant, sustained minor injuries. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight that originated from 103 at 0930.

In the written statement, the pilot reported that during the flight, he encountered a moderate turbulence that was accompanied by 4 bumps. Seconds later, the engine lost power. The pilot executed an emergency landing to a nearby field. After he landed, he observed that the fuel line was pinched between the airframe and the seat. The pilot repositioned the fuel line, and ran the engine for 10 minutes to ensure there were no abnormalities and took off to return to the airport. On the downwind leg, the seat shifted to the left, and the engine stopped producing power. The pilot elected to land on a nearby road; however, a vehicle approached his direction. The pilot made a hard left turn to avoid landing on the road and the airplane stalled at about 50 feet above ground level and subsequently impacted terrain.

According to the Federal Aviation Administration inspector, it was apparent that the movement of the seat pinched the fuel line which resulted in the starvation of the fuel to the engine and, therefore, caused the engine to stop producing power. The inspector stated that the pilot and a mechanic replaced the propeller and started the engine with no issues.

On June 9, 2016, a National Transportation Safety Board investigator conducted the engine and airframe examination. He observed that the fuel line from the engine remained connected to the fuel pump, and from the fuel pump, the fuel line extended into the right side of the fuselage. The fuel line was manually cut forward of the fuel shut off valve, located on the right side of the airframe, just behind the seat. No abrasions or chafing were observed on the fuel line. The fuel line about 3 inches from the area it was cut could be compressed by hand. The seat remained partially attached to the airframe. The seat featured a rigid

mount via two tubes on the left and right sides of the seat, that attached to the airplane structure forward of the seat. The rear of the seat frame was suspended by seat belt type webbing attached to the left and right side of the seat frame assembly. The right side seat frame tube exhibited a wear mark on the lower right side, which corresponded to another wear mark on an aluminum tube that spanned the airplane crosswise.

No evidence of any preexisting mechanical malfunction was found.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16LA110	05/13/2016 1530 PDT	Regis# N68TQ	Mojave, CA	Apt: Mohave Air And Space Port MHV
Acft Mk/Mdl SEGUIN QUICKIE		Acft SN 001	Acft Dmg: DESTROYED	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PBS TJ-40		Acft TT 1	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: ELLIOT SEGUIN		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Summary

The commercial pilot and a colleague constructed the single-place, composite airplane with the intention of using it for air racing purposes. Rather than using the single piston engine and propeller specified by the original plans, they opted to power the airplane with two turbojet engines. The engines were designed and intended for use only on model aircraft and were mounted one per side on the lower fuselage, just aft of the cockpit.

The airplane was in the very early stages of its flight test program and had flown only two previous flights with an accumulated total flight time of about 0.8 hours. The purpose of the accident flight was to begin exploring the crosswind handling characteristics and capabilities of the airplane. About 200 ft above ground level (agl) during the first landing approach, the pilot conducted a go-around and climbed to pattern altitude for another approach. While in the landing flare about 10 ft agl, a gust of wind from the right side disturbed the airplane, and the pilot applied power to go around. He heard one engine "spool down" and confirmed a power loss on the left engine via the instrument indications. The wind gust and power loss caused the airplane to track left toward an array of unused airliners stored at the airport. Since the airplane's single-engine minimum control speed had not yet been determined, preflight planning called for reducing power on the remaining engine and landing in the event of an engine power loss; however, the pilot maintained about 30-40% thrust on the right engine to avoid impacting one of the airliners. The asymmetric thrust resulted in a loss of directional control, and the airplane was destroyed when it struck a wooden office trailer and the ground. There was insufficient evidence to determine the reason(s) for the loss of engine power, and none of the three most likely causes (fuel flow interruption, air flow interruption, or flameout due to rapid and large throttle input) could be definitively ruled out.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A loss of engine power for reasons that could not be determined based on the available information.

Events

1. Approach-VFR go-around - Loss of engine power (partial)
2. Approach-VFR go-around - Loss of control in flight

Findings - Cause/Factor

1. Not determined-Not determined-(general)-(general)-Unknown/Not determined - C

Narrative

HISTORY OF FLIGHT

On May 13, 2016, about 1530 Pacific daylight time, an experimental amateur-built Quickie, N68TQ, was destroyed when it impacted a structure and terrain following a loss of engine power at Mojave Air and Space Port (MHV), Mojave, California. The pilot received minor injuries. The test flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed.

The airplane was originally developed and designed as a kit to be powered by a single piston engine. According to the pilot, he and another individual had modified the airplane to be powered by two turbine engines, and they planned to use it for air-racing purposes. The accident flight was the third flight of the airplane, which had accumulated a total of approximately 0.8 hours of flight time, all by the accident pilot. The flight was intended to begin exploring the crosswind handling capability and characteristics of the airplane. The pilot intended to conduct several circuits in the airport traffic pattern, each terminating in a low approach and go around, with one landing at the end of the flight.

The pilot departed on runway 12, and conducted his first approach to runway 26. When the airplane was about 200 feet above ground level (agl), the pilot abandoned that approach, and climbed back up to pattern altitude for another approach. This time, based on the winds, he maneuvered for a landing on runway 12. While in the flare at approximately 10 feet agl, a gust from right side disturbed the airplane, and the pilot applied power to go-around. He heard an engine "spool down," and confirmed a power loss on the left engine via the instrument indications. The gust disturbance and power loss caused the airplane to track left towards the airliners stored at MHV, and the pilot found himself headed for a parked B-747. He maintained approximately 30-40% thrust on the right engine to clear the B-747, but he was unable to correct the directional slew with full aileron/rudder controls. The airplane cleared the parked B-747, continued to descend, and impacted a wooden office trailer and the ground shortly thereafter.

National Transportation Safety Board - Aircraft Accident/Incident Database

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with multiple ratings. He reported that he had about 1,650 total hours of flight experience, including about 0.8 hours in the accident airplane make and model. His most recent flight review was completed in May 2015, and his most recent Federal Aviation Administration (FAA) second class medical certificate was issued in September 2015. The pilot was employed as a professional test pilot for a general aviation airplane manufacturer.

AIRCRAFT INFORMATION

General

FAA information indicated that the airplane was built by the pilot, and registered to him in February 2016. The pilot reported that the airplane was equipped with two Czech-manufactured PBS-TJ40 turbine engines, and that the engines were FADEC (full authority digital engine control) equipped.

The airplane was primarily of composite (glass cloth and resin) construction. It was a canard design, with the wings mounted aft and above the single-place cockpit. The two fixed main landing gear were located at the ends of each canard, and a tailwheel was situated below the single vertical stabilizer and rudder.

The original design for a nose-mounted piston engine was modified by the builders; they fabricated and installed a faired nose cone, and installed the two turbine engines just aft of the cockpit, one on either side of the fuselage, near where the side surfaces transitioned to the bottom surface. One engine was attached to either end of a through-strut, so that each engine/thrust centerline was located about 2 feet outboard of the fuselage centerline.

Engine Information

The engine was designed and marketed for use on model aircraft. According to the engine manufacturer's Operation and Maintenance Manual (OMM), the TJ40-G1 was a single-shaft turbojet engine with a single-stage radial compressor, annular combustion chamber, single-stage axial turbine, and an exhaust nozzle. A starter-generator was housed in the compressor impeller assembly. A ceramic spark plug was integrated in the combustion chamber, and "evaporating pipes" were used for "generation of the mixture of fuel and air."

The engine produced about 88 pounds of thrust. Idle fuel consumption was cited as 20 ml/min (0.32 gallons per hour- gph), and maximum fuel consumption rate was 19.2 gph.

The OMM contained the following caution:

"The TJ40-G1 turbojet engine is designed exclusively for model aircraft and is not suitable for any other purpose. Never use it for people, objects or vehicle; it can only be used for properly designed model aircraft. Any other use can result in injury or death."

METEOROLOGICAL INFORMATION

The MHV 1520 automated weather observation included winds from 210 degrees at 15 knots, visibility 10 miles, clear skies, temperature 32 degrees C, dew point minus 2 degrees C, and an altimeter setting of 29.95 inches of mercury. The 1540 winds were reported as being from 220 degrees at 18 knots.

AIRPORT INFORMATION

MHV was situated at an altitude of about 2,800 feet msl. It was equipped with three runways, as follows:

- Runway 4/22: 4,746 by 60 feet
- Runway 8/26: 7,049 by 100 feet
- Runway 12/30: 12,503 by 200 feet

The runways were arranged so that the thresholds of 4 and 8 were essentially collocated, and that apex was situated about 4,000 feet south-southwest of the threshold of runway 12. Numerous stored/unused airliners were parked east of runway 12, between the centerlines or extended centerlines of runways 4 and 8.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted in an area of the airport used to store and/or dismantle unused airlines. The highly fragmented wreckage was located in a relatively compact area, about 3,000 feet down runway 12, about 1,500 feet northeast of its centerline.

The airplane struck the office trailer, located among the airliners, while it was still airborne. The trailer was oriented with its longitudinal axis approximately east-west, and the airplane initially struck the east end of the south side, headed north. Damage patterns were consistent with the airplane passing completely through the trailer. The canards, wings, vertical stabilizer, and one engine were all fracture-separated from the fuselage. The fuselage was ruptured just aft of the cockpit, but the cockpit remained relatively intact. No leaked fuel was observed at the scene, and there was no fire.

No FAA or NTSB personnel responded to the scene on the accident day, and the wreckage was collected and transported to the pilot's hangar at MHV for subsequent examination. An FAA inspector examined the wreckage a few days after the accident.

All components were accounted for. The inspector observed leaked fuel below the fuselage section where the fuel tank was mounted. He was unable to determine the remaining fuel quantity, or whether the tank was breached. Neither engine displayed any evidence of an uncontained failure, or other evidence of any pre-impact mechanical failures.

ADDITIONAL INFORMATION

Pilot's Helmet

The pilot reported that during the flight and accident, he was wearing his Gentex brand model HGU-68 helmet. The Gentex website indicated that the helmet "was designed to meet the rigorous requirements of the U.S. Navy and Marine Corps" and is equipped "with a single visor system qualified at 600 KEAS (Knots Equivalent Air Speed) in accordance with MIL-H-85047A."

The pilot reported that the visor was down at the time of the accident, but that the visor opened during the accident sequence, and the pilot sustained a black eye. In a written communication to the NTSB, the pilot stated that his "natural flinch" position was to turn his head slightly to the right, which resulted in the helmet visor friction knob, located on the left side of the helmet, being in a more forward-facing position. He noted that "something in the crash caught the friction knob (there are marks on the knob and the visor is cracked right there) and pulled it open, presenting my eye to the crash."

Potential Engine Power Loss Causes

Turbine engines can experience significant power losses, or cease operation altogether, primarily due to the disturbance or cessation of the supply of one of the two principle input components, fuel and air. Fuel flow interruptions can be caused by fuel exhaustion, fuel starvation, contaminated or clogged lines or filters, or loss of fuel pressure.

Inlet air disruptions are typically the result of disturbed airflow due to atmospheric turbulence, or high sideslip or angle of attack values. Inlet airflow disturbances will often result in compressor stall, where the compressor airfoils exceed their critical angle of attack. Compressor stalls are normally accompanied by loud reports such as "bangs" or a more steady roaring sound.

Imbalances between the fuel- and air-flows into the engine can also result in "flameout," where the fuel air mixture in the combustion chamber is either too lean or too rich to support combustion, and the fire in the combustion chamber is extinguished. Such imbalances are most often triggered by rapid and/or large commanded changes to engine thrust levels.

National Transportation Safety Board - Aircraft Accident/Incident Database

In his accident statements to the NTSB, the pilot reported that the left engine lost all power just after he commanded go-around thrust. He reported that he believed that the loss of power was caused by the disturbed or blocked airflow to the engine, due to the gust from the right that prompted the go-around. He did not report any sounds similar to a compressor stall.

Pilot-Reported Fuel System Information

The pilot provided the following information regarding the fuel system configuration, indications, and post-accident condition:

- The fuel tank had an estimated capacity of 7 gallons, including 1 gallon unusable
- The fuel tank was situated below the forward front cockpit, under the pilot's legs
- The tank quantity was "gauged with a very repeatable float type mechanical fuel gauge on the top of the tank" directly visible to the pilot, on the cockpit floor between his legs
- The fuel is routed from the tank to a tee fitting, and then through two shut off valves; the valves were found in the "ON" position at the accident site
- Fuel indication just prior to the accident was between 3/8 and 1/2 tank

The pilot reported the following planning and operational information

- "Bingo" fuel (the quantity at which the testing was to be terminated and the airplane landed) was 1/2 tank
- The takeoff fuel quantity was sufficient for 85 minutes of flight when flying the planned test profile. He amplified that value by stating that "That is in economy cruise at 80 mph," and was "based on the L/D check we did on flight one."
- He acknowledged that with "Full power on both engines, the duration is much much shorter."
- Full power on both engines yields a climb rate of "greater than 2,000 fpm."

The pilot provided his estimate of times and power settings for the flight as follows:

- The airplane was towed to the runway, and the engine was started at the hold short line
- The engine was run for 3 minutes at 20% power to recharge the batteries
- Applied full power for takeoff; duration was "1-2 minutes"
- Idle descent for 7 minutes.
- Conducted an approach to runway 26 down to 500 feet; terminated in go-around
- Approximately "20 seconds [at] full power"
- Idle descent to runway 12; terminated in accident

NTSB Fuel Burn Calculations

Using the pilot-reported initial usable fuel quantity of 6 gallons and the OMM maximum fuel burn rate, the two engines could be run for a total of about 9.2 minutes at full throttle.

Based on the pilot's estimates, the engines were run for about 17 minutes on the accident flight. Calculations that used the pilot's estimated flight times and power settings, and linear interpolation for fuel burn rate between idle and full thrust, indicated that the flight would have consumed a total of approximately 2 gallons of fuel.

Unknowns regarding this aspect of the investigation included the actual pre- or post-flight fuel quantity, the actual fuel burn rates at the various power settings, the actual power settings, or the actual flight durations at those power settings.

Minimum Control Airspeed

Loss of thrust in one engine of a multi-engine airplane will reduce or eliminate climb capability, and will introduce directional control problems that result from asymmetric thrust in non-centerline thrust configuration airplanes. Minimum control speed airborne (V_{mca}) is defined by 14 CFR part 23 as the minimum speed at which directional control, under a very specific set of circumstances, can be maintained with the critical engine inoperative while airborne in a multi-engine

National Transportation Safety Board - Aircraft Accident/Incident Database

airplane. Vmca does not require or provide for a positive rate of climb. Vmca is a function of multiple factors, and is established by the manufacturer during flight test. Because the airplane had accumulated less than 1 hour of total flight time in its test program, Vmca had not been yet determined.

The Airplane Flying Handbook (AFH, FAA-8083-3) contained the following text regarding engine failures. "A takeoff or go-around is the most critical time to suffer an engine failure. The airplane will be slow, close to the ground, and may even have landing gear and flaps extended. Altitude and time will be minimal...Airplane climb performance will be marginal or even non-existent, and obstructions may lie ahead...With loss of an engine, it is paramount to maintain airplane control and comply with the manufacturer's recommended emergency procedures."

The pilot stated that because Vmca had not yet been determined, the flight test program's engine failure plan called for the pilot to reduce thrust in the operating engine to idle, and land wherever practical. He reported that following the loss of left engine thrust, he had to maintain some thrust on the right engine in order to avoid striking the parked airliners. He also reported that the resulting thrust asymmetry resulted in his limited ability to control the airplane flight path.

Engine FADEC Data

The engine was equipped with limited non-volatile memory as part of the FADEC. The pilot sent both engines (including their FADEC modules) to the engine manufacturer in the Czech Republic for analysis, but the manufacturer only provided limited feedback, which did not provide any useful information regarding the reason(s) for the engine failure.

Onboard Video Recordings

A private film production company had teamed with the pilot and his colleague to produce a documentary about the airplane development and testing. In support of that effort, the company had installed several video cameras on the airplane and/or pilot for this flight. Film company personnel recovered most of those cameras prior to the NTSB becoming aware that they were installed. Based upon the pilot's description of the contents, the NTSB investigator in charge decided not to request or retain any of the imagery, due to its limited usefulness to the investigation.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA14LA358	07/25/2014 1108 EDT	Regis# N3831W	Grove City, PA	Apt: Grove City 29D
Acft Mk/Mdl WINDER ROBERT S VP1		Acft SN 01	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl VOLKSWAGEN		Acft TT 4	Fatal 0 Ser Inj 1	Flt Conducted Under: FAR 091
Opr Name: WINDER ROBERT S		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPE

Events

1. Approach-VFR pattern final - Miscellaneous/other

Narrative

On July 25, 2014, about 1108 eastern daylight time, an experimental amateur-built VP1, N3831W, was substantially damaged when it impacted terrain while attempting to land at Grove City Airport (29D), Grove City, Pennsylvania. The private pilot was seriously injured. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to an employee of the fixed base operator at 29D, the accident pilot was performing takeoffs and landings in the airport traffic pattern, and had completed three to four circuits when the accident occurred. She watched as the airplane was on final approach to land on runway 28; about 1/4-mile from the runway threshold, it suddenly "jerked" left, away from the runway centerline. The airplane continued on that track in a shallow descent until it impacted a berm about 200 feet south of the runway, about 750 feet beyond the threshold. Prior to impact, the engine sound was smooth and continuous, and did not change in pitch or intensity. The engine sound continued uninterrupted until impact. Medevac personnel based at the airport subsequently responded to the accident site to render assistance to the pilot.

Due to the nature of the injuries he sustained during the accident, the pilot was unable to recall any details of the accident.

The pilot, age 83, held a private pilot certificate with a rating for airplane single-engine land. His most recent Federal Aviation Administration third-class medical certificate was issued in June 2010 with the limitation "must wear corrective lenses." He also held an experimental aircraft builder repairman certificate for the accident airplane. None of the pilot's personal flight logs were available for inspection and his total flight experience could not be determined.

The airplane's airworthiness certificate was issued in December 2010. It was equipped with a Volkswagen 65 horsepower engine driving a Heagy fixed-pitch propeller. The airplane's most recent condition inspection was completed by the pilot on July 18, 2014, with no anomalies noted.

Federal Aviation Administration inspectors examined the wreckage after it was recovered from the accident site. During the examination, the inspectors confirmed flight control continuity for the elevator and ailerons. The rudder pedals had separated from the fuselage floor during impact, but were otherwise intact and connected to the rudder. The engine was separated from the fuselage, though the engine control cables remained connected and intact.

Continuity of the engine power and valvetrain was confirmed through rotation of the crankshaft, and thumb compression was noted on all cylinders. The spark plugs exhibited a clean appearance with a small amount of external corrosion. Fuel and a small quantity of dirt were found in the fuel filter and in the carburetor float bowl.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA300 08/02/2016 2045 EDT Regis# N430WT Bluffton, IN Apt: Miller Airport C40
Acft Mk/Mdl WINGS AN THINGS INC AVID FLYER Acft SN 145 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl BOMBARDIER 532 UL Acft TT 250 Fatal 0 Ser Inj 2 Flt Conducted Under: FAR 091
Opr Name: MATTHEW T CHRISTMAN Opr dba: Aircraft Fire: NONE
AW Cert: SPE

Summary

The student pilot was operating a personal, local flight in the nonregistered, experimental amateur-built airplane with one passenger onboard. The student stated that, while the airplane was climbing through 500 ft above ground level after takeoff, there was an uncommanded left roll. He reported that the airspeed was 60 knots (which is above the stall speed of 40 mph listed in the airplane's specifications). He applied right control input to the control stick, which did not counter the left roll. The airplane entered a left spiral descent, and the pilot pulled back on the control stick and applied right rudder until the airplane impacted terrain. He reported that the airplane's engine was at full throttle during the flight and that it did not experience a loss of engine power.

A postaccident examination of the airframe, including the flight controls, revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. The investigation could not determine the reason for the loss of roll control.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The loss of roll control during climb for reasons that could not be determined because postaccident examination of the airframe revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Events

1. Initial climb - Loss of control in flight
2. Initial climb - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Not determined-Not determined-(general)-(general)-Unknown/Not determined - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Lateral/bank control-Not attained/maintained - C
3. Aircraft-Aircraft handling/service-Maintenance/inspections-Scheduled maint checks-Not inspected
4. Personnel issues-Experience/knowledge-Experience/qualifications-Qualification/certification-Student/instructed pilot

Narrative

On August 2, 2016, about 2045 eastern daylight time, an experimental, amateur-built Wings An Things Avid Flyer airplane, N430WT, sustained substantial damage when it impacted a cornfield after takeoff from Miller Airport (C40), Bluffton, Indiana. The student pilot and passenger received serious injuries. The student pilot owned and operated the non-registered airplane under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the personal flight, which was not on a flight plan. The flight departed from C40 about 1945 on a local flight.

The student pilot reported that he had flown for about an hour and then returned to land at C40. He decided to make one more takeoff and landing before completing the flight. He departed to the west and at approximately 500 ft, the left wing "dipped on its own without input from the stick." He countered with opposite right stick but without effect. The left wing continued to dip further to the left. He reported the airspeed was 60 kts (which is above the stall speed of 40 mph listed in the Avid Flyer specifications). He attempted to put in right rudder and right stick, but again without effect. He then tried turning into the left dip, but the airplane continued losing altitude. Before impact, he pulled back on the stick with hard right rudder, and the nose came up "some" before the airplane hit the tall corn. After ground impact, he exited the airplane, and then immediately worked to get the passenger unbuckled and evacuated out of the airplane. He reported that the airplane's engine was at full throttle during the flight and it did not experience a loss of engine power. He reported the loss of airplane control was due to a separated left aileron.

A Federal Aviation Administration (FAA) inspector examined the airplane wreckage and reported that there was no preexisting anomaly in the flight controls. He reported that there was flight control continuity from the cockpit controls to the flight control surfaces. The examination revealed that the damage to the four broken left wing flaperon attach points was consistent with impact damage.

The 42-year-old pilot held a student pilot certificate and was authorized to fly solo in a Cessna 172, but there was no endorsement in his logbook to fly the accident airplane. The pilot's logbook indicated he had a total of 46 hours of flight time. There was no record in his logbook concerning any flights in the accident airplane. He held a third class medical certificate issued on December 17, 2015.

The airplane was manufactured in 1985. The airplane's maintenance logbook indicated that the last conditional maintenance inspection was conducted on

National Transportation Safety Board - Aircraft Accident/Incident Database

January 23, 1995. At the time of the inspection, the airframe had a total time of 249.7 hours and the engine had 107.9 hours. On May 15, 2015, the FAA cancelled the airplane's registration and the airplane was considered as a non-registered aircraft.

Federal Aviation Regulation (FAR) 61.89 (a) states that "A student pilot may not act as a pilot in command of an aircraft: (1) That is carrying a passenger."

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA15LA306 08/10/2015 1033 EDT Regis# N9288 Brooksville, FL Apt: Brooksville-tampa Bay Rgnl BKV
Acft Mk/Mdl WRIGHT DANIEL J VOLKSPLANE VP-1 Acft SN 42010 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl AEROVEE 2180 Acft TT 120 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091
Opr Name: FALK NICOLAUS Opr dba: Aircraft Fire: GRD
AW Cert: SPE

Summary

The sport pilot, who was also the builder of the single-seat, experimental, amateur-built airplane, stated that he had "some issues" during assembly of the experimental engine kit, but was finally able to achieve the desired engine rpm during static tests. Subsequently, during the airplane's takeoff roll on its first flight with the new engine, the pilot noted that the airplane was able to gain airspeed, but struggled to become airborne. The pilot stated that he should have aborted the takeoff at that point. The airplane reached a maximum altitude about 100 ft, the engine lost power, and the airplane descended into trees and was destroyed by a postimpact fire. The extent of the fire precluded detailed documentation of the engine and its associated systems; therefore, the reason for the loss of power could not be determined.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to abort the takeoff after determining that the engine was not producing adequate power. Contributing to the accident was the engine's inability to produce adequate power for reasons that could not be determined due to extensive postimpact fire damage.

Events

1. Takeoff - Loss of engine power (partial)
2. Initial climb - Loss of engine power (partial)
3. Approach-VFR pattern downwind - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
2. Aircraft-Aircraft power plant-Engine (reciprocating)-(general)-Not specified - F
3. Not determined-Not determined-(general)-(general)-Unknown/Not determined - F

Narrative

On August 10, 2015, at 1033 eastern daylight time, an experimental amateur-built Volksplane VP-1, N9288, was destroyed when it impacted trees and terrain during the initial climb after takeoff from Brooksville-Tampa Bay Regional Airport (BKV), Brooksville, Florida. The sport pilot, who was also the builder of the airplane, was seriously injured. Visual meteorological conditions prevailed, and no flight plan had been filed for the local test flight which was operating under the provisions of 14 Code of Federal Regulations Part 91.

According to information obtained from the Federal Aviation Administration (FAA), the airplane departed from runway 9 and appeared to climb no higher than 100 feet. It made a left turn beyond the departure end of the runway and eventually descended into a wooded area about 1/2 mile north of the approach end of runway 27.

According to the pilot, he purchased the preowned fuselage and wings in late 2012, and after assembling those, purchased landing gear, some instrumentation and a Sonex Aerovee 2180 engine kit. He also noted that he had "no experience building an aircraft engine or any engine for that matter." The pilot further stated that there were initially "some issues" with the engine's performance, but that it finally achieved [desired] static rpm on the ground.

The accident flight was the pilot's first in the single-seat airplane. During the takeoff roll, the airplane "gained speed but struggled to get off the ground at which time I should have aborted the takeoff. Trying to overcome the first flight anxiety and not knowing how this aircraft should behave," the pilot continued the takeoff. After being cleared for a left turn, the pilot continued the climb, but realized that the engine, "did not develop enough power to climb sufficiently." As the airplane began to turn downwind, the engine lost more power, and the airplane descended into trees. Hitting the trees, the airplane burst into flames, and the pilot passed out. When he awoke, the pilot was in the fuselage and his legs were on fire. After unbuckling the four-point safety harness, he climbed out of the fuselage and crawled away from the fire.

Photographs of the scene showed the airplane in multiple parts and mostly consumed by the fire. The responding FAA inspector noted that the extent of the fire precluded detailed examination of the engine and systems.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA021 10/20/2016 1350 CDT Regis# N8681 Morristown, MN Apt: N/a
Acft Mk/Mdl ZENITH CH-750 Acft SN 75-8681 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROTAX 912ULS Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091
Opr Name: DELBERT F. VOEGELE Opr dba: Aircraft Fire: NONE
AW Cert: SPX

Summary

The private pilot reported that he had started, warmed up, and then shut down the engine about 1 hour before the accident flight. Shortly after takeoff for the personal flight, the airplane's engine lost total power. Subsequently, the pilot conducted a forced landing on a hill, which resulted in substantial damage to the nose landing gear, fuselage, and left wing.

The pilot said that he had fueled the airplane that morning with 82-octane automotive fuel that he had recently purchased from a service station. However, postaccident examination revealed that the fuel was yellow in color and smelled like "aged" automobile fuel. The top spark plugs appeared aged, and the electrodes were corroded, which could have affected engine performance. The airplane was not equipped with a fuel vapor return line to prevent fuel vapor lock. Given that old automotive fuel was found in the fuel system and that a fuel vapor return line had not been installed, it is likely that the engine lost power due to vapor lock. It is also likely that the corrosion of the spark plugs and the spacing of the electrode gaps contributed to the loss of engine power.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power due to fuel vapor lock. Contributing to the loss of engine power were the corrosion of the spark plugs and the spacing of the electrode gaps.

Events

1. Initial climb - Loss of engine power (total)
2. Emergency descent - Off-field or emergency landing
3. Landing - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Aircraft-Aircraft power plant-(general)-(general)-Incorrect use/operation - C
2. Aircraft-Aircraft power plant-Ignition system-Spark plugs/igniters-Fatigue/wear/corrosion - F
3. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid condition
4. Environmental issues-Physical environment-Terrain-Mountainous/hilly terrain-Contributed to outcome

Narrative

October 20, 2016, about 1350 central daylight time (CDT), the pilot of a Zenith CH-750, N8681, made a forced landing in a field 3 miles northwest of Morristown, Minnesota, after the engine lost power. The pilot, the sole occupant on board, was seriously injured. The airplane was substantially damaged. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Visual meteorological conditions (VMC) prevailed at the time of the accident, and no flight plan had been filed. The local flight originated from a private airstrip in Morristown about 1340.

The following is based on two interviews between Federal Aviation Administration (FAA) inspectors and the pilot. The pilot said he had fueled the airplane that morning with 82-octane automotive fuel that he had recently purchased from a service station. He started the engine and allowed it to warm up but had to shut the engine down when he was called away. He returned about an hour later, started the engine, and took off. When he reached an altitude of about 100 feet AGL, the engine lost power. He turned the electric fuel pump on. The engine restarted momentarily but failed to keep running. He did not remember if he turned the fuel selector valve to the opposite tank. After maneuvering to avoid cattle and a tree, the airplane touched down on its main landing gear. Due to the steepness of the hill and the grass, the airplane came to an abrupt halt. Examination of the airplane revealed the nose gear had collapsed, the fuselage was buckled, and the engine was knocked askew to the right. The left wing had separated from the fuselage and bore leading edge crushing. When asked what he thought may have happened, the pilot said he felt it was a vapor lock due to the time between the first and second engine starts and takeoff. He also stated that the engine had a safety feature that prevented it from starting if the throttle was out of the idle position. He felt that he could have gotten the engine running if he had brought the throttle back to idle but he failed to do so during the emergency.

On October 28, 2016, the airplane and engine were examined at Wentworth Aircraft in Lakeville, Minnesota, under the auspices of a Federal Aviation Administration (FAA) inspector. Recovered fuel was yellow in color and had the aroma of "aged" automobile fuel. The top spark plugs were removed and examined. They appeared old and corroded at the electrode ends. The electrode gaps were not consistent. The number 3 plug appeared had a substantial gap, and the number 1 plug had a narrow gap. These were the only mechanical anomalies noted. It was also determined the airplane did not have a fuel vapor line installed.

A Rotax Aircraft Engines flight safety representative verified a vapor lock was a possibility, especially since the owner had not installed a fuel vapor return line and old automotive fuel was found in the fuel system. He stated that the condition and corrosion of the spark plugs and the spacing of the electrode gaps could also affect engine performance. He also stated the engine did not have a safety device installed that would prevent it from starting when the throttle was in other than the idle position.

Examination of the maintenance records revealed the pilot had complied with Service Bulletin SB-912-053-UL on May 24, 2007, mandating the replacement of the fuel pump. However, there was no record that he had complied with SB-912-063-UL that mandated replacing the 5-year life-limit fuel pump.