

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA15FA353	09/12/2015 1625 EDT	Regis# N139RT	Oneida, TN	Apt: Scott Muni SCX
Acft Mk/Mdl AERO VODOCHODY L39-C		Acft SN 332505	Acft Dmg: DESTROYED	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl IVCHENKO AI-25TL		Acft TT 1550	Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: STANLEY JAY GORDON, JR.		Opr dba:		Aircraft Fire: GRD
				AW Cert: SPE

Events

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

Narrative

HISTORY OF FLIGHT

On September 12, 2015, about 1625 eastern daylight time, an Aero Vodochody L-39C Albatros, N139RT, was destroyed when it impacted terrain shortly after takeoff from Scott Municipal Airport (SCX), Oneida, Tennessee. The airline transport pilot was fatally injured. The airplane was registered to Float Dancer, Inc., and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the local airshow performance flight.

According to witnesses, the pilot flew the airplane to SCX the day before the accident to perform in the Wings Over Big South Fork airshow that was being held on the day of the accident. Witnesses reported that the pilot was scheduled to be the final performer in the airshow.

A friend of the pilot, who had flown the airplane about 1 week before the accident and assisted the pilot on the day of the accident, reported that he removed the safety pins for the front cockpit ejection seat, filled the airplane's smoke system oil tank, and observed the pilot perform a full power engine check and smoke system check before the takeoff from runway 23. He further stated that the takeoff "appeared normal in all respects." As the airplane began to climb, he diverted his attention to the spectators, and when he looked back for the airplane, he could not locate it. Moments later he observed a rising column of smoke.

The airboss, who cleared the airplane for takeoff, reported no distress calls or abnormal communications from the pilot before the accident. Several witnesses reported that a "puff of smoke" exited the airplane's exhaust before the airplane's taxi to the runway and that the airplane seemed "slow" during climbout. A witness located near the departure end of the runway stated that the airplane did not appear to be climbing as quickly as other jet-powered airplanes he had previously observed. He further stated that the airplane made a right turn and pitched up to gain altitude, and "the engine failed." The airplane subsequently entered a "sliding turn" and descended nose first toward the ground.

PERSONNEL INFORMATION

The pilot, age 61, held an airline transport pilot certificate with ratings for airplane single- and multiengine land. He also held type ratings for Cessna CE-525- and CE-525S-series airplanes and had private pilot privileges in single-engine sea airplanes.

The pilot's personal flight logs were not located. He reported 6,000 hours of total flight experience, with 40 hours accumulated during the previous 6 months, on his most recent Federal Aviation Administration (FAA) medical examination, which was conducted on December 23, 2014, and resulted in the issuance of a limited second-class/full third-class special issuance medical certificate. A flight instructor reported that the pilot satisfactorily completed a flight review and pilot proficiency check in the airplane on April 16, 2015.

AIRCRAFT INFORMATION

The single-engine, two-seat, high-performance airplane was manufactured in Czechoslovakia as a basic and advanced military jet trainer. It was equipped with an Ivchenko AI-25TL turbofan engine, which had a takeoff thrust rating of 3,792 pounds.

According to FAA airworthiness records, the airplane was manufactured in 1983 and purchased by the pilot on October 7, 1999. It was issued an FAA experimental special airworthiness certificate in the exhibition category on October 23, 1999.

The airplane was maintained under an FAA-approved maintenance program. Review of maintenance records revealed that the airplane's most recent condition inspection was performed on April 2, 2015. The pilot's friend reported that the airplane had been flown about 13 to 15 times and had accumulated about 15 to

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18 hours of flight time since the condition inspection.

At that time, the airplane had been operated for about 1,550 total hours and about 325 hours since it was purchased by the pilot. The engine, which was new when it was installed on March 27, 2001, had been operated for about 325 hours. The airplane was not flown between October 25, 1999, and the date the that new engine was installed.

METEOROLOGICAL INFORMATION

At 1635, the weather conditions reported at Campbell County Airport (JAU), which was located about 24 nautical miles east-southeast from the accident site, included wind from 310° at 5 knots, visibility 10 statute miles, clear sky, a temperature of 23°C, a dew point of 4°C, and an altimeter setting of 29.85 inches of mercury.

WRECKAGE INFORMATION

The airplane impacted trees about 2 miles west of the departure end of runway 23 in the Big South Fork National River and Recreation Area. The airplane was severely fragmented and partially consumed by a postimpact fire. A debris path began around a group of about 75-ft-tall broken trees and continued on a magnetic heading of about 120° for about 325 ft over sloped, uneven terrain to the engine.

Portions of all major parts of the airframe, which included all the flight controls, were identified in the debris path. The fuselage and both wings were fragmented, and the empennage was separated. The vertical stabilizer and rudder were separated from the empennage. The rudder trim tab was separated from the rudder. The left and right elevators remained attached to the horizontal stabilizer; however, the horizontal stabilizer and both elevators displayed crushing damage and tearing consistent with tree and ground impacts. The left aileron remained attached to the outboard portion of the left wing, and the right aileron was separated. Both wing tip fuel tanks were separated. The postimpact condition of the airframe precluded confirmation of flight control continuity.

The airplane was equipped with ejection seats. One ejection seat rocket motor was found discharged, and one parachute was located in the debris path; however, its respective envelope was not inflated.

The engine was impact and fire damaged. It was complete from the inlet case's front flange to the exhaust duct's rear flange. Visual examination of the last stage turbine assembly did not reveal any damage consistent with an internal catastrophic failure. The gearbox was missing from the engine. A small section of the gearbox housing, which included three internal spur gears with no apparent teeth damage, was recovered among the airplane debris.

Additional examination of the engine after it was recovered from the accident site revealed that all the fan ducts were in place, except for an area on the top of the engine between the intermediate case and the rear fan duct that was partially burned away. There was no forward-to-aft linearity of the soot and burn patterns, consistent with a postimpact fire. All of the 1st, 2nd, and 3rd stage fan blades were in place in their respective disks. Five 1st stage fan blades were separated up to 2 inches above their blade root platforms, and the remaining fan blades were bent in the midspan area opposite the direction of rotation. None of the 1st stage fan blades had any soft body or hard body impact damage. The 3rd stage fan blade shroud contained imprints of the 3rd stage fan blades, with no circumferential rub marks.

The fuel control throttle pointer indicated 30 (0-110 scale), and the high-pressure compressor variable stator vane indicator was at 17 (0-30 scale). The fuel control unit remained attached to the engine but sustained both impact and thermal damage.

MEDICAL AND PATHOLOGICAL INFORMATION

The Knox County Regional Forensic Center, Knoxville, Tennessee, performed an autopsy on the pilot. According to the autopsy report, the cause of death was "multiple blunt force injuries following airplane crash."

Review of the pilot's medical history revealed that he had a history of hypertension, high cholesterol, and severe coronary artery disease, which required surgery in 1997. He reported all those diagnoses to the FAA, as well as the use of several medications, including atorvastatin and atenolol.

Toxicological testing performed by NMS Labs on specimens from the pilot at the request of the medical examiner identified 0.064 gm/dl of ethanol and caffeine in muscle tissue. Ethanol is an intoxicant commonly found in beer, wine, and liquor that acts as a central nervous system depressant. Ethanol may also be

produced in body tissues by microbial activity after death.

Toxicology testing performed on specimens from the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma, was limited by the lack of available blood, urine, or vitreous for testing. No ethanol was identified in muscle; however, diphenhydramine and metoprolol were detected in muscle and brain tissue. Metoprolol is a beta-blocking agent similar to atenolol that is used to treat high blood pressure and reduce the risk of recurrent heart attacks. Diphenhydramine is a sedating antihistamine used to treat allergy symptoms and as a sleep aid.

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Accident Rpt# GAA17CA323	06/04/2017 700 PDT	Regis# N802NB	Prosser, WA	Apt: Sun Heaven Airstrip PVT
Acft Mk/Mdl AIR TRACTOR INC AT 802		Acft SN 802A-0640	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY PT6A-65AG		Acft TT 917	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: AIR-TRAC INC		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPR

Summary

The pilot of the tailwheel-equipped airplane reported that, during an agricultural application flight, about 800 ft into the takeoff roll on a gravel airstrip, he veered the airplane to the right to avoid hay bales that were stacked on the left side of the runway. He added that, as the airplane veered right, the right-wing spray boom encountered tall wheat, and the airplane exited the right side of the runway. Subsequently, the airplane came to rest nose down.

The airplane sustained substantial damage to the left wing.

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

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's abrupt maneuver to avoid hay bales during the takeoff roll, which resulted in a loss of directional control.

Events

1. Takeoff - Abrupt maneuver
2. Takeoff - Loss of control on ground
3. Takeoff - Runway excursion
4. Takeoff - Dragged wing/rotor/float/other
5. Takeoff - Nose over/nose down

Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Directional control-Not attained/maintained - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
3. Environmental issues-Physical environment-Object/animal/substance-Debris/dirt/foreign object-Effect on operation

Narrative

The pilot of the tailwheel-equipped airplane reported that, during an aerial application flight, approximately 800 ft. into the takeoff roll on a gravel airstrip, he veered the airplane to the right to avoid hay bales that were stacked on the left side of the runway. He added that as the airplane veered right, the right-wing spray boom encountered tall wheat, and the airplane exited the right side of the runway. Subsequently, the airplane came to rest nose down.

The airplane sustained substantial damage to the left wing.

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

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Accident Rpt# ANC17CA041	08/03/2017	1400 AKS	Regis# N351SH	Delta Junction, AK	Apt: N/a
Acft Mk/Mdl AIRBUS AS350-B3			Acft SN 4598	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
				Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 135
Opr Name: SOLOY HELICOPTERS, LLC			Opr dba:		Aircraft Fire: NONE

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Accident Rpt# WPR16LA125	06/14/2016 1550 PDT	Regis# N1076Y	Bishop, CA	Apt: Bishop BIH
Acft Mk/Mdl BELL 206-L1		Acft SN 45380	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ALLISON 250 C30P		Acft TT 34947	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: GLOBAL EQUITY INVESTMENTS, LLC		Opr dba:		Aircraft Fire: NONE

Events

1. Enroute-cruise - Fuel related

Narrative

****This report was modified on August 1, 2017. Please see the docket for this accident to view the original report.***

On June 14, 2016, about 1550 Pacific daylight time, a Bell 206L-1 helicopter, N1076Y, was substantially damaged during an autorotative landing attempt near Bishop, California, following a loss of engine power during cruise flight. The private pilot and two passengers were not injured. The helicopter was owned by a private company and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the cross-country flight that departed Corona Municipal Airport (AJO), Corona, California, at approximately 1320. The personal flight was destined for Mammoth Yosemite Airport (MMH), Mammoth, California.

According to the pilot, the flight departed AJO with 110 gallons of fuel on board and flew direct to General Wm. J. Fox (WJF), Lancaster, California to avoid restricted airspace. He planned the flight around a forecasted headwind of approximately 15 knots. Once he reached WJF, the pilot then flew a direct course to MMH, but after more than 2 hours of flight in 30 knot headwinds and turbulence the pilot decided to land at Bishop Airport to service the helicopter, which only had 110 lbs (about 16 gallons) of fuel remaining. He began a descent from his cruising altitude, 12,000 feet mean sea level (msl), but as he passed below 10,000 feet msl, the pilot heard a "violent explosion in the engine compartment" and immediately felt the helicopter vibrate. He then observed an engine out light indication and quickly initiated an autorotation. During the helicopter's descent to land, the pilot made two attempts to restart the engine, but was unsuccessful. The pilot reported that he observed that he was "too high" in the last 2,000 feet of his descent. He subsequently pulled the collective early to avoid landing in a crater; however, the helicopter impacted the ground hard, which resulted in substantial damage to the tail boom.

A review of photographs supplied by the Federal Aviation Administration (FAA) showed the accident was surrounded by flat terrain and terrain suitable for landing. Further, images from an online mapping tool showed flat topography near the accident site.

According to FAA records, the helicopter was manufactured in 1980, and registered to Premiere Rotors, LLC on February 19, 2008. The helicopter was powered by a Rolls Royce M250 C30P, 650 shaft horsepower turboshaft engine, which was installed in 1992 in accordance with supplemental type certificate SH5695SW. A review of the aircraft logbooks revealed that the helicopter's most recent 100 hour inspection was completed on July 1, 2015 at which time the airframe had accumulated 34,947 total flight hours and the engine had accumulated 17,261 total flight hours. According to the registered owner, the accident pilot had entered into a lease-to-buy contract a few months prior to the accident with the intent of purchasing the helicopter.

According to a National Transportation Safety Board (NTSB) weather study, multiple weather forecasts that had been issued prior to the time of the pilot's departure, showed a probability of high winds throughout his route of flight. A National Weather Service Surface Analysis Chart depicted a thermal low-pressure system over southern Nevada with a trough of low pressure extending northward. The chart showed a 12-hectopascal pressure gradient across southern California and supported strong wind gusts over the mountainous regions of eastern California. The winds aloft forecast for the area that had been issued about 6 hours prior to the pilot's time of departure and was valid beginning at 1400 indicated winds from the west-southwest at approximately 17 to 30 knots. An area forecast issued at 1245 forecasted southwesterly winds at 20 knots gusting to 30 knots. Further, multiple Terminal Aerodrome Forecasts that were issued on the morning of the accident flight indicated up to 30 knot wind gusts along the pilot's route of flight.

The weather at Bishop Airport (BIH), Bishop, California near the time of the accident indicated winds from 280 degrees at 7 knots, clear skies, temperature 32 degrees C, dewpoint -2 degrees C, and a barometric altitude of 29.76 inches of Hg.

The helicopter came to rest in a slight nose up attitude approximately 4 nautical miles from Bishop Airport, Bishop, California. A first responder who arrived at the accident site moments after the impact reported that he was able to view the "fittings" at the bottom of the "fuel tank" and observed that the tank was void of fuel. An FAA inspector who arrived on-scene the day after the accident, reported that the fuel pump circuit breakers were extended indicating that the pumps were in the OFF position. The pilot subsequently reported that he flew with the fuel pump circuit breakers ON, and pulled them after the helicopter came to rest.

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He later added that he customarily disengages the fuel pumps by pulling the circuit breakers after each flight. Later that day, the pilot and the FAA inspector could hear the fuel pump motors run as they cycled the fuel pump circuit breakers several times. The helicopter was subsequently transported to a secure facility in Rancho Cordova, California where an airframe examination was completed by representatives of the airframe and engine manufacturers under the supervision of the NTSB and FAA.

An initial inspection of the airframe revealed that the empennage had separated from the aft tailboom. The aft section of the tail rotor drive shaft at the tailboom displayed rotational scoring consistent with rotation at impact. The top half of the left end plate on the horizontal stabilizer was separated. One tail rotor blade was bent, but remained attached to the tail rotor hub and its opposing blade was separated at the blade root. Both tail rotor blades displayed paint transfer markings at the leading edges and the separated blade exhibited a gouge mark near the outboard tip of the blade. Paint transfer markings similar in color to the color scheme of the accident helicopter were found on the outboard leading edges of one of the main rotor blades, which displayed bending opposite the direction of rotation.

According to the Bell 206L-1 flight manual, the helicopter's total fuel system capacity was 99.4 gallons. According to the owner, the helicopter was equipped with a fuel range extender that expanded the fuel tank size to accommodate a total of 110 gallons of usable fuel. The helicopter fuel system included two interconnected forward fuel tanks with a capacity of 11 gallons each. The aft fuel tank, located below the aft cabin, has a total capacity of approximately 88 gallons.

A fuel system diagram furnished by the helicopter manufacturer shows that fuel is transferred from the forward tanks to the main fuel tank using right and left boost pumps located in the main tank and an ejector pump located between the two forward tanks. Fuel is then pumped from the aft tank to the engine through an airframe mounted fuel filter. After the helicopter is started, the fuel boost pumps engage to begin directing fuel from the forward tanks to the aft tank. The fuel boost pumps can only be deactivated through two circuit breakers that control each pump.

Fuel line continuity was observed from the forward fuel tank to the inlet port of the engine driven fuel pump. Both the right and left fuel boost pumps operated normally and continuously when tested using the cockpit circuit breakers; the left fuel boost pump measured 8 psi and the right boost pump measured 5 psi. A representative of the FAA stated that he noted the fuel boost pump circuit breakers were extended, indicating that the pumps were OFF when he arrived at the accident site. The pilot reported that he flew with the fuel boost pumps ON, but subsequently pulled the fuel boost pump circuit breakers after the accident when the helicopter came to rest. An inspection of fuel recovered from the fuel pump inlet line appeared free of contaminants.

The fuel gauge, which monitors the fuel quantity from the left forward tank and the main fuel tank, indicated approximately 40-50 lbs. of fuel (5.88 - 7.35 gallons) during the postaccident examination. Subsequently, a representative of the FAA drained approximately 20 gallons of fuel from the helicopter's fuel sump. A sample submitted to a laboratory for analysis revealed that it displayed the same specifications as JET A fuel.

A fuel consumption of approximately 35 gallons per hour, furnished by the helicopter manufacturer, was used to compute the approximate fuel burn during the accident flight. Based on the pilot's reported fuel quantity of 110 gallons at the time of his departure, the helicopter would have burned about 88 total gallons of fuel during the 2 hour and 30 minute long flight.

Approximately 1 teaspoon of fuel was drained from the fuel feed line that was connected to the fuel spray nozzle and considered normal by the engine manufacturer. The fuel was clear in appearance and free of contamination. The fuel spray nozzle tip displayed a black soot pattern with no indications of carbon deposits, blockage or streaking.

Collective and cyclic control continuity was verified from the cockpit to the main rotor assembly. Tail rotor pedal continuity was traced from the tail rotor pedals to the tailboom.

A subsequent engine examination/test run was performed at the engine manufacturer's facility with oversight from the NTSB.

An initial engine examination revealed that the N1 and N2 tach-generator drive gears rotated freely by hand using a speed handle.

Both the upper and lower magnetic chip detectors were free of ferrous debris.

The compressor inlet was free of debris, but exhibited a build-up of black residue around the back edge of the compressor front support.

A leak test was performed after a soap solution was applied to all fittings, connections and air lines. Approximately 50 PSI of pressurized air was directed through the Pc pneumatic line, which revealed no presence of leaks as the soap solution was not excreted.

During the three test runs, the engine functioned normally at ground-idle, flight-idle, max-continuous power and take-off power. Additionally, during subsequent transient tests, when the power was reduced to flight-idle and rapidly advanced to take-off power, the engine responded normally and produced maximum power without hesitation. Further, the vibration measurements were within the prescribed limitations of the manufacturer.

According to the manufacturer, the engine performance was 4.8% below new engine production standards at maximum take-off power, which was attributed to a faulty anti-ice solenoid valve that had failed in the open position, as designed.

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Accident Rpt# CEN16LA168	04/25/2016 1845 CDT	Regis# N435AE	Houston, TX	Apt: Memorial City Hospital 8TS4
Acft Mk/Mdl BELL HELICOPTER TEXTRON CANADA	Acft SN 52446	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl ROLLS-ROYC 250-C30P	Acft TT 963	Fatal 0	Ser Inj 0	Flt Conducted Under: FAR 135
Opr Name: AIR EVAC EMS INC	Opr dba: METHODIST AIR CARE	Aircraft Fire: NONE	AW Cert: STN	

Events

1. Takeoff - Loss of tail rotor effectiveness
2. Takeoff - Loss of control in flight

Narrative

On April 25, 2016, about 1845 central daylight time, a Bell Helicopter 206L4, N435AE, was substantially damaged during an emergency landing following a loss of directional control shortly after takeoff from the Memorial City General Hospital Heliport (8TS4), Houston, Texas. The pilot and two medical crewmembers onboard were not injured. The aircraft was registered to Helifleet 2015, LLC, and operated by Air Evac EMS, Inc. doing business as Methodist Air Care under the provisions of 14 Code of Federal Regulations Part 135 as a positioning flight. Day visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The flight was originating at the time of the accident. The intended destination was the Victoria Regional Airport (VCT), Victoria, Texas.

The pilot stated that the helicopter was initially oriented on a west heading. After lifting off, he turned to a south heading so that the helicopter would be oriented into the prevailing wind as he departed the area. About 75 feet above ground level, as the pilot translated toward the east from behind the south building and into the prevailing wind, the nose of the helicopter began yawing to the right. He applied full left pedal; the helicopter may have made one full rotation at that time while moving back toward the helipad. The rotation stopped with the helicopter on a west heading; however, the low rotor speed warning subsequently sounded and the helicopter began rotating rapidly to the right. The pilot lowered the collective and attempted to maneuver back to the helipad. About 25 feet agl, he applied collective but the helicopter landed hard.

The paved helipad (30 feet by 30 feet, concrete) was surrounded by a grass area and a paved access driveway. The area outside of the perimeter driveway was bordered by buildings and parking structures to the north, west and south. A small parking area, power lines and an eight-lane roadway were located immediately east of the helipad. The helicopter came to rest upright on the grass area surrounding the helipad. It was oriented on a south heading about 15 feet southeast of the helipad. The landing skids had collapsed. The aft end of the tail boom was partially separated approximately halfway between the stabilizers and the tail rotor.

A postaccident examination conducted by a Federal Aviation Administration (FAA) inspector did not reveal any anomalies consistent with a preimpact failure or malfunction. After release of the helicopter by the NTSB, the operator performed an engine test run. No anomalies were reported.

Engine torque and main rotor speed data was recovered by the operator from a Turbine Tracker unit on-board the helicopter; no other parameters were available. Thirty seconds of data were provided. During the initial 20 seconds, the engine torque peaked from about 20% to nearly 40% consistent with a pretakeoff hydraulic systems check. Over the final approximately 10 seconds of data, the torque increased as the main rotor speed decreased. The torque increased to a maximum of about 121% as the rotor speed decreased to minimum of about 92% before both recovered toward 100%.

The engine control system incorporated a fuel control and governor to provide fuel metering. With the throttle in the full open position, the fuel control unit would meter the fuel flow to maintain the desired engine speed set by the pilot. In addition, the fuel control unit restricted the maximum fuel flow to limit the maximum engine speed. The helicopter was also equipped with a low rotor speed warning system that provided a "low rotor RPM" caution light and an audible tone when the rotor speed decreased to 90% +/- 3%.

The engine run-up checklist noted that the GOV RPM switch is to be set at 100% in preparation for takeoff. The before takeoff checklist noted that the throttle is to be full open, and the rotor (Nr) and engine (N2) speeds are to be verified at 100%. The flight manual stated that the engine torque may not exceed 100% for takeoff (5 minutes), with a transient of 105% permitted for no more than 5 seconds. The maximum continuous torque limitation is 75%. The rotor speed limitation (power on) was 99% to 101%, with the minimum transient (5 seconds) of 95% and the maximum transient (5 minutes) 104%.

Loss of tail rotor effectiveness (LTE) is caused by the tail rotor not providing adequate thrust to maintain directional control and is usually caused by either certain wind azimuths while hovering or by an insufficient tail rotor thrust for a given power setting at higher altitudes. The result is an uncommanded yaw; to

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the right in helicopters with counterclockwise rotating rotor systems. Pilots are cautioned to be alert to changing wind conditions, which may be experienced when flying along ridge lines and around buildings. LTE is not related to an equipment or maintenance malfunction and may occur in all single-rotor helicopters at airspeeds less than 30 knots.

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Accident Rpt# WPR17LA163	07/24/2017 1156 PDT	Regis# N605GV	Las Vegas, NV	Apt: Henderson Executive HND
Acft Mk/Mdl BRITISH AIRCRAFT CORP. BAC STKMSTR	Acft SN EEP/JP/3681	Acft Dmg: DESTROYED	Rpt Status: Prelim	Prob Caus: Pending
Eng Mk/Mdl ROLLS-ROYC VIPER 535		Fatal 0 Ser Inj 0	Flt Conducted Under: FAR PUBU	
Opr Name: BLUE AIR TRAINING LLC	Opr dba:		Aircraft Fire: NONE	
			AW Cert: SPE	

Events

1. Initial climb - Loss of lift
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Narrative

On July 24, 2017, about 1156 Pacific daylight time, an experimental British Aircraft Corp. BAC STKMSTR MK80, N605GV, was destroyed when it collided with the ground shortly after takeoff at the Henderson Executive Airport (HND) Las Vegas, Nevada. The commercial pilot, sole occupant of the airplane, sustained minor injuries. The airplane was registered to Attack Aviation Foundation Inc., and operated by Blue Air Training LLC, for the U.S. Department of Defense as a public aircraft in support of the U.S. Air Force. Visual meteorological conditions prevailed and no flight plan was filed for the cross-country ferry flight. The flight originated about 1155 with a destination of Reno/Tahoe International Airport, Reno, Nevada.

According to the pilot, shortly after takeoff, the airplane failed to accelerate and he was unable to initiate a normal climb. The airplane subsequently struck terrain and was consumed by fire.

Examination of the accident site by a Federal Aviation Administration inspector revealed that the airplane came to rest upright, about 1/4 mile south of the departure end of runway 17R. All major components of the airplane were located in the wreckage.

The airplane wreckage was recovered to a secure location for further examination.

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Accident Rpt# ANC15FA071	09/15/2015 606 AKD	Regis# N928RK	Iliamna, AK	Apt: N/a
Acft Mk/Mdl DEHAVILLAND DHC 3T		Acft SN 61	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl HONEYWELL TPE33112JR702		Acft TT 15436	Fatal 3 Ser Inj 5	Flt Conducted Under: FAR 091
Opr Name: RAINBOW KING LODGE INC		Opr dba:		Aircraft Fire: NONE
				AW Cert: STN

Events

1. Initial climb - Loss of control in flight

Narrative

HISTORY OF FLIGHT

On September 15, 2015, about 0606 Alaska daylight time, a single-engine, turbine-powered, float-equipped de Havilland DHC-3T (Otter) airplane, N928RK, impacted tundra-covered terrain just after takeoff from East Wind Lake, about 1 mile east of the Iliamna Airport, Iliamna, Alaska. Of the 10 people on board, three passengers died at the scene, the airline transport pilot and four passengers sustained serious injuries, and two passengers sustained minor injuries. The airplane sustained substantial damage. The airplane was registered to and operated by Rainbow King Lodge, Inc., Lemoore, California, as a visual flight rules other work use flight under the provisions of 14 Code of Federal Regulations (CFR) Part 91. Dark night, visual meteorological conditions existed at the departure point at the time of the accident, and no flight plan was filed for the flight. At the time of the accident, the airplane was en route to a remote fishing site on the Swishak River, about 75 miles northwest of Kodiak, Alaska.

The manager of Rainbow King Lodge reported that the accident airplane was being used to transport sport-fishing clients and guides to a remote area for a day of salmon fishing. The manager noted that, on the morning of the accident, a lodge employee transported the guests to East Wind Lake in a lodge-owned van for the early morning departure.

The pilot reported that, on the morning of the accident, he woke at 0430 to check the weather and prepare for the flight. He stated that he had been sleeping normally and was feeling well except for pain in his right knee. He left the lodge at 0515 to conduct a preflight of the airplane. He stated that, for an easterly departure, the light on the building near the departure point is left on so the pilot can use it as a visual reference, but for a westerly departure, there are no lights to use as a reference. The pilot typically used a ridgeline about 7 miles west of Iliamna as a horizon, but the dark night conditions made it difficult to see the ridgeline. He stated that a very small percent of flights departed in the dark.

The lodge employee that drove the guests to the lake stated that they left the lodge at 0545. The airplane had been loaded the day before with fishing equipment. He said that, after all of the passengers boarded the airplane and the pilot had started the engine, he then untied the airplane's floats so the pilot could taxi away from the shoreline. The lodge employee reported it was dark but that he was still able to watch the airplane as it started its westerly takeoff run. He said that, after liftoff, the airplane began to climb and then descended, and the floats subsequently struck the water's surface. The airplane then became airborne again and veered right, but he lost sight of it behind an area of rising terrain.

The pilot stated that, during takeoff, he looks outside the airplane and does not focus on his instruments. The pilot stated that, after the airplane lifted off the water at what seemed like a normal pitch, he heard a noise from the left side of the airplane that distracted him. He looked outside for visual cues but was unable to see due to the dark night conditions. According to the automatic dependent surveillance-broadcast (ADS-B) data, the airplane then began a gradual right turn before reaching a maximum altitude of 175 ft above the water. The airplane then descended toward the water's surface, flew low over the water and terrain, and then climbed briefly again before it impacted terrain. The pilot stated that he did not know that the airplane touched the water's surface after the initial liftoff or that it then turned right.

A search and rescue team was assembled consisting of Iliamna residents, lodge employees, and Alaska State Troopers. Dark night conditions delayed the search and the discovery of the wreckage by about 30 minutes.

PERSONNEL INFORMATION

The pilot, age 54, held an airline transport pilot certificate with an airplane multiengine land rating and commercial pilot privileges with an airplane single-engine land rating. He also held a type rating for Beech 1900 and Beech 300 airplanes and a flight instructor certificate with an airplane single-engine land rating.

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According to the Federal Aviation Administration (FAA) medical certification file, the pilot was first medically certificated in 1981. His most recent FAA second-class medical certificate was issued May 12, 2015, with the limitation that he must have available glasses for near vision. At that time, he measured 71 inches tall and weighed 249 lbs. He reported no medications, and the examining physician did not identify any abnormal findings.

According to the pilot's logbooks, he had about 11,280 total flight hours, about 450 hours of which were in the accident airplane make and model. In the 90 and 30 days before the accident, the pilot logged 200 and 70 flight hours, respectively. His most recent flight review was on February 9, 2014, in a Schweizer S269C helicopter.

The pilot had flown for Rainbow King Lodge during the 2012 to 2015 fishing seasons. The first two seasons were before the Otter was converted to a turbine-powered airplane (see the next section for more information about the conversion). The pilot stated that he had not received any training in the airplane since the turbine conversion.

AIRCRAFT INFORMATION

The accident airplane was a high-wing, float-equipped, single-pilot, de Havilland DHC-3T, N928RK, serial number 61, manufactured in 1954. It was powered by a Honeywell TPE 331-12JR-702TT turboprop engine per a Texas Turbine Conversions, Inc., supplemental type certificate (STC). It was equipped with a Hartzell model HC-B4TN-5NL four-bladed propeller.

In April 2014, the airplane was sent to Recon Air Corporation in Geraldton, Ontario, Canada, for a major overhaul and the turbine conversion. The airplane's US registry was changed to N928RK. The airplane was also modified with a Baron STOL kit and an upgross kit per an STC to improve its performance. The upgross kit increased the maximum gross weight of the airplane from 8,000 lbs to 8,367 lbs. The airplane was configured to carry one pilot and 10 passengers and cargo.

On May 24, 2014, after the overhaul, a new weight and balance calculation was performed, which showed that the airplane's basic empty weight on wheels was 4,345 lbs.

On May 30, 2014, an 800-hour inspection of the airplane and special inspection items was completed. The records indicated that all applicable airworthiness directives were complied with at this time. According to maintenance records, the airplane's last inspection was a 100-hour inspection on July 25, 2015, at which time, the airframe had accumulated 15,436 total hours, and the engine had accumulated 384 total hours.

On June 11, 2014, another weight and balance calculation was performed, which indicated that the airplane's empty weight on floats was 4926.8 lbs with a useful load of 3,073.2 lbs and that its center of gravity (CG) was 131.79 inches. A maximum gross weight of 8,000 lbs was used for the computation, not the adjusted weight of 8,367 lbs. The installation of the upgross kit was noted in the equipment list, but the increase of the maximum gross weight was not reflected in the final weight and balance paperwork.

On August 30, 2015, a 150-hour engine inspection was conducted with no defects or leaks noted. At the time of inspection, the engine had a total of 430.3 hours.

Weight and Balance Study

The accident airplane was configured to carry 62 gallons of fuel in the forward tank, 102 gallons of fuel in the center tank, and 51 gallons of fuel in the aft tank. The Texas Turbine Conversions, Inc., Airplane Flight Manual (AFM) supplement instructs the operator to burn fuel from the forward tank during takeoff and, after takeoff, from the aft tank forward to leave as much fuel in the forward tank as possible for landing. The minimum amount of fuel for takeoff is 20 gallons in each of the three tanks to prevent introduction of air into the fuel system. The pilot stated the center and forward tanks were full, and there was "residual" fuel in the aft tank.

Rainbow King Lodge had no procedures in place or equipment available for calculating preflight weight and balance. Pilots should calculate the airplane's actual weight and balance using the procedures contained in the original DHC-3 Otter AFM, published by de Havilland Canada, along with the information in the various flight manual supplements for the STCs installed on the airplane. The entire flight manual and all of its supplements were carried in the airplane during the accident flight. When asked how he calculated the weight and balance for the accident airplane before departure, the pilot said he "guesstimated" it.

As noted, the airplane was carrying the pilot and nine passengers. The seating location of each passenger was determined based on passenger statements. In accordance with passenger statements, 10 lbs was added to each person's weight to account for gear and clothing, including chest waders and boots.

All of the cargo, which included fishing gear, coolers, firewood, and passenger bags, was loaded in the baggage compartment located behind the last row of passenger seating. After the accident, these items were removed and weighed. See table 1 for a summary of the weight and balance calculations.

Using this data, the airplane's weight before takeoff was calculated to be 8,875.6 lbs, which was 508.6 lbs over the maximum gross weight. The CG range for the airplane at 8,367 lbs was between 140.3 and 148.3 inches. The airplane's pretakeoff CG was calculated to be 152.38 inches, 4.08 inches aft of the aft CG limit.

METEOROLOGICAL INFORMATION

The closest weather reporting weather station was Iliamna, about 1 mile south of the accident site. At 0553, a METAR reported, in part, wind 270ø at 7 knots; visibility 10 statute miles; clouds and sky condition, scattered at 700 ft, overcast at 4,400 ft; temperature 48ø F; dew point 47ø F; and altimeter 29.61 inches of mercury.

According to the US Naval Observatory Astronomical Applications Department, civil twilight began at 0706, and sunrise was at 0748.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was found about 510 ft from the shore of East Wind Lake at N59.777778 W154.917778, on a magnetic heading of 020ø, about 0.5 miles from the departure point. The airplane impacted soft, tundra-covered terrain. There was no evidence of any impact with terrain between the lake and the main wreckage. There was a ground scar about 20 ft long and 10 inches deep aft and in line with the right wing. There was an additional ground scar aft of the right float that was about half the length of the right float.

The left wing remained attached, and the left flap and aileron were attached at their respective attachment points. The right wing was separated from the fuselage at the wing root, and the forward attachment point bolt was broken at the wing and remained in the wing. The rear attachment, about 5 inches into the spar, was separated. The right flap was separated, and the right lift strut was separated at the fuselage structure. The last 10 ft of the right wing sustained extensive aft accordion-style crushing from the tip inboard. The right aileron had extensive impact damage and only remained attached outboard of the attachment point.

The tail was displaced about 30ø to the left. The stabilator remained attached and was relatively undamaged. The outboard 2 ft of the right elevator was separated, and the inboard portion of the right elevator had accordion-style crushing where it had impacted the rudder. The left elevator remained attached and undamaged. The rudder remained attached and sustained damage where it was penetrated by the servo tab. The rudder and elevator cables were still attached to their relative attachment points.

The jack screw separated at the top fitting from the horizontal stabilator, and the forward bolts threads were stripped. There was no noted inner movement of the jack screw, which remained attached at the lower attachment point and measured about 3/4 inch.

The left float was attached to the fuselage at the forward and aft attachment points. The forward spreader bar remained attached to the float. The left float came to rest on top of the right float. Multiple outboard panels on the left float had slight inward crushing. The right float was heavily damaged and fragmented at the attachment points.

The elevator, trim indicator, and a manual control wheel were in a nose-up position. The rudder trim was in a slightly right position. The flaps were hydraulically actuated and were in the "takeoff" position.

The navigation, beacon, cockpit, and instrument lights were in the "on" position, and the dome, strobe, and landing lights were in the "off" position.

The propeller was still attached to the propeller flange. Three blades had extensive leading edge gouging and exhibited torsional twisting. One of the blades tip had separated, one of the blades was rotated 180° in the hub, and another blade was buried in the terrain.

The power lever was slightly above flight idle. The condition lever was midrange. The fuel shut-off was not in an off position, the fuel selector was on the center tank, and the ignition was set to continuous ignition. All three of the fuel caps were on and secure. The fuselage had accordion-style crushing, and at the rear spar there was a tear in the production joint. There was no damage to the engine mounts.

MEDICAL AND PATHOLOGICAL INFORMATION

Hospital treatment records revealed that the pilot had a 1-week history of right leg swelling before the accident. In addition to crash-induced injuries, the pilot was diagnosed with a right leg deep vein thrombosis and bilateral pulmonary emboli. Two days after admission, the pilot suffered a syncopal episode attributed to another pulmonary embolus.

Toxicology

The FAA Bioaeronautical Sciences Research Laboratory testing of the pilot's urine collected on admission to the hospital was negative for ethanol and drugs of abuse but detected ibuprofen, ketamine, and its metabolite norketamine. Ketamine is an injectable, rapidly acting general anesthetic agent that was administered during the pilot's postaccident transport to the hospital. Ibuprofen is a non-sedating medicine used to treat pain, swelling, and fever and is marketed with various names, including Motrin. (See the Medical Factual Report in the docket for this accident for more information.)

Pilot and Passenger Injuries

The NTSB Medical Officer reviewed hospital treatment records to determine the pilot's injuries. The IIC reviewed the Alaska State Medical examiner's autopsy reports for the three fatally injured passengers. See table 2 for a complete list of pilot and passenger injuries.

TESTS AND RESEARCH

On September 22, 2015, the wreckage was examined at a private hangar in Iliamna under the supervision of the NTSB IIC. Flight control system cable continuity was established from each control surface to the point of impact-related damage.

On November 2, an engine teardown and examination were conducted at Honeywell facilities in Phoenix, Arizona, under the supervision of the NTSB IIC. Disassembly and examination of the engine revealed the following significant characteristics consistent with rotation and operation at the time of impact: rotational scoring of the propeller shaft and rotational scoring throughout the compressor and turbine sections indicate rotation at the time of impact. Metal spray was present throughout the turbine components in the air stream path indicating operation at the time of impact. There were multiple, nonadjacent, vanes in the first-stage compressor impeller bent opposite the direction of rotation. There was dirt and debris in the first- and second-stage compressor housings.

The propeller coupling was fractured. Examination of the coupling and the mating coupling revealed the two axial cracks in the coupling were the result of overload. There was no debris found in the fuel filter or in the fuel collected from the fuel control unit and fuel pump.

The examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

The engine fuel control unit was examined at Woodward Governor Company, Rockford, Illinois, under the supervision of an FAA inspector. The control was functionally tested, and no evidence of a preaccident malfunction was found.

Airplane Performance Study

The accident airplane was equipped with ADS-B technology. In typical applications, the ADS-B-capable aircraft uses an ordinary GPS receiver to derive its

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precise position from the global navigation satellite system constellation and then combines that position with any number of aircraft parameters, such as speed, heading, altitude, and aircraft registration number. This information is then simultaneously broadcast to other ADS-B-capable aircraft and to ADS-B ground or satellite communications transceivers, which then relay the aircraft's position and additional information to air traffic control centers in real time.

Data from the accident airplane's ADS-B, as shown in figure 1, show the airplane's flightpath. Airspeeds were calculated using the ADS-B position data and the reported wind information. Airplane orientation was calculated from these data and a basic aerodynamic model of the airplane. Calculations made from ADS-B and weather data are subject to uncertainty; therefore, airspeeds and attitude values should not be considered exact.

During the initial climb, the airplane remained below the recommended airspeed per the Texas Turbine Conversions, Inc., AFM. The data show the airplane initially gaining altitude at 0605:54 and reaching 56 mph, as recommended in the AFM. After the initial climb with a 10° bank angle, the airplane made a descending right turn at 57 mph and lost 175 ft of altitude, which placed the airplane at or near the water's surface. Subsequently, the airplane began regaining altitude with a 30° bank angle, and then it made another right turn at less than 57 mph. The airplane's stall speed is 57 mph at a 0° bank angle, 59 mph at a 20° bank angle, and 65 mph at a 40° bank angle.

ADDITIONAL INFORMATION

Weight and Balance Guidance

FAA-H-8083-1A, "Aircraft Weight and Balance Handbook," stated the following:

Improper loading cuts down the efficiency of an aircraft from the standpoint of altitude, maneuverability, rate of climb, and speed. It may even be the cause of failure to complete the flight, or for that matter, start the flight. Because of abnormal stresses placed upon the structure of an improperly loaded aircraft, or because of changed flying characteristics of the aircraft, loss of life and destruction of valuable equipment may result.

The pilot in command of the aircraft has the responsibility on every flight to know the maximum allowable weight of the aircraft and its CG limits. This allows the pilot to determine on the preflight inspection that the aircraft is loaded in such a way that the CG is within the allowable limits.

Excessive weight reduces the efficiency of an aircraft and the safety margin available if an emergency condition should arise. Some of the problems caused by overloading an aircraft are:

- The aircraft will have a higher takeoff speed, which results in a longer takeoff run.
- Both the rate and angle of climb will be reduced.
- Maneuverability will be decreased.

An important part of careful preflight planning includes a check of these charts to determine the aircraft is loaded so the proposed flight can be safely made. If the CG is too far aft, it will be too near the center of lift and the airplane will be unstable, and difficult to recover from a stall.

Federal Aviation Regulations

Title 14 CFR Part 91.9, "Civil aircraft flight manual, marking, and placard requirements," stated the following:

(a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.

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Part 91.103 Preflight action: Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include-

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Spatial Disorientation

The FAA's "Pilot's Handbook of Aeronautical Knowledge" (FAA-H-8083-25), stated, "Spatial disorientation specifically refers to the lack of orientation with regard to the position, attitude, or movement of the airplane in space." The handbook also contained the following guidance:

under normal flight conditions, when there is a visual reference to the horizon and ground, the sensory system in the inner ear helps to identify the pitch, roll, and yaw movements of the airplane. When visual contact with the horizon is lost, the vestibular system becomes unreliable. Without visual references outside the airplane, there are many situations where combinations of normal motions and forces can create convincing illusions that are difficult to overcome.

FAA Publication "Spatial Disorientation Visual Illusions" (OK-11-1550), stated, in part, the following:

false visual reference illusions may cause you to orient your aircraft in relation to a false horizon; these illusions are caused by flying over a banked cloud, night flying over featureless terrain with ground lights that are indistinguishable from a dark sky with stars, or night flying over a featureless terrain with a clearly defined pattern of ground lights and a dark starless sky.

The FAA publication Medical Facts for Pilots (AM-400-03/1) described several vestibular illusions associated with the operation of aircraft in low-visibility conditions. Somatogravic illusions, which involve the utricle and saccule of the vestibular system, were generally placed into one of three categories, one of which was "the head-up illusion." According to the publication, the head-up illusion involves a forward linear acceleration, such as takeoff, where the pilot perceives that the aircraft's nose is pitching up. The pilot's response to this illusion would be to push the control yoke forward to pitch the aircraft's nose. It added, "A night takeoff from a well-lit airport into a totally dark sky (black hole).can also lead to this illusion, and could result in a crash."

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Accident Rpt# GAA17CA303 05/24/2017 1515 PDT Regis# N708PV Perris, CA Apt: Perris Valley L65
Acft Mk/Mdl DEHAVILLAND DHC 6-300 Acft SN 489 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY PT6A-27 Acft TT 37886 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: PERRIS VALLEY AVIATION SERVICES Opr dba: SKYDIVE PERRIS Aircraft Fire: NONE
INC> AW Cert: STN

Summary

The pilot of the twin-engine, turbine-powered airplane reported that, while providing flights for skydivers throughout the day, he had a potential new hire pilot flying with him in the right seat. He added that, on the eighth flight of the day, the new pilot was flying during the approach and "approximately 200' [ft.] south from the threshold of [runway] 15 at approximately 15 feet AGL [above ground level] the bottom violently and unexpectedly dropped out. [He] believe[d] some kind of wind shear caused the aircraft [to] slam onto [the] runway and bounce into the air at a 45 to 60-degree bank angle to the right." The prospective pilot then said, "you got it." The pilot took control of the airplane and initiated a go-around by increasing power, which aggravated the "off runway heading." The right wing contacted the ground, the airplane exited the runway to the right and impacted a fuel truck, and the right wing separated from the airplane. The impact caused the pilot to unintentionally add max power, and the airplane, with only the left engine functioning, ground looped to the right, coming to rest nose down. The airplane sustained substantial damage to the fuselage and right wing.

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

The automated weather observation system about 8 nautical miles from the accident site reported that, about the time of the accident, the wind was from 280° at 7 knots, visibility 10 statute miles, few clouds at 20,000 ft agl, temperature 86° F, dew point 45° F, and altimeter 29.81 inches of mercury. The pilot landed on runway 15.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The prospective pilot's improper landing flare and the pilot's delayed remedial action to initiate a go-around, which resulted in a runway excursion.

Events

1. Landing - Windshear or thunderstorm
2. Landing - Loss of control in flight
3. Landing-aborted after touchdown - Abnormal runway contact
4. Landing-aborted after touchdown - Attempted remediation/recovery
5. Landing-aborted after touchdown - Dragged wing/rotor/float/other
6. Landing-aborted after touchdown - Runway excursion
7. Landing-aborted after touchdown - Collision with terr/obj (non-CFIT)
8. Landing-aborted after touchdown - Nose over/nose down

Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Landing flare-Not attained/maintained - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Copilot - C
3. Personnel issues-Action/decision-Action-Delayed action-Pilot - C
4. Environmental issues-Conditions/weather/phenomena-Wind-Windshear-Effect on operation
5. Environmental issues-Physical environment-Object/animal/substance-Ground vehicle-Contributed to outcome

Narrative

The pilot of the twin-engine, turbine powered airplane reported that while providing flights for skydivers throughout the day, he had a potential new hire pilot flying with him in the right seat. He added that on the eighth flight of the day, the new pilot was flying during the approach and "approximately 200' [ft.] south from the threshold of [runway] 15 at approximately 15 feet AGL [above ground level] the bottom violently and unexpectedly dropped out. [He] believe[d] some kind of wind shear caused the aircraft [to] slam onto [the] runway and bounce into the air at a 45 to 60-degree bank angle to the right." The new pilot then said, "you got it". The pilot took the control and initiated a go around by increasing power which aggravated the "off runway heading". The right wing contacted the ground, the airplane exited the runway to the right, impacted a fuel truck and the right-wing separated from the airplane. The impact caused the pilot to unintentionally add max power and the airplane, with only the left engine functioning ground looped to the right, coming to rest nose down.

The airplane sustained substantial damage to the fuselage and right wing.

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

The automated weather observation system about 8 nautical miles from the accident site, about the time of the accident, reported the wind from 280° at 7 knots, visibility 10 statute miles, few clouds at 20,000 ft. AGL, temperature 86°F, dew point 45°F, and altimeter 29.81 in Hg. The pilot landed on runway 15.

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Accident Rpt# GAA17CA344	05/25/2017 1630 MST	Regis# N153GC	Peach Springs, AZ	Apt: Grand Canyon West 1G4
Acft Mk/Mdl EUROCOPTER EC130-B4		Acft SN 7074	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl TURBOMECA ARRIEL 2B1			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: PAPILLON AIRWAYS INC.		Opr dba: PAPILLON GRAND CANYON HELICOPTERS		Aircraft Fire: NONE AW Cert: STN

Events

1. After landing - Miscellaneous/other

Narrative

The pilot of the helicopter reported that, after fueling the helicopter with the engine running, the ground crewman opened the front passenger door on the opposite side from the pilot. Upon unlatching the door, the ground crewman released the door, and it was blown open. The door separated from the door strut, and struck the main rotor damaging the blades.

The helicopter sustained substantial damage to the main rotor blades.

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

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA305 05/26/2017 1315 PDT Regis# N6674K Maxwell, CA Apt: N/a
Acraft Mk/Mdl GRUMMAN ACFT ENG COR-SCHWEIZER Acft SN 16C Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl HONEYWELL (GARRETT) TPE-331-6-5AM Acft TT 10114 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 137
Opr Name: RICHTER AVIATION INC Opr dba: Aircraft Fire: NONE
AW Cert: SPR

Summary

The pilot reported that, a few minutes after takeoff for an agricultural application flight, while maneuvering to a field he intended to spray, the engine lost power and that he then attempted to land on a dirt road. He added that the airplane bounced on touchdown and "went off the road and struck a ditch." He further added that when the engine lost power, the fuel gauge indicated about half full. Postaccident, the pilot reported that the fuel gauge was "stuck in the middle," that he did not visually check the fuel quantity before flight, and that he had exhausted the fuel supply.

The fuselage and both wings sustained substantial damage.

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

The Federal Aviation Administration Pilot's Handbook of Aeronautical Knowledge stated, in part:

Fuel Gauges

The fuel quantity gauges indicate the amount of fuel measured by a sensing unit in each fuel tank and is displayed in gallons or pounds. Aircraft certification rules require accuracy in fuel gauges only when they read "empty." Any reading other than "empty" should be verified. Do not depend solely on the accuracy of the fuel quantity gauges. Always visually check the fuel level in each tank during the preflight inspection, and then compare it with the corresponding fuel quantity indication.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to visually check the fuel quantity during the preflight inspection and ensure that sufficient fuel was onboard for the flight, which resulted in a total loss of engine power due to fuel exhaustion.

Events

1. Prior to flight - Aircraft inspection event
2. Maneuvering-low-alt flying - Fuel exhaustion
3. Landing - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Task performance-Inspection-Preflight inspection-Pilot - C
2. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid level - C
3. Aircraft-Fluids/misc hardware-Fluids-Fuel-Inadequate inspection - C
4. Aircraft-Aircraft systems-Fuel system-Fuel indication system-Malfunction
5. Environmental issues-Physical environment-Terrain-(general)-Contributed to outcome

Narrative

The pilot reported that a few minutes after takeoff during an aerial application flight, while maneuvering to a field he intended to spray, the engine lost power and he attempted to land on a dirt road. He added that the airplane bounced on touchdown and "went off the road and struck a ditch." He further added that when the engine lost power, the fuel gauge indicated about half full. Postaccident, the pilot reported that the fuel gauge was "stuck in the middle", he did not visually check the fuel quantity prior to flight, and had exhausted the fuel supply.

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quantity indication.

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Accident Rpt# WPR16LA021 11/03/2015 1130 PST Regis# N510PA Sedro-woolley, WA Apt: N/a
Acraft Mk/Mdl MD HELICOPTER 369D Acft SN 811073D Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROLLS ROYCE 250-C20B Acft TT 9329 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 133
Opr Name: OLYMPIC AIR INC Opr dba: Aircraft Fire: NONE
AW Cert: STN

Events

1. Maneuvering - Loss of engine power (total)
2. Maneuvering-low-alt flying - Fuel starvation

Narrative

HISTORY OF THE FLIGHT

On November 3, 2015, at 1130 Pacific standard time, an MD Helicopters 369D, N510PA, was substantially damaged during a forced landing following a loss of engine power near Sedro-Woolley, Washington. The commercial pilot, the sole occupant, was not injured. Olympic Air was operating the helicopter as a 14 Code of Federal Regulations Part 133 external load flight. Visual meteorological conditions prevailed, and no flight plan was filed. The pilot departed from Arlington Municipal Airport, Arlington, Washington, about 0700.

According to the pilot, he was conducting longline operations using a 50-foot line to gather cedar pieces. After completing work at an initial jobsite, he flew to the second jobsite. Between jobs, the helicopter was refueled. Before beginning the second job, a safety briefing was conducted. The pilot then completed about 30 to 40 slings and as he was positioning the helicopter to lift a load from a slope, the helicopter suddenly lost engine power and he entered an autorotation. The pilot attempted to land at the bottom of a hill because of the flat terrain, but the helicopter touched down on the slope and the tailboom impacted the side of a hill, followed by the skids. The helicopter came to rest on its right side. Prior to the loss of engine power, the pilot did not receive any warning lights during the flights.

TESTS AND RESEARCH

The National Transportation Safety Board investigator, the FAA representative, and representatives from MD Helicopters, Rolls-Royce, Boeing, and Olympic Air examined the helicopter following its recovery from the accident site.

Examination of the airframe and engine revealed contaminants throughout the fuel system, including the engine fuel filter. All warning lights functioned normally. Removal of the start pump showed the fuel bypass valve inlet port screen (the port used when the start pump is off) was covered with a brown, sponge-like debris (normal operation is with the start pump off except when using alternate fuel mixtures or emergency fuels). When the start pump is not in use, fuel passes through the fuel bypass valve inlet port screen. The debris was submitted to the NTSB Materials Laboratory for testing and identification.

The debris from the fuel bypass valve inlet port screen was examined using Fourier-transform infrared spectroscopy (FTIR) with a diamond attenuated total reflectance (ATR) accessory in accordance to ASTM E1252-98 (American Society for Testing Materials E1252-98: Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis and American Society for Testing Materials). The debris was then examined by scanning electron microscope (SEM) and quantitative energy dispersive x-ray spectroscopy (EDS) in accordance with ASTM E15081. The FTIR and EDS examinations indicated that the unknown material was consistent with potassium naphthenate, a surfactant.

On January 12, 2016, the start pump was examined and tested at Globe Motors Inc. in Dothan, Alabama. The start pump was tested on a test bench with the contaminant in place. The electrically driven centrifugal fuel pump was tested in the non-powered and powered state, the pump demonstrated intermittent fuel flow from the discharge port; the pressure drop was erratic, and did not meet the defined performance parameters. The contamination was removed from the fuel bypass valve inlet port screen, and the start pump was retested. In the powered state, the fuel flow was intermittent and did not meet defined performance parameters. Disassembly of the start pump revealed debris internal to the pump and centrifugal impeller.

According to the operator, the company first identified fuel contamination in a company helicopter engine fuel filter on October 7, 2015. The operator reported that samples were retrieved from every refueling vehicle in its ground fleet, and some growth was noticed in a vehicle fuel tank, but not in the filters. All fuel sources were then treated with Biobor, a micro-biocide used in fuel to destroy microbial growth. This fuel was then supplied to company helicopters. For several years, the operator had been changing the engine fuel pump filter every 100 hours instead of the prescribed 300 hours due to contaminants.

MD Helicopters, Inc. (MDHI) maintenance procedures at the time of the accident required that the fuel bypass valve inlet port screen be checked if the FUEL FILTER cockpit warning light was activated. Because the light had not activated, the operator did not check the start pump screens. Following the accident, the helicopter manufacturer revised their maintenance procedures to require that the screens be checked when fuel contamination is identified.

During the examination of the helicopter, the main rotor blades were examined and cracking of the blade root fitting sealant, between the root fitting and airfoil, was observed on one of the blades. Although unrelated to the accident circumstances, one of the inboard sections of the main rotor blade was submitted to the Materials Laboratory for a detailed examination due to a previous event involving a blade root fitting disbond and its inspection procedures.

MDHI Maintenance Manual No. CSP-HMI-2 requires 100 hour inspections of the upper and lower root fittings for ".cracked adhesive/paint around the periphery of the root fitting." If the condition is found, the root fittings are to be inspected for disbonding. The root fitting inspection involves loosening (not removing) the outmost bolt and attempting to insert a 0.004 inch thick Mylar shim in the adhesive bond line between the root fitting and the blade doubler. The disposition of the blade is determined by the ability or inability of inserting the shim.

For the accident main rotor blade, visual inspections found cracked or missing paint around the entire periphery of the lower root fitting. The paint was intact around the upper root fitting. Magnified examination of the periphery of the lower fitting and area of missing paint near the outboard tip of the fitting revealed that the bond line was visible, however no gap was visible. The remaining bond line was hidden from direct view by the paint. The outermost bolt was then loosened, and a gap became visible, but a 0.004 inch thick feeler gauge could not be inserted. During the loosening and probing, more paint flaked off exposing more of the bond line. It was also noted that in some locations a fillet formed by adhesive squeezed out during manufacture partially hid portions of the bond line gap. Following loosening and removal of all bolts, the gap enlarged. In this condition, the 0.004 inch thick feeler gauge would easily slide into the exposed portions of the gap. At the two outermost bolt locations, the gauge would penetrate all the way to the bolt holes (about 1 inch). At the outermost bolt, the gap was estimated to be between 0.012 inch and 0.014 inch wide. Following these observations, MDHI and the blade manufacturer stated they would revise the main rotor blade inspection procedures to address the findings from this investigation.

ADDITIONAL INFORMATION

According to Chevron Global Aviation's publication-Aviation Fuels Technical Review, naphthenic acid and its corresponding metal salts can be present as naturally occurring materials in the crude oil or as residual refinery treating materials. Refinery processing should remove all traces of these materials. However, in some refining processes, small amounts of the naphthenates can get carried through with the jet fuel.

Following the accident, nearby workers tried to assist the pilot in evacuating the helicopter. He was unable to egress due to his headset cord. Once he removed his headset, he was able to egress from the helicopter. Following a prior accident, MD Helicopters had issued Operational Safety Notice 2015-001, Helmet Communication Cord Connection that notes, "In the event of an accident an attached communication cord may impede the occupants' ability to egress from the aircraft. Use of an intermediate "pig-tail" communication cord can help to mitigate this safety hazard."

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA16CA325	06/17/2016 1400 CDT	Regis# N155NR	Brainerd, MN	Apt: N/a
Acft Mk/Mdl MD HELICOPTER 369E-500		Acft SN 0623E	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROLLS ROYCE C20B			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR PUBU
Opr Name:		Opr dba:		Aircraft Fire: NONE
				AW Cert: STN

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA16LA325	06/17/2016 1400 CDT	Regis# N155NR	Brainerd, MN	Apt: N/a
Acft Mk/Mdl MD HELICOPTER 369E-500		Acft SN 0623E	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ROLLS ROYCE C20B		Acft TT 91	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR PUBU
Opr Name: MICHIGAN DEPARTMENT OF NATURAL RESOURCES		Opr dba:		Aircraft Fire: NONE
				AW Cert: STN

Events

1. Enroute-cruise - Part(s) separation from AC

Narrative

On June 17, 2016 about 1400 central daylight time (CDT), an MD Helicopters Inc., 369E, N155NR, sustained a windscreen failure in flight, 20 miles south of Brainerd Lakes Regional Airport, Minnesota. The helicopter was registered to the State of Minnesota Department of Natural Resources Enforcement Division and operated as a visual flight rules (VFR) public use local flight under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the flight, and company VFR flight following was in effect.

According to the Federal Aviation Administration Inspector who responded to the accident, the right front windscreen failed in cruise flight for unknown reasons. The inspector reported that the pilot sustained facial lacerations but he was able to land the helicopter next to a highway, and shutdown without further incident. The observer on board did not sustain any injury. A post-accident examination of the helicopter by the inspector revealed gouges in the main rotor blades and the horizontal stabilizer. When asked by the inspector, the pilot stated that he did not see anything strike the windscreen and that there wasn't any evidence of a bird strike.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN15FA328 07/29/2015 1810 CDT Regis# N425KJ Milwaukee, WI Apt: Lawrence J Timmerman Airport MWC
Acft Mk/Mdl SOCATA TBM 700-850 Acft SN 518 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY CANADA PT6A-66D Acft TT 657 Fatal 2 Ser Inj 0 Flt Conducted Under: FAR 091
Opr Name: TRUSTEY MANAGEMENT Opr dba: Aircraft Fire: GRD
CORPORATION AW Cert: STN

Summary

The airline transport pilot was landing at the destination airport after a cross-country flight in visual meteorological conditions. The tower controller stated that the airplane's landing gear appeared to be extended during final approach and that the airplane landed within the runway's touchdown zone. The tower controller stated that, although the airplane made a normal landing, he heard a squealing noise that continued longer than what he believed was typical. The pilot subsequently transmitted "go-around." The tower controller acknowledged the go-around and cleared the pilot to enter a left traffic pattern. The tower controller stated that he heard the engine speed accelerate while the airplane maintained a level attitude over the runway until it passed midfield. He then saw the airplane pitch up and enter a climbing left turn. The tower controller stated that the airplane appeared to enter an aerodynamic stall before it descended into terrain in a left-wing-down attitude. Another witness reported that he saw the airplane, with its landing gear extended, in a steep left turn before it descended rapidly into terrain.

A postaccident examination did not reveal any evidence of flight control, landing gear, or engine malfunction. An examination of the runway revealed numerous propeller slash marks that began about 215 ft past the runway's touchdown zone; however, there was no evidence that any portion of the airframe had impacted the runway during the landing. Additionally, measurement of the landing gear actuators confirmed that all three landing gear were fully extended at the accident site. Therefore, the pilot likely did not adequately control the airplane's pitch during the landing, which allowed the propeller to contact the runway. Due to the propeller strikes, the propeller was likely damaged and unable to provide adequate thrust during the go-around. Further, based on the witness accounts, the pilot likely did not maintain adequate airspeed during the climbing left turn, which resulted in the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall at a low altitude.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper pitch control during the landing, which resulted in the propeller striking the runway, and his failure to maintain adequate airspeed during the subsequent go-around, which resulted in the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall at a low altitude.

Events

1. Landing-aborted after touchdown - Abnormal runway contact
2. Initial climb - Loss of control in flight
3. Initial climb - Aerodynamic stall/spin
4. Uncontrolled descent - Collision with terr/obj (non-CFIT)
5. Post-impact - Explosion (post-impact)
6. Post-impact - Fire/smoke (post-impact)

Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Pitch control-Incorrect use/operation - C
2. Aircraft-Aircraft propeller/rotor-Propeller system-Propeller blade section-Damaged/degraded - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - C
5. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C

Narrative

HISTORY OF FLIGHT

On July 29, 2015, about 1810 central daylight time, a Socata TBM 700 single-engine turboprop airplane, N425KJ, collided with terrain following a loss of control during a go-around at Lawrence J. Timmerman Airport (MWC), Milwaukee, Wisconsin. The airline transport pilot and his passenger were fatally injured, and the airplane was destroyed. The airplane was registered to Trustey Management Corporation and was operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 on an instrument flight rules flight plan. Day visual meteorological conditions prevailed for the cross-country flight that departed Beverly Municipal Airport (BVY), Beverly, Massachusetts, at 1552 eastern daylight time with a destination of MWC.

According to Federal Aviation Administration (FAA) air traffic control (ATC) data, the flight was cleared for a visual approach to runway 33R at MWC. At

National Transportation Safety Board - Aircraft Accident/Incident Database

1808:12, while on a 2.5-mile final approach, the pilot asked the tower controller for the current wind conditions. At 1808:18, the tower controller told the pilot that the prevailing wind was from 230ø at 10 knots. At 1808:21, the pilot replied, "Three zero one zero, thanks, or two three zero?" At 1808:24, the tower controller responded, "Two three, two thirty."

In a postaccident interview, the tower controller reported that he established visual contact with the airplane when it was on a 3-mile final approach to runway 33R. The tower controller stated that the airplane's landing gear appeared to be extended during final approach and that the airplane landed within the runway's touchdown zone. The tower controller further stated that, although the airplane made a normal landing, he heard a squealing noise that continued longer than what he believed was typical.

According to ATC transmissions, at 1809:56, shortly after the airplane had touched down, the pilot transmitted, "go-around." The tower controller acknowledged the go-around and cleared the pilot to enter a left traffic pattern. The tower controller stated that he heard the engine speed accelerate while the airplane maintained a level attitude over the runway until it passed midfield. He then saw the airplane pitch up and enter a climbing left turn. The tower controller stated that the airplane appeared to "stall" during the turn before it descended into terrain in a left-wing-down attitude.

Another witness reported that he saw the airplane, with its landing gear extended, in a steep left turn before it descended toward the ground. He stated that the airplane maintained the steep left bank throughout the final descent and estimated that the airplane's final descent path was about 45ø below a level flight attitude. The witness reported that, shortly after he lost sight of the airplane, he heard it impact terrain and saw a large explosion.

PERSONNEL INFORMATION

According to FAA records, the 53-year-old pilot held an airline transport pilot certificate with single-engine land, multi-engine land, and instrument airplane ratings. The airplane single-engine land rating was limited to commercial privileges. The pilot was type-rated for the Bombardier Challenger 300 and Embraer Phenom 300. His most recent FAA third-class medical certificate was issued on June 13, 2014, with no restrictions or limitations. On the application for his current medical certificate, the pilot reported having accumulated 1,594 total hours of flight experience, of which 112 hours were flown within the previous 6 months.

The pilot's flight history was established using his logbook. The final logbook entry was dated July 20, 2015, at which time he had accumulated 1,875.1 hours total flight time. The pilot had logged 1,656.5 hours as pilot-in-command, 1,363 hours in single-engine airplanes, and 512.1 hours in multi-engine airplanes. He had flown 268.1 hours during the year before the accident, 152.7 hours during the 6 months before the accident, 64.4 hours during the 90 days before the accident, and 16.2 hours during the month before the accident. Based on available information, the 3.3-hour accident flight was the only flight flown within 24 hours of the accident. The pilot had accumulated 721.1 hours in the accident airplane make/model. His last flight review and instrument proficiency check were completed in the accident airplane on November 16, 2014.

AIRCRAFT INFORMATION

The airplane was a 2009 Socata TBM 700, serial number 518. The low-wing airplane was of conventional aluminum construction and was equipped with a retractable tricycle landing gear and a pressurized cabin that was configured to seat six individuals. The airplane was powered by an 850 shaft-horsepower Pratt & Whitney Canada PT6A-66D turbo-propeller engine, serial number PCE-RV0179, through a 4-blade, constant speed, full-feathering, Hartzell model HC-E4N-3/E9083SK propeller assembly. The airplane was approved for operations in instrument meteorological conditions and in known icing conditions. The airplane had a maximum allowable takeoff weight of 7,394 pounds. On December 2, 2009, the airplane was issued a standard airworthiness certificate and a registration number when it was imported into the United States after manufacture in France. The current airplane owner, Trustey Management Corporation, purchased the airplane on December 16, 2009.

According to maintenance records, the airplane had been maintained under the provisions of an approved manufacturer inspection program. The most recent phase inspection was completed on December 29, 2014, at 656.7 hours total airframe time. The recording hour meter was destroyed during the postimpact fire, which precluded a determination of the airplane's total service time at the time of the accident. A postaccident review of the available maintenance records found no history of unresolved airworthiness issues.

The airplane had two fuel tanks, one located in each wing, and a total fuel capacity of 301 gallons (292 gallons usable). According to available fueling information, the fuel tanks were topped-off before the accident flight.

METEOROLOGICAL INFORMATION

At 1745, the MWC automated surface observing system reported: wind 270ø at 14 knots, a clear sky, 10 miles surface visibility; temperature 29øC; dew point 6øC; and an altimeter setting of 29.93 inches of mercury.

According to air traffic control communications, at 1808:12, the pilot asked the tower controller for the current wind conditions while on final approach to runway 33R. The tower controller replied that the prevailing wind was from 230ø at 10 knots.

COMMUNICATIONS

A review of available air traffic control information indicated that the accident flight received normal services and handling. Transcripts of the voice communications recorded between the accident pilot and the tower controller are included in the docket materials associated with the investigation.

AIRPORT INFORMATION

Lawrence J. Timmerman Airport (MWC), a public airport located about 5 miles northwest of Milwaukee, Wisconsin, was owned and operated by Milwaukee County. The airport field elevation was 745 ft msl. The airport was served by two asphalt runways, runway 15L/33R (4,103 ft by 75 ft) and runway 4L/22R (3,201 ft by 75 ft). Runway 4L/22R was closed for maintenance at the time of the accident. The airport also had two turf runways, runway 15R/33L (3,231 ft by 270 ft) and runway 4R/22L (2,839 ft by 270 ft). The airport was equipped with an air traffic control tower that was operational at the time of the accident.

WRECKAGE AND IMPACT INFORMATION

A postaccident examination of runway 33R revealed numerous slash marks consistent with propeller blades striking the asphalt runway surface. The first propeller strike was identified about 1,384 ft from the runway 33R threshold, or about 215 ft past the runway's touchdown zone. There were 22 propeller strike marks identified over a distance of about 25 feet 7 inches. The propeller strike marks were located slightly right of the runway centerline. There were also numerous small asphalt pieces found adjacent to the slash markings.

The main wreckage was in an open field located on the west side of the airport property. The initial impact was identified by a small ground depression that contained pieces of red lens material that were consistent with the left wing navigational light. A large area of burnt ground and vegetation preceded the main wreckage. The wreckage debris path was oriented on a 180ø heading and measured about 141 ft. The propeller, nose landing gear, right flap, and left aileron were located along the wreckage debris path.

The main wreckage consisted of the fuselage, empennage, both wings, and the engine. The main wreckage was oriented on a north heading. A majority of the fuselage, including the cockpit, cabin, and the left wing were consumed by the postimpact fire. The cockpit Garmin G1000 avionic components, including the nonvolatile memory cards, were destroyed by the postimpact fire. Flight control continuity could not be established due to impact and fire damage; however, all observed separations were consistent with overstress or were consumed during the postimpact fire.

The landing gear selector switch was found in the "DOWN" position. Measurements of the landing gear actuators were consistent with all three landing gear being fully extended at the time of impact. Examination of the nose wheel tire and right main tire did not reveal any flat spots. The right main and nose wheel assemblies rotated freely, and no anomalies were noted with the right brake components. A majority of the left main tire was consumed during the postimpact fire. The fuselage skid plates, installed on the lower wing spar carry-through structure, did not exhibit any evidence of being scraped. The lower VHF antenna had separated from the fuselage and was located along the wreckage debris path. The lower VHF antenna did not exhibit any evidence of being scraped. The trailing edge of the right flap and the corresponding flap track fairings did not exhibit any evidence of being scraped. The left flap was partially consumed during the postimpact fire. Measurements of the flap actuator jack screws established that the flaps were extended to 34ø, which was consistent with a normal landing flap configuration.

The propeller assembly and the forward section of the reduction gearbox had separated from the engine and were found along the wreckage debris path. All four propeller blades remained attached to the hub assembly and exhibited S-shaped bends, tip curls, chordwise scratching, and leading edge damage. The fractured propeller shaft exhibited features consistent with torsional overload. The engine exhaust exhibited evidence of torsional bending associated with

impact. The downstream face of the compressor turbine disc and blades exhibited rotational scoring from contact with the adjacent static components. The upstream face of the compressor turbine disc and blades were unremarkable. The first-stage power turbine vane and baffle exhibited rub marks on both sides from contact with the power turbine and compressor turbine discs and blades. The first-stage power turbine disc and blades exhibited rotational scoring on the upstream face. Examination of the engine oil filter and magnetic chip detectors did not reveal any significant particulate contamination. The observed damage to the propeller and engine components were consistent with the engine operating at a medium to high power output at the time of final impact.

MEDICAL AND PATHOLOGICAL INFORMATION

The Milwaukee County Medical Examiner's Office, located in Milwaukee, Wisconsin, performed an autopsy on the pilot. The cause of death was attributed to thermal injuries and the inhalation of combustion products during the postaccident fire. The autopsy report also noted multiple blunt-force injuries. The FAA's Bioaeronautical Sciences Research Laboratory located in Oklahoma City, Oklahoma, performed toxicology tests on specimens obtained during the autopsy. The test results included 23% carbon monoxide and 1.3 ug/ml cyanide detected in blood. There was no ethanol detected in vitreous. Ibuprofen was detected in urine. Ibuprofen, sold under multiple brand names, is a nonsteroidal anti-inflammatory analgesic drug.

ADDITIONAL DATA/INFORMATION

According to National Transportation Safety Board (NTSB) Safety Alert No. SA-019, Prevent Aerodynamic Stalls at Low Altitude, many aerodynamic stalls occur in visual meteorological conditions when a pilot becomes momentarily distracted from the primary task of flying, such as while maneuvering in the airport traffic pattern, during an emergency, or when fixating on ground objects. The safety alert further states that reducing angle-of-attack by lowering the airplane's nose at the first indication of a stall is the most important immediate response for stall avoidance and stall recovery.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA457	07/28/2017 1150 CDT	Regis# N541GF	Hondo, TX	Apt: South Texas Rgnl At Hondo HDO
Acft Mk/Mdl SWEARINGEN SA26-AT		Acft SN T26-173	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: FMG AVIATION LLC		Opr dba:		Aircraft Fire: NONE
