

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--|---------------------|-----------------------|--|--------------------------|
| Accident Rpt# GAA17CA494                   | 08/17/2017 1540 PDT | Regis# N8230S         | Moses Lake, WA                         | Apt: Moses Lake Muni W20 |
| Acft Mk/Mdl AEROTECHNIK L 13 SEH VIVAT-SEH | Acft SN 930504      | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |                          |
| Eng Mk/Mdl AEROTECHNIK MIKRON III          | Acft TT 402         | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |                          |
| Opr Name: KASPROWICZ KRZYSZTOF J           | Opr dba:            | Aircraft Fire: GRD    |  | AW Cert: STN             |

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## Events

1. Takeoff - Loss of control in flight
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## Narrative

According to the powered-glider pilot, during takeoff he noticed a slower than usual acceleration, but continued the departure.

He reported that, "after lift-off the glider exhibited a poor climb rate although the engine was running smooth."

Moments later, the glider stopped climbing, then descended and struck the roof of a building located about 800ft southwest of the departure end of the runway. The glider came to rest upright, after colliding with another structure, and was consumed by a post-crash fire.

The pilot recalled that during the startup sequence, he was, "anxious to get back to my home base" and that he had not used the checklist.

The pilot reported that he had taken off with the propeller in the cruise setting and the wing spoilers deployed.

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

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|--|-----------------|----------------|-----------------------|--|
| Accident Rpt# GAA17CA497                         | 08/19/2017 1615 | Regis# N136BJ  | Loman, ID             | Apt: Warm Springs Creek 0U1            |
| Acft Mk/Mdl BEECH A36-UNDESIGNAT                 |                 | Acft SN E-1077 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO-520-BB                 |                 | Acft TT 4091   | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: CONTEMPORARY COMMUNICATION SYSTEMS INC |                 | Opr dba:       |                       | Aircraft Fire: NONE                    |
|  |                 |                |                       | AW Cert: STU                           |

## Events

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

## Narrative

According to the pilot, as he approached the airport, he requested a wind and weather PIREP. An unknown person replied on the CTAF, to expect winds out of the west. With the intent of landing on runway 2, the pilot overflew the airfield and observed a light crosswind from the west. He landed the high-performance airplane on 2,580 ft. turf surface.

The pilot recalled a shift in wind direction during landing. The airspeed as he crossed the runway threshold was about 90 knots, and the airspeed, "increased dramatically" during the landing flare and touch down. The pilot applied the brakes, however, the airplane overran the departure end of the runway and collided with a tree. The airplane sustained substantial damage to the engine mounts and the fuselage.

According to the pilot, witnesses to the accident recalled that the airplane landed in variable wind conditions and touched down with a 20-30 knot tailwind.

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

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|---------------------------------|---------------------|----------------|-----------------------|---------------------------------------|
| Accident Rpt# ERA18LA038        | 11/17/2017 1215 EST | Regis# N592SS  | Statesville, NC       | Apt: Statesville Rgnl SVH             |
| Acft Mk/Mdl BEECH B 55-A        |                     | Acft SN TC2375 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO 470 L |                     | Acft TT 4500   | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: LGM SERVICES LLC      |                     | Opr dba:       |                       | Aircraft Fire: NONE                   |
|                                 |                     |                |                       | AW Cert: STN                          |

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## Events

1. Takeoff - Loss of engine power (partial)

## Narrative

On November 17, 2017, about 1215 eastern standard time, a Beech B55, N592SS, was substantially damaged during takeoff from Statesville Regional Airport (SVH), Statesville, North Carolina. The private pilot and flight instructor were not injured. Visual meteorological conditions prevailed at the time, and no flight plan was filed for the instructional flight. The flight was operated by the private pilot under the provisions of Title 14 Code of Federal Regulations Part 91.

According to the private pilot, he was conducting a flight review with the flight instructor, who was also his friend. They departed SVH and flew to a practice area where he conducted several maneuvers. The private pilot landed at another airport, where he conducted a full-stop landing and two short-field takeoffs. They then flew back to SVH, where he conducted the instrument landing system approach to runway 28 and a circle-to-land approach on runway 10. Upon landing on runway 10, the private pilot raised the flaps and slowly applied full power on both throttles for a touch-and-go landing. Both engines were producing full power and he rotated just above 90 knots indicated airspeed. The airplane lifted off and began a positive rate of climb. At that time, the airplane yawed hard to the left and he noticed a change in engine sound. The airplane began to descend, bounced on the runway, and collided with a ditch, before skidding to a stop on the edge of the taxiway.

Initial examination of the airplane revealed that the fuselage was substantially damaged. The airplane was retained for further examination.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|-------------------------------|---------------------|----------------|-----------------------|--|
| Accident Rpt# WPR15LA132      | 03/22/2015 1115 MST | Regis# N7628R  | Flagstaff, AZ         | Apt: Flagstaff Pulliam FLG             |
| Acft Mk/Mdl BEECH B23         |                     | Acft SN M-1249 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-360-A4G |                     | Acft TT 5371   | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: WILSON RODNEY C     |                     | Opr dba:       |                       | Aircraft Fire: NONE                    |
|                               |                     |                |                       | AW Cert: STA                           |

## Summary

The private pilot reported that, during the takeoff roll for the local personal flight, the nosewheel seemed to turn slightly to the left. Rudder input maintained a straight path on the runway centerline, but the nosewheel side-skidded for a few seconds before the airplane lifted off. When the airplane returned for landing, the pilot stated that touchdown was smooth and uneventful. During the landing roll, the nosewheel turned slightly left, and he attempted to correct with full right rudder. The airplane continued to veer to the left, exited the runway, and impacted a precision approach path indicator (PAPI) light. The pilot stated that he felt that the right rudder bungee did not have enough pull to stop the nosewheel from continuing to turn more sharply to the left. However, a postaccident examination of the airplane and nosewheel steering mechanism did not reveal any mechanical anomalies that would have precluded normal operation. Thus, it is likely that the pilot failed to maintain directional control of the airplane during landing.

## Cause Narrative

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

## Events

1. Landing-landing roll - Loss of control on ground
2. Landing-landing roll - Collision during takeoff/land

## 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-Runway/taxi/approach light-Contributed to outcome

## Narrative

On March 22, 2015, about 1115 mountain standard time, a Beech B23, N7628R, veered off runway 21 during the landing rollout at the Flagstaff Pulliam Airport (FLG), Flagstaff, Arizona. The private pilot/owner operated the airplane under the provisions of 14 Code of Federal Regulations Part 91 as a local area personal flight. The pilot and passenger were not injured. The airplane sustained substantial damage. Visual meteorological conditions prevailed for the local area flight, and no flight plan had been filed. The flight departed FLG about 1050.

According to the pilot, just prior to rotation for takeoff, the nose wheel seemed to turn left slightly, rudder input maintained a straight path on the runway centerline, but the nose wheel side skidded for a few seconds before he rotated. They flew for about an hour and then returned to the airport for a full stop landing. The pilot stated that touchdown was smooth and uneventful. During the landing rollout, the nose wheel turned slightly left, and he corrected for the condition with full right rudder. He felt that the right rudder bungee did not have enough pull to stop the nose wheel from continuing to turn more sharply to the left. The pilot applied right brake, but was not able to correct the turn to the left. The airplane tipped up on its nose wheel and right main landing gear, which caused the nose wheel to turn more to the left. The pilot applied full power and elevator to reduce the weight off the nose wheel in an attempt to turn it to the right. The right wing struck a precision approach path indicator (PAPI) box, and the pivot tube on the left wing caught the top of another PAPI box. After coming to a stop, the pilot and passenger exited the airplane.

Flagstaff airport reported wind from 230 degrees at 13 knots gusting to 20 knots.

The airplane was inspected by a Federal Aviation Administration (FAA) inspector, with no mechanical anomalies identified.

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Accident Rpt# GAA18CA109    01/17/2018 1602 MST    Regis# CFESG    Scottsdale, AZ    Apt: Scottsdale SDL  
Acft Mk/Mdl BEECH B60    Acft Dmg: SUBSTANTIAL    Rpt Status: Prelim    Prob Caus: Pending  
Fatal 0    Ser Inj 0    Flt Conducted Under: FAR 091  
Opr Name: VEL MICULINIC    Opr dba:    Aircraft Fire: NONE

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|--------------------------|---------------------|----------------|-----------------------|---------------------------------------|
| Accident Rpt# CEN18LA076 | 01/13/2018 1715 MST | Regis# N803R   | Longmont, CO          | Apt: Vance Brand LMO                  |
| Acft Mk/Mdl BEECH K35    |                     | Acft SN D-6003 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
|                          |                     |                | Fatal 0 Ser Inj 1     | Flt Conducted Under: FAR 091          |
| Opr Name: LUKE SIMON     |                     | Opr dba:       |                       | Aircraft Fire: NONE                   |
|                          |                     |                |                       | AW Cert: STN                          |

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## Events

1. Initial climb - Loss of engine power (total)
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## Narrative

On January 13, 2018, about 1715 mountain standard time, a Beech K35 Bonanza, N803R, experienced a loss of engine power after departure from Vance Brand Airport, (LMO), Longmont, Colorado. The pilot sustained serious injuries, the passenger sustained minor injuries, and the airplane sustained substantial damage. The airplane was registered to and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident and no flight plan had been filed. The local flight was departing LMO at the time of the accident.

A witness reported that he was near taxiway A3 when heard "a popping noise" coming from the accident airplane during takeoff. A few seconds later he heard the engine "shut off" as the airplane was in a nose up attitude. The airplane rolled to the right and then descended in a "steep dive" toward the ground. When he arrived at the accident site (figure 1) he observed smoke and smelled fuel near the airplane. He stated that the ground near the airplane was wet and fuel was leaking from the wing where it had separated from the fuselage.

The airplane owner, who is the father-in-law of the pilot, stated that he spoke with both the pilot and passenger; the passenger did not remember anything except the preflight inspection before the flight began. The pilot told the owner that they returned to LMO to perform touch-and-go landings. During the climb out, after the second consecutive touch-and-go, the engine lost power so the pilot pushed the nose down and made a forced landing in a field off the end of the runway. The pilot added that the landing gear had already been retracted and there was no remaining runway available to land.

The airplane has been retained for further examination.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR17LA072 03/01/2017 1250 PST Regis# N39894 Carson City, NV Apt: Carson Airport CXP  
Acft Mk/Mdl BELLANCA 17-30A Acft SN 73-30544 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR IO 520 SERIES Acft TT 3394 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091  
Opr Name: MULCAHY ROBERT F Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The airline transport pilot was conducting the airplane's first flight after about 1 1/2 years of inactivity and the completion of an annual inspection. A witness reported that the airplane took off normally, but the retractable landing gear remained extended. As the airplane neared the end of the runway, about 300 ft above ground level, the engine sounded as though it "decreased to idle." The airplane entered a right, 180o turn and descended rapidly before impacting the ground.

During a postaccident test run, the engine operated normally at both idle and full power settings and during abrupt changes between idle and full power. However, it operated inconsistently at 2,100 rpm for about 30 seconds before stabilizing at that power setting. During this time, the fuel pump pressure fluctuated. Following the test run, the fuel manifold valve was disassembled, revealing rust on the screen, lower housing, and plunger, consistent with exposure to water. The diaphragm was removed and a small amount of fuel was found on the "dry" side of the valve; the vent extending from this section was examined and clear of debris. Examination of the airframe and engine maintenance logs revealed that the airplane flew a total of 73 hours and underwent 3 annual inspections in the previous 8 years. It is likely that water accumulated in the fuel system sometime during the airplane's prolonged periods of disuse, resulting in corrosion of the fuel manifold valve's internal components. Because the corrosion was internal, it would not have been detected without disassembly of the fuel manifold, which is not part of the annual inspection procedure. It is likely that this corrosion caused the manifold valve plunger to temporarily stick, which restricted fuel flow to the engine and resulted in the anomalous operation during the postaccident test run as well as the loss of power on the accident flight. Following the loss of engine power, the pilot initiated a turn back to the runway, during which the airplane exceeded its critical angle of attack and experienced an aerodynamic stall.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power due to internal corrosion of the fuel manifold valve. Also causal was the pilot's decision to return to the runway following the loss of engine power shortly after takeoff, and his exceedance of the airplane's critical angle of attack during the turn, which resulted in an aerodynamic stall.

## Events

1. Initial climb - Fuel related
2. Initial climb - Loss of engine power (total)
3. Initial climb - Off-field or emergency landing
4. Landing - Aerodynamic stall/spin
5. Landing - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Fuel system-Fuel distribution-Fatigue/wear/corrosion - C
2. Aircraft-Aircraft systems-Fuel system-Fuel distribution-Malfunction - C
3. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C

## Narrative

On March 1, 2017, about 1250 Pacific standard time, a Bellanca 17-30A, N39894, experienced a loss of engine power shortly after takeoff from the Carson Airport (CXP), Carson City, Nevada. The pilot, sole occupant, was seriously injured, and the airplane sustained substantial damage to both wings. The airplane was registered to and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed at the time of the accident no flight plan was filed for the local flight.

At the time of this report, the pilot was unable to provide a statement or complete the NTSB Pilot/Operator Aircraft Accident/Incident Report Form 6120.1.

A witness reported that he observed the airplane takeoff normally, with the exception that the landing gear remained in the down position. At the end of the runway, when the airplane was no higher than 300 feet, it sounded as if the engine decreased to idle. The airplane made a right 180o turn and descended rapidly before impacting the ground.

Postaccident examination of the airframe revealed continuous control continuity throughout the airframe. In addition, control continuity was established from the cabin to the throttle, mixture, and propeller controls. The fuel lines were intact from the engine to the firewall, and from the wing tanks to the fuselage; the remaining lines were inaccessible due to airframe damage. Air was blown from the engine driven fuel pump inlet line aft through the fuel selector and air/fuel exited the left wing fuel tank outlet line. With no obvious anomalies with the airframe or engine, the engine was shipped to Continental Motors to be run in a test cell.

The engine was installed into a test cell. It started normally and ran for a while at 1,200 RPM with no anomalies noted. The power was increased to 2,100 rpm and the engine operated inconsistently; the fuel pump pressure was fluctuating, and after about 30 seconds the engine stabilized. After stabilization, a magneto check was completed and no abnormalities were noted. The engine power was increased to 2,400 RPM momentarily before full power was applied; the engine continued to operate normally. The engine power was abruptly changed between idle and full power several times with no anomalies noted. Unable to recreate the inconsistent running engine, it was shut down normally and removed from the test cell.

The fuel components were removed from the engine. The fuel manifold valve was disassembled and rust indicative of corrosion was present on the screen and lower housing of the unit. The plunger was removed and it also exhibited rust. The diaphragm was removed and a small amount of fuel was found on the "dry" side of the valve; the vent extending from this section was examined and clear of debris.

The most recent entries from the airplane's airframe and engine maintenance logbooks were three annual inspections that occurred over a span of about 8 years. The tach time difference between these inspections was a total of 73 hours, for an average of 9 hours a year. The wife of the pilot reported that they purchased the airplane in 2002, and it has been parked in a hangar for a majority of their ownership. About 1.5 years leading up to the accident, the airplane had been undergoing an annual inspection and new paint, which was completed on February 24, 2017. When the maintenance was completed, the pilot ran the airplane's engine on the ground for about 45 minutes with no anomalies noted; the accident flight was the first flight post maintenance.

According to a Continental Motors representative the fuel manifold valve is generally not disassembled by a mechanic in the field, and there are rarely issues with this engine component. If fuel issues are suspected, the troubleshooting section of the Continental Motors Standard Practices Manual (M-0) directs the mechanic to an isolated fix. If the problem is isolated to the fuel manifold, it is to be removed and either sent to an appropriate overhaul facility, or replaced by a new or rebuild from Continental Motors.



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| Accident Rpt# GAA18CA079                | 12/03/2017 1109 PST | Regis# N1431C   | Chino, CA             | Apt: Chino CNO                         |
| Acft Mk/Mdl BOEING A75N1(PT17)-UNDESIGN |                     | Acft SN 75-1702 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL W670-6N          |                     | Acft TT 3363    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: EIS LLS                       |                     | Opr dba:        |                       | Aircraft Fire: NONE                    |
|   |                     |                 |                       | AW Cert: STA                           |

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## Events

1. Takeoff - Loss of control on ground
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## Narrative

The pilot reported that, the tailwheel-equipped biplane bounced during the initial touchdown of a three point touch-and-go landing. He added that, the biplane settled back onto the runway and he continued to maintain the runway centerline. Subsequently, when he raised the tail for takeoff, the biplane veered sharply to the right and the lower left wing struck the ground.

The biplane sustained substantial damage to the lower left aileron.

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

The pilot added that he may have "accidentally hit the right brake" during the landing roll.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA343 06/15/2017 1540 CDT Regis# N103GH Boerne, TX Apt: Boerne Stage Field 5C1  
Acft Mk/Mdl BURKHART GROB G103C-TWIN II AC Acft SN 34110 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: SAN ANTONIO SOARING SOCIETY INC. Opr dba: Aircraft Fire: NONE  
AW Cert: STA

## Summary

The flight instructor of the glider reported that, during landing, about 100 above the ground, "a sink rate started to develop." He added that he took over the flight controls and closed the spoilers. The glider impacted the airport perimeter fence, landed short of the runway, and then slid into a culvert.

The glider sustained substantial damage to the empennage.

The flight instructor did not submit the National Transportation Safety Board Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The student pilot's failure to maintain an adequate glidepath and the flight instructor's delayed remedial action, which resulted in the glider landing short of the runway.

## Events

1. Landing - Landing area undershoot
2. Landing-flare/touchdown - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Descent/approach/glide path-Not attained/maintained - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Student/instructed pilot - C
3. Personnel issues-Action/decision-Action-Delayed action-Instructor/check pilot - C
4. Environmental issues-Conditions/weather/phenomena-Wind-Gusts-Effect on operation
5. Environmental issues-Physical environment-Object/animal/substance-Fence/fence post-Contributed to outcome

## Narrative

The flight instructor of a glider report that, during landing, about 100 above the ground, a "a sink rate started to develop". He added that, he took over the flight controls and closed the spoilers. The glider impacted the airport perimeter fence and landed short of the runway, then slid into a culvert.

The glider sustained substantial damage to the empennage.

The flight instructor failed to submit the NTSB Form 6120.1 Pilot/ Operator Aircraft Accident/ Incident Report.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|----------------------------------|--------------------|---------------|-----------------------|--|
| Accident Rpt# CEN17LA145         | 03/19/2017 955 CDT | Regis# N1915N | Columbia, IL          | Apt: Sackman Field H49                 |
| Acft Mk/Mdl CESSNA 120-NO SERIES |                    | Acft SN 12159 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR C85 SERIES |                    | Acft TT 4656  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: AERONCA CHAMP CLUB INC |                    | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                  |                    |               |                       | AW Cert: STN                           |

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## Summary

The flight instructor reported that the purpose of the flight was to complete a tail-wheel endorsement for the pilot. After about 1 hour of total flight time, while attempting to take off for the fourth full-length runway departure, the flight instructor realized that the engine was not producing enough power for a successful takeoff, so he took control of the airplane and began applying maximum braking; however, the airplane departed the runway end, collided with a ditch, and then nosed over.

During postaccident examination of the airplane, no anomalies were found that would have precluded normal operation. Atmospheric conditions in the area were conducive to the formation of serious icing at cruise power. The flight instructor reported that he believed that carburetor icing led to the loss of engine power. He added that carburetor heat was applied before each landing but that it was turned off when they taxied for departure. Therefore, it is likely that carburetor ice accumulated during the taxi and that the carburetor heat was not on long enough to melt the ice before takeoff, which resulted in the partial loss of engine power.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The partial loss of engine power due to carburetor icing.

## Events

1. Takeoff - Fuel related
2. Takeoff - Loss of engine power (partial)
3. Takeoff-rejected takeoff - Runway excursion
4. Takeoff-rejected takeoff - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Effect on equipment - C
2. Personnel issues-Action/decision-Info processing/decision-Identification/recognition-Instructor/check pilot - C
3. Environmental issues-Physical environment-Object/animal/substance-(general)-Contributed to outcome

## Narrative

On March 19, 2017, at 0955 central daylight time, a Cessna 120 airplane, N1915N, was substantially damaged during a runway excursion at Sackman Field Airport (H49), Columbia, Illinois. The pilot receiving instruction and the flight instructor were not injured. The airplane was registered to Aeronca Champ Club LLC and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Visual meteorological conditions prevailed for the flight that operated without a flight plan. The local flight was originating at the time of the accident.

According to information provided by the flight instructor, the purpose of the flight was to complete a tail-wheel endorsement for the pilot. The accident occurred on the fourth full-length runway departure, after about one hour of total flight time. While taking off from runway 21, the airplane was 2/3 down the length of the runway when the flight instructor assessed that the engine was not developing enough power for a successful takeoff, so he took control of the airplane and began braking. With full brake application and about 700 ft remaining, the airplane slowed down but not enough to remain on the runway. The airplane exited the end of the runway and collided with a drainage ditch, entered a cultivated field and nosed over.

Inspectors from the Federal Aviation Administration responded to the accident site and visually examined the airplane. No anomalies were detected.

On the NTSB Form 6120, the flight instructor suspected carburetor icing as the reason of the loss of engine power. The flight instructor reported that carburetor heat was applied on each landing and after each landing, the carburetor heat was turned off as they taxied for departure.

A review of the Carburetor Icing Probability Chart located in the FAA's Special Airworthiness Information Bulletin CE-09-35, Carburetor Icing Prevention found that the airplane was operating in an area conducive to the formation of serious icing at cruise power.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA306 05/21/2017 945 EDT Regis# N60579 Zepp, VA Apt: N/a  
Acft Mk/Mdl CESSNA 150-J Acft SN 15070419 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR O-200 Acft TT 3972 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: CARL BIVENS Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The flight instructor reported that, during a long cross-country flight, they encountered deteriorating weather conditions, and to remain visual flight rules, he altered course and destination. En route and while approaching a ridge line, he "noticed that [the airplane's] airspeed started to drop toward 65 miles an hour." He added that "[he] thought that maybe [the airplane was] picking up carburetor ice and [he] reached for the carburetor heat and pulled it out."

The student pilot reported that, after the flight instructor stated, "watch your airspeed," he looked at the rpm gauge and noted that it was indicating 1,800 to 1,900 rpm. He added that the flight instructor took over the flight controls and that the airplane then impacted the top of a ridge.

The airplane sustained substantial damage to the right wing.

Atmospheric conditions reported at the time of the accident around the accident site were conducive to serious icing at cruise power. It is likely that carburetor ice accumulated due to the student pilot's failure to apply carburetor heat and the flight instructor's delayed application of carburetor heat, which resulted in a partial loss of engine power.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A partial loss of engine power due to the formation of carburetor icing, which resulted from the student pilot's failure to apply carburetor heat and the flight instructor's delayed response in applying carburetor heat while operating in conditions conducive to carburetor icing.ÿ

## Events

1. Enroute - Other weather encounter
2. Enroute - Loss of engine power (partial)
3. Enroute-cruise - Controlled flight into terr/obj (CFIT)

## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Use of equip/system-Instructor/check pilot - C
2. Personnel issues-Action/decision-Action-Delayed action-Student/instructed pilot - C
3. Personnel issues-Action/decision-Action-Delayed action-Instructor/check pilot - C
4. Personnel issues-Action/decision-Action-Lack of action-Student/instructed pilot - C
5. Aircraft-Aircraft systems-Ice/rain protection system-Intake anti-ice, deice-Not used/operated - C
6. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Effect on operation - C

## Narrative

The flight instructor reported that, during a long cross-country flight, they encountered deteriorating weather conditions, and in order to remain VFR, altered course and destination. En route, while approaching a ridge line, he "noticed that [the airplane's] airspeed started to drop toward 65 miles an hour". He added that "[he] thought that maybe [they] were picking up carburetor ice and [he] reached for the carburetor heat and pulled it out".

The student pilot reported that after the flight instructor stated, "watch your airspeed", he looked at the Revolutions Per Minute (RPM) gauge and noted that it was indicating 1800-1900 RPM. He added that, the flight instructor took over the flight controls and the airplane impacted the top of the ridge.

A review of multiple weather observation stations, located around the four corners of the accident site, revealed similar conditions, temperature 55øF, and dew point 43øF. Review of the Federal Aviation Administration Carburetor Icing Chart for the given temperature and dew point revealed that the conditions were conducive to "serious icing at cruise power". (For more information see Special Airworthiness Information Bulletin CE-09-35 in the public docket.)

The airplane sustained substantial damage to the right wing.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                               |                     |                  |                       |  |
|-------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA18CA095      | 01/01/2018 1930 MST | Regis# N3229V    | Nampa, ID             | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 150-M      |                     | Acft SN 15076429 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR O-200-A |                     | Acft TT 7430     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: BRIAN YAGUES        |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                               |                     |                  |                       | AW Cert: STU                           |

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## Events

1. Enroute-cruise - Loss of visual reference
- 

## Narrative

The pilot reported that, after departure in dark night conditions, he became disoriented about two-thirds of the way to his destination airport. He added that he circled over a nearby town for about an hour, but was unable to find any visual references to aid in navigation. The pilot then called a family member on the ground, who provided guidance to the destination airport via a phone tracking application. He added that he spotted what appeared to be the destination airport, maneuvered for approach, and in the landing flare realized he was not at the airport. The pilot landed on a roadway that was about 6 miles from his intended destination. During landing the airplane struck trees, landed on a road, veered left, and impacted a light pole.

The airplane sustained substantial damage to the fuselage and 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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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                  |                     |                  |                       |  |
|----------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA18CA076         | 11/30/2017 1140 PST | Regis# N417CB    | Fullerton, CA         | Apt: Fullerton Muni FUL                |
| Acft Mk/Mdl CESSNA 152-NO SERIES |                     | Acft SN 15281010 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-235 SERIES |                     |                  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: IVAN ROMERO            |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                  |                     |                  |                       | AW Cert: STN                           |

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## Events

1. Takeoff - Loss of control on ground
- 

## Narrative

The flight instructor reported that, during the student pilot's solo flight in the traffic pattern, after completing a series of takeoffs and landings, the student decided to practice a soft field takeoff. During the takeoff, the student applied back pressure and full throttle; however, he did not add sufficient right rudder. Subsequently, the airplane veered off the runway to the left, struck the Precision Approach Path Indicator lights, and came to rest off the runway.

The airplane sustained substantial damage to the fuselage and engine mount.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

|                                |                 |               |                       |  |
|--------------------------------|-----------------|---------------|-----------------------|--|
| Accident Rpt# GAA17CA468       | 08/03/2017 1950 | Regis# N1214D | Moab, UT              | Apt: Canyonlands Field CNY             |
| Acft Mk/Mdl CESSNA 170-A       |                 | Acft SN 19768 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL O-300-A |                 | Acft TT 3309  | Fatal 0 Ser Inj 1     | Flt Conducted Under: FAR 091           |
| Opr Name: RYDMAN NATHAN D      |                 | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                |                 |               |                       | AW Cert: STN                           |

## Events

1. Enroute-climb to cruise - Windshear or thunderstorm

## Narrative

According to the pilot, he and his passenger were waiting in the fixed-base operator building for the storm system to pass.

When the storm system appeared to have passed and the wind had calmed significantly, the pilot checked the Automated Surface Observing System (ASOS) and took off on runway 21.

During the initial climb, the pilot observed "Just beyond the end of the pavement was the obvious sign of a small microburst developing with blowing dust curling up in several different directions centered just to the right of the centerline, and it was growing spreading out quickly".

The pilot was able to climb about 400ft before encountering the wind at the departure end of the runway.

He made a slight left turn to avoid powerlines and performed a forced landing.

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

The Special METAR, reported that about the time of the accident the wind was from 280ø at 23 knots gusting to 34 knots. The visibility was 10 statute miles with light rain. There were few clouds at 3,500 feet and the ceiling was broken at 9,000 feet and 11,000 feet. The temperature was 84øF and the dew point was 45øF. The altimeter setting was 30.06 inches of mercury. The peak wind was from 10ø at 40 knots at 1903 MDT and the wind shifted direction at 1910 MDT. The rain began at 1958 MDT with trace precipitation. The density altitude was 7,164ft.

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



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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA18CA100 01/11/2018 1100 EST Regis# N1997C Auburn, NY Apt: Murphy Field 06NY  
Acft Mk/Mdl CESSNA 170-B Acft SN 26142 Acft Dmg: SUBSTANTIAL Rpt Status: Prelim Prob Caus: Pending  
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: TRIVISONNO DOMINICK P Opr dba: Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|----------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA18CA064         | 11/16/2017 1526 EST | Regis# N75919    | Pompano, FL           | Apt: Pompano Beach Airpark PMP         |
| Acft Mk/Mdl CESSNA 172-N         |                     | Acft SN 17268042 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320 SERIES |                     |                  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: RICKY L. WARDWELL      |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                  |                     |                  |                       | AW Cert: STN                           |

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## Events

1. Landing - Abnormal runway contact
- 

## Narrative

The pilot reported that, during landing, as the main landing gear touched down, he "felt like [the airplane] hit a[n] uneven section of the runway" and began to porpoise. The pilot was able to remedy the porpoise by using back pressure and he taxied the airplane to the ramp without further incident. Subsequently, the airplane sustained substantial damage to the fuselage.

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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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA18CA112    01/26/2018 1000 MST    Regis# N1046F    Silver City, NM    Apt: Whiskey Creek 94E  
Acft Mk/Mdl CESSNA 172-N    Acft SN 17272937    Acft Dmg: SUBSTANTIAL    Rpt Status: Prelim    Prob Caus: Pending  
Fatal 0    Ser Inj 0    Flt Conducted Under: FAR 091  
Opr Name: DAVE KONOPNICKI    Opr dba:    Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--------------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA482             | 08/02/2017 1630 CDT | Regis# N91966    | Kearney, NE           | Apt: Kearney Rgnl EAR                  |
| Acft Mk/Mdl CESSNA 172-R             |                     | Acft SN 17281616 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-360-L2A       |                     | Acft TT 1568     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: BEERS INVESTMENT GROUP INC |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                      |                     |                  |                       | AW Cert: STN                           |

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## Events

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

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## Narrative

The pilot reported that just after touchdown, he lost directional control of the airplane. The airplane exited the right side of the runway and collided with a taxiway sign.

The airplane's lower right fuselage sustained substantial damage.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                |                 |                   |                       |  |
|--------------------------------|-----------------|-------------------|-----------------------|--|
| Accident Rpt# GAA17CA327       | 06/06/2017 1615 | Regis# N741TW     | Tooele, UT            | Apt: Bolinder Field-tooele Valley TVY  |
| Acft Mk/Mdl CESSNA 172-S       |                 | Acft SN 172S10117 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-360-L2A |                 | Acft TT 3471      | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: UPPER LIMIT AVIATION |                 | Opr dba:          |                       | Aircraft Fire: NONE                    |
|                                |                 |                   |                       | AW Cert: STN                           |

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## Summary

The solo student pilot reported that, during landing, the airplane "ballooned up and [he] added a little throttle [to] settle the [airplane]." He added that "the [airplane] seemed to settle but felt like it was coming down too fast." He applied full power to go around and reduced the flaps to 20°. He added that "the [airplane] was stalling and so [he] moved the flaps to 0 degrees, which caused the plane to continue to stall." Subsequently, the airplane impacted the ground. The airplane sustained substantial damage to the wings and empennage. The student pilot reported that there were no preaccident mechanical malfunctions or failures 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 student pilot's failure to maintain adequate airspeed and his exceedance of the airplane's critical angle of attack during an attempted go-around, which resulted in an aerodynamic stall.

## Events

1. Approach-VFR go-around - Aerodynamic stall/spin

## Findings - Cause/Factor

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

## Narrative

The solo student pilot reported that, during landing, the airplane "ballooned up and [he] added a little throttle [to] settle the [airplane]". He added that, "the [airplane] seemed to settle but felt like it was coming down too fast". He applied full power to go around and reduced the flaps to 20°. He added that, "the [airplane] was stalling and so [he] moved the flaps to 0 degrees, which caused the plane to continue to stall". Subsequently, the airplane impacted the ground.

The airplane sustained substantial damage to the wings and empennage.

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

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--------------------------------|---------------------|-------------------|-----------------------|--|
| Accident Rpt# GAA18CA044       | 11/07/2017 1200 PST | Regis# N55234     | Bonnors Ferry, ID     | Apt: Boundary County 65S               |
| Acft Mk/Mdl CESSNA 172-S       |                     | Acft SN 172S11415 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-360-L2A |                     | Acft TT 224       | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: COLIN HAMBLING       |                     | Opr dba:          |                       | Aircraft Fire: NONE                    |
|                                |                     |                   |                       | AW Cert: STN                           |

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## Events

1. Enroute - Low altitude operation/event

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## Narrative

The pilot reported that, about 50 ft. above the ground during a "low recon" over a river bar, he did not see power lines crossing the river until they were about 10 ft. in front of the airplane. Subsequently, the airplane's empennage struck the wires; he then, added power and initiated a climb. He returned to the airport and landed without further incident.

The airplane sustained substantial damage to the empennage.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA15LA363 09/19/2015 1043 EDT Regis# N3647S Gettysburg, PA Apt: N/a  
Acft Mk/Mdl CESSNA 172E-E Acft SN 17250847 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR O-300-D6 Acft TT 2181 Fatal 0 Ser Inj 2 Flt Conducted Under: FAR 091  
Opr Name: TROSTLE WALTER M Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The private pilot, who was also the airplane owner, was conducting a local personal flight. About 30 minutes after takeoff, during a descent from 3,000 to 1,500 ft mean sea level, the airplane experienced a total loss of engine power; the pilot then attempted a forced landing to a grass field. The airplane's approach speed was too fast for landing and the airplane overflowed the selected field, eventually impacting trees at the edge of an adjacent field.

Subsequent examination of the airframe and engine revealed no evidence of any preimpact mechanical anomalies that would have precluded normal operation. Before the accident flight, the airplane had been stored for an extended period with automotive fuel in the tanks. Although long-term storage with automotive fuel can lead to varnish or gum deposits that may block or restrict fuel flow, the newly-replaced carburetor was found full of fuel with no foreign material or deposits present, and fuel was observed to flow freely from the fuel tanks to the carburetor during postaccident testing. The weather conditions at the time of the accident were conducive to the formation of serious carburetor icing at glide engine power settings when using aviation-grade gasoline. Given that the use of automotive gasoline is known to result in the formation of carburetor icing at higher ambient temperature and lower humidity conditions than aviation gasoline, it is likely that the loss of engine power was the result of carburetor icing.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The total loss of engine power due to carburetor icing. Contributing to the accident was the pilot's failure to maintain a proper approach speed during the forced landing, which resulted in impact with trees.

## Events

1. Maneuvering - Loss of engine power (total)
2. Landing - Off-field or emergency landing
3. Landing-flare/touchdown - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Effect on equipment - C
2. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid type
3. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F

## Narrative

On September 19, 2015, at 1043 eastern daylight time, a privately owned and operated Cessna 172E, N3647S, was substantially damaged during a forced landing to a soybean field after a total loss of engine power near Gettysburg, Pennsylvania. The private pilot and pilot-rated passenger received serious injuries. Visual meteorological conditions prevailed and no flight plan was filed for the local personal flight that departed from Waltz Field (34PA), Gettysburg, Pennsylvania about 1015. The airplane was being operated under the provisions of Title 14 Code of Federal Regulations Part 91.

The pilot-rated passenger stated that prior to departure, during the engine run-up, the engine ran "a little rough" when operated on one of the two magnetos. The pilot continued the run up until the engine operated smoothly on the left, right, and both magnetos. He recalled that the engine operated "remarkably smooth" for takeoff, climb and while performing various maneuvers. After descending from 3,000 feet to about 1,500 feet above mean sea level, the engine started to "shake, rumble, spit, and sputter and then just quit." The passenger further recalled that the pilot did not reduce engine power from its previous setting of around 2,400 rpm during the descent, nor did he apply carburetor heat. After the engine lost power, the pilot attempted to land in a nearby grass field, however the approach was too fast. He overflowed the grass field, then touched down in an adjacent soybean field, the airplane bounced, veered left, and collided with the tree line at the edge of the field.

According to Federal Aviation Administration (FAA) records, the pilot held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. His most recent FAA third-class medical certificate had expired, it was issued on December 29, 2010, at which time he reported a total of 2,096 hours of flight experience.

The four-seat, single-engine, high-wing airplane was manufactured in 1963, and was equipped with a Continental O-300D, 145-horsepower reciprocating engine. The maintenance logbooks were not recovered. FAA airworthiness records showed that the airplane had been modified to operate with automotive gasoline in accordance with a supplemental type certificate. According to a mechanic, an annual inspection of the airplane was completed in July 2013, after

which the airplane had accrued about 1 hour of flight prior to the next annual inspection, which was completed by him on September 11, 2015. During the interval between the two inspections, automotive fuel remained in the fuel tanks. Maintenance documents provided by the mechanic revealed that the carburetor had been replaced, seals in the fuel selector valve and gascolator were replaced, the automotive fuel was drained and 15 gallons of 100 low-lead aviation fuel was added to the fuel tanks, just prior to the September 2015 annual inspection. Afterwards, the engine operated satisfactorily during ground tests. The accident flight was the first flight after the maintenance and inspection.

Examination of the airplane revealed that the left wing was partially separated from the fuselage, rotated about 45 degrees aft, and exhibited leading edge crush damage. The right wing remained attached, exhibited leading edge crush damage, and the right aileron was separated from the wing. The empennage was partially separated from the fuselage near the aft bulkhead of the cargo compartment. Flight control cable continuity was confirmed for pitch and yaw from the cockpit controls to the respective control surfaces, while the aileron control cables exhibited fractures in each wing consistent with tension overload.

The left fuel tank was breached, and about 2 gallons of fuel were drained from it during recovery operations. An unknown amount of fuel had leaked from the right wing after the accident. The gascolator and carburetor were full of a yellowish-amber fluid similar in color and odor as automotive fuel. The fuel inlet screen was unobstructed, and no water was present. Air pressure was applied to the gascolator outlet and fluid was observed flowing through the fractured fuel lines at the door pillars near the wing attach points. The carburetor needle valve and seat were clean with no debris found. When manually operated, fluid was observed exiting out of the carburetor accelerator pump. The carburetor main fuel nozzle was absent of debris. The fluid observed throughout the fuel system was yellowish-amber in color with an odor consistent with automotive fuel.

One of the propeller blades was bent aft at its tip. Neither blade exhibited a pattern of chordwise scratching or leading edge damage. The propeller was rotated by hand and thumb suction and compression was observed on all cylinders. Continuity of the crankshaft was confirmed to the rear accessory pad. The top spark plugs were removed and appeared grey to slightly black in color with normal wear when checked against the Champion Check-A-Plug chart. Both magnetos produced spark on all towers when rotated by hand. The air inlet box was clean and free of obstructions. The throttle, mixture, and carburetor heat controls were securely attached to the engine and moved freely. The oil quantity dipstick indicated 6 quarts.

A weather observation recorded at Fountain Dale Heliport (RYT), Fountain Dale, Pennsylvania, at 1053 included: temperature 23 degrees C (73 F), dew point 18 degrees C (64 F), and an altimeter setting of 29.95 inches of mercury.

According to an FAA Special Airworthiness Information Bulletin, these weather conditions are conducive to serious carburetor icing at glide power settings. FAA Advisory Circular (AC) 91-33A, Use of Alternate Grades of Aviation for Grade 80/87, and Use of Automotive Gasoline, provided operational information regarding the use of automotive fuels in aircraft. According to the AC, "Long-term fuel storage of automotive gasoline in aircraft fuel tanks should be avoided. Although automotive gasolines have lower maximum existent gum specification requirements than aviation gasoline, either fuel can form undesirable gum deposits over long-term storage under particularly severe conditions, such as in barrels and at high temperature. Gum deposits thus formed could result in engine malfunctions." The AC further stated, "FAA Technical Center testing indicates that carburetor icing will occur in less time and at higher ambient temperatures with automotive gasoline than with aviation gasoline. Therefore, pilots using automotive gasoline should be familiar with the induction system icing prevention procedures of the FAA Advisory Circular AC 20-113 and be prepared to use these procedures at higher ambient temperatures and lower humidities than when using aviation gasolines."



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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|----------------------------------|---------------------|------------------|-------------------|---------------------------------------|
| Accident Rpt# WPR18FA063         | 12/29/2017 1441 MST | Regis# N4395R    | Ogden, UT         | Apt: N/a                              |
| Acft Mk/Mdl CESSNA 172M-M        |                     | Acft SN 17263145 | Acft Dmg: UNK     | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320 SERIES |                     |                  | Fatal 2 Ser Inj 0 | Flt Conducted Under: FAR 091          |
| Opr Name: HILL FLYING CLUB INC   |                     | Opr dba:         |                   | Aircraft Fire: UNK                    |

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## Events

1. Enroute - Unknown or undetermined
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## Narrative

On December 29, 2017, about 1441 mountain standard time, a Cessna 172M, N4395R, impacted water in the northern portion of the Great Salt Lake. The commercial pilot and a private pilot rated passenger were fatally injured. The airplane was registered to the Hill Flying Club Inc., and operated by a private individual as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed for the local flight and no flight plan had been filed. The flight originated from the Ogden-Hinckley Airport (OGD), Ogden, Utah, about 1420.

After family members became concerned that the pilots had failed to return from their flight, the Federal Aviation Administration (FAA) issued an Alert Notification (ALNOT) for the airplane. No emergency locator beacon signal was reported. A ground and air search ensued, however, on January 2, 2018, the search was terminated. Subsequently, several days later, an area where the airplane may have impacted was calculated, in the northern portion of the Great Salt Lake. The area was scanned with sonar equipment, and a target that resembled the airplane was identified in about 20 ft of water. On January 13, the target was confirmed to be the missing airplane.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|---------------------------|---------------------|------------------|-----------------------|---|
| Accident Rpt# WPR18CA048  | 12/14/2017 1344 PDT | Regis# N54873    | Valley Springs, CA    | Apt: Wagon Wheel Ranch Privat Strip UNK |
| Acft Mk/Mdl CESSNA 172P-P |                     | Acft SN 17275075 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending   |
|                           |                     |                  | Fatal 0 Ser Inj 2     | Flt Conducted Under: FAR 091            |
| Opr Name: ROBERT PINA     |                     | Opr dba:         |                       | Aircraft Fire: NONE                     |

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# WPR18CA072    01/20/2018 1300 PST    Regis# N64204    Cloverdale, CA    Apt: Cloverdale Municipal Airport O60  
Acft Mk/Mdl CESSNA 172P-P    Acft SN 17275534    Acft Dmg: SUBSTANTIAL    Rpt Status: Prelim    Prob Caus: Pending  
Fatal 0    Ser Inj 0    Flt Conducted Under: FAR 091  
Opr Name: NORTH COAST AIR    Opr dba:    Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                               |                     |                   |                       |   |
|-------------------------------|---------------------|-------------------|-----------------------|---|
| Accident Rpt# ERA18LA067      | 01/21/2018 1804 EST | Regis# N9415B     | Martinsburg, WV       | Apt: Eastern West Virginia Regional MRB |
| Acft Mk/Mdl CESSNA 172RG      |                     | Acft SN 172RG0816 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending   |
| Eng Mk/Mdl LYCOMING O-360 SER |                     | Acft TT 3055      | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091            |
| Opr Name: DULLES AVIATION INC |                     | Opr dba:          |                       | Aircraft Fire: NONE                     |
|                               |                     |                   |                       | AW Cert: STN                            |

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## Events

1. Approach-VFR pattern downwind - Sys/Comp malf/fail (non-power)
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## Narrative

On January 21, 2018, at 1804 eastern standard time, a Cessna 172RG airplane, N9415B, sustained substantial damage while landing at the Eastern West Virginia Regional Airport (MRB), Martinsburg, West Virginia. The flight instructor and the private pilot were not injured. The airplane was registered to Dulles Aviation, Manassas, Virginia, and operated by Av-Ed Flight School, Leesburg, Virginia, as a Title 14 Code of Federal Regulations Part 91 instructional flight. Visual meteorological conditions prevailed and no flight plan was filed for the flight that originated from MRB.

The flight instructor stated that the purpose of the flight was to practice commercial pilot maneuvers and landings. The flight was normal, and they had completed about six short and soft-field takeoffs and landings without incident. On the seventh landing, after the private pilot extended the landing gear, the gear down-and-locked light did not illuminate. A visual check revealed that the nose gear was extended but the main gear was trailing and not fully extended. The flight instructor said they used the emergency gear handle to try and pump the main gear down, but there was no pressure in the system. The flight instructor then landed the airplane with the nose wheel still extended. He said he was able to keep the airplane straight for about 600 ft, but the airplane's left wing dropped resulting in substantial damage to the wing and elevator. After exiting the airplane, hydraulic fluid was observed pooling under the airplane and along the side of the empennage.

The airplane was retained for further examination of the hydraulic and landing gear systems.

At 1753, the weather conditions reported at MRB was calm wind, visibility 10 statute miles, scattered clouds at 4,900 ft, overcast clouds at 8,000 ft, temperature 11ø C, dewpoint 5ø C, and an altimeter setting of 30.11 inches of mercury.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA311 08/09/2017 1220 EDT Regis# N5274Q Wellston, OH Apt: N/a  
Acft Mk/Mdl CESSNA 172S-S Acft SN 172S9199 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING IO-360-L2A Acft TT 6300 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: KCSI TEXAS INC Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The commercial pilot and observer were conducting an aerial observation flight of a pipeline. The pilot reported that, while maneuvering at a low altitude toward an airport to refuel, he heard a "significant boom" and noticed a reduction in engine rpm. The pilot unsuccessfully attempted to regain engine power and then initiated a forced landing to a space between trees. During the forced landing, the airplane impacted rolling, uneven grass terrain and a barbed wire fence.

Examination and disassembly of the engine revealed a large hole on the top of the engine crankcase inboard of the No. 4 cylinder. The examination revealed that the No. 4 connecting rod had failed due to the installation of a nonconforming small end connecting rod bushing. Five days before the accident, the engine manufacturer had issued a mandatory service bulletin indicating that the accident connecting rod bushing may not have met engine specifications and may require followup action. Six days after the accident, the Federal Aviation Administration issued an airworthiness directive that required inspecting the connecting rods, replacing affected connecting rod small end bushings, and accomplishing the instructions in the engine manufacturer's mandatory service bulletin.

♂

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The failure of a connecting rod small end bushing, which resulted in a loss of engine power.

## Events

1. Maneuvering-low-alt flying - Loss of engine power (total)
2. Emergency descent - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Aircraft-Aircraft power plant-Engine (reciprocating)-Recip engine power section-Failure - C
2. Environmental issues-Physical environment-Terrain-Sloped/uneven terrain-Contributed to outcome
3. Environmental issues-Physical environment-Object/animal/substance-Fence/fence post-Contributed to outcome

## Narrative

On August 9, 2017, about 1220 eastern daylight time, a Cessna 172S airplane, N5274Q, experienced a loss of engine power while maneuvering at low altitude near Wellston, Ohio. The pilot and passenger sustained minor injuries, and the airplane sustained substantial damage. The airplane was registered to and operated by KCSI Texas, Inc., under the provisions of 14 Code of Federal Regulations Part 91 as an aerial observation flight. Visual meteorological conditions prevailed and a company visual flight rules flight plan had been filed. The flight departed Newark-Heath Airport (VTA), Newark, Ohio, about 1330, and was destined for James A. Rhodes Airport (I43), Jackson, Ohio.

The pilot and observer were conducting an aerial observation flight of a pipeline. While maneuvering toward I43 to refuel, the pilot heard a "significant boom" and noticed a reduction in engine rpm. The pilot unsuccessfully attempted to regain rpm and then initiated a forced landing to a green space between trees. During the forced landing, the airplane impacted rolling, uneven grass terrain, and a barbed wire fence. The airplane sustained substantial damage to the right wing and fuselage.

Examination of the engine by a Federal Aviation Administration (FAA) inspector noted a large hole on the top of the engine crankcase. The airplane was recovered for further examination.

On August 24, 2017, the engine was examined at a recovery facility by a Lycoming Engine representative under the supervision of a FAA inspector. Examination and disassembly of the engine revealed a large hole at the top of the crankcase inboard of the No. 4 cylinder. According to Lycoming Engines, the No. 4 connecting rod failed at the small end bushing. The other 3 connecting rod small end bushings were found displaced forward from their normal positions, and the No. 3 connecting rod small end bushing was free to move by hand.

A review of the aircraft maintenance records revealed the engine was field overhauled on September 2, 2016, at a total time of 2,664.5 hours. During the overhaul, Lycoming LW-13923 connecting rod upper bushings were installed (according to an invoice from Lycoming Engines, the bushings were shipped from

the factory on June 30, 2016). The most recent 100-hour inspection was completed on June 15, 2017, at 503.5 hours since major overhaul (SMOH). On July 20, 2017, at 556.4 hours SMOH, the engine oil was changed with no anomalies noted in the oil filter or oil suction screen. The July 2017 oil change record was the last record in the engine logbook.

On August 4, 2017, Lycoming Engines issued mandatory service bulletin (MSB) No. 632B, Identification of Connecting Rods with Non-Conforming Small End Bushings. According to the MSB, LW-13923 connecting rod bushings, shipped between November 18, 2015, and November 15, 2016, may be suspected as not meeting Lycoming Engine specifications and require follow-up corrective action. The MSB stated the following warning, "You must complete the 'required action' in this service bulletin to ensure that your connecting rod bushings are properly seated. If a connecting rod bushing becomes unseated, the connecting rod can fail, causing an uncommanded and complete loss of power." The MSB time of compliance was within the next 10 hours of engine operation.

The FAA issued an airworthiness directive (AD) 2017-16-11, effective August 15, 2017, which required the inspection of connecting rods and replacement of affected connecting rod small end bushings. The AD required accomplishing the instructions in Lycoming Engines MSB No. 623B.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|  |                     |                  |                       |  |
|--|---------------------|------------------|-----------------------|--|
| Accident Rpt# ERA16LA008                 | 10/10/2015 1400 EDT | Regis# N5295Y    | Seville, FL           | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 172S-S                |                     | Acft SN 172S9236 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-360-L2A           |                     | Acft TT 6119     | Fatal 1 Ser Inj 2     | Flt Conducted Under: FAR 091           |
| Opr Name: AIR AMERICA FLIGHT CENTER LLC. |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|  |                     |                  |                       | AW Cert: STN                           |

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## Summary

The commercial pilot reported that, during a local flight, he encountered a downdraft while maneuvering the airplane between 300 and 600 ft above ground level at an airspeed about 75 knots. He stated that he attempted to recover, but the airplane continued to sink and subsequently impacted trees and terrain.

Postaccident examination of the airplane did not reveal evidence of any mechanical any anomalies that would have precluded normal operation.

The conditions reported by the closest weather observation facility, located 23 nautical miles away, included scattered towering cumulus clouds and 6-knot winds. Additionally, towering cumulus and cumulonimbus clouds were noted near the airport. Atmospheric modeling data noted the potential for strong low-level thermal activity near the accident site about the time of the accident. Given the weather conditions that prevailed about the time of the accident, it is likely that the airplane encountered a downdraft; given the airplane's altitude and airspeed at the time of the encounter, the pilot had insufficient time to regain control of the airplane before it impacted the ground.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The airplane's encounter with a downdraft, and the pilot's decision to maneuver the airplane at a low altitude and airspeed, which provided insufficient time and altitude to recover before impacting terrain.

## Events

1. Maneuvering-low-alt flying - Windshear or thunderstorm
2. Uncontrolled descent - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Environmental issues-Conditions/weather/phenomena-Wind-Downdraft-Effect on operation - C
2. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C

## Narrative

On October 10, 2015, at 1400 eastern daylight time, a Cessna 172S, N5295Y, was substantially damaged after a loss of control during a low altitude maneuver near Seville, Florida. The commercial pilot and pilot-rated passenger sustained serious injuries, and the rear seated passenger was fatally injured. The airplane was registered to Mike Bravo LLC., and operated under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions were reported near the accident site about the time of the accident, and no flight plan was filed. The local flight originated from Daytona Beach International Airport (DAB), Daytona, Florida at 1300.

According to the pilot, while flying about 600-650 feet above ground level (agl) at a speed of 75 knots with 20ø of flaps, the airplane suddenly "fell out from under" him. The airplane lost 300-350 feet of altitude within a few seconds. He applied full power to recover the altitude but the airplane continued to "sink." He maneuvered the airplane towards a clearing to avoid trees, lost control, and collided with the ground.

According to the operator of the airplane, the pilot called twice on the day of the accident. He initially called to apologize for the accident and in the evening, he called to explain what happened earlier that day. The pilot stated earlier that day he brought one passenger and then picked up another. He said that the intent of the flight was to "drop boxes" south of Lake Crescent, at a campsite managed by St. Johns River Water Management District. The pilot said he was aware that dropping objects out of the airplane was prohibited, but assured the operator that he had coordinated with the people on the ground to stay out of the way when the items were dropped. When the pilot reached the campsite, he descended to an altitude between 300 and 600 feet agl, configured the airplane with 20ø of flaps, and slowed it to 75 knots. After successfully dropping several boxes, and during the final drop, the airplane encountered a downdraft and lost altitude. The pilot attempted to recover, but the airplane subsequently impacted trees and terrain.

Examination of the airframe and engine by a Federal Aviation Administration (FAA) inspector revealed no anomalies that would have precluded normal operation.

The 1453 weather conditions reported at DAB included scattered, towering cumulus clouds at 3,500 feet, scattered clouds at 5,000 feet, scattered clouds at 7,500 feet and a broken ceiling at 25,000 feet, and winds from 060ø at 6 knots. Additionally, towering cumulus clouds were noted to the south, and cumulonimbus clouds were noted in the distance to the east, southwest, and northwest of the airport. DAB was located 23 nautical miles southeast of the

accident site.

The National Weather Service National Radar Mosaic for the period depicted isolated echoes associated with rain showers approximately 5 miles west and 10 miles southwest of the accident site, near Georgetown and Aster, Florida on the ends of Lake George, with a small isolated intense area of echoes immediately east of DAB at the time.

A North American Mesoscale Model sounding for the area of the accident site suggested the potential for strong low-level thermal activity and an unstable atmosphere, with expected clouds developing near 3,000 feet agl. The sounding did not depict the presence of low-level turbulence or windshear.



# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                   |                     |               |                       |  |
|-----------------------------------|---------------------|---------------|-----------------------|--|
| Accident Rpt# GAA17CA302          | 05/20/2017 1000 PDT | Regis# N175DH | Prospect, OR          | Apt: Prospect State 64S                |
| Acft Mk/Mdl CESSNA 175-UNDESIGNAT |                     | Acft SN 56280 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR GO-300D     |                     | Acft TT 2954  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: STEPHEN OLDROYD         |                     | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                   |                     |               |                       | AW Cert: STN                           |

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## Summary

The flight instructor reported that, during a demonstrated soft-field takeoff, the right lift strut impacted the tops of three trees. The flight instructor continued to his destination without further incident.

The airplane sustained substantial damage to the elevator.

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

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The flight instructor's failure to attain an adequate climb rate during takeoff, which resulted in impact with trees.

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## Events

1. Takeoff - Collision with terr/obj (non-CFIT)

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## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Climb rate-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-Tree(s)-Effect on operation - C

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## Narrative

The flight instructor reported that, during a demonstrated soft field takeoff, the right lift strut impacted the tops of three trees. The flight instructor continued to his destination with no other anomalies.

The airplane sustained substantial damage to the elevator.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                |                     |                  |                     |  |
|--------------------------------|---------------------|------------------|---------------------|--|
| Accident Rpt# ERA16LA286       | 08/08/2016 1535 EDT | Regis# N30923    | Mcdonough, NY       | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 177-B       |                     | Acft SN 17701548 | Acft Dmg: DESTROYED | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-360-A1F6 |                     | Acft TT 3984     | Fatal 0 Ser Inj 0   | Flt Conducted Under: FAR 091           |
| Opr Name: JAO-SHIANG LUO       |                     | Opr dba:         |                     | Aircraft Fire: GRD                     |
|                                |                     |                  |                     | AW Cert: STN                           |

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## Summary

The private pilot was conducting a personal sightseeing flight with three passengers to view a local landmark. The pilot completed two flyovers uneventfully. The passengers then asked him to fly over a third time at a slower speed. The pilot fully extended the flaps in preparation for the next flyover. During the flyover, the pilot noted that the airplane was slow and had descended to an altitude near the tops of the trees. He applied full engine power and fully retracted the flaps. The airplane nosed down and impacted trees and terrain. The pilot and passengers subsequently egressed the airplane before it was consumed by a postimpact fire.

Extensive thermal damage precluded a detailed examination of the airframe or engine for mechanical malfunctions; however, witness and passenger statements and initial statements provided by the pilot did not indicate any preimpact mechanical anomalies. It is likely that, while performing the flyover at the passengers' request, the pilot became distracted, allowing the airplane to descend and its airspeed to decay. Once the pilot recognized the situation, his response of adding engine power then immediately and fully retracting the flaps while attempting to gain altitude resulted in an exceedance of the airplane's critical angle of attack and subsequent aerodynamic stall.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper recovery from a slow flight configuration at low altitude, which resulted in an exceedance of the airplane's critical angle of attack and an aerodynamic stall. Contributing to the accident was the pilot's decision to operate at low altitude.

## Events

1. Maneuvering-low-alt flying - Loss of control in flight
2. Uncontrolled descent - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Personnel issues-Action/decision-Action-Incorrect action performance-Pilot - C
2. Aircraft-Aircraft systems-Flight control system-TE flap control system-Incorrect use/operation - C
3. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F
4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Altitude-Not attained/maintained - F

## Narrative

On August 8, 2016, about 1535 eastern daylight time, a Cessna 177B, N30923, was destroyed when it impacted trees and terrain while maneuvering near McDonough, New York. The private pilot and three passengers sustained minor injuries. Visual meteorological conditions prevailed and no flight plan was filed for the personal flight, which originated from Sidney Airport (N23), Sidney, New York and was destined for Brookhaven Airport (HWV), Shirley, New York. The airplane was operated under the provisions of 14 Code of Federal Regulations Part 91.

During an interview, the pilot stated that prior to the accident flight, he filled the airplane's fuel tanks, for a total fuel load of 50 gallons. The purpose of the flight was to fly back to HWV, where the airplane was based, and give the three passengers an opportunity to view and photograph a local landmark on-the-way. After making two passes over the landmark, the passengers asked the pilot to flyover again, but at a slower speed. The pilot then fully deployed the flaps in preparation for the next flyover. During the flyover, the pilot noted that the airplane was slow, and had descended to a height near the tops of the trees. He added full power and fully retracted the flaps. The airplane did not appear to be climbing, and in "a wink of an eye the nose dropped." The pilot was then looking straight down at the ground. The pilot's next recollection was that the airplane was on the ground. He and his passengers subsequently egressed before the airplane was consumed by a postimpact fire.

During separate statements to a Federal Aviation Administration (FAA) inspector, first responders and an NTSB investigator, the pilot did not report any mechanical functions during the accident flight. In a subsequent written statement he reported that the engine experienced a total power loss prior to the impact.

One of the passengers reported that he and the other two passengers were taking pictures of the landmark when he noticed the airplane descending and then hitting a tree. He did not remember hearing anything strange before the accident. Another witness that was standing on the north side of the landmark, saw the airplane fly overhead three times. During the third flyover, the airplane was flying north very low near the tree tops. He then heard the breaking of branches and

a loud bang. He stated he ask someone to call 911 while he tried to help the passengers out of the airplane. Shortly after they all were out of the airplane, it erupted in flames.

Examination of the wreckage by an FAA inspector revealed that the airplane was destroyed by fire. The engine was intact, but exhibited extensive thermal damage. All other components were unrecognizable.

The weather conditions reported at Greater Binghamton Airport, Binghamton, New York, located 16 nautical miles south of the accident site, at 1553, were clear sky, wind calm, and visibility 10 statute miles.

The pilot held a private certificate with a rating for airplane single-engine land. He also held a third-class medical certificate, issued on June 24, 2016. His last flight review was completed on June 27, 2015. At the time of the accident, the pilot reported 378 total hours of flight experience, with 100 hours in the same make and model as the accident airplane.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                       |                     |                     |                       |  |
|---------------------------------------|---------------------|---------------------|-----------------------|--|
| Accident Rpt# GAA17CA505              | 08/21/2017 2000 PDT | Regis# N8053G       | Byron, CA             | Apt: Byron C83                         |
| Acft Mk/Mdl CESSNA 177RG-NO SERIES    |                     | Acft SN 177RG0053   | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-360-A1B6       |                     | Acft TT 3908        | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: SQUADRON 2 ACQUISITION CORP |                     | Opr dba: SQUADRON 2 |                       | Aircraft Fire: NONE                    |
|                                       |                     |                     |                       | AW Cert: STN                           |

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## Events

1. Enroute - Fuel exhaustion

## Narrative

According to the pilot, he was flying a 400-nautical mile cross-county flight.

He reported that the outside air temperature along the route had been hot. He recalled that the engine temperature had been high and, "I increased the mixture to cool the engine down multiple times."

As he approached his destination, the engine began "coughing for 3-4 minutes" before the engine stopped. He attempted to land at the destination airport, but unable to reach the airport, made a forced landing in a mud filled drainage channel, about .5 miles north of the airport.

The airplane sustained substantial damage to the lower fuselage and windscreen.

A Federal Aviation Administration, Aviation Safety Inspector examined the airplane's fuel system at the accident site. He reported that both fuel tanks were found empty, with about « cup of fuel at the bottom of the left tank, after removing the sump drain.

Per the National Transportation Safety Board's Pilot Aircraft Accident Report, the pilot reported that the accident could have been prevented with the, "Use of [a] fuel dipstick for better measurement of fuel quantity".

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                   |            |          |               |                     |  |
|-----------------------------------|------------|----------|---------------|---------------------|--|
| Accident Rpt# GAA17CA473          | 08/01/2017 | 1900 AKD | Regis# N9455C | Puntilla, AK        | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 180-UNDESIGNAT |            |          | Acft SN 31853 | Acft Dmg: DESTROYED | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR O-470J      |            |          | Acft TT 2883  | Fatal 0 Ser Inj 0   | Flt Conducted Under: FAR 091           |
| Opr Name: SEAN JONES              |            |          | Opr dba:      |                     | Aircraft Fire: GRD                     |
|                                   |            |          |               |                     | AW Cert: STN                           |

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## Events

3. Landing - Loss of control on ground

## Narrative

According to the pilot, he made two passes over a dry creek bed to assess a potential landing site. The second pass was accomplished up creek into rising terrain. The airplane was configured with full power, with flaps at 20° and flying about 50ft AGL and 80 MPH.

The pilot reported that the airplane encountered a downdraft as the airplane transitioned from overflying the trees, to overflying the creek bed, which he attempted to correct, but the airplane aerodynamically stalled.

Following the stall, the pilot attempted to land on a dry creek bed. The airplane touched down on the creek bed, then bounced and descended into a "dry cut channel". The airplane came to rest nose down and the airplane in a near vertical position. The airplane was destroyed by a post-crash fire.

According to the National Transportation Safety Board's, Pilot Aircraft Accident Report, the pilot reported that the event could have been avoided by making the low pass along descending terrain at a higher airspeed.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                   |                     |               |                       |   |
|-----------------------------------|---------------------|---------------|-----------------------|---|
| Accident Rpt# GAA18CA039          | 11/10/2017 1105 CST | Regis# N6547A | Panama City, FL       | Apt: Northwest Florida Beaches Intl ECP |
| Acft Mk/Mdl CESSNA 180-UNDESIGNAT |                     | Acft SN 32444 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending  |
| Eng Mk/Mdl CONT MOTOR O-470-R15B  |                     | Acft TT 3188  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091            |
| Opr Name: DYER, BRADLEY L.        |                     | Opr dba:      |                       | Aircraft Fire: NONE                     |
|                                   |                     |               |                       | AW Cert: STN                            |

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## Events

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

## Narrative

The pilot of the tailwheel-equipped airplane reported that, during the landing roll in gusting crosswind conditions, the right wing "suddenly" lifted and he applied right aileron to correct. He added that the control application did not correct the raised right wing and the left wing dragged on the runway, which resulted in the airplane coming to rest nosed over.

The airplane sustained substantial damage to the left wing and vertical stabilizer.

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

The pilot reported in the National Transportation Safety Board Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report that the wind was from 020ø at 6 knots, gusting 17 knots. He added that the landing was on runway 34.

An automated weather observation station at the airport, about the time of the accident, reported the wind from 010ø at 13 knots, gusting 17 knots.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                   |            |          |                  |                       |  |
|-----------------------------------|------------|----------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA361          | 06/22/2017 | 2005 CDT | Regis# N1800M    | Doniphan, MO          | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 182-P          |            |          | Acft SN 18264452 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL O-470-U13B |            |          | Acft TT 5555     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: CAPE FLYERS LLC.        |            |          | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                   |            |          |                  |                       | AW Cert: STN                           |

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## Summary

The private pilot reported that, near the conclusion of a long cross-country flight, the engine suddenly lost partial power. He declared an emergency with air traffic control and was advised that the nearest airport was about 5 miles behind him. He reversed course and began heading toward the airport. Unable to reach the airport, the pilot initiated a landing to an open field. During the landing roll, the airplane collided with a fence and a detached garage. The airplane sustained substantial damage to the fuselage, empennage, and both wings.

Postaccident examination of the airplane revealed blue-colored fuel streaking from the right wing fuel cap to the trailing edge of the flap. Both fuel tanks were empty.

The pilot reported that he was aware of that the right wing fuel cap was leaking before the accident flight and that it had been leaking since he purchased the airplane about 6 months before the accident.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper decision to take off with a known fuel leak, which resulted in a loss of engine power due to fuel exhaustion.

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## Events

1. Enroute - Fuel exhaustion
2. Enroute - Loss of engine power (partial)
3. Landing - Off-field or emergency landing
4. Landing - Collision with terr/obj (non-CFIT)

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## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Fuel system-(general)-Malfunction - C
2. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
3. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid level - C
4. Aircraft-Aircraft systems-Fuel system-(general)-Not serviced/maintained
5. Environmental issues-Physical environment-Object/animal/substance-Fence/fence post-Contributed to outcome

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## Narrative

The private pilot reported that near the conclusion of a long cross-country flight, the engine suddenly lost partial power. He declared an emergency with air traffic control, and was advised that the nearest airport was about 5 miles behind him. He reversed course and began heading towards the airport. Unable to reach the airport, the pilot initiated a landing to an open field. During the landing roll, the airplane collided with a fence and a detached garage. The airplane sustained substantial damage to the fuselage, empennage, and both wings.

Postaccident examination of the airplane revealed blue colored fuel streaking from the right wing fuel cap to the trailing edge of the flap. Both fuel tanks were empty.

The pilot reported that he was aware of the right wing fuel cap leak prior to the accident flight. The fuel cap had been leaking since he purchased the airplane about six months prior to the accident.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA376 09/27/2017 1130 EDT Regis# N70634 Piqua, OH Apt: Piqua Airport- Hartzell Field I17  
Acft Mk/Mdl CESSNA 182M Acft SN 18259334 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR O-470-R Acft TT 1811 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: PILOT Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The private pilot reported that, while approaching the destination airport, the engine lost total power. The pilot performed a forced landing, and the airplane impacted a cornfield.

A postaccident examination of the wreckage, including the fuel system, revealed no preimpact anomalies that would have precluded normal operation. The engine was started, and it operated normally. Atmospheric conditions at the time of the accident were conducive to the accumulation of moderate icing at cruise power and serious icing at descent power. The total loss of engine power was likely due to an accumulation of carburetor ice while operating at a reduced engine power setting.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The accumulation of carburetor ice while operating at a reduced engine power setting, which resulted in a total loss of engine power on approach and a subsequent forced landing on unsuitable terrain.

## Events

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

## Findings - Cause/Factor

1. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Effect on equipment - C
2. Environmental issues-Physical environment-Terrain-Rough terrain-Contributed to outcome

## Narrative

On September 27, 2017, about 1130 eastern daylight time, a Cessna 182M airplane, N70634, impacted a corn field and terrain during a forced landing following a loss of engine power near Piqua, Ohio. The private pilot was uninjured. The airplane sustained substantial firewall damage during the impact. The airplane was registered to and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Day visual meteorological conditions prevailed in the area about the time of the accident, and the flight was not operated on a flight plan. The flight originated from the Phillipsburg Airport, near Phillipsburg, Ohio, about 1100, and was destined for the Piqua Airport - Hartzell Field (I17), near Piqua, Ohio.

According to the pilot's report, the airplane was approaching I17 when the airplane had a total loss of engine power. The pilot performed a forced landing and the airplane impacted a "standing" cornfield where the substantial damage occurred.

A Federal Aviation Administration inspector, assisted by a mechanic, examined the entire fuel system to include the vents and sumps and found no anomalies. The engine was started and it was operational. The inspector confirmed that the skin panel directly behind the firewall was bent and stringers were bent. In addition, a review of the aircraft records indicated the airplane's last annual inspection was completed about 2 years prior to the accident.

At 1135, the recorded weather, about 11 miles and 2830 from the accident site, at the Darke County Airport, near Versailles, Ohio, was: Wind 3600 at 10 kts; visibility 7 statute miles; sky condition clear; temperature 260 C; dew point; 180 C; altimeter 30.01 inches of mercury.

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



# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                |                     |                  |                       |  |
|--------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA353       | 06/06/2017 1615 ADT | Regis# N207RB    | Homer, AK             | Apt: N/a                               |
| Acft Mk/Mdl CESSNA 207-A       |                     | Acft SN 20700606 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO-520F |                     | Acft TT 21450    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 135           |
| Opr Name: NORTHAIR, INC.       |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                |                     |                  |                       | AW Cert: STN                           |

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## Summary

The pilot reported that, while landing on a beach, he "felt a significant push to the right toward the water and was concerned with going into the water" He added that he initiated a go-around, but the nosewheel "caught and apparently broke off." The propeller then struck the sand, the airplane slid, the tail kicked over, and the airplane came to rest on its back.

The airplane sustained substantial damage to the left wing.

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

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's decision to land on unsuitable terrain, which resulted in the nosewheel breaking and a subsequent noseover.

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## Events

1. Landing-aborted after touchdown - Landing gear collapse
2. Landing-aborted after touchdown - Dragged wing/rotor/float/other
3. Landing - Nose over/nose down

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## Findings - Cause/Factor

1. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
3. Environmental issues-Physical environment-Runway/land/takeoff/taxi surface-(general)-Decision related to condition - C

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## Narrative

The pilot reported that, while landing on a beach, he "felt a significant push to the right toward the water and was concerned with going into the water" ... He added that he initiated a go-around, but the nose wheel "caught and apparently broke off".

The airplane sustained substantial damage to the left wing.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16FA176 09/09/2016 700 MST Regis# N126P Wickenburg, AZ Apt: Wickenburg Muni E25  
Acft Mk/Mdl CESSNA 310N Acft SN 310N-0127 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONTINENTAL MOTORS IO-470-VO Acft TT 3488 Fatal 0 Ser Inj 4 Flt Conducted Under: FAR 091  
Opr Name: FRED GAGLIANO Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The airline transport pilot and three passengers were departing in the multi-engine airplane when, during the early phase of takeoff, most likely shortly after rotation, the right engine experienced a total loss of power. The power loss occurred during a critical phase of flight, at a time when the airplane was close to or just below the manufacturer's recommended "safe single-engine speed." The hilly terrain surrounding the airport, particularly in the takeoff direction, left the pilot with few options for a safe climb out. Further hindering the takeoff was the airplane's anemic single-engine climb performance due to the high density altitude conditions and the airplane's weight. As a result, shortly after the loss of power, the airplane rolled right, consistent with it flying slower than its minimum controllable single-engine airspeed, collided with the ground, and sustained substantial damage. The pilot and passengers all sustained serious injuries and could not remember the circumstances of the accident. Examination of the right engine revealed that a clear, gelatinous substance had blocked the inlet port of the fuel flow transducer, leading to fuel starvation. The substance was determined to be silicone, most likely room-temperature-vulcanization silicone sealant. There were no indications that this material had been used anywhere within the fuel system, nor were there any signs of recent maintenance that could have resulted in the introduction of this contaminant. To get to the fuel flow transducer, the silicone would have had to pass through multiple fine mesh filters, which was unlikely based on the material's size when dry. However, silicone becomes semi-soluble once in contact with aviation gasoline, and it is possible that it was extruded through the filters in this state, and eventually coalesced in the flow divider inlet port. Smaller fragments of the silicone were found in the fuel manifold valve, beyond the flow divider, and a fuel injector valve port was partially occluded, possibly with the same material. The specific source of contamination could not be determined. The pilot last purchased fuel for the airplane about one month before the accident. Later on the day of purchase, the fuel system was shut down by the airport management due to metering inaccuracies; however, the problems were all electrical in nature, and did not require the repair or replacement of any components that would have come into contact with fuel.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: Total loss of power to the right engine during takeoff due to a fuel contaminant, which blocked the fuel flow transducer and resulted in fuel starvation to the engine.

## Events

1. Prior to flight - Fuel contamination
2. Takeoff - Fuel starvation
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid condition - C
2. Aircraft-Aircraft power plant-Engine fuel and control-Fuel flow indicating-Damaged/degraded - C
3. Aircraft-Aircraft oper/perf/capability-Aircraft capability-Engine out capability-Attain/maintain not possible

## Narrative

### HISTORY OF FLIGHT

On September 9, 2016, about 0700 mountain standard time, a Cessna 310N, N126P, struck a refuse transfer trailer shortly after takeoff from Wickenburg Municipal Airport, Wickenburg, Arizona. The airline transport pilot and three passengers were seriously injured, and the airplane sustained substantial damage. The twin-engine airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91. The personal flight departed Wickenburg with a planned destination of Payson, Arizona. Visual meteorological conditions prevailed, and no flight plan had been filed.

Witnesses reported observing the airplane takeoff from runway 23, and veer to the right of centerline shortly after rotation. Having reached an altitude of about 75 ft above ground level, the airplane did not climb, and crossed over the runway verge and towards an adjacent industrial park. A witness stated that a few seconds later, the airplane rolled almost 90o to the right, and the right wing struck the refuse trailer. The right wing separated from the airframe, and the main fuselage came to rest about 75 ft downrange. The airplane came to rest within the confines of the City Sanitation Department, about 2,200 ft beyond the runway departure threshold, and about 30o right of its centerline.

The pilot and passengers sustained multiple serious injuries, and were initially treated and stabilized at the accident site by first response personnel. Due to the nature of their injuries, they were unable to recall the circumstances of the accident.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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## PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with ratings for airplane multiengine land. He also held an instructor rating for airplane single-engine land, along with type ratings for the B-727, B-757, B-767, DC3, and N-265. He held an airframe and powerplant mechanic certificate with inspection authorization.

The pilot's last flight review took place in March 2014, he also reported practicing single-engine procedures in the accident airplane during July 2016.

## AIRPLANE INFORMATION

The airplane was manufactured in 1968, and had been owned and maintained by the pilot since 1985. It was equipped with two six-cylinder, fuel injected, Continental Motors IO-470 series engines. The right engine had been overhauled and installed in 1986, and had accrued 690.9 flight hours at the last annual inspection on July 6, 2016. The left engine was overhauled and installed in a Cessna 310N airplane in 1978, and removed and installed on the accident airplane in 1988. It had accrued 1,268.7 flight hours at the last annual inspection.

## METEOROLOGICAL INFORMATION

Area winds were out of the northwest at 5 knots, with an altimeter setting at 29.93 inches of mercury, and a temperature and dewpoint of 25° C and 16° C respectively. The corresponding density altitude for field elevation was about 4,200 ft.

## AIRPORT INFORMATION

Wickenburg Airport is at an elevation of 2,378 ft, and is composed of a single 6,101-ft-long asphalt runway, designated 5/23. Runway 23 is on a 1.2% uphill gradient. Terrain 1.5 miles beyond the departure end of runway 23 rises to a peak about 300 ft above runway elevation. Highway 60, which is offset about 300 ft right of the runway centerline, follows the foothills of the rising terrain, about 200 ft below the peak.

The only fueling facility at the airport was a self-serve pump, managed by the City of Wickenburg. During the period July 16 through 30, the pilot serviced the airplane twice at Wickenburg, and then three times at different airports in Kansas and Wisconsin. The last fuel purchased for the accident aircraft before the accident was from the Wickenburg pump on July 30, 2016. He then flew to Payson, Arizona a few days later.

The airport operations manager provided the certificate of analysis for the fuel delivered to the tank farm during that period, and the sample met the tested specifications for ASTM 5191 (vapor pressure), ASTM D86 (distillation), and IP 559 (density). Additionally, daily fuel system facility checks for the month of July and August, did not reveal any anomalies, and no pilots reported issues with fuel.

According to the operations manager, the fuel system experienced a failure on July 12, 2016, attributed to a lightning strike, and as a result, the system's computer motherboard was replaced. Metering problems persisted, and on July 30, the same day that the accident pilot purchased fuel, the system was shut down for a week because the delivery meter did not read correctly. The meter's pulse transmitter was replaced; however, anomalies persisted, and in early December, the entire fuel island was shut down for redesign. The operations manager stated that the problems were all electrical in nature, and did not require repair or replacement of any components that would have come into contact with fuel.

## MEDICAL AND PATHOLOGICAL INFORMATION

Toxicological tests on specimens recovered from the pilot after he was admitted to the hospital were performed by the FAA Bioaeronautical Sciences Research Laboratory. Analysis revealed negative findings for ethanol and all screened drug substances except Etomidate, which is an anesthetic agent often used in emergency treatment.

## TESTS AND RESEARCH

Examination of the engine control quadrant at the accident site revealed that both mixture controls were in the full rich position, the propeller controls were 1-inch short of full forward, and the throttle controls had bent to the right and over the quadrant about midrange. Both the flap actuator and landing gear

assemblies were in positions consistent with retraction.

## Left Engine

The left engine had partially separated from the firewall during the impact sequence, sustaining damage to the throttle body and rocker covers, and exposing the valve springs and rocker assemblies for all cylinders except number 4. The propeller blades and hub assembly remained attached to the crankshaft. Both blades exhibited a 150 bend about 12 inches from the hub, along with multiple nicks and chordwise scratches to their leading edges.

The fuel lines along with both the engine and propeller controls were intact, and the spark plug electrodes exhibited normal service life wear signatures, and dark grey coloration. The magneto-to-engine timing was correct, and "thumb" compression was confirmed at all cylinders, along with drive train continuity to all valves and accessories. The fuel lines from the metering unit through to the fuel flow transducer and the fuel manifold valve were free of obstruction, and the internal impellor of the transducer could be heard spinning when low-pressure air was applied to the inlet.

Disassembly of the fuel manifold valve, engine driven fuel pump, and throttle body metering unit revealed no mechanical anomalies, and residual fuel was observed within the cavity of the manifold valve. The fuel inlet screen was found clear and free from obstructions. During disassembly of the metering unit, debris was observed on the spring side of the mixture control cam. The debris appeared to be a combination of dried grease and ferrous material.

## Right Engine

The right engine sustained similar impact damage, with the propeller hub assembly remaining attached to the crankshaft. Both blades had detached from the hub, and both were straight, with neither exhibiting any damage signatures associated with rotation such as leading edge nicks or chordwise scratches. Both blades displayed blue streak marks, similar in color to the paint on the refuse trailer which was struck during impact.

The engine exhibited comparable magneto-to-engine timing, cylinder compression, and spark plug characteristics as the left engine. Disassembly of the fuel manifold valve, engine driven fuel pump, and throttle body metering unit revealed no mechanical anomalies. However, about 1/8 of one side of the surface of the throttle body inlet screen was covered in lint material, and the fuel injector nozzle for cylinder 3 was partially occluded and coated with a solid glaze. No fuel was observed within the cavity of the manifold valve or the fuel line between the fuel flow transducer and the fuel manifold valve.

Disassembly of the fuel lines revealed that a clear gelatinous substance had completely blocked the fuel flow transducer inlet port (metering orifice) (Photo 1). The material was removed, and had a slimy wet texture. After one hour of exposure to air, the material had hardened and took on a texture similar to room-temperature-vulcanization (RTV) silicone. Six fragments were recovered, which, after drying for 24 hours, ranged in size from 1 to 3 mm. Further examination of the fuel manifold valve revealed a similar fragment of the material within the manifold cavity on the pre-filtered side of its screen.

## Fuel System

The airplane was equipped with a 20-gallon auxiliary fuel tank in each wing, and a 50-gallon main tank at each wingtip. The auxiliary tanks fed the system through gravity, and an electrically driven submerged fuel pump was housed in each tip tank for use during priming and starting, and for backup operation to the engine-driven fuel pump.

Each wing housed a combination fuel selector valve/strainer, which was controlled by a selector lever in the cabin via a set of cables. The mesh size of the strainer was 104 microns. The fuel flowed from the strainer to the engine driven fuel pump, and onward to the inlet port of the fuel metering unit, which was protected by a 210-micron mesh filter. Downstream of the metering unit, the fuel passed through the fuel flow transducer, and into the fuel manifold valve, which contained a 210-micron mesh filter.

Maintenance records revealed that a Shadin 910502 fuel flow indicating system was installed in 1982, in accordance with supplemental type certificate SA573GL and SE552GL. The fuel flow transducer installed at the time of the accident was a FloScan 201 series (p/n 680501), which according to the engine logbook, had been installed in 1995 as a replacement for the original unit.

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The transducer inlet and outlet ports used 1/4-inch NPT threads, and the inlet metering orifice was about 0.115 inches (2.92mm) in diameter.

Both outboard tip tanks had been breached, exposing their inner surfaces. No debris was observed within the tanks. The auxiliary tanks were intact, and no debris was observed when examined through the respective fuel filler necks.

The airframe and engine fuel lines, filter plugs, fittings, and gaskets were examined to determine if RTV sealant material had been used as a sealing medium. No traces of such material were observed. Additionally, the fuel lines within the engine compartment were stiff, almost brittle, and exhibited significant chaffing damage. The owner stated that he had never used RTV silicon to seal any components within the fuel system.

Data provided by Continental Engines indicated that the fuel pressure from the engine driven fuel pump to the metering unit was between 28.8 and 31.0 psi when the engine was operating at 2,625 RPM, and 6.5 to 7.5 psi at 600 RPM. The metered fuel pressure at 2,625 RPM varies between 17.8 and 18.8 psi.

## Material Examination

The rubber-like material was sent to the NTSB Materials Laboratory Division for analysis using a Fourier Transform Infrared spectrometer. The results revealed spectral peaks, which when evaluated, were a strong match to polydimethylsiloxane, also known as silicone.

A survey of manufacturer's data sheets for silicon rubber compounds revealed multiple warnings regarding its soluble properties and limitations when exposed to gasoline. The data advised that silicon can swell from 75% to 260% when exposed to gasoline, with the manufacturer of a popular RTV silicon brand specifically stating:

"Do not use for gasketing carburetors or fuel control devices where it will be in constant contact with hydrocarbon fuels. Material will develop excessive swell and loss of mechanical properties."

The Floscan 200 Series Application Notes, current at the time of the accident stated the following:

"SAFETY WARNING: Never use RTV or similar sealants when installing Floscan senders or any fuel system components. Sealants can get into the fuel system and cause fuel starvation."

## Performance

The pilot reported the airplanes takeoff weight was 4,900 pounds.

The airplane owner's manual stated that for a normal takeoff, the pilot should raise the nose at 90 MPH, break ground at 105 MPH, and allow the airplane to accelerate to the best "twin-engine" rate-of-climb speed of 124 MPH. It further stated that the most critical time for an engine-out condition was during the two to three second period late in takeoff, while the airplane was accelerating to a safe engine-out speed. Furthermore, during an engine-out scenario on takeoff, at a field elevation of 5,000 ft, 4,527 ft is the total distance required to accelerate to 105 MPH, recognize and respond to an engine out-event, and stop the airplane.

The manual's "Single Engine Takeoff Distance" chart provided the means to calculate the total distance required to clear a 50 ft obstacle, assuming an engine failure occurred at takeoff speed, and that the propeller was feathered, and the landing gear and flaps were retracted. Under the reported temperature, with a 4-knot headwind, and a gross weight of 4,800 pounds, the distance required would have been about 4,100 ft. Extrapolation of the graph for a gross weight of 4,900 pounds (reported takeoff weight), indicated a distance of about 6,200 ft. At airplane weights between 4,900 and 5,200 pounds (max gross weight), the distance fell beyond the 7,000 ft scale of the graph.

The manual stated that under single-engine operation at maximum gross weight, the rate of climb at sea level and standard temperature was 330 ft per minute, with a service ceiling of 6,850 ft. The minimum single-engine control speed was 87 MPH, and the best single-engine angle of climb and rate of climb speeds were 105 and 113 MPH respectively. The manual stated that although the airplane is controllable at the minimum single-engine control speed, "the performance is so far below optimum that continued flight near the ground is improbable. A more suitable recommended safe single-engine speed is 105 MPH, since at this speed, altitude can be maintained more easily while the landing gear is being retracted and the propeller is being feathered."

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The propellers for both engines rotate in the same direction, with the left engine considered the, "critical engine" during engine-out conditions.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA16FA133 03/18/2016 1130 EDT Regis# N6239X Tampa, FL Apt: Peter O Knight TPF  
Acft Mk/Mdl CESSNA 340-A Acft SN 340A0436 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR TSIO-520-NCNB Acft TT 3963 Fatal 2 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: LOUIS CAPORICCI Opr dba: Aircraft Fire: GRD

## Summary

The airline transport pilot and pilot-rated passenger were departing on an instrument flight rules (IFR) cross country flight from runway 4 in a Cessna 340A about the same time that a private pilot and pilot-rated passenger were departing on a visual flight rules repositioning flight from runway 36 in a Cessna 172M. Visual meteorological conditions prevailed at the airport. The runways at the nontowered airport converged and intersected near their departure ends.

According to a witness, both airplanes had announced their takeoff intentions on the airport's common traffic advisory frequency (CTAF), which was not recorded; the Cessna 340A pilot's transmission occurred about 10 to 15 seconds before the Cessna 172M pilot's transmission. However, the witness stated that the Cessna 172M pilot's transmission was not clear, but he was distracted at the time. Both occupants of the Cessna 172M later reported that they were constantly monitoring the CTAF but did not hear the transmission from the Cessna 340A pilot nor did they see any inbound or outbound aircraft.

Airport video that captured the takeoffs revealed that the Cessna 172M had just lifted off and was over runway 36 approaching the intersection with runway 4, when the Cessna 340A was just above runway 4 in a wings level attitude with the landing gear extended and approaching the intersection with runway 36. Almost immediately, the Cessna 340A then began a climbing left turn with an increasing bank angle while the Cessna 172M continued straight ahead. The Cessna 340A then rolled inverted and impacted the ground in a nose-low and left-wing-low attitude. The Cessna 172M, which was not damaged, continued to its destination and landed uneventfully.

The Cessna 340A was likely being flown at the published takeoff and climb speed of 93 knots indicated airspeed (KIAS). The published stall speed for the airplane in a 40° bank was 93 KIAS, and, when the airplane reached that bank angle, it likely exceeded the critical angle of attack and entered an aerodynamic stall.

Examination of the Cessna 340A wreckage did not reveal any preimpact mechanical malfunctions that would have precluded normal operation. Because of a postcrash fire, no determination could be made as to how the radios and audio panel were configured for transmitting and receiving or what frequencies were selected. There were no reported discrepancies with the radios of the Cessna 172M, and there were no reported difficulties with the communication between the Cessna 340A and the Federal Aviation Administration facility that issued the airplane's IFR clearance. Additionally, there were no known issues related to the CTAF at the airport.

Toxicological testing detected unquantified amounts of atorvastatin, diphenhydramine, and naproxen in the Cessna 340A pilot's liver. The Cessna 340A pilot's use of atorvastatin or naproxen would not have impaired his ability to hear the radio announcements, see the other airplane taking off on the converging runway, or affected his performance once the threat had been detected. Without an available blood level of diphenhydramine, it could not be determined whether the drug was impairing or contributed to the circumstances of the accident.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The intentional low altitude maneuvering during takeoff in response to a near-miss with an airplane departing from a converging runway, which resulted in an exceedance of the airplane's critical angle of attack and a subsequent aerodynamic stall.

## Events

1. Takeoff - Airport occurrence
2. Initial climb - Abrupt maneuver
3. Initial climb - Aerodynamic stall/spin
4. Uncontrolled descent - Collision with terr/obj (non-CFIT)
5. Post-impact - Fire/smoke (post-impact)

## Findings - Cause/Factor

1. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-(general)-Capability exceeded - C
3. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C

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4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
5. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - C
6. Personnel issues-Task performance-Communication (personnel)-(general)-Pilot
7. Personnel issues-Task performance-Communication (personnel)-(general)-Pilot of other aircraft

## Narrative

### HISTORY OF FLIGHT

On March 18, 2016, at 1130 eastern daylight time, a Cessna 340A, N6239X, was destroyed during takeoff when it impacted terrain following a near-miss with a Cessna 172M, N61801, at Peter O. Knight Airport (TPF), Tampa, Florida. The airline transport pilot and the pilot-rated passenger of the Cessna 340A were fatally injured. The private pilot and the pilot-rated passenger of the Cessna 172M were not injured, and the Cessna 172M was not damaged. The Cessna 340A was registered to Ninexray, Inc., and operated by the pilot. The Cessna 172M was registered to and operated by Tampa Aviation Club, Inc. Visual meteorological conditions prevailed. An instrument flight rules (IFR) flight plan had been filed and activated for the Title 14 Code of Federal Regulations (CFR) Part 91 personal flight of the Cessna 340A that was destined for Pensacola International Airport, Pensacola, Florida. No flight plan was filed for the 14 CFR Part 91 personal flight of the Cessna 172M that was destined for Tampa Executive Airport, Tampa, Florida.

At the time of the accident, a temporary flight restriction (TFR) Notice to Airmen was in effect at TPF due to an airshow at MacDill Air Force Base, which was located about 5 nautical miles southwest of TPF. The TFR specified that only departures from runways 4 and 36 were authorized.

Earlier that day, the pilot of the Cessna 172M had successfully completed the oral examination and flight test for his private pilot certificate at TPF. The Cessna 172M was departing for its home airport following the flight test. The pilot-rated passenger in the Cessna 172M was the president of the corporation that owned and operated the Cessna 172M.

The president of the corporation that owned the Cessna 340A, reported that, on the day of the accident, one of the principals of the corporation was scheduled to be flown by the accident pilot to Fort Lauderdale, Florida; however, the trip was cancelled. The president further reported that, "without consulting any of the Principals of Ninexray, Inc., and without their knowledge or consent," the pilot initiated the accident flight.

TPF does not have an air traffic control tower (ATCT). According to a chronological summary of communications with the ATCT at Tampa International Airport (located about 6 nautical miles northwest of TPF), at 1126, an occupant of the Cessna 340A contacted the Tampa ATCT using the remote communications outlet (RCO) at TPF for an IFR departure from runway 4 and was given an IFR clearance, but was held for departure. About 2 minutes later, he was advised to contact Tampa approach control on 119.9 MHz and was released for departure. There was no further contact between the Cessna 340A and Tampa ATCT.

The pilot of the Cessna 172M stated that he and the pilot-rated passenger monitored TPF's common traffic advisory frequency (CTAF) of 122.725 MHz from their taxi start point in front of the fixed base operator (FBO) to runway 36. The pilot-rated passenger stated that the radio transmissions were made by the pilot using the No. 3 radio, which was a Garmin GPS/Com transceiver. The pilot indicated that he initially transmitted on the CTAF that he was taking off from runway 1 but then corrected that he was taking off from runway 36. In separate written statements, both occupants of the Cessna 172M stated that they did not hear any other airplane on the CTAF frequency, and they saw no incoming or departing traffic.

A pilot-rated employee of the FBO at TPF reported that he heard a radio call on the CTAF from an occupant of the Cessna 340A stating that they were taking off from runway 4. About 10 to 15 seconds later, while he was talking to another person, he heard another transmission on the CTAF that "wasn't clear and direct" but indicated that an airplane was departing from runway 1, then corrected to runway 36. The employee asked the person he was talking with if the second radio call was at TPF, to which the individual replied that he did not hear it and did not think so.

The pilot of the Cessna 172M stated that he performed a short field takeoff, and just after liftoff, he heard but did not see what he thought was a twin-engine airplane with full throttle "descending off the right [side] of the airplane." He then heard a crash and saw a fireball at the departure end of runway 36. The pilot-rated passenger stated that, as the Cessna 172M climbed through about 200 ft near the north end of the runway, he heard another airplane. He looked out the right window and saw the Cessna 340A almost directly below "stall and crash." Because the pilot felt it unsafe to return to TPF, he elected to continue to his planned destination.

The airport was equipped with a security camera that pointed to the intersection of runways 4/22 and 18/36. The security camera depicted the latter portion of the departures of both airplanes. Review of the recorded video revealed that it depicted the Cessna 172M becoming airborne before the runway intersection



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and continuing in a slow climb straight ahead over the runway until just before the intersection with runway 4. As the Cessna 172M approached the intersection, the Cessna 340A entered the left side of the video just above runway 4 in a wings level attitude with the landing gear extended. The Cessna 340A was observed in a climbing left turn while the Cessna 172M continued straight ahead. The Cessna 340A then continued in a climbing left turn, rolled inverted, and, while in a nose- and left-wing-low attitude, impacted the ground north of the intersection. A fireball occurred almost immediately after impact, and the Cessna 172M continued in a northerly direction out of view of the camera.

A camera at a berth on the opposite (eastern) side of the shipping channel adjacent to the airport also recorded the accident sequence. The left side of the video included part of the airport where runways 4 and 36 intersected. In the recording, the Cessna 172M was first seen coming into view airborne over runway 36 and climbing straight out over the runway. As it neared the intersection of runway 4/22, the Cessna 340A came into view, just lifting off from runway 4 and almost immediately entering a hard-left turn. The Cessna 340A continued the turn, passing behind the Cessna 172M while climbing and closing on the Cessna 172M's right side. The Cessna 340A almost reached the Cessna 172M's altitude, but continued the left turn to an inverted attitude, and descended into the ground. A fireball then erupted.

A witness who was on a boat in the shipping channel next to runway 36 stated that he heard a "screaming engine noise," which caused him to look toward the two airplanes. He saw that a "twin engine plane was behind and below the single engine plane." The twin engine airplane was in a left turn; it then caught a wing and slammed into the ground with an "instantaneous" explosion. He also indicated that the airplanes were so close that he thought they would collide (The figure below shows the airport diagram and accident site location).

Figure - Airport and Accident Site Diagram

## PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot, who was seated in the left seat of the Cessna 340A, age 54, held an airline transport pilot certificate with an airplane multi-engine land rating. He also held commercial, flight instructor, and ground instructor certificates. At the commercial level, he held ratings for airplane single-engine land and sea, rotorcraft helicopter, and instrument helicopter, and, at the flight instructor level, he held ratings for airplane single- and multi-engine, rotorcraft helicopter, and instrument airplane and helicopter. His most recent FAA second-class medical certificate with no limitations was issued on June 5, 2014. As of October 2, 2015, the pilot reported a total time of 5,195 hours of which 284 hours were in multi-engine airplanes. His last flight review in accordance with Title 14 CFR Part 61 section 56 was on March 12, 2015.

According to FAA records, the right seat occupant of the Cessna 340A, age 55, held a private pilot certificate with an airplane single-engine land rating. His most recent FAA second-class medical certificate with no limitations was issued on June 6, 2014. On the application for his last medical certificate, he listed a total flight time of 375 hours.

According to FAA records, the pilot, who was seated in the left seat of the Cessna 172M, age 30, held a private pilot certificate with airplane single-engine land rating issued earlier that day. His most recent FAA third-class medical certificate with no limitations was issued on December 7, 2015. On the FAA 8710-1 application form for his private pilot certificate, he listed a total flight time of 40 hours of which 21.4 hours were as instruction received and 18.6 hours were solo.

According to FAA records, the right seat occupant of the Cessna 172M, age 69, held airline transport, commercial, and flight instructor pilot certificates. At the airline transport pilot level, he held an airplane multi-engine land rating, and, at the commercial level, he held ratings for airplane single-engine land and sea. At the flight instructor level, he held ratings for airplane single- and multi-engine and instrument airplane. He reported a total flight time of 6,530 hours and about 3,000 hours in a Cessna 172.

## AIRCRAFT INFORMATION

Cessna 340A

The six-place, low-wing, retractable-gear Cessna 340A airplane, serial number 340A0436, was manufactured in 1977. It was powered by two 335-horsepower Continental Motors, Inc., TSIO-520-NB engines and equipped with Hartzell PHC-C3YF-2UF/FC7693DFB constant-speed propellers. The airplane was also

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equipped with RAM Option 3 vortex generators on both wings and tail that were installed in 1996 in accordance with Supplemental Type Certificate (STC) SA7975SW. The airplane's maximum allowable gross weight was 6,390 pounds.

The airplane was equipped with a Garmin GNS-530W installed in the "pilots view position" that was the No. 1 communication and navigation transceiver. It was connected to the No. 1 position of the audio panel. A Garmin GNS 430 with navigation and communication capability was installed in the center instrument panel.

The maintenance records were reportedly in the airplane at the time of the accident. Review of copies of the Cessna 340A's maintenance record entries indicated that the airplane's last annual inspection was signed off as being completed on February 15, 2016. At that time, the airplane's total time was 3,963.10 hours.

The Cessna 340A's weight at the time of the accident was calculated using the empty weight when the airplane was modified in 1996 (about 4,478 pounds), the weights of the occupants from their most recent FAA medical examinations (208 and 207 pounds), and the weight of full usable fuel in each main fuel tank, each auxiliary fuel tank, and the locker fuel tank (1,098 pounds). The calculations indicated that the takeoff weight was about 5,991 pounds.

The Flight Manual Supplement associated with the 1996 modifications specified that the takeoff and climb speed to 50 ft was 93 knots indicated airspeed (KIAS) for weights between 5,990 and 6,390 pounds.

A review of the stall speed chart in the Flight Manual Supplement revealed that at 6,390 pounds, with flaps retracted and landing gear up, the stall speeds at 0°, 40°, and 60° of bank were 81, 93, and 115 KIAS, respectively. There were no published stall speeds for flaps retracted and landing gear down.

## Cessna 172M

The four-place, high-wing, fixed-gear Cessna 172M airplane, serial number 17264811, was manufactured in 1975. It was equipped with three communication and navigation transceivers, which included a Garmin GNC-300XL GPS/Com system that was installed and interfaced to the existing audio system after the airplane was manufactured. According to the pilot-rated passenger, in November 2015, there had been static over the intercom, and the audio panel had been replaced. The pilot-rated passenger reported that all three radios were checked after the accident with no discrepancies reported.

Review of the Cessna 172M's maintenance records indicated that an annual inspection was completed on July 8, 2015, at an airplane total time of 9,412.4 hours. The next annual inspection was completed on August 10, 2016, at an airplane total time of 9,601.1 hours. There was no entry between the 2015 and 2016 annual inspection entries related to the airplane's radios.

## METEOROLOGICAL INFORMATION

The 1115 automated surface observation taken at TPF reported wind from 210° at 9 knots, 10 statute miles visibility, and clear skies. The temperature and dew point were 27°C and 20°C, respectively, and the altimeter setting was 30.00 inches of mercury.

## COMMUNICATIONS

TPF did not have a control tower, and the CTAF of 122.725 MHz was not recorded, nor was it required to be. Following the accident, equipment that recorded the CTAF was installed at TPF.

There were no reported communication difficulties with Tampa ATCT.

According to an individual who provided oversight for TPF, to their knowledge, there had been no formal or informal complaints about the CTAF pertaining to reception issues related to buildings and/or structures.

## AIRPORT INFORMATION

TPF had two runways, runway 4/22, which was 3,580 ft long and 100 ft wide, and runway 18/36, which was 2,687 ft long and 75 ft wide. The runways

intersected near their northern ends. A shipping channel was located just east of and parallel to runway 18/36.

## WRECKAGE AND IMPACT INFORMATION

Examination of the accident site revealed that the Cessna 340A impacted flat terrain about 40 ft to the right of and 250 ft from the departure end of runway 36. The initial ground scars indicated a magnetic heading of about 10ø. The wreckage came to rest upright, and both engines were separated from the wings. The right engine was located between the beginning of the wreckage path and the main wreckage, and the left engine was laying on the right wing.

A postcrash fire consumed the majority of fuselage from the nose of the airplane to the beginning of the empennage. Both wings were substantially consumed by fire. Remnants of all flight control surfaces were found at the scene. Flight control continuity could only be confirmed between the wings and the center cabin and between the tail and the center cabin due to the extensive fire damage. The hardware attaching the elevator trim pushrod assembly to the elevator trim actuator remained intact, and the elevator trim tab actuator was extended 1.4 inches, which equates to 5ø tab trailing-edge-down. The rudder trim tab actuator was extended 1.0 inch, which equates to 5ø tab trailing-edge-right. The aileron trim tab actuator was extended 1.7 inches, which equates to a neutral setting. Examination of the flap motor revealed the flap chain position correlated to flaps retracted.

The frequencies of the communication transceivers and the configuration of the audio control panel could not be determined due to the postcrash fire, which consumed the cockpit.

Engine crankshaft continuity and cylinder compression were confirmed on both engines. Significant thermal and impact damage were noted to both engines and their accessories. No preexisting anomalies were found that would have precluded normal operation.

Both propellers were separated from their respective engines, and both exhibited leading edge burnishing, bending, and twisting of the blades.

The Cessna 172M was examined the day of the accident by several FAA inspectors; no operational testing of the radios was performed. The pilot-rated passenger reported that subsequent testing of all three radios was satisfactory.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Hillsborough County Medical Examiner Department, Tampa, Florida, performed postmortem examinations of the Cessna 340A pilot and pilot-rated passenger, and also toxicological testing. The cause of death for both was listed as blunt impact to head and neck. Toxicology testing on liver specimens of the pilot and pilot-rated passenger revealed the results for both were negative for volatiles, drugs of abuse, comprehensive drug screen, and benzodiazepines.

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma performed toxicological testing of specimens from the Cessna 340A pilot and pilot-rated passenger. The toxicology report for the pilot indicated no ethanol was detected in the submitted muscle and brain specimens. Unquantified amounts of atorvastatin, diphenhydramine, and naproxen were detected in the submitted liver specimen. Atorvastatin is a cholesterol lowering prescription medication commonly called Lipitor. Naproxen is an anti-inflammatory analgesic available over the counter and by prescription, often with the names Aleve and Naprosyn. Neither of these drugs are considered impairing. Diphenhydramine is a sedating antihistamine that has been shown to impair a driver's ability to safely operate a car. Testing for carbon monoxide and cyanide was not performed.

The toxicology report for the pilot-rated passenger indicated no ethanol was detected in the submitted muscle and brain specimens, and no tested drugs were detected in the submitted liver specimen. Testing for carbon monoxide and cyanide was not performed.

Drug and alcohol testing was not requested or performed for the occupants of the Cessna 172M.

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|                                 |                     |                  |                       |  |
|---------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA310        | 05/27/2017 1310 PDT | Regis# N2262T    | Fall River Mill, CA   | Apt: Fall River Mills O89              |
| Acft Mk/Mdl CESSNA A185-E       |                     | Acft SN 185-1420 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO-520-D |                     | Acft TT 1926     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: JERRY JONES           |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                 |                     |                  |                       | AW Cert: STN                           |

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## Summary

The pilot of the tailwheel-equipped airplane reported that, during the landing roll, the airplane "went hard right." He applied full left rudder and brake, but he could not regain directional control. The airplane veered off the runway to the right, the left main landing gear collapsed, and the left wing impacted the ground.

The airplane sustained substantial damage to the left wing.

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

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## Cause Narrative

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

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## Events

1. Landing-landing roll - Loss of control on ground
2. Landing-landing roll - Runway excursion
3. Landing-landing roll - Landing gear collapse
4. Landing-landing roll - Dragged wing/rotor/float/other

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## 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

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## Narrative

The pilot of the tailwheel-equipped airplane reported that, during the landing roll, the airplane "went hard right and with full left rudder and break [they] could not bring it back around". The airplane veered off the runway to the right, the left main landing gear collapsed, and the left wing impacted the ground.

The airplane sustained substantial damage to the left wing.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                |                 |                  |                       |  |
|--------------------------------|-----------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA442       | 07/26/2017 1042 | Regis# N208SS    | Nampa, ID             | Apt: Nampa Muni MAN                    |
| Acft Mk/Mdl CESSNA A185-F      |                 | Acft SN 18502452 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO-520D |                 | Acft TT 1510     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: BRUCE MINTER         |                 | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                |                 |                  |                       | AW Cert: STN                           |

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## Summary

The pilot of the tailwheel-equipped airplane reported that, during the landing roll, the left wing started to lift, followed by the tail. He added that he applied full left aileron and full back pressure on the control yoke. The airplane then nosed over to the right and stopped.

The airplane sustained substantial damage to the fuselage. y

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

An automated weather observation station at the airport reported, about the time of the accident, wind from 100ø at 7 knots. The airplane landed on runway 11.

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## Cause Narrative

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

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## Events

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

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## 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

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## Narrative

The pilot of the tailwheel-equipped airplane reported that during the landing roll, the left wing started to lift, followed by the tail. He added that he applied full left aileron and full back pressure on the control yoke. Then the airplane nosed over to the right and stopped.

The airplane sustained substantial damage to the fuselage.

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

An automated weather observation station at the airport reported, about the time of the accident, wind from 100ø at 7 knots. The airplane landed on runway 11.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|---------------------------|---------------------|-------------------|-----------------------|-----------------------------|------------------------------|
| Accident Rpt# GAA18CA106  | 01/12/2018 1330 MST | Regis# N2W        | Lowman, ID            | Apt: Warm Springs Creek 0U1 |                              |
| Acft Mk/Mdl CESSNA A185-F |                     | Acft SN 185-02982 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim          | Prob Caus: Pending           |
|                           |                     | Acft TT 3119      | Fatal 0               | Ser Inj 0                   | Flt Conducted Under: FAR 091 |
| Opr Name: DARYN COLLEDGE  |                     | Opr dba:          |                       | Aircraft Fire: NONE         |                              |

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                   |                     |                  |                       |  |
|-----------------------------------|---------------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA461          | 07/05/2017 1100 CDT | Regis# N4207J    | Kankakee, IL          | Apt: Greater Kankakee IKK              |
| Acft Mk/Mdl CESSNA A188B-B        |                     | Acft SN 18803724 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL IO520D187B |                     | Acft TT 5867     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: GUST DOUG J             |                     | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                   |                     |                  |                       | AW Cert: SPR                           |

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## Events

1. Landing-flare/touchdown - Loss of control on ground

## Narrative

The pilot in the tailwheel-equipped airplane reported that he made a three-point landing on runway 4, but the airspeed was high, and the airplane bounced. The airplane then descended and landed on the main landing gear. As the airspeed decreased, and the tail wheel settled to the runway, the pilot felt that he did not have rudder authority and he mistakenly attempted to apply the heel brakes.

The accident airplane was equipped with toe brakes. The pilot's other airplane has heel brakes and he recalled that the heel brake application was instinctive.

The pilot reported that there was a crosswind, the airplane began pulling to the right, and he eventually applied the toe brakes, but the airplane ground-looped to the right.

The airplane sustained substantial damage to the horizontal stabilizer.

The METAR reported that the wind was from 130ø at 7 knots and the skies were clear with 10 statute miles of visibility.

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

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Accident Rpt# CEN16FA188 05/18/2016 901 MDT Regis# N6609P Sheridan Lake, CO Apt: N/a  
Acft Mk/Mdl CESSNA P210N Acft SN P21000192 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONTINENTAL MOTORS TSIO-520-P Acft TT 3345 Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: STUBBLEFIELD CONSTRUCTION CO Opr dba: Aircraft Fire: NONE

## Summary

The private pilot was conducting a cross-country flight at 17,500 ft mean sea level (msl) while operating on a visual flight rules clearance. About 2 hours after takeoff, the pilot stated over the radio, "(unintelligible) I'm going down and I'm going down hard." Based on the pilot's speech, it became apparent to the controller that the pilot was experiencing some type of distress. The controller attempted to communicate with the pilot, concerned that he was possibly experiencing hypoxia, carbon monoxide exposure, or another medical condition that was affecting his speech and ability to control the airplane. Throughout the remainder of the flight, the controller provided numerous altimeter setting updates recommending that the pilot descent to a lower altitude in a continued effort to assist the pilot; however, the pilot did not acknowledge or reply to these requests. During three different radio transmissions, the pilot stated, "I can show you." what the airplane can do. He also stated, "(unintelligible) guys want me to do Muller?", which is an aerobatic maneuver that involves a flat spin and recovery. (The airplane is not approved for aerobatics or spins.) Radar data indicated that the airplane entered a series of turns, climbs, and descents. The final recorded radar return indicated the airplane was about 9,200 ft msl. The airplane subsequently impacted a field in a flat spin. Examination of the airframe, engine, and airplane pressurization system revealed no mechanical malfunctions or anomalies that would have precluded normal operation.

Given that the airplane's descent did not improve the pilot's control of the airplane's heading or the quality of his communication with the controller, it is likely that the pilot's behavior was not the result of hypoxia.

Toxicology testing on the pilot was positive for ethanol at ranges between 0.247 gm/dl and 0.335 gm/dl, which is significantly higher than the legal limit of 0.040 gm/dl. While ethanol can be produced in tissues after death, this occurs by microbial action; and vitreous, where the levels were highest in specimens from the pilot, is typically a sterile fluid. In addition, an approximately half-full bottle of vodka was found in the wreckage, suggesting that the majority of the identified ethanol had been ingested. Further, the tested samples were positive for three additional impairing substances; diphenhydramine, lorazepam, and zolpidem. The pilot's impaired speech and behavior were most likely caused by the effects of high levels of alcohol along with effects from the three prescription medications, which likely led him to believe that he could perform maneuvers in the airplane that it was not capable of performing.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's severe impairment from the combined effects of high levels of ingested alcohol as well as three impairing medications (zolpidem, lorazepam, and diphenhydramine), which resulted in his decision to attempt an aerobatic maneuver that the airplane was not approved for.

## Events

1. Enroute-cruise - Loss of control in flight
2. Enroute-cruise - Aerodynamic stall/spin
3. Maneuvering-aerobatics - Loss of control in flight

## Findings - Cause/Factor

1. Personnel issues-Physical-Impairment/incapacitation-Alcohol-Pilot - C
2. Personnel issues-Physical-Impairment/incapacitation-Prescription medication-Pilot - C
3. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Capability exceeded - C
5. Aircraft-Aircraft oper/perf/capability-Aircraft capability-(general)-Capability exceeded - C
6. Personnel issues-Action/decision-Action-Incorrect action performance-Pilot - C
7. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C

## Narrative

HISTORY OF FLIGHTOn May 18, 2016, about 0901 mountain daylight time, a Cessna P210N, N6609P, sustained substantial damage when it impacted a field in a flat spin about 4 miles northeast of Sheridan Lake, Colorado. The pilot sustained fatal injuries. The airplane was registered to and operated by Stubblefield Construction Company under the provisions of the 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the flight, which departed at 0645 from Rock Springs-Sweetwater County Airport (RKS), Rock Springs, Wyoming, en route to Wiley Post Airport (PWA), Oklahoma City, Oklahoma.



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Earlier that morning, about 0222, the pilot departed Nampa Municipal Airport, Nampa, Idaho, and flew to RKS, where he landed the airplane about 0442. A witness at RKS reported that the pilot had the airplane topped off with 68 gallons of fuel. He reported that the pilot slept in the pilot's lounge for about 1 hour before departing toward PWA.

After departing RKS, radar data from the Federal Aviation Administration (FAA) indicated that the airplane was flying on a southeast heading at 17,300 ft pressure altitude. About 0800, the pilot established visual flight rules flight following with the Denver, Colorado, Air Route Traffic Control Center, which provided the pilot with the current altimeter setting.

A transcript of the communications between the accident airplane and an air traffic controller indicated that, at 0842:36, the pilot transmitted, "(unintelligible) I'm going down and I'm going down hard."

It became apparent to the controller that the pilot was experiencing some type of distress. The controller attempted to communicate with the pilot, concerned that he was possibly experiencing hypoxia, carbon monoxide exposure, or another medical condition that was affecting his speech and ability to control the airplane. Throughout the remainder of the flight, the controller provided numerous altimeter setting updates in a continued effort to communicate with the pilot; however, the pilot did not acknowledge or reply to numerous controller requests. The controller made numerous recommendations to the pilot to descend to a lower altitude.

At 0846:23, the controller transmitted, "November six six zero nine papa suggest you descend to lower altitude at or below one two thousand uhh sounds like you might have an hypoxic situation."

The recorded radar data indicated that the airplane had maintained a straight-and-level flight track to the southeast at 17,300 ft pressure altitude until 0847. Then, the airplane entered a series of turns, climbs, and descents that ultimately put the airplane on a northerly course.

At 0853:16, the pilot transmitted, "I can show you what a p two ten can do." The radar data indicated that the airplane's altitude was about 11,700 ft pressure altitude at the time of the transmission.

At 0854:05, the pilot transmitted, "(unintelligible) guys want me to do Muller?" The radar data indicated that the airplane's altitude was about 12,275 ft pressure altitude at the time of the transmission.

At 0855:24, the pilot transmitted, "I can show you things this airplane can do." The radar data indicated that the airplane's altitude was about 10,600 ft pressure altitude at the time of the transmission.

At 0858:01, the pilot transmitted, "Let me show you what a (unintelligible) two ten can do." The radar data indicated that the airplane's altitude was about 10,950 ft pressure altitude at the time of the transmission.

At 0858:28, the controller transmitted, "November six six zero nine papa it's possible you're uhh uhh hypoxic and umm and carbon monoxide poisoning is going on if you could just open up that window maybe get some fresh air in that airplane November zero nine pop."

At 0900:30, the pilot's last radio transmission stated, "You got it watch the center watch it go." The last recorded radar return at 0900:32 indicated that the airplane's pressure altitude was about 9,200 ft. Subsequent attempts to contact the pilot were unsuccessful.

Fig. 1 View of the airplane at the accident site

## PERSONNEL INFORMATION

The 64-year-old pilot held a private pilot certificate with airplane single-engine land and instrument ratings. He held a third-class medical certificate issued on November 11, 2015, with a limitation for corrective lenses. During his medical examination in November 2015, the pilot reported that his total flight time was 4,250 hours. The pilot's logbook was not recovered during the investigation.

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FAA airman records indicated that the pilot was involved in a landing incident in Boise, Idaho, on May 28, 2000. The pilot was found to be operating the airplane under the influence of alcohol with a blood alcohol concentration (BAC) of 0.26 percent, which was above the BAC legal limit of 0.04 percent for operating aircraft. The pilot surrendered his pilot and medical certificates after the incident. He reapplied for a medical certificate on July 5, 2005, and was granted an eligibility letter on August 10, 2005.

## AIRCRAFT INFORMATION

The airplane was a pressurized, single-engine Cessna P210N that was manufactured in 1979. The airplane was configured to seat 4 individuals and had a maximum takeoff weight of 4,000 lbs. The airplane was equipped with a 310-horsepower Continental TSIO-520-P engine and a 3-blade McCauley propeller. No acrobatic maneuvers, including spins, were approved. The last annual maintenance inspection was conducted on June 1, 2015. The total airframe time at the time of the inspection was 3,329 hours, and the total engine time was 1,035 hours. According to available documentation, the airplane was flown about 28 hours since the last annual inspection.

## METEOROLOGICAL INFORMATION

At 0853, the surface weather observation at Lamar, Colorado, located about 30 nautical miles southwest of the accident site, included wind from 160ø at 9 knots, variable between 140ø and 200ø, surface visibility 10 miles, clouds broken 6,500 ft above ground level, temperature 13øC, dew point 6øC, and an altimeter setting of 30.25 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

The airplane impacted an open, harvested agricultural field in a wings-level, flat pitch attitude. The left wing was canted aft and the right wing was canted forward, consistent with the airplane being in a left spin at impact. The tail was bent slightly to the left of the fuselage and the engine was displaced slightly to the right. The fuselage was leaning slightly to the left. The landing gear was found in the retracted position.

The left wing remained attached to the fuselage. It was bent downward at the root and bent upward at the flap/aileron junction where the wing was resting on the ground. There was no leading edge compression damage observed to the left wing. The left flap was in the retracted position. The left main fuel tank was ruptured. There was no fuel in the left wing auxiliary fuel tank.

The right wing remained attached to the fuselage. It was bent downward at the root and bent upward in the middle of the right aileron where the wing was resting on the ground. No leading edge compression damage was observed to the right wing. The right flap was hanging down approximately 10ø. Examination of the flap cables indicated the right flap cable was separated near the right wing root. The bottom side of the right wing had oil spray from the wing root extending toward the outboard end of the right flap. The right main fuel tank contained an undetermined amount of fuel. There was no fuel in the right wing auxiliary fuel tank.

The tail was fractured almost completely around its circumference at the dorsal. The rudder and elevators remained attached to the empennage. The rudder balance weight was separated from the top of the rudder and was found on the ground directly below the rudder.

The fuel selector handle was found positioned to the right tank, and the fuel selector valve was found in an intermediate position between RIGHT and OFF. The main fuel gauges indicated that the right tank was greater than 1/2 full and the left tank was full. The fuel strainer assembly was removed and contained about 4 ounces of fuel consistent with 100LL fuel; a sample tested negative for water contamination. The fuel strainer screen was installed properly with a cork gasket.

The airplane's pressurization system controls were on and the cabin pressure was set to 5,000 ft. The pressurization outflow and safety valve were examined. The outflow valve diaphragm was pliable and moved freely. The outflow valve was removed, and the diaphragm was compressed by hand. The pneumatic pressure port was covered to restrict airflow and the diaphragm did not move, which indicated normal operation. The safety valve was also removed for examination. The electric solenoid on the safety valve was found separated from the valve housing by impact damage. A fragment of the safety valve remained connected to the solenoid threads. The safety valve diaphragm was compressed, and a tear was observed where the solenoid had been installed. The "Overhead Vent Fan" switch was found in the LOW position.

The airplane was equipped with an aftermarket supplemental type certificate inflatable door seal. The cabin "Door Seal Activate" switch was observed to be in

the OFF position.

Flight control cable continuity was confirmed from the flight controls to their respective attachment points of the elevator, rudder and ailerons. The flap actuator was found in the 0ø position; however, the flap handle and flap indicator were in the 10ø position. The elevator trim actuator was found in about a 5ø tab up position.

The engine remained partially attached to the airframe by cables and lines; all four engine mount legs were broken. The exhaust and induction systems exhibited impact damage, and the oil sump was crushed upward into the crankcase. The throttle, mixture and propeller control arms moved freely between the mechanical stops. There was no oil spray observed on the top of the engine crankcase or cylinders, and there was no oil spray observed on the underside of the engine cowling.

The top spark plugs were removed, and they exhibited normal wear signatures when compared to the Champion Check-A-Plug chart. The cylinder combustion chambers were examined with a lighted borescope and no anomalies were noted. Drive train continuity and cylinder compression was confirmed on all six cylinders as the crankshaft was rotated by hand. Spark was also observed on all top ignition leads.

The engine accessories were removed from the engine and examined. The oil scavenge pump and engine oil pump were disassembled with no anomalies noted to the gears or cavities. The oil pressure relief valve exhibited signatures of normal operation. The engine-driven fuel pump was removed, and its drive coupling remained intact. The fuel pump turned freely by hand. The engine-driven fuel pump was disassembled with no anomalies noted. The fuel manifold valve was disassembled, and its diaphragm remained intact. The plunger and retaining nut remained secured, and the fuel screen was free of debris. The fuel nozzles were removed and found to be free of contamination. Fuel consistent with 100LL was found in various fuel system components and lines. The fuel was tested for the presence of water using water finding paste; no water contamination was identified. The two vacuum pumps were removed and disassembled with no discrepancies noted. The alternator drive turned freely by hand. The turbocharger remained attached to the exhaust system. The turbocharger compressor rotated freely and was coupled to the turbine wheel. The turbocharger's wastegate and controller exhibited no damage.

The 3-blade propeller remained attached to the crankshaft propeller flange. Examination of the propeller revealed all 3 blades were loose in the hub. The propeller blade marked No. 1 was bent forward about 90ø about 6 inches from the hub. The outboard 10 inches of the blade exhibited a slight blade twist. The No. 2 blade exhibited a curved bend in the entire length of the blade. The No. 3 blade was bent slightly forward about 12 inches from the hub and exhibited a curved bend along the remaining length of the blade. All three blades exhibited burnishing of the leading edge; however, none of the blades exhibited nicks, gouges, or chordwise scratching of the blades.

During the onsite examination, a half-full bottle of vodka and numerous prescription and over-the-counter medications were found in the airplane.

Fig 2. View of the front of the airplane and propeller

## MEDICAL AND PATHOLOGICAL INFORMATION

The El Paso County Coroner, Colorado Springs, Colorado conducted an autopsy of the pilot. The cause of death was the result of multiple blunt force injuries. Toxicology testing detected ethanol at 0.335 gm/dl in vitreous and 0.291 gm/dl in femoral blood as well as diphenhydramine at less than 0.050 ug/ml and zolpidem at 0.077 ug/ml in femoral blood.

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology testing and identified ethanol at 0.0332 gm/dl in vitreous and 0.247 gm/dl in cavity blood. In addition, diphenhydramine was detected at levels too low to quantify, zolpidem was found at 0.049 ug/ml, and lorazepam was confirmed at 0.029 ug/ml in cavity blood. Clonidine was detected in liver but not in cavity blood. Ethanol is the type of alcohol present in beer, wine, and liquor. It is a social drug that acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses, ethanol can cause coma and death. Generally, the rapid distribution of ethanol throughout the body after ingestion leads to similar levels in different tissues. 14 CFR 91 section 17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more alcohol in the blood. The effects of alcohol on aviators are generally well understood; alcohol significantly impairs pilot performance, even at very low levels.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Diphenhydramine is a sedating antihistamine used to treat allergy symptoms and as a sleep aid. It is available over the counter under the names Benadryl and Unisom. Diphenhydramine carries the following FDA warning: may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery). Compared to other antihistamines, diphenhydramine causes marked sedation; it is also classed as a central nervous system (CNS) depressant and this is the rationale for its use as a sleep aid. Altered mood and impaired cognitive and psychomotor performance may also be observed. In a driving simulator study, a single dose of diphenhydramine impaired driving ability more than a blood alcohol concentration of 0.10 gm/dl. The range of blood levels in which diphenhydramine is thought to have psychoactive effects is between 0.025 and 0.112 ug/ml.

Zolpidem is a prescription CNS depressant used as a short-acting sleep aid, often sold with the name Ambien. It carries the warning, "Due to the rapid onset of action, zolpidem tartrate should only be taken immediately prior to going to bed. Patients should be cautioned against engaging in hazardous occupations requiring complete mental alertness or motor coordination such as operating machinery or driving a motor vehicle after ingesting the drug, including potential impairment of the performance of such activities that may occur the day following ingestion of zolpidem tartrate. Zolpidem tartrate showed additive effects when combined with alcohol and should not be taken with alcohol. Patients should also be cautioned about possible combined effects with other CNS-depressant drugs." Blood levels where the sedating effects are expected are between 0.025 and 0.30 ug/ml.

Lorazepam is a sedating benzodiazepine that is a Schedule IV controlled substance available by prescription and commonly used to treat anxiety; it is often sold with the name Ativan. It carries this warning, "As with all patients on CNS-depressant drugs, patients receiving lorazepam should be warned not to operate dangerous machinery or motor vehicles and that their tolerance for alcohol and other CNS depressants will be diminished." Blood levels where the sedating effects are expected in living subjects are between 0.16 ug/ml and 0.27 ug/ml.

Clonidine is a prescription blood pressure medication that is not generally considered impairing.

## TESTS AND RESEARCH

The propeller manufacturer examined 25 digital photographs of the propeller that were provided by the National Transportation Safety Board's investigator-in-charge. According to the propeller manufacturer, the propeller sustained damage that appeared to be a result of impact and subsequent recovery of the airplane. There were no indications of propeller failure or malfunction before impact. Also, the propeller exhibited damage consistent with low rotational energy absorption during the impact sequence, which generally indicates low to no engine power at impact.

The NTSB Vehicle Recorder Division reviewed an excerpt of an ATC recording. The purpose of the study was to determine what was said in the pilot transmission. The sound wave form and spectral image were examined, and pitch contours identified. Sound was listened to by two different people, one who had no knowledge of the investigative facts. The text identified by the two listeners was "guys want me-to do-a muller." Additionally, the pilot's speech was noted to be markedly slurred.

## ADDITIONAL INFORMATION

An aerobatic flight maneuver referred to as the "Muller" Tower, Zwiebelturm, or Spiral Tower, is attributed to Swiss and European aerobatic champion Eric Muller, who is believed to have invented it in 1974. It is an aerobatic maneuver where a pilot begins with a vertical climb, performs an aileron snap roll to the right, does a negative push to level out into horizontal flight at the top of the apogee, and enters a flat spin to the left at full throttle before pitching forward and exiting the maneuver in a dive.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|   |                     |                   |                       |  |
|---|---------------------|-------------------|-----------------------|--|
| Accident Rpt# CEN16LA356                  | 08/05/2016 1700 CDT | Regis# N323DC     | Waco, TX              | Apt: Waco Regional KACT                |
| Acft Mk/Mdl CESSNA P210N                  |                     | Acft SN P21000384 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL MOTORS TSIO-520-P5 | Acft TT 6160        | Fatal 0           | Ser Inj 0             | Flt Conducted Under: FAR 091           |
| Opr Name: JOHN MERAUIGLIA                 | Opr dba:            |                   | Aircraft Fire: NONE   | AW Cert: STN                           |

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## Summary

The airline transport pilot reported that the electrical system began to indicate a discharge condition during cruise flight and that he chose to divert to an intermediate airport. He lowered the wing flaps and landing gear, and then the airplane lost total electrical power. Landing gear extension seemed to be normal, which included a green down position indicator light and visual verification of the landing gear in the extended position. The pilot then conducted a visual approach to landing, and after landing, the right main landing gear (MLG) collapsed, which resulted in a runway excursion. A postaccident examination of the electrical system revealed that the alternator was not functioning properly and that the voltage regulator was inoperative, which precipitated the diverted landing. Examination of the landing gear system revealed that the right MLG down-lock mechanism had failed. None of the components were provided to the National Transportation Safety Board for further examination, which precluded a determination of the root cause of the failure of the right MLG down-lock mechanism.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The failure of the right main landing gear (MLG) down-lock mechanism, which resulted in the collapse of the landing gear. The root cause of the right MLG down-lock mechanism could not be determined because the components were not available for examination.

## Events

1. Enroute-cruise - Electrical system malffailure
2. Landing-flare/touchdown - Landing gear collapse
3. Landing-flare/touchdown - Runway excursion

## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Landing gear system-Gear extension and retract sys-Failure - C
2. Aircraft-Aircraft systems-Electrical power system-DC generator-alternator-Failure
3. Aircraft-Aircraft systems-Electrical power system-DC regulator-Failure

## Narrative

On August 5, 2016, about 1700 central daylight time, a Cessna P210N airplane, N323DC, was substantially damaged when the landing gear collapsed during landing on runway 19 (7,107 feet by 150 feet, concrete) at the Waco Regional Airport (ACT), Waco, Texas. The pilot and four passengers onboard were not injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was operated on an instrument flight rules flight plan. The flight originated from the Dallas-Fort Worth International Airport (DFW) about 1630. The intended destination was the Austin-Bergstrom International Airport (AUS), Austin, Texas.

The pilot reported that the airplane electrical system began to indicate a discharge condition during cruise flight. He elected to divert to ACT. The wing flaps and landing gear were lowered before the airplane lost electrical power completely. Landing gear extension seemed to be normal, which included a green down position indicator light and visual verification of the landing gear in the extended position. He executed an uneventful visual approach and landing touchdown. However, after touching down, the landing gear collapsed. The airplane subsequently departed the left side of the runway before coming to rest.

A postaccident examination of the aircraft electrical system revealed that the alternator was not functioning properly and the voltage regulator was inoperative. Examination of the landing gear system revealed that the right main landing gear down lock mechanism had failed. None of the components were provided to the NTSB for further examination, which precluded any determination of the root cause of the failures. The alternator was repaired and the voltage regulator was replaced. The landing gear down lock mechanism was repaired. The airplane was subsequently returned to service and no further anomalies were reported to the NTSB.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|-------------------------------------|--------------------|------------------|-----------------------|--|
| Accident Rpt# GAA17CA374            | 06/26/2017 930 CDT | Regis# N3195C    | Watertown, SD         | Apt: Watertown Rgnl ATY                |
| Acft Mk/Mdl CHAMPION 7BCM-NO SERIES |                    | Acft SN 7BCM-171 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL C-85-8F      |                    | Acft TT 2600     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: THOMAS P. ROSS            |                    | Opr dba:         |                       | Aircraft Fire: NONE                    |
|                                     |                    |                  |                       | AW Cert: STN                           |

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## Events

1. Landing - Loss of control on ground
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## Narrative

The pilot of the tailwheel-equipped airplane reported that during the landing roll, the right wing suddenly came up. He applied aileron and rudder corrections, however the left wing impacted the ground as the airplane ground looped.

The left wing was substantially damaged.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                    |                     |                |                       |  |
|------------------------------------|---------------------|----------------|-----------------------|--|
| Accident Rpt# GAA18CA025           | 10/21/2017 1200 PDT | Regis# N7589E  | Gerlach, NV           | Apt: Black Rock City 88NV              |
| Acft Mk/Mdl CHAMPION 7GC-NO SERIES |                     | Acft SN 7GC-23 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-290          |                     |                | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: RYAN N. DILLON           |                     | Opr dba:       |                       | Aircraft Fire: NONE                    |
|                                    |                     |                |                       | AW Cert: SPR                           |

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## Events

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

## Narrative

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge, the pilot of the tailwheel-equipped airplane reported that, during a wheel landing, the wind shifted from a crosswind to a quartering tailwind. He further reported that, he had full aft elevator applied, but lost control of the pitch when the wind shifted, and the airplane nosed over about 5 to 10 knots groundspeed.

The airplane sustained substantial damage to the left wing and vertical stabilizer.

The pilot did not report that there were any preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

The pilot did not submit the NTSB Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA223 06/18/2016 1411 Regis# N678Z Coloradosprings, CO Apt: N/a  
Acft Mk/Mdl CIRRUS DESIGN CORP SR22-NO SERIES Acft SN 0311 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR IO-550-N Acft TT 788 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: PILOT Opr dba: Aircraft Fire: NONE

## Events

1. Enroute - Loss of engine power (partial)

## Narrative

### HISTORY OF FLIGHT

On June 18, 2016, about 1411 mountain daylight time, a Cirrus Design Corporation SR22 airplane, N678Z, descended under the canopy of the cirrus airframe parachute system (CAPS) and impacted terrain near Colorado Springs, Colorado, following an in-flight loss of engine power. The pilot, a safety pilot in the right seat, and a pilot rated rear-seated passenger sustained minor injuries. The airplane sustained substantial damage during the impact. The airplane was registered to N678Z LLC and was operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Day visual meteorological conditions prevailed in the area of the accident and the flight was not operated on a flight plan. The local flight originated about 1345 from the City of Colorado Springs Municipal Airport (COS), near Colorado Springs, Colorado.

The pilot of the accident airplane reported that he was participating in a Cirrus Owners and Pilots Association flying clinic. He departed from COS with two passengers to conduct training in a local practice area located about 15 miles east of COS. The pilot stated that after 20 minutes of air work, at approximately 8,500 feet above mean sea level (msl), he noticed a roughness in the engine and that the oil pressure reading indicated within the green arc but lower than normal. The engine continued to run rough and lose power. Air traffic controllers were advised that the flight was headed back to COS with an engine problem. He said that with the reduced engine power available, the airplane began losing altitude and airspeed. The pilot determined the flight could not make a landing at COS, which was about 11 nautical miles west of the airplane's position, or Meadow Lake Airport, which was about 6 nautical miles north. He indicated that no suitable landing areas were identified and he pulled the CAPS handle. The CAPS rocket fired and separated from its lanyard. The parachute subsequently deployed. The airplane impacted the ground in a nose down attitude. The impact occurred with the aft harness in a snubbed position, prior to tail drop. The airplane subsequently stabilized upright on its main landing gear.

The safety pilot seated in the front right seat of the accident airplane, reported that he flew the accident airplane earlier in the morning during the demonstration phase of training and noted no issues or anomalies with the accident airplane. He indicated that his purpose during the flight was to demonstrate and teach formation-flying techniques. He reported that after a preflight brief he held an additional briefing emphasizing that the airplane owner would be the pilot-in-command and is responsible for all emergencies as he, as a safety pilot, was not familiar with the owner's equipment.

According to the safety pilot, the rear seated passenger noticed the oil light illuminated before the takeoff run when the engine was at idle. However, the light went off during the engine run up so he did not think it was a problem. The safety pilot related that he had observed his oil pressure light illuminated while at idle numerous times with a warm engine.

The safety pilot indicated that the takeoff, rendezvous, and initial formation training were normal. As a wingman, the pilot is usually unaware of the flight's location, altitude, or airspeed. Additionally, he said that a wingman's attention revolves around the lead airplane where you do not have time to monitor engine instrumentation. The safety pilot said, "If you have never flown as a wingman you just don't understand how much you have to trust your plane while keeping your eyes on lead AT ALL TIMES. I even commented on this during the initial 4-hour brief - if you have a weak engine don't fly. When there is a lead change it takes a moment for you to figure out where you are."

The safety pilot reported that this loss of engine power during the flight was extremely subtle. At no time did he notice any indications out of normal parameters. The pilot mentioned his oil pressure looked low at 27 psi. The safety pilot asked what was normal but the pilot did not know. The safety pilot stated that the oil pressure and all other engine indications were within their respective green arcs, showing normal engine parameters. The accident airplane had fallen behind the lead airplane and was five plane lengths away on his right wing. The safety pilot said that a slow "pinging" about every 10 - 15 seconds started and that is when the pilot elected to return to the airport. The formation flew as briefed where the accident airplane took over as the lead airplane. The pilot informed air traffic control of engine problem. An intermediate engine power setting was set and all of the engine indications remained within their green arcs. The safety pilot reported that the pinging interval started to decrease and that the engine did not sputter.



An air traffic controller advised the flight of bearings and distances to three nearby airfields. The safety pilot stated that with the remaining altitude, they immediately knew they could not reach any of them. He noticed and told the pilot the airspeed was low with an indication of 100 knots while the airplane was at 7,100 feet msl. The pilot told him that the throttle was full forward. The safety pilot immediately transmitted a Mayday call and advised the pilot to deploy the CAPS.

The safety pilot reported that the pilot in command would pull the CAPS unless incapacitated, as briefed during preflight briefing. According to the safety pilot, the pilot's previous and overriding training habit kicked as he looked for a place to land. The pilot verified with the safety pilot that he intended to deploy the CAPS and pulled the CAPS handle at the safety pilot's second request. The airplane's altitude was 7,000 feet msl and its indicated airspeed was 80 knots. The handle came out and down. However, it took a strong second pull to get the rocket to fire. The safety pilot estimated that the CAPS deployment occurred about 800 feet above ground level (agl).

The safety pilot said that there was a huge deceleration after the CAPS deployment. There was a moment of weightlessness and then the airplane pitched nose down. The safety pilot, in part, said:

All I saw was the ground rushing up rapidly. ... We violently impacted nose down. I screamed in pain. It felt as if I was stabbed in my neck and lower back, all on the left side. It took a few seconds to assess my condition. Wiggle fingers and toes, move head, etc. When I realized I was alive I looked over at [the pilot]. It initially looked like he was slumped over to the left but then observed him move with purpose. He stated his door was jammed, grabbed the hammer and started whacking away at the forward part of his door window. [The rear seated passenger] ... told me to try my door. It opened, I crawled out and went to move the seat forward but [the rear seated passenger] had already slithered out so I went down the wing.

The safety pilot flying in the other formation airplane, in part, said:

I observed N678Z deploy CAPS, and informed Approach that I saw a "good chute". I did not look at the altimeter, but I recall thinking that we were very low. N678Z struck the ground within just a few seconds, in a nose-low attitude that I estimate at about 80 degrees. A large dust cloud was raised; the impact appeared violent to me, and I was not sure that it was survivable by any of the occupants.

The passenger in the rear seat of the accident airplane helped the accident pilot egress out of the right-side door. The safety pilot in the accident airplane reported that first responders helped deflate and wrap up the chute. After that, his neck started hurting again. The three occupants were subsequently transported to a hospital to be evaluated.

## PERSONNEL INFORMATION

The 64-year-old pilot held a Federal Aviation Administration (FAA) commercial pilot certificate with an airplane single engine land and instrument ratings. He held a flight instructor certificate for single engine airplanes. He also held a third-class medical certificate that was issued on June 1, 2016, with a limitation that he must wear corrective lenses. The pilot reported that he had accumulated 1,289 hours of total flight time and accumulated 30 hours in the same make and model as the accident airplane.

## AIRCRAFT INFORMATION

N678Z, a 2002 model Cirrus Design Corporation SR22, serial number 0311, was a four-place single engine low-wing airplane powered by a six-cylinder, Continental Motors model IO-550-N engine with serial number 686307, that drove a three-bladed Hartzell constant speed propeller. According to airplane logbook entries, an annual inspection was completed on November 13, 2015. The airplane accumulated 787.9 hours of total flight time at the time of that inspection. Another entry indicated that a Forced Aeromotive Technologies, Inc. (FAT) supercharger was installed on the engine on June 11, 2016, and the airplane accumulated 817.6 hours of total flight time at the time of that installation.

According to technical information from the supercharger manufacturer's website, the supercharger is belt driven off the accessory drive, similar to the alternator. The supercharger will run much cooler than a turbocharger and should result in much lower maintenance costs. It will add 7 to 8,000 feet of altitude performance to the Cirrus SR-22. The supercharger's impeller speed is a function of engine RPM and therefore over-speed and bootstrapping are not operational considerations. There are no manifold pressure fluctuations while adjusting the throttle, or mixture. Additionally, according to the manufacturer, after landing idle cool down periods are not necessary and the manifold pressure is limited to 29.60 inches at full engine power.

Engine manifold pressure is maintained automatically by an electronic boost controller designed for the SR22 by FAT. The controller reacts to throttle changes in less than one second. The boost controller is not affected by cold oil temperatures or cold take off conditions and will operate quickly to control boost even down to -50ø F.

The airplane was equipped with an Avidyne Multi-Function Display (MFD). The MFD unit can display engine information, pilot checklists, terrain/map information, approach chart information and other airplane/operational information depending on the specific configuration and options that are installed. One of the options available is a display of comprehensive engine monitoring and performance data. Each MFD contains a compact flash (CF) memory card. This memory card contains all the software that the MFD needs to operate. Additionally, this card contains checklists, approach charts, and map information that the unit uses to generate the various cockpit displays.

During operation, the MFD display receives information from several other devices that are installed on the airplane. Specifically, the MFD receives GPS position, time and track data from the airplane's GPS receiver. The MFD may also receive information from the airplane concerning altitude, engine and electrical system parameters, and outside air temperature. This data is also stored on the unit's CF memory card.

The MFD generates new data files for each MFD power-on cycle. The oldest file is dropped and replaced by a new recording once the storage limit has been reached. MFD data are sampled every six seconds and recorded to memory once every minute. If an interruption of power occurs during the minute between MFD memory write cycles, data sampled during that portion of a minute are not recorded.

The airplane was fitted with a CAPS designed to recover the airplane and its occupants to the ground in the event of an in-flight emergency. The CAPS contains a parachute (within a deployment bag) located within a fiberglass CAPS enclosure compartment, a solid-propellant rocket contained within a launch tube to deploy the parachute, a pick-up collar assembly and attached Teflon-coated steel cable lanyard and incremental bridle, a rocket activation system that consisted of an activation handle, an activation cable, and a rocket igniter, and a harness assembly, which attached the parachute to the fuselage. Upon deployment by the pilot, a rocket fires from the parachute bay located behind the cabin, knocking the cover panel off the parachute bay in the process. The pickup collar assembly is carried by the rocket for rapid deployment of the parachute.

## METEOROLOGICAL INFORMATION

At 1354, the recorded weather at COS was: Wind 170ø at 9 knots gusting to 16 knots; visibility 9 statute miles; sky condition few clouds at 7000 feet; temperature 29ø C; dew point 11ø C; altimeter 30.36 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

The airplane was found upright about 11 miles east of COS. Its engine and cowling were bent upward forward of the firewall. The CAPS parachute was found deployed. A recovery company relocated the wreckage. The CF memory chip from the MFD, the engine, and components of the CAPS system, to include the rocket lanyard, incremental bridle, incremental bridle sheath, deployment bag, and retaining harness, were subsequently shipped for additional examinations.

However, the rocket, the pickup collar, pickup collar support, and the cable stop sleeves from the pickup collar assembly were not recovered.

Examination of the wreckage revealed a witness mark on the lower forward left side of the vertical stabilizer. The hour meter indicated 823.0 hours. The electric fuel pump was able to pump a fluid when electric power was applied. Disassembly of the pump did not reveal any anomalies that would have prevented its operation.

## TESTS AND RESEARCH

The engine was shipped to and examined at Continental Motors in Mobile, Alabama. Both front engine mounts were damaged and replaced with exemplar mounts. The engine was mounted on a test stand and placed in a test cell. During the initial engine test run, the engine reached an indicated manifold pressure of 35 inches of mercury at 2,700 RPM. The altitude control valve was connected and the indicated engine performance was within the supplemental type certificate holder's specifications and no anomalies were noted.

The CF memory chip from the MFD was shipped to the National Transportation Safety Board (NTSB) Recorder Laboratory. The MFD card was received in good condition and a senior recorder specialist downloaded and examined the card's data. The recorder specialist subsequently produced a report that showed the MFD card contained 138 data files, representing data from 69 electrical power cycles. The last 2 files recorded were identified as the accident flight. The data from the accident flight and the previous 11 engine cycles before the accident were plotted. According to the pilot, some preceding flights were to retrieve the airplane after the installation of the supercharger and then to return back to Centennial Airport (APA), near Denver, from COS for a 2-hour inspection. The engine was reported to have operated nominally on the flights to/from APA, as well as on the first flight on the day of the accident. Some of the recorded engine cycles occurred with the airplane on the ground and were only a few minutes in duration. Although review of the engine operation data showed fluctuations in their values, the recorded data did not reveal any anomalies that could explain the engine power loss.

The occupants of the other airplane in the formation flight collected GPS and photographic data during the accident airplane's power loss and descent. A review of the images revealed the parachute traveled aftward and below the airplane. The parachute subsequently inflated, the airplane descended downward in a nose low attitude, and impacted terrain in a nose low attitude.

The CAPS components were shipped to the NTSB Materials Laboratory. A senior materials engineer examined the components and produced Materials Laboratory Factual Report No. 17-009.

In the accident airplane, the cable for the rocket lanyard (included in the pickup collar assembly) had separated.

As designed, the rocket lanyard from the pickup collar assembly attach to the incremental bridle. The other end of the incremental bridle is attached to lanyard on the parachute deployment bag. The folded parachute is contained within the deployment bag. When stowed, the retaining harness covers the top of the deployment bag and retains the deployment bag in the airplane parachute bay.

During a deployment, the rocket is launched, carrying the pickup collar assembly, incremental bridle, and parachute deployment bag with it. The incremental bridle is positioned between the rocket lanyard and the deployment bag and is designed to absorb the impact associated with the acceleration difference between the rocket and the deployment bag during deployment. As assembled, the middle portion of the incremental bridle is folded to a shorter length, and the folded segment is stitched together. The stitches in the folded segment separate until the velocity of the deployment bag matches the velocity of the rocket. During a typical deployment, some stitches in the incremental bridle remain intact, and a portion of the incremental bridle remains folded. Ten rows of stitches remained intact in the incremental bridle from the accident airplane.

The pickup collar assembly includes a zinc-coated steel pickup collar, aluminum pickup collar support, and rocket lanyard. The rocket lanyard consists of two lengths of a single stainless steel cable that connect the pickup collar to the incremental bridle. The cable for the lanyard loops through and around the pickup collar and pickup collar support, and cable eyes at each end are connected to a loop at one end of the incremental bridle. The cable bends 90° at two locations on either side of the pickup collar support, and the center of the cable is routed around the center tube of the support. Cable stop sleeves made of copper are attached to the cable adjacent to the pickup collar. During manufacturing, each pickup collar assembly is proof tested to a tensile load of 1,000 pounds.

The submitted cable from the accident airplane for the rocket lanyard was separated into two segments that were arbitrarily labeled segments A and B. Teflon

tubes, which cover each leg of the lanyard between the pickup collar and the cable eyes, were also included. The Teflon tube that had covered the segment A lanyard was displaced along the length of the cable segment and was covering the separation. The Teflon tube from segment B was completely separated from the cable. Based on engineering drawings, the calculated total length of the rocket lanyard cable in the pickup collar assembly is 105.1 inches  $\pm$  1.0 inch.

The rocket lanyard cable was constructed of 7 strands (6 strands wrapped around a core strand) with 7 wires per strand consistent with manufacturer specifications. The lengths of segment A and segment B were measured from the separation to the end of the cable eye. Segment A was 55.38 inches long, and segment B was 50.50 inches long, for a measured total cable length of 105.88 inches, consistent with the cable length calculated from the engineering drawings.

The cable segments were closely examined visually and using an optical stereomicroscope for contact damage, deformation, and metal transfer. Individual wires showed necking deformation and chisel-type separation features consistent with overstress separation. A material consistent with red grease was present on the surfaces of the cable, and no evidence of corrosion was observed.

Orange metal deposits consistent with copper were observed along the surface of cable segment A between approximately 0.5 inches and 5.3 inches from the separation. The deposits were consistent with material transfer from a copper cable stop sleeve.

On segment B, isolated areas of orange metal deposits consistent with copper were observed on two of the wires approximately 0.28 to 0.34 inch from the separation. Further from the separation on segment B, the outer surfaces of wires on two strands were flattened consistent with sliding contact damage at a location between 0.07 to 0.09 inch from the separation. On most of the wires with the contact damage, gray metal was observed at the edge of the flattened surface on the side furthest from the separation.

The separation end of segment B was examined using a scanning electron microscope (SEM).

The SEM examination revealed portions of the area with sliding contact appeared relatively lighter gray than the surrounding material, consistent with the presence of an element with a higher atomic weight. Analysis of the area using energy dispersive x-ray spectroscopy (EDS) showed the bright areas showed a peak indicating the presence of zinc.

The gray metal adjacent to the sliding contact areas was also examined using SEM and EDS. The EDS analysis of the gray metal at the edges of the sliding contact damage resulted in spectra consistent with stainless steel, matching the spectra obtained from intact areas of the lanyard cable wires.

Two lengths of cables were cut from each rocket lanyard segment to facilitate tension tests to fracture. Four tension specimens were fabricated. The test specimens fractured at peak loads of 905 pounds, 916 pounds, 893 pounds, and 930 pounds. All specimens broke within the crimp for the cable eyes. The specified minimum cable strength as listed in the current Military Standard MIL-DTL-83420N is 920 pounds.

The cover flap of the retaining harness has a pocket on its flap exterior. The clear plastic face of the pocket is intended to observe parachute documents. The plastic pocket face from the accident retaining harness was detached from the fabric border on three of the four sides and was discolored and distorted consistent with exposure to heat. No evidence of abrasion was observed on the plastic surfaces.

Pulled stitches were observed in the fabric of the retaining harness near the sleeve for the incremental bridle. The sleeve was located on the right side of the retaining harness cover flap. Stitches between the cover flap and the side flap were broken just above the sleeve. Pulled stitches were also observed at the upper end of the sleeve where it was attached to the cover flap.

Pull tests were conducted with the exemplar incremental bridle folded and inserted into the sleeve on the retaining harness cover flap in two configurations. In the first pull test, the incremental bridle was inserted so that the rocket lanyard end of the bridle was adjacent to the cover flap. In the second test, the incremental bridle was inserted so that the deployment bag end of the bridle exited the sleeve adjacent to the cover flap. To simulate the shape of a retaining harness installed on a packed parachute, the retaining harness was clamped to a table with wood planks extending into the cover flap cavity, and the cover flap cavity was stuffed with packing paper. For each test configuration, a force gage was attached to the exemplar pickup collar, and the collar was pulled while the restraining harness was held in place by the clamped wood planks. In the test 1 configuration where the lanyard end exited the sleeve adjacent to the cover flap, the incremental bridle pulled out of the sleeve at a load of 9 pounds. In the test 2 configuration where deployment bag end of the bridle exited the sleeve adjacent to the cover flap, the incremental bridle remained within the sleeve up to a load of 90 pounds, at which point the test was interrupted. In Cirrus Design's Packed Parachute Assembly Specification document number 90814, revision J, dated October 7, 2015, the procedure states, "Insert incremental

bridle assembly into the pouch of the retaining strap." However, the document does not specify the orientation of the inserted incremental bridle.

Cirrus Aircraft completed tension tests to failure on 5 exemplar pickup collar assemblies. Reported peak loads for the assembly tension tests were 2,080 pounds, 1,838 pounds, 1,802 pounds, 1,927 pounds, and 1,925 pounds. Cirrus Aircraft also completed impact load tests to failure on additional exemplar pickup collar assemblies accomplished by dropping a 3,000-pound weight from a 48-inch height. The fractured pickup collar assemblies from 5 tension tests and 2 impact load tests were then sent to the NTSB Materials Laboratory for examination.

In the 5 tension tests, fractures of the rocket lanyard cable from the collar assembly test specimens occurred in 2 or 3 locations. Three of the test assemblies fractured in 2 locations, and the remaining 2 assemblies fractured in 3 locations. The primary fracture in each case occurred in the lanyard cable at the location where the cable bent around the flange on the pickup collar. Secondary fractures in the lanyard cables occurred at the lower side of the sleeve as the sleeve was loaded against the lower end of the pickup collar. The lower ends of the pickup collars in each test assembly were bent downward and outward consistent with the downward loading from contact with the sleeves.

In tests resulting in 2 fractures, a secondary fracture occurred in the rocket lanyard cable just below the sleeve opposite from the primary fracture, leaving a 4.7-inch to 5.5-inch segment of cable with the sleeve attached. On the other side of the pickup collar in these tests, the sleeve adjacent to the primary fracture slipped off the fractured end as the sleeve was loaded against the lower end of the pickup collar. In tests resulting in 3 fractures, secondary fractures occurred in the lanyard cable at the lower side of both sleeves, leaving a short segment (0.8-inch to 0.9-inch length) of cable within the sleeve adjacent to the primary fracture and an approximately 5-inch to 5.5-inch length of cable with the other sleeve attached.

In the 3 tests with 2 fractures, copper metal transfer was observed adjacent to the primary fracture in the area where the sleeve had originally been installed up to the fracture location. In one of the tests with 2 fractures, copper metal transfer was also observed adjacent to the secondary fracture consistent with sleeve movement prior to cable fracture at the secondary fracture location.

In the 2 impact tests, the rocket lanyard cable from the pickup collar assembly fractured in one location. The location of the fracture in each case corresponded to the location of the 90° bend. The two cable segments measured 50.13 inches and 54.88 inches long on one impact test assembly, and the segments measured 50.38 inches and 54.88 inches long on the other impact test assembly. The lower ends of the pickup collars in each test assembly were bent downward and outward consistent with the downward loading from contact with the sleeves. Copper metal transfer was observed on the cable surfaces between the locations of the stop sleeve installation and the fractured end on each cable segment.

## ADDITIONAL DATA/INFORMATION

The safety representative from Cirrus Design provided correspondence in reference to the investigation, which, in part, stated:

Prior to this investigation, and part of the development of our 200 lbs increased gross weight project, we had to develop a larger diameter parachute that in turn required a more powerful rocket motor. The trickle-down effect also required a thicker rocket lanyard, new incremental bridle and a new pick-up collar/collar support. As a result, we developed two larger, more powerful rocket motors (known as the 3,600 and 3,400). Both with electronic (top down) ignition. The 3,600 was developed for new production in the SR22 and SR22T (Generation 5, 200 lbs increase gross weight) aircraft. The 3,400 was later developed for new production in the SR20 (Generation 5, 100 lbs increase gross weight) and as an electronic upgrade for older SR20, SR22 and SR22T (Generation 1-3) aircraft. The 3,600 system, with its larger diameter cable lanyard, redesigned bridle and bridle sheath, redesigned pick-up collar and pick-up collar support, entered production in January 2013. The similar 3,400 system entered production in April 2013. ...

There were approximately 5,330 airplanes built prior to the implementation of electronic rocket ignition on the production line in January 2013. (As a reference, approximately 1,490 electronic rocket ignition aircraft have been produced since then.) As of December 5, 2017, approximately 2,600 aircraft in the field (roughly 50%) had already been converted to electronic rocket ignition. We expect an additional 800 aircraft in the field (roughly 15%) to be converted in 2018. By the end of 2018, over 65% of the older airplanes will have been converted to an electronic rocket ignition. The remaining 35% of older airplanes will be converted as they reach their scheduled ten-year repacks between 2019 and mid-2023. Overall, by the end of 2018, nearly 75% of the entire Cirrus fleet will be equipped with electronic rocket ignition and the host of upgrades that system provides.

The safety representative from the Cirrus Owners and Pilots Association (COPA) produced a factual analysis report of images taken from the other formation airplane. The COPA report, in part, indicated the analysis of the images suggests that the accident airplane was approximately 472 ft agl in a photograph taken very shortly after CAPS activation.

In the Cirrus Design correspondence, the safety representative, in part, stated that the CAPS was deployed at a low altitude and touchdown under a fully inflated canopy occurred prior to tail drop. The nose low attitude is a designed stage in the deployment sequence. A subsequent stage, referred to as "tail drop," would occur at a time in the deployment sequence that is dependent on the type of reefing line cutters used (8 or 10 second cutters). To achieve tail drop, requires time and/or altitude. On site photos revealed that at some point, after touchdown, the reefing line cutters fired, and the rear harness became unsubbed.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA263 07/09/2017 1619 CDT Regis# N929DE Corydon, IA Apt: N/a  
Acft Mk/Mdl CIRRUS DESIGN CORP SR22-NO SERIES Acft SN 0293 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl CONT MOTOR IO-550-N7 Acft TT 896 Fatal 0 Ser Inj 2 Flt Conducted Under: FAR 091  
Opr Name: ON FILE Opr dba: Aircraft Fire: NONE

## Events

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

## Narrative

On July 9, 2017, about 1619 central daylight time, a Cirrus SR22 airplane, N929DE, impacted trees during a forced landing following a loss of engine power near Corydon, Iowa. The private pilot and passenger sustained serious injuries, and the airplane sustained substantial damage. The airplane was registered to Lakeview Aviation LLC and operated by a private individual under Title 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and a flight plan was not filed. The flight departed the Corydon Airport (0E9) about 1614 and was destined for the Centerville Municipal Airport (TVK), Centerville, Iowa.

Prior to takeoff, the pilot completed an engine run-up with no problems noted. Shortly after takeoff, the pilot turned the airplane toward TVK when the "engine started sputtering and died." The pilot attempted an engine restart by turning on the boost pump, switching fuel tanks, checking the mixture lever, and cycling the magneto switch; however, the engine restart was unsuccessful. Due to the low altitude at the time of the loss of engine power, the pilot did not deploy the Cirrus Airframe Parachute System and performed a forced landing to a wooded area. The pilot reported the airplane contained 40 gallons of fuel at the time of takeoff.

According to the passenger, who was interviewed by a Federal Aviation Administration inspector after the accident, the pilot planned to go to TVK for fuel since there was no fuel at 0E9. During the turn toward TVK, she heard and felt the engine lose power. She stated the pilot attempted to restart the engine, but nothing he was doing was working. The passenger reported that the airplane usually sounds like a hot rod car, but after takeoff, it sounded like it kept skipping a beat.

According to local authorities and witnesses, the airplane departed 0E9 after a local fly-in event. Witnesses described the engine as "pinging or popping" during the takeoff roll. The airplane departed the grass runway and witnesses lost sight of the airplane. One witness became concerned based on his observation of the airplane during the takeoff about whether the airplane had crashed. The witness then departed in his airplane to search for the accident airplane. The airplane was located by search personnel about 1/2 miles east of 0E9.

The airplane came to rest upright and right-wing low in the trees about 10 ft above the ground. Both wings and the forward fuselage structure were fragmented. The instrument panel, firewall, and engine were displaced down toward the terrain. The three-bladed propeller assembly was separated from the engine. The engine crankshaft propeller flange remained attached to the propeller hub, and the engine crankshaft was fractured near the flange.

A Garmin Aera 796 GPS device was recovered from the accident site and sent to the National Transportation Safety Board (NTSB) for examination and data extraction. The device was undamaged and data was downloaded normally using the manufacturer's software. The data extracted included one track log session which consisted of 9,999 data points from multiple events ranging from April 20, 2017, to July 9, 2017. The accident flight was recorded which started at 16:14:55 and ended at 16:19:34.

An Avidyne Multifunction Display (MFD) Compact Flash Card was recovered from the cockpit MFD and sent to the NTSB Vehicle Recorder Laboratory for examination and data extraction. An examination revealed the compact flash card was undamaged. The card would not read in an NTSB surrogate unit, and a binary copy was sent to Avidyne for further examination. According to Avidyne, the MFD unit was not configured to record, and no non-volatile memory data was available.

On October 24, 2017, at Continental Motors Inc., Mobile, Alabama, the engine was examined and disassembled under the supervision of the NTSB investigator-in-charge. Due to a bent engine crankshaft, the engine could not be functionally tested. Disassembly of the engine and functional testing of the engine components revealed no anomalies that would have precluded normal operation. A reason for the loss of engine power could not be determined.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                      |                     |               |                    |                                       |
|--------------------------------------|---------------------|---------------|--------------------|---------------------------------------|
| Accident Rpt# CEN18FAMS1             | 01/03/2018 1800 CDT | Regis# N325JK | Gulf Of Mexico, GM | Apt: N/a                              |
| Acft Mk/Mdl CIRRUS DESIGN CORP SR22T |                     | Acft SN 1290  | Acft Dmg: UNK      | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR TSIO-550-K     |                     |               | Fatal 0 Ser Inj 0  | Fit Conducted Under: FAR 091          |
| Opr Name: ABIDE AVIATION LLC         |                     | Opr dba:      |                    | Aircraft Fire: UNK                    |
|                                      |                     |               |                    | AW Cert: STN                          |

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## Events

1. Enroute-cruise - Unknown or undetermined

## Narrative

On January 3, 2018, about 1800 central standard time, a Cirrus Design Corporation SR22T airplane, N325JK, went missing over the Gulf Of Mexico. Since that time the private pilot has not been located and the airplane is missing. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and a Federal Aviation Administration (FAA) flight plan had been filed for the flight. The flight departed Wiley Post Airport (KPWA), Oklahoma City, Oklahoma, about 1419, and was en route to Georgetown Municipal Airport (KGTU), Georgetown, Texas.

According to preliminary data provided by the Federal Aviation Administration, as the airplane approached KGTU, the pilot was instructed by air traffic control to turn right and descend to 13,000 feet. At that time, the airplane turned to the left. Air traffic controllers made multiple attempts to communicate with the pilot of the airplane with no success. The airplane was tracked by radar with the last known position about 220 miles north of Cancun, Mexico.



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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--|---------------------|-----------------------|------------------------------|--|
| Accident Rpt# GAA17CA578                     | 07/03/2017 1100 CDT | Regis# N711NN         | Eagle Grove, IA              | Apt: Eagle Grove Muni EAG              |
| Acft Mk/Mdl COLUMBIA AIRCRAFT MFG LC41-550FG | Acft SN 41614       | Acft Dmg: SUBSTANTIAL | Fatal 0                      | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONT MOTOR TSIO-550-C             |                     | Ser Inj 0             | Flt Conducted Under: FAR 091 |  |
| Opr Name: RONALD SIEMENS                     | Opr dba:            |                       | Aircraft Fire: NONE          |  |
|  |                     |                       | AW Cert: STU                 |  |

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## Events

1. Landing - Loss of control on ground
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## Narrative

The pilot reported that, during the landing roll, the airplane encountered wind, exited the runway to the left, and the wing struck a runway light. The right hand wing sustained substantial damage.

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

A review of recorded data from the automated weather observation station located about 7 nautical miles east-northeast, about 5 minutes before the accident, the wind was from 060ø at 7 knots. The airplane landed on runway 13.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN18LA014 10/16/2017 2112 EDT Regis# N105MK Gustavus, OH Apt: Gustavus Airport OH33  
Acft Mk/Mdl DIAMOND AIRCRAFT IND INC DA 40 Acft SN 40.244 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING IO-360-M1A Acft TT 768 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091  
Opr Name: ROBERT J. GALE Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The private pilot was maneuvering to land at the destination airport after a cross-country flight in dark night, visual meteorological conditions. The pilot reported that he became disoriented as he orbited the airport waiting for the airport manager to turn on the runway lights, which resulted in him believing that he was on final approach to runway 1 instead of runway 19. The pilot stated that, during final approach, he incorrectly identified a crossing road that he believed was about 3/4 mile south of the runway 1 approach threshold; however, the road he observed was about 1 mile north of the airport. The pilot stated that he and his passenger suddenly saw tree branches appear as the airplane descended on final approach. The pilot immediately increased engine power and airplane pitch in an attempt to avoid the trees, but the right wing impacted a tree, and the airplane subsequently impacted terrain about 1/2 mile north of runway 19.

The pilot reported that there were no mechanical failures or malfunctions with the airplane that would have precluded normal operation. The pilot had previously flown 7 hours during nighttime conditions; however, he had not flown at night within the 238 days preceding the accident. According to federal regulations, pilots are prohibited from acting as pilot-in-command with passengers at night unless they have completed three night takeoffs and three night landings within the previous 90 days. An ancillary benefit of pilots maintaining their regulatory night flight currency is that it demonstrates their having an adequate level of proficiency of night flight operations on a recurring basis. The pilot's lack of recent night flight experience likely contributed to his becoming disorientated while maneuvering in the airport traffic pattern, the airplane descending below a normal approach path, and the collision with trees.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's geographic disorientation while maneuvering in the airport traffic pattern in dark night conditions, which resulted in the airplane descending below a normal approach path and a collision with trees. Contributing to the accident was the pilot's lack of recent night flight experience.

## Events

1. Approach-VFR pattern final - Controlled flight into terr/obj (CFIT)

## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Descent/approach/glide path-Not attained/maintained - C
2. Personnel issues-Psychological-Perception/orientation/illusion-Geographic disorient (lost)-Pilot - C
3. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
4. Environmental issues-Conditions/weather/phenomena-Light condition-Dark-Effect on personnel - C
5. Personnel issues-Experience/knowledge-Experience/qualifications-Recent experience-Pilot - F
6. Environmental issues-Physical environment-Object/animal/substance-Tree(s)-Effect on operation

## Narrative

On October 16, 2017, about 2112 eastern daylight time, a Diamond Aircraft Industries DA40 single-engine airplane, N105MK, collided with trees and terrain while on final approach to Gustavus Airport (OH33), Gustavus, Ohio. The private pilot was seriously injured, his passenger was not injured, and the airplane sustained substantial damage. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 without a flight plan. Night visual meteorological conditions prevailed for the cross-country flight that departed at 1730 central daylight time from Bult Field Airport (C56), Monee, Illinois.

The pilot reported that he had originally planned to land at Northeast Ohio Regional Airport (HZY), Ashtabula, Ohio; however, as the flight approached HZY he was unable to activate the airport's runway lights using the designated common traffic advisory frequency. The pilot subsequently diverted to OH33 and telephoned the airport manager to have the runway lights turned on. The pilot reported that he became disoriented as he orbited the airport waiting for the runway lights to be turned on, which resulted in him believing that he was on final approach to runway 1 instead of runway 19. The pilot stated that during final approach he incorrectly identified a crossing road that he believed was about 3/4 mile south of runway 1 approach threshold; however, the road he observed was about 1 mile north of the airport. The pilot stated that he and his passenger suddenly saw tree branches appear as the airplane descended on final approach. The pilot immediately increased engine power and airplane pitch in attempt to avoid the trees, but the right wing impacted a tree and the airplane subsequently impacted terrain about 1/2 mile north of runway 19. The right wing, aft fuselage, and empennage sustained substantial damage during the impact sequence. The pilot reported that there were no mechanical failures or malfunctions with the airplane that would have precluded normal operation.

At 2051, the Youngstown-Warren Regional Airport automated surface observing system located about 12 miles south of the accident site reported: calm wind, a

clear sky, 10 miles surface visibility, temperature 50C, dew point 00C, and an altimeter setting of 30.28 inches of mercury.

The United States Naval Observatory data indicated that the sunset and end of civil twilight at the accident site were at 1840 and 1908, respectively. Moon transit, the time at which the moon is highest in the sky, occurred at 1051 and the moonset was at 1726. Additionally, the accident site was located in a sparsely populated area with minimal illumination from ground light sources. As such, dark nighttime conditions likely existed at the time of the accident.

The pilot reported that he had previously flown 7 hours during nighttime conditions; however, he had not flown at night within the 90 days preceding the accident. He reported that his most recent night flight was completed on February 20, 2017, during which he made a night landing on runway 1 at OH33. According to federal regulation 14 CFR Part 61.57(b), pilots are prohibited from acting as pilot-in-command with passengers at night unless they have completed 3 night takeoffs and 3 night landings within the previous 90 days.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|----------------------------------|---------------------|---------------|-----------------------|--|
| Accident Rpt# WPR17LA158         | 07/19/2017 1010 PDT | Regis# N5697B | Ontario, CA           | Apt: Chino Airport CNO                 |
| Acft Mk/Mdl ENSTROM F 28C        |                     | Acft SN 505-2 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING HIO-360-E1AO |                     | Acft TT 3715  | Fatal 0 Ser Inj 1     | Flt Conducted Under: FAR 091           |
| Opr Name: DUBOIS AVIATION INC    |                     | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                  |                     |               |                       | AW Cert: STN                           |

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## Summary

The solo student pilot reported that he entered the downwind leg to set up for the helicopter's first landing of the day. When abeam the touchdown location, he conducted the prelanding checks with no anomalies noted. Before turning onto the base leg, the pilot lowered the collective, reduced the throttle, and started to descend about 100 ft per minute. During the descent, he observed that the engine rpm was slightly above 2,900 rpm. He reduced the throttle, and the rpm reduced slightly; however, it again increased to 2,900 rpm, and the manifold pressure was about 10 inches of mercury. When the helicopter was about 400 ft above ground level, the pilot heard the engine sound increase, and he observed that the engine rpm had increased to between about 3,300 and 3,500 rpm. The helicopter was unable to reach the runway, so the pilot continued to descend it toward a pasture, and it landed hard in the dirt.

A postaccident airframe and engine examination and subsequent engine run revealed no preimpact anomalies that would have precluded normal operation. The observed damage to the main rotor blades was consistent with blade coning, a condition indicative of low main rotor rpm. It is likely that the student pilot mismanaged the main rotor rpm during the descent, which resulted in a low rotor rpm and a high descent rate during landing.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The student pilot's mismanagement of the main rotor rpm, which resulted in low rotor rpm, a high descent rate, and a subsequent hard landing.

## Events

1. Approach-VFR pattern downwind - Loss of control in flight
2. Approach-VFR pattern downwind - Off-field or emergency landing

## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Student/instructed pilot - C
2. Personnel issues-Task performance-Use of equip/info-Use of equip/system-Student/instructed pilot - C
3. Aircraft-Aircraft propeller/rotor-Main rotor system-Main rotor blade system-Incorrect use/operation - C
4. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Descent rate-Not attained/maintained - C
5. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Prop/rotor parameters-Not attained/maintained - C

## Narrative

On July 19, 2017, about 1010 Pacific daylight time, an Enstrom F28-C rotorcraft, N5697B, descended rapidly and landed hard in a dirt pasture about 1/2-mile northeast of the Chino Airport (CNO), Ontario, California. The student pilot, sole occupant, was seriously injured and the helicopter sustained substantial damage to the tailboom and main rotor blades. The helicopter was registered to Dubois Aviation Inc and operated by the pilot as a 14 Code of Federal Regulations Part 91 solo instructional flight. Visual meteorological conditions prevailed and no flight plan was filed. The flight originated from CNO about 1005.

The student pilot reported he entered the downwind leg to set up for the first landing of the day. When abeam his touchdown location, he conducted the prelanding checks with no anomalies noted. Prior to turning base he lowered the collective, reduced the throttle, and started to descend at about 100 feet per minute. During the descent, he observed the engine RPM to be slightly above 2,900 RPM, and he reduced the throttle. The RPMs reduced slightly, however, went back to 2,900 RPM, and the manifold pressure was about 10 inches of Hg. About 400 feet above the ground, he heard the engine sound increase and he observed 3,300-3,500 RPM. Unable to make the runway, he continued to descend towards a pasture and landed hard in the dirt.

A postaccident airframe and engine examination revealed no preimpact anomalies that would have precluded normal operation. Flight control continuity was established from the cockpit controls to the main rotorhead. The tailrotor driveshaft was turned and rotation was observed - from the tail rotor gear to the main rotor mast. The main rotor blades remained intact and exhibited signatures consistent with coning. The lower spark plugs were removed from the engine and the engine was rotated from the cooling fan. Thumb compression was obtained on all cylinders in proper firing order, and the impulse coupling was heard clicking from the left magneto. The spark plugs were reinstalled, and the engine was prepared for an engine run. The engine ran normally for several minutes at various RPMs. Normal operating pressures and temperatures were observed, and there were no fuel or oil leaks observed. The engine was shutdown normally with no anomalies noted.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16LA342 08/30/2016 1950 EDT Regis# N47164 Madison, OH Apt: Private Strip PVT  
Acft Mk/Mdl FAIRCHILD M 62A-3 Acft SN T-42-3041 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl FAIRCHILD 6-440 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: PRIVATE INDIVIDUAL Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The commercial pilot and one passenger departed in a vintage airplane from a private airstrip. During the takeoff, the airplane would not climb with full engine power, and it collided with trees about 1/2 mile from the end of the runway.

An examination of the airplane revealed that the flaps were in the "down" position. However, the Before Takeoff checklist stated, "flaps up," for takeoff. The pilot reported that he normally took off with one notch of flaps. It is likely that the pilot's failure to follow the Before Takeoff checklist and his use of the wrong flaps setting for takeoff degraded the airplane's climb performance.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to follow the Before Takeoff checklist and his improper use of flaps during takeoff, which degraded the airplane's climb performance and resulted in a collision with trees.

## Events

1. Prior to flight - Miscellaneous/other
2. Prior to flight - Ground handling event
3. Initial climb - Loss of control in flight
4. Initial climb - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Climb rate-Attain/maintain not possible - C
2. Personnel issues-Task performance-Use of equip/info-Use of checklist-Pilot - C
3. Personnel issues-Task performance-Use of equip/info-Use of equip/system-Pilot - C
4. Environmental issues-Physical environment-Object/animal/substance-Tree(s)-Effect on operation - C
5. Aircraft-Aircraft structures-Wing structure-Trailing edge flaps-Incorrect use/operation - C

## Narrative

On August 30, 2016, about 1950 eastern daylight time, a Fairchild M 62A-3 (PT-19) airplane, N47164, collided with tree while departing from a private strip near Madison, Ohio. The commercial rated pilot and passenger were not injured. The airplane was substantially damaged. The airplane was registered to DTD PT-19 LLC and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which operated without a flight plan. The local flight was originating at the time of the accident.

According to information obtained by investigators, while departing the private strip, the airplane would not climb with full engine power. The airplane collided with trees about « mile from the end of the strip. Substantial damage was sustained to the fuselage and wings.

An examination of the airframe by the responding Federal Aviation Administration found no anomalies with the airframe. However, the flaps were found in the down or extended position. A review of the aircraft checklist, notes for takeoff: "flaps up". The pilot stated to the FAA inspector that he normally takes off with one notch of flaps.

The pilot did not submit a completed NTSB Form 6120.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA18CA105 12/17/2017 1530 EST Regis# N5619Z Wiscassett, ME Apt: Wiscasset IWI  
Acft Mk/Mdl GOLDEN CIRCLE AIR T BIRD II-NO Acft SN 001 Acft Dmg: SUBSTANTIAL Rpt Status: Prelim Prob Caus: Pending  
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: DAUPHIN HAROLD E Opr dba: Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|  |                    |                       |                              |                    |
|--|--------------------|-----------------------|------------------------------|--------------------|
| Accident Rpt# WPR15LA160                   | 05/13/2015 930 PDT | Regis# N8875H         | Maxwell, CA                  | Apt: N/a           |
| Acft Mk/Mdl GRUMMAN ACFT ENG COR-SCHWEIZER | Acft SN 1556       | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual          | Prob Caus: Pending |
| Eng Mk/Mdl PRATT AND WHITNEY R1340-AN1     | Acft TT 10032      | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 137 |                    |
| Opr Name: RICHTER AVIATION INC             | Opr dba:           |                       | Aircraft Fire: NONE          |                    |
|  |                    |                       | AW Cert: SPR                 |                    |

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## Summary

Just after takeoff on the agricultural application flight, the commercial pilot was positioning the airplane to spray a rice field. About 200 ft above ground level, the pilot heard a loud pop, and the engine experienced a total loss of power. The pilot turned the airplane to land on a dirt road, but it was too narrow; the right main landing gear contacted mud on the side of the road, and the airplane subsequently nosed over and came to rest inverted. Recovery personnel reported no residual fuel on the ground around the accident site, and about one half gallon of fuel was recovered from the airplane.

The pilot stated that the airplane had not been refueled on the day of the accident and that he departed on the flight with less than a half tank of fuel.

The postaccident engine examination revealed no mechanical anomalies that would have precluded normal operation. The loss of engine power was likely due to fuel exhaustion, and given that the loss of power occurred just after takeoff, it is likely that the pilot did not verify the amount of fuel onboard before departing on the flight.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper preflight inspection and fuel planning, which resulted in a total loss of engine power due to fuel exhaustion.

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## Events

1. Initial climb - Fuel exhaustion
2. Landing-landing roll - Off-field or emergency landing
3. Landing-landing roll - Collision with terr/obj (non-CFIT)

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## Findings - Cause/Factor

1. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid level - C
2. Personnel issues-Task performance-Use of equip/info-Use of equip/system-Pilot - C
3. Personnel issues-Task performance-Planning/preparation-Fuel planning-Pilot - C

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## Narrative

On May 13, 2015, about 0930 Pacific daylight time, a restricted category Grumman Aircraft ENG COR-Schweizer G164A airplane, N8875H, experienced a loss of engine power shortly after takeoff, and the pilot subsequently made an emergency landing on a dirt road near Maxwell, California. Richter Aviation Inc., operated the airplane under the provisions of 14 Code of Federal Regulations Part 137 as an aerial application flight. The commercial pilot, the sole occupant, was not injured. The airplane sustained substantial damage. Visual meteorological conditions prevailed for the local flight that departed from a private airstrip. No flight plan had been filed.

In the pilot's written statement, he reported that the airplane seemed to function normally; good magneto check before takeoff and no indications of any problems. About 200 feet above the ground he heard a loud pop, and then the engine quit. He made a right 90o turn to land on a dirt road. The road was too narrow, and the right wheel went over the edge into the rice field and got stuck in mud, which caused the airplane to slow down and flip over onto its back.

During an interview with an inspector from the Federal Aviation Administration (FAA), the pilot reported that when he took off, on the day of the accident, there was less than half a tank of fuel on board.

The operator reported that the day before, the left magneto had been replaced, and that the airplane had not been refueled following the maintenance. The operator also stated that the pilot started flying at 0900 the day of the accident for the purpose of spraying a pesticide on the rice fields.

According to a responding deputy from the Colusa County Sheriff's Department, there was no evidence of fuel, or the smell of fuel, at the accident site.

An FAA inspector reported that during the recovery of the airplane, maintenance personnel recovered « gallon of fuel out of the airplane. Maintenance personnel stated that there was no fuel smell, or residual fuel found on the ground. The airplane holds 80 gallons of fuel and burns about 40 gallons of fuel per hour.

The loader reported that on the day of the accident the airplane was not refueled.

During the postaccident engine examination, the FAA inspector stated that the engine turned freely without any binding, and about a 1/3-cup of fuel was recovered from the gascolator. Compression was obtained in all the cylinders except the #1 cylinder which had sustained impact damage. The left magneto produced a spark when rotated however, the right magneto had sustained impact damage and could not be functionally tested.



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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA18CA110 01/22/2018 1127 CST Regis# N989HH Cahokia, IL Apt: CPS  
Acft Mk/Mdl HELICOPTERES GUIMBAL CABRI G2-NO Acft SN 1124 Acft Dmg: SUBSTANTIAL Rpt Status: Prelim Prob Caus: Pending  
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: D H HELICOPTER INC Opr dba: Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                     |                     |              |                       |                                       |
|-------------------------------------|---------------------|--------------|-----------------------|---------------------------------------|
| Accident Rpt# CEN17LA375            | 09/11/2017 1100 CDT | Regis# N2686 | Griffith, IN          | Apt: Griffith-merrville Airport 05C   |
| Acft Mk/Mdl HILLER UH 12A-NO SERIES |                     | Acft SN 168  | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl FRANKLIN 6V350           |                     | Acft TT 2654 | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: CHRIS HOUSER              |                     | Opr dba:     |                       | Aircraft Fire: NONE                   |
|                                     |                     |              |                       | AW Cert: STN                          |

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## Events

1. Maneuvering - Flight control sys malffail
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## Narrative

On September 11, 2017, about 1100 central daylight time, a Hiller UH-12A helicopter, N2686, registered to a private individual, sustained substantial damage after a loss of directional control and collision with the ground following a failure of the tail rotor drive in the vicinity of Griffith, Indiana. The certified helicopter flight instructor (CFI) and his student were not injured. Visual meteorological conditions prevailed throughout the area and no flight plan was filed. The local instructional flight was being conducted under the provisions of Federal Code of Regulations Part 91. The flight originated at 1050 from the Griffith-Merrillville Airport (O5C), Griffith, Indiana.

The CFI stated that he was providing dual flight instruction to a student pilot. About 10 into the flight, in a 3-5 foot hover, the student began to lose control and the helicopter began to spin to the right. As the student could not regain control, the CFI took the controls. Upon taking the controls, the helicopter was not responding to cyclic inputs and left pedal input. At this point, the CFI assumed a loss of thrust from the tail rotor. He rolled the throttle off and the helicopter settled to the ground and landed hard.

After asking if his student was ok, the CFI exited the helicopter while the main rotor was still spinning. He observed the tail rotor and tail rotor drive shaft were not spinning and could hear a grinding noise near the connection of the transmission output shaft and the tail rotor drive shaft. After the main rotor stopped spinning, the CFI found the tail rotor guard had broken off the helicopter and was laying about 20-feet away. The CFI did not recall if or when the tail rotor guard struck the ground.

The helicopter was towed back to the hangar and was inspected by an on-field mechanic and an FAA inspector. During the inspection, it was discovered that the tail rotor driveshaft had failed near the output shaft of the transmission. The failed part was identified as the End Yoke Assembly, Tail Rotor Drive, JASC Code 6510.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                 |                     |                |                       |  |
|---------------------------------|---------------------|----------------|-----------------------|--|
| Accident Rpt# GAA18CA060        | 11/22/2017 1100 EST | Regis# N9685F  | Woodlawn, VA          | Apt: N/a                               |
| Acft Mk/Mdl HUGHES 300-C        |                     | Acft SN 620147 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING HIO-360-D1A |                     | Acft TT 5598   | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: CHARLES SMITH         |                     | Opr dba:       |                       | Aircraft Fire: GRD                     |
|                                 |                     |                |                       | AW Cert: STN                           |

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## Events

2. Landing - Loss of control in flight

## Narrative

The helicopter pilot reported that, he was landing on a pad in a confined area. He added that, as he approached the landing pad, he slowed the helicopter to transition to a hover. The main rotor RPM began to drop and he applied full throttle, but the RPM continued to decline. The helicopter was unable to maintain altitude and slowly settled into the trees on the hillside about 20 ft. short of the landing pad. Subsequently, the helicopter struck the trees, and rolled onto its right-side.

The helicopter sustained substantial damage to the fuselage and main rotor system.

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

The pilot reported that, after the accident, he noticed there was a significant right quartering tailwind, which required the application of more left pedal than anticipated. He further explained that the increased application of anti-torque pedal lessened the available power to maintain the main rotor RPM. He concluded the approach could have been completed safely with a steeper and faster approach to better manage engine power.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                           |                     |               |                       |                                       |
|---------------------------|---------------------|---------------|-----------------------|---------------------------------------|
| Accident Rpt# GAA18CA111  | 01/24/2018 1925 CST | Regis# N56548 | Boerne, TX            | Apt: Boerne Stage Field 5C1           |
| Acft Mk/Mdl MAULE M 6-235 |                     | Acft SN 7444C | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
|                           |                     |               | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: ALAS VIEJAS LLC |                     | Opr dba:      |                       | Aircraft Fire: NONE                   |

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                  |                    |                |                       |  |
|----------------------------------|--------------------|----------------|-----------------------|--|
| Accident Rpt# WPR15LA209         | 07/10/2015 900 MST | Regis# N9152V  | Phoenix, AZ           | Apt: Phoenix Deer Valley Airport DVT   |
| Acft Mk/Mdl MOONEY M 20G         |                    | Acft SN 690012 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O&VO-360 SER |                    | Acft TT 2993   | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: BURDICK MARK           |                    | Opr dba:       |                       | Aircraft Fire: NONE                    |
|                                  |                    |                |                       | AW Cert: STN                           |

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## Summary

The private pilot receiving instruction reported that, abeam the runway threshold on the downwind leg of the traffic pattern, he reduced engine power to idle to conduct a practice 180o power-off landing. The pilot maintained glide speed until about 40 ft above the ground then noticed that the airplane was slightly below the intended glide path. The pilot applied throttle to initiate a go-around; however, the engine sputtered and power did not increase. The pilot executed a forced landing short of the runway; the airplane touched down hard and bounced. The right main and nose landing gear collapsed, and the airplane came to rest to the right of the runway. The flight instructor reported that, upon the pilot's decision to conduct a go-around, he ensured that the throttle, propeller, and mixture were in the correct position, but made no reference to carburetor heat.

During a postaccident examination, the engine was started, operated, and shut down normally with no anomalies noted. Data from the engine monitoring system revealed that, shortly before the engine lost power, it was operating at idle power for about 1 1/2 minutes, during which the cylinder exhaust gas temperatures were decreasing. At the end of the 1 1/2 minutes, in the engine rpm increased and the the exhaust gas temperatures showed a small spike, then continued to decrease. The rpm then decreased to zero, and the manifold pressure adjusted to barometric pressure, consistent with a total loss of power.

The reported temperature and dew point at the time of the accident were conducive to carburetor icing at glide and cruise power settings. It is likely that the carburetor collected ice during the time the engine was at idle power. When the pilot increased power, the engine responded momentarily, but was unable to continue operation with the restricted airflow through the carburetor. The airplane's pilot operating handbook stated that full carburetor heat should be applied when reducing power for descent or landing.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilots' failure to apply carburetor heat during the approach for landing, which resulted in a total loss of engine power due to carburetor icing.

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## Events

1. Landing - Fuel related
2. Landing - Landing area undershoot
3. Landing - Hard landing
4. Landing - Landing gear collapse

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## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Ice/rain protection system-Intake anti-ice, deice-Not used/operated - C
2. Personnel issues-Action/decision-Info processing/decision-Identification/recognition-Pilot - C
3. Personnel issues-Action/decision-Info processing/decision-Identification/recognition-Instructor/check pilot - F
4. Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Conducive to carburetor icing-Effect on operation

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## Narrative

On July 10, 2015, about 0900 mountain standard time, a Mooney M20G, N9152V, experienced a partial loss of engine power while on short final to the Phoenix Deer Valley Airport (DVT), Phoenix, Arizona, and subsequently landed short of the runway. The private pilot undergoing instruction and the certified flight instructor (CFI) sustained no injuries; the airplane sustained substantial damage to the right wing. The airplane is registered to a private individual and operated by the private pilot under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Visual meteorological conditions prevailed and no flight plan was filed.

The private pilot undergoing instruction reported that when they passed the approach end of the runway on the downwind leg of the traffic pattern, he reduced power to idle to conduct a practice 180o power off landing. The pilot maintained glide speed until about 40 feet above the ground when the pilot observed the airplane was slightly below the intended glide path. The pilot increased power to initiate a go around, however, the engine sputtered and did not increase RPM. The pilot executed a forced landing short of the runway surface; the airplane touched down hard and bounced. When it settled back onto the ground, the right

main landing gear and nose landing gear collapsed and the airplane came to rest to the right of the runway surface.

The CFI reported that when the private pilot decided to conduct a go around, he looked at the throttle quadrant to confirm that the throttle was full forward and the propeller and mixture levers were also positioned correctly.

A postaccident engine run was conducted by a mechanic and inspectors from the Federal Aviation Administration (FAA). The spark plugs were removed and examined; they displayed signatures consistent with a rich running engine. The spark plugs were reinstalled and an undamaged propeller was installed. The engine started without hesitation; after idling temporarily, the RPM was increased and a magneto check was completed with no abnormalities noted. The power was decreased to idle for two minutes to simulate a 180o power off landing. The throttle was abruptly increased to full power; it hesitated for a split second and went to full RPM for a couple minutes. This sequence was conducted twice with no anomalies noted. The engine was shutdown uneventfully.

The engine data monitor download showed that shortly before the engine lost power, the engine was at idle for about 1.5 minutes; during which, the cylinder exhaust gas temperatures were decreasing. At the end of the 1.5 minutes, there was an increase in RPM and subsequent small spike in the exhaust gas temperatures before they continued to decrease. In addition, the RPMs continued to zero, and the manifold pressure adjusted to barometric pressure.

At the time of the accident, the reported temperature was 29o C and the dew point was 7o C. According to the FAA carburetor icing Special Airworthiness Information Bulletin, the condition was conducive to carburetor icing at glide and cruise power settings.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                               |                     |               |                       |  |
|-------------------------------|---------------------|---------------|-----------------------|--|
| Accident Rpt# GAA17CA260      | 05/02/2017 1830 CDT | Regis# N7118U | Olathe, KS            | Apt: Johnson County Executive OJC      |
| Acft Mk/Mdl MOONEY M20-E      |                     | Acft SN 360   | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO360 SER |                     |               | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: SMOOTH BLUE INC.    |                     | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                               |                     |               |                       | AW Cert: STN                           |

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## Summary

The pilot reported that, during the initial climb, about 1,000 ft above the ground, he "saw the engine power winding down." He added that he "turned on" the boost pump, checked the magnetos and fuel mixture, and then switched the fuel selector to the other fuel tank. The engine experienced a total loss of power and then impacted the ground.

The airplane sustained substantial damage to the fuselage.

The Federal Aviation Administration inspector reported that he traveled to the accident, and while on-site, he observed that the fuel selector knob set screw was loose and that the knob turned freely on the shaft.

The pilot did not submit the National Transportation Safety Board Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The loose fuel tank selector knob set screw, which prevented the fuel selector from moving to the fuel tank position for the tank with usable fuel and resulted in fuel starvation and the subsequent total loss of engine power.

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## Events

1. Prior to flight - Unknown or undetermined
2. Takeoff - Fuel starvation
3. Takeoff - Loss of engine power (total)
4. Takeoff - Collision with terr/obj (non-CFIT)

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## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Fuel system-Fuel selector/shutoff valve-Malfunction - C

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## Narrative

The pilot reported that, during the initial climb, about 1000 ft above the ground, he "saw the engine power winding down". He added that he "turned on" the boost pump, checked the magnetos and fuel mixture, and then switched the fuel selector to the other fuel tank. The engine experienced a total loss of power, and subsequently, impacted the ground.

The airplane sustained substantial damage to the fuselage.

The Federal Aviation Administration inspector reported that he traveled to the accident, and while on-site, he observed that the fuel selector knob set screw was loose and the knob was turning freely on the shaft.

The pilot did not submit the NTSB Form 6120.1 Pilot/ Operator Aircraft Accident/ Incident Report.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16FA295 07/28/2016 1138 CDT Regis# N54PM Holmen, WI Apt: La Crosse Regional Airport LSE  
Acft Mk/Mdl MOONEY M20J Acft SN 24-1677 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl TEXTRON LYCOMING IO-360-A3B6D Acft TT 3294 Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: PILOT Opr dba: Aircraft Fire: NONE

## Events

1. Approach-IFR initial approach - Loss of control in flight

## Narrative

### HISTORY OF THE FLIGHT

On July 28, 2016, about 1138 central daylight time, a Mooney M20J, N54PM, impacted terrain near Holmen, Wisconsin, while being vectored for an instrument approach to runway 18 at La Crosse Regional Airport (LSE), La Crosse, Wisconsin. The commercial pilot sustained fatal injuries, and the airplane was destroyed by impact forces. The airplane was registered to and operated by the pilot under Title 14 Code of Federal Regulations (CFR) Part 91 as a personal flight that was operating on an instrument flight rules flight plan. Day instrument meteorological conditions prevailed at the time of the accident. The flight originated from Willmar Municipal Airport-John L Rice Field (BDH), Willmar, Minnesota, at 1024 and was destined for LSE.

A friend of the pilot stated that the pilot planned the flight a "few weeks" earlier. The friend reported that the pilot was going to pick him up at LSE and that they were going to fly to Appleton, Wisconsin, to buy tickets for the Oshkosh air show and then fly to Oshkosh, Wisconsin. The friend said that he received a text message from the pilot at 1013 stating that he was ready for takeoff from BDH and would be in the air in about 10 minutes. According to the friend, the flight departed at 1024. He stated that, according to Flightaware, the flight was to land at 1137.

Minneapolis Center provided radar vectors to the pilot for the final approach course for the instrument landing system (ILS) runway 18 approach and then was instructed to contact LSE Air Traffic Control Tower (ATCT). The pilot contacted LSE ATCT and reported that the airplane was over Mindi (Mindi was the locator outer marker for the ILS runway 18 approach and was located 6.6 miles north of runway 18.) The pilot then asked for radar vectors for the localizer. LSE ATCT instructed the pilot to maintain 4,000 feet and to contact Minneapolis Center for radar vectors. The pilot acknowledged the instruction. There were no further radio transmissions from the pilot.

A witness near the accident site stated that he heard the airplane going very fast about 1145 or 1150. He added that the weather was "bad," it was "misting," and the clouds were lower than 700 ft above ground level. He stated that he heard the engine running but could not tell where the engine sound was coming from. The engine then "quit." After the airplane's engine quit, 3 to 4 minutes elapsed and then he heard a "boom."

### PERSONNEL INFORMATION

The pilot's logbook showed that his last instrument proficiency check, as specified in 14 CFR Part 61 section 57(d), which included a 1.0 hour biennial flight review, was dated September 7, 2013, and was conducted in the accident airplane. The last filled-in page of the pilot's logbook had flight entries dated from August 1 to May 31 with no year(s) entered; the previous logbook page had its last entry dated July 31, 2014. There was an endorsement at the back of the pilot's logbook for a biennial flight review that was dated November 29, 2015.

Title 14 CFR 61.57(c)(1) states that a person may act as pilot in command under IFR or weather conditions less than the minimums prescribed for VFR only if:

"Within the 6 calendar months preceding the month of the flight, that person performed and logged at least the following tasks and iterations in an airplane, powered-lift, helicopter, or airship, as appropriate, for the instrument rating privileges to be maintained in actual weather conditions, or under simulated conditions using a view-limiting device that involves having performed the following-

(i) Six instrument approaches.

(ii) Holding procedures and tasks.

(iii) Intercepting and tracking courses through the use of navigational electronic systems."



Title 14 CFR 61.57(d) states that "a person who has failed to meet the instrument experience requirements of paragraph (c) for more than six calendar months may reestablish instrument currency only by completing an instrument proficiency check. The instrument proficiency check must consist of the areas of operation and instrument tasks required in the instrument rating practical test standards."

According to the Federal Aviation Administration publication, "Instrument Proficiency Check (IPC) Guidance," regulations for the biennial flight review require a minimum of 1 hour of ground training and 1 hour of flight training. The publication states that, while Part 61.57(d) does not stipulate a minimum time requirement for the IPC, a good rule of thumb is to plan at least 90 minutes of ground time and at least 2 hours of flight time for a solid evaluation of the pilot's instrument flying knowledge and skills. The publication further states that, depending on the pilot's level of instrument experience and currency, the instructor administering the IPC may want to plan on two or more separate sessions to complete an IPC. For pilots with little or no recent instrument flying experience, it is a good idea to schedule an initial session in an appropriate aircraft training device.

## AIRCRAFT INFORMATION

## METEOROLOGICAL INFORMATION

## WRECKAGE AND IMPACT INFORMATION

The accident site was located about 5.6 miles north/northeast of runway 18 at LSE at an elevation of 805 ft msl. The wreckage path was about 800 ft in length and oriented on a north/south heading in a grass/corn field. The fuselage, wings, empennage, control surfaces, engine, and propeller were present along the wreckage path. At the northern edge of the wreckage path about a 35-ft-long by 6- to 10-ft-wide area of corn stalks were cut at an angle of about 45°, sloping down toward the east. The southern edge of the wreckage path contained the engine, which was separated from the airframe. The fuselage was located about 80 ft south of the cut corn stalks and was upright. The left and right wings were located about 6 ft north and 45 ft east of the fuselage, respectively. There was no evidence of soot or fire on the airframe, engine, or terrain.

Examination of the flight controls confirmed flight control continuity from the wing and empennage control surfaces to the cockpit controls through separations of the control system that were consistent with overload. The wing flaps were in the 0° position.

The base of the propeller hub was attached to the engine crankshaft with all the attachment bolts in place. The upper portion of the propeller hub was broken off, and its pieces were located along the wreckage path. The hub fracture surfaces exhibited 45° granular fracture faces consistent with overstress. Both propeller blades were separated from the hub. One propeller blade was buried near corn stalks near the northern edge of the wreckage path, and the other propeller blade was located about 35 ft from the corn stalks. Both propeller blades exhibited leading edge damage and chordwise scratching consistent with propeller rotation/engine power at impact.

The instrument panel was located about 37 ft south from the fuselage. The flight instruments were separated from the panel and were located along the wreckage path. The attitude indicator, which was vacuum driven, was broken apart exposing the gyro casing and gimbals. The gyro was separated from the casing and was not found during recovery of the airplane wreckage. The gyro casing showed circumferential smearing/scoring and was attached to the pitch and roll gimbals.

The engine-driven vacuum pump was attached to the engine accessory section. Removal of the vacuum pump showed that the vacuum pump's drive teeth were intact, but the drive was separated from its opaque plastic coupling, with separation features consistent with torsional overstress. The coupling exhibited counterclockwise witness marks (the drive rotates counterclockwise during engine operation as viewed from the rear of the engine).

The engine did not exhibit any mechanical anomalies that would have precluded engine operation.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was not performed, and no toxicology samples were available for testing. During the pilot's most recent aviation medical exam, no concerns were reported by the pilot and no significant issues were identified by the aviation medical examiner.

# National Transportation Safety Board - Aircraft Accident/Incident Database

|   |                     |                       |                              |                        |
|---|---------------------|-----------------------|------------------------------|------------------------|
| Accident Rpt# GAA17CA472                | 08/02/2017 1630 CDT | Regis# N95442         | Skiatook, OK                 | Apt: Skiatook Muni 2F6 |
| Acft Mk/Mdl MOONEY AIRCRAFT CORP. M20-K | Acft SN 25-0489     | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual          | Prob Caus: Pending     |
| Eng Mk/Mdl CONTINENTAL TSIO-520-NB      | Acft TT 3737        | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091 |                        |
| Opr Name: RINER, MARK G.                | Opr dba:            |                       | Aircraft Fire: NONE          |                        |
|   |                     |                       | AW Cert: STN                 |                        |

## Events

2. Approach-VFR pattern final - Fuel starvation

## Narrative

The pilot reported in a written statement that the airplane had just been released from a repair shop, where the engine exhaust system had been rebuilt. He added that the engine was tested before being released from the repair shop and no mechanical anomalies were noted.

According to the pilot, he took possession of the airplane, and while completing the preflight run-up, "the engine died upon the 3rd time of cycling the propeller. The engine was at 1800 RPM [revolutions per minute] when it quit running, [it] totally died." He added that he, got out of the airplane and did a walk around and noticed nothing abnormal. He then attempted multiple engine starts, and "the engine would try to start but would not keep running." Subsequently, he was able to get the engine started, he then completed the "pre-flight checks" with "no issues," and he took off. He added that after takeoff, he circled the airport in a right traffic pattern and flew "back down the center line" of the runway at 2,000 ft. mean sea level, before proceeding on-course to his destination.

The pilot further reported that "upon departure," the "left tank low fuel light was on, right fuel tank light was off and [while] level showed between 1/8 and 1/4 full." The fuel selector was selected to the right fuel tank. He added that about 7 nautical miles from the destination airport, the right tank low fuel light illuminated for about 3-5 seconds, and then stopped illuminating. As the airplane entered the traffic pattern, he completed a left base turn and then a left turn to final "with power pulled back" because the airplane was "a bit high on left base." As the airplane turned onto final, the "glide path altitude looked correct" and he added power, but there was no response from the engine. He added that he "pumped throttle several times with no response from [the] engine." The pilot reported that the airplane continued to sink, and he made a slight right turn to avoid power lines and a street with several cars, and landed hard in a large yard.

The right wing sustained substantial damage.

During telephone conversations with the NTSB investigator-in-charge, the pilot described numerous details about the flight and the accident airplane. He reported that he did not visually check or measure the fuel in either tank during the preflight, but prior to flight he believed the left fuel tank was empty and the right fuel tank gauge read 1/4 to 1/8 full. He reported that when the engine lost power, the propeller was wind milling, the mixture was rich, and he moved the throttle to full forward. He added that when the engine lost power, he switched the fuel selector from the right tank, to the left, out of habit. He reported in numerous conversations, that he could have run out of gas, but he was unsure. He also added that, "I'm not going to deny that my turns in the traffic pattern may have introduced air into line and then the engine quit."

The pilot reported on the NTSB Form 6120.1 Pilot/ Operator Aircraft Accident/ Incident Report that the engine failed.

A Federal Aviation Administration (FAA) aviation safety inspector reported that after the accident, he and the pilot drained the fuel from the airplane. He reported that while sumping the right wing, via the right wing sump, about 3.25 to 3.50 gallons were drained into a bucket. He reported that they were using a combination of buckets due to the quantity, and "at the very most" a quarter of fuel, or less, was spilled. He added that he drained about one gallon of fuel from the left fuel tank.

About two and a half months after the accident, the pilot provided an additional emailed written statement and additional photos. He reported that he measured the drained fuel quantity as "4.45 gallons less spillage." He added that the "gas a lator [gascolater] housing was removed from the plane where a fair amount of lint type material was observed that could [had] restricted fuel flow to the engine." The pilot further added that he normally burns "28-30 gph [gallons per hour] on takeoff power and 18-19 gph cruise power." The FAA inspector was not present for the pilot's additional fuel measurements, or his airplane examination.

The airplane flight manual (AFM) stated in part that, fuel is carried in two integrally sealed sections of the forward inboard area of the wings and the total usable fuel capacity was 75.6 gallons, with a total unusable fuel volume of 3 gallons. The AFM further stated that, fuel feeds from one tank at a time to the selector valve and through the electric fuel pump enroute to the engine-driven pump and the fuel injector unit. The airplane was equipped with a three-position fuel

selector valve located on the floorboard between the left and right cockpit seats. The valve allowed the pilot to select the left or right fuel tank, or select the fuel off.

The AFM stated that the airplane was equipped with left and right fuel low annunciation lights, that indicate 2.5 to 3 gallons of usable fuel remain in the respective tanks and further stated: "switch to fuller tank." The AFM also stated in part: "Warning: Takeoff maneuvers when the selected fuel tank contains less than 12 gallons of fuel have not been demonstrated."

According to the FAA electronic document retrieval system, the airplane underwent a "Rocket 305" engine conversion, which was completed in March 1998. The conversion was performed under FAA approved supplemental type certificate numbers SA00243SE and SA5691NM. In part, the conversion involved removal of the original engine and installation of a TSIO-520 engine, increasing the airplane's horsepower to 305.

According to 14 Code of Federal Regulations Part 91.151 Fuel requirements for flight in VFR conditions: (a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed - (1) During the day, to fly after that for at least 30 minutes.

The FAA 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.

# National Transportation Safety Board - Aircraft Accident/Incident Database

|                                  |                     |                 |                     |  |
|----------------------------------|---------------------|-----------------|---------------------|--|
| Accident Rpt# WPR16FA087         | 03/23/2016 1542 PDT | Regis# N7055D   | Astoria, OR         | Apt: N/a                               |
| Acft Mk/Mdl NORTH AMERICAN AT 6A |                     | Acft SN 78-7228 | Acft Dmg: DESTROYED | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl P & W R-1340-AN-1     |                     | Acft TT 3071    | Fatal 2 Ser Inj 0   | Flt Conducted Under: FAR 091           |
| Opr Name: JOHN MCKIBBIN          |                     | Opr dba:        |                     | Aircraft Fire: NONE                    |

## Events

1. Enroute-cruise - Unknown or undetermined
2. Maneuvering-low-alt flying - Loss of control in flight

## Narrative

### HISTORY OF FLIGHT

On March 23, 2016, about 1542 Pacific daylight time, a North American AT-6A, N7055D, impacted the Columbia River near Astoria, Oregon. The private pilot and the passenger sustained fatal injuries, and the airplane was destroyed. The airplane was registered to and operated by the pilot as a personal flight under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed at the time and location of the accident, and no flight plan had been filed. The flight departed Pearson Field Airport, Vancouver, Washington, about 1506.

The passenger was seated in the aft cockpit, and the flight was intended to be for the dispersal of her deceased husband's ashes. According to representatives of the passenger's family, the plan was to disperse the ashes along the Pacific coast near a beach house the passenger owned in Ocean Shores, Washington, and, if the weather along the coast was bad, they were going to drop the ashes over the Columbia River instead. The beach house was about 115 miles northwest of Pearson Field and about 45 miles north of the entrance to the Columbia River channel.

A witness, who was the captain of a cargo ship moored at an anchorage in the river channel about 1 mile northeast of Astoria, was on the ship's bridge at the time of the accident. He observed the airplane flying about 300 ft above sea level, approaching the ship from the starboard quarter traveling on a north-northeast track. He walked outside to watch as it flew directly overhead and across the ship's port beam. It continued on the same track away from the ship, and, a short time later, he saw the left wing dip as the airplane began a left turn. A few seconds later the wings were almost vertical, and the airplane then rapidly transitioned into an aggressive steep vertical dive. The airplane hit the water in a nose-down attitude, and the captain saw a red tail section bob back into view and then sink. The airplane was flying level over the water surface leading up to the turn, and the captain could hear the engine operating throughout the flight.

Another witness, located inside her apartment close to the southern shore of the waterfront in Astoria, was at a north-facing window with a view of the channel. She observed an airplane directly ahead flying over the water and east toward and over moored ships. She was familiar with the helicopter traffic of the Columbia Bar Pilots, and the airplane immediately seemed unusual to her because of its low altitude. It was flying at the same level as the ship's stacks relative to her position at an altitude typically flown by the helicopters. The airplane was flying at a speed she considered to be slower than normal, and it then began a slow and "graceful" turn to what appeared to be the left. She likened the maneuver to the way a large commercial airplane turns, and, as it progressed, she could eventually see the full wing profile. The turn continued, and, before completing 180°, the nose of the airplane aggressively dropped, and the airplane transitioned into an almost vertical dive, passing out of view behind a ship. The airplane was flying straight and level up until the turn that resulted in the accident.

The witnesses reported that the airplane was not trailing smoke or vapor at any time and that the weather included good visibility, with overcast skies above the airplane's altitude. They further stated that it was not raining at the time of the accident, but rain began later that day. Due to the airplane's low altitude and the local terrain features, there were no radar data for the final portions of the flight.

The witnesses guided search and rescue personnel from the Coast Guard and Clatsop County Sheriff's Department to the approximate accident location. No wreckage was observed floating in the water, and weather, fast water currents, and low water visibility hampered the search efforts. Two days later, divers from the Sheriff's Department located the wreckage in 15 ft of water in a 5-mile-wide section of the channel about 1.5 miles from the southern shore. The location was about 2 miles northeast of Astoria and 11 miles east of the river mouth to the Pacific Ocean.

## PERSONNEL INFORMATION

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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The pilot held a private pilot certificate with a rating for airplane single-engine land issued in 1976 and an instrument airplane rating issued on June 16, 2005. He held a third-class medical certificate issued on July 1, 2014, with no limitations. At the time of the application for this medical certificate, he reported 1,140 hours of total flight time, 5 hours of which occurred in the 6 months before the examination.

The pilot's logbook indicated that, since May 2007, he had accumulated about 168 hours of flight experience in the AT-6A airplane (all in the accident airplane). His last entry in the logbook was dated March 19, 2016, and he reported at that time a total flight experience of 1,282.4 hours. His last flight review took place on October 1, 2013. No logbooks with entries before 2007 were recovered.

The pilot had been involved in an airplane accident in August 2004, during takeoff in a Taylorcraft DC-65 airplane (NTSB accident number SEA04LA156). The NTSB determined the cause to be his inadequate compensation for wind conditions and his failure to maintain airspeed, resulting in a stall. The NTSB cited the pilot's failure to use all of the available runway and the high-gusty winds as contributing factors.

## AIRPLANE INFORMATION

The tailwheel-configured airplane had retractable main landing gear and was powered by a nine-cylinder Pratt & Whitney R-1340-AN1 radial engine, which drove a two-blade constant-speed propeller.

Maintenance records indicated that a disassembly and restoration of the airplane was completed in 2006, after which it was issued an experimental special airworthiness certificate in the exhibition category. According to the maintenance records, at that time, the airframe had accrued a total time of 2,931 flight hours. The last logbook entry was on May 23, 2014, and was for a condition inspection. The entry indicated a total flight time of 3,070.7 hours. The recording hour meter had fragmented during the accident, preventing an accurate determination of airframe and engine time. However, according to the pilot's logbooks, he had flown the airplane for 8.5 hours since May 24, 2014.

The pilot reported to a friend before departure that he had recently fueled the airplane, and the last entry in the pilot's flight logbook indicated that the airplane had been fueled on the pilot's last flight, 4 days before the accident. According to the manager of Astoria Regional Airport, the airplane did not arrive at or obtain fuel from Astoria on the day of the accident.

## METEOROLOGICAL INFORMATION

The closest weather reporting station was located at Astoria Regional Airport, Astoria, Oregon, about 5 miles southwest of the accident location. An automated report issued at 1455 indicated wind from 190° at 13 knots gusting to 24 knots and variable between 160° and 230°; visibility 10 miles; light rain beginning at 1421; scattered clouds at 4,500 ft, broken ceiling at 5,000 ft, and an overcast ceiling at 6,500 ft; temperature 11°C; dew point 7°C; and altimeter 30.20 inches of mercury.

By 1555, the visibility had reduced to 4 miles with light rain, scattered clouds at 2,400 ft, and an overcast ceiling at 3,100 ft.

The closest weather reporting station to the primary intended ash dispersal location was Bowerman Airport, Hoquiam, Washington, about 10 miles east of Ocean Shores. An automated report issued at 1453 indicated wind from 150° at 22 knots gusting to 25 knots; visibility 4 miles; light rain beginning at 1415; mist; scattered clouds at 1,600 ft, broken at 2,200 ft, and overcast ceiling at 3,100 ft.

By 1553, the visibility had reduced to 1 3/4 miles with light rain and mist, broken clouds at 1,300 ft and 1,700 ft, and an overcast ceiling at 2,400 ft.

A video of the airplane departing for the flight was taken by a friend of the pilot. The video revealed light rain and overcast ceilings.

According to a representative from Lockheed Martin Flight Service, the pilot did not request any weather services. Additionally, there was no record of the pilot obtaining a weather briefing from any Direct User Access Terminal (DUAT) providers.

## WRECKAGE AND IMPACT INFORMATION

The underwater debris field was about 150 ft long and 100 ft wide. The wreckage had broken into multiple sections and was recovered by a diving team. The

sections included the fuselage, which was still attached to the empennage, the right wing outboard of the main landing gear, the wing center section, and the engine and propeller. Additionally, the fragmented left wing, along with cabin debris and airframe and control surface skins were recovered. (Photo 1, 2).

## MEDICAL AND PATHOLOGICAL INFORMATION

According to the autopsy performed by the Clatsop County Medical Examiner's Office, Clackamas, Oregon, the cause of death for the pilot was multiple blunt force injuries, and the manner of death was accident.

Examination of the body for natural disease was limited by the severity of the pilot's injuries. The heart was lacerated, which complicated the evaluation, but severe coronary artery disease was identified. The proximal third of the left anterior descending coronary artery had about 90% occlusion that was described as a pinpoint lumen. Several millimeters of the proximal left circumflex coronary artery also had 90% or greater occlusion. The myocardium was otherwise grossly normal. No weights or other measurements were given, and microscopic evaluation of the myocardium did not identify any myocardial fibrosis or inflammation.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified sertraline, its metabolite desmethylsertraline, and trazodone in urine and cavity blood.

Sertraline is an antidepressant prescription medication commonly marketed with the name Zoloft. It falls within the selective serotonin re-uptake inhibitors drug class and is not generally considered sedating. Although the use of antidepressant drugs is usually disqualifying for aeromedical certification purposes, FAA guidance indicates that the authorization decision is made on a case-by-case basis, when a pilot is taking one of four potentially allowable antidepressants. These are sertraline (which the pilot was taking), plus fluoxetine (Prozac), escitalopram (Lexapro), and citalopram (Celexa).

Trazodone is a prescription antidepressant that can be sedating. It comes with this warning: "Trazodone hydrochloride tablets may cause somnolence or sedation and may impair the mental and/or physical ability required for the performance of potentially hazardous tasks. Patients should be cautioned about operating hazardous machinery, including automobiles, until they are reasonably certain that the drug treatment does not affect them adversely." In addition, trazodone can increase the potential for arrhythmias in patients with pre-existing cardiac disease.

## Pilot's FAA Medical Information

The pilot had reported multiple eye conditions and procedures, multiple orthopedic procedures, chronic back pain, and sinus disease to his FAA medical examiner. He reported brief treatment for depression in 2000 but said that it had resolved. At the time of his most recent FAA medical examination, dated July 1, 2014, he reported frequent or severe headaches, hand surgery, and the use of intranasal steroids (fluticasone and beclomethasone) as well as ocular drops of cyclosporine (a treatment for dry eyes). He did not report his use of sertraline and trazodone, and he was issued a third-class medical certificate without limitations.

Review of the pilot's personal, non-FAA medical records revealed that he had presented multiple times to physicians with complaints of fatigue. He was diagnosed with sleep apnea in 2011, which was treated with a continuous positive airway pressure (CPAP) machine. However, data downloaded periodically from his CPAP machine indicated that he was never compliant with the FAA frequency and duration usage requirements.

The pilot was diagnosed with major depression in 1999 and was placed on sertraline. The records document remission of his symptoms, and he stopped receiving prescriptions for the drug sometime between 2002 and 2004. However, in 2014, he told one of his personal physicians that he had continued to use sertraline and had been obtaining it from India for many years out of concern about FAA regulations.

After again complaining of fatigue, the pilot was prescribed and used trazodone for sleep from 2013 onwards. In 2014, he was diagnosed and treated for chronic lung disease (Valley Fever), and he had symptoms of post-concussive syndrome due to sports injuries for several months in 2014 and 2015, and although these symptoms were later thought to have completely resolved, he had stopped flying, driving, and working during that period.

## TESTS AND RESEARCH

### Ash Dispersal Procedures

Friends and fellow pilots gave similar descriptions of the ash dispersal procedures the pilot planned to use, stating that the bag had been used on multiple occasions by other pilots.

One pilot stated that the bag was made of canvas, with a plastic inner liner that was cinched at the top, and tethered to the airframe from within the cabin. The procedures required slowing down the airplane, following which the passenger would throw the bag out of the window. The ashes would then release into the slipstream, and the bag would be pulled back in.

The pilot's daughter flew with him in the airplane to disperse ashes over the water between downtown Seattle and Bainbridge Island in June 2015. She stated that on that occasion she was briefed by her father on the dispersal procedures both before and during the flight. Before takeoff, the ashes were placed in the bag, which she described as being about the size of a paper lunch bag. The bag was cinched closed with a rope, and tied by a longer rope to an interior airframe member on the right side. She sat in the rear seat, facing forward, and, when the time to disperse came, she slid the rear canopy open. The pilot then performed a shallow banking maneuver to the right, and she reached out with her hand holding the bag along the airframe side. She then let go of the bag, the rope unraveled, and the ashes immediately "puffed" and dispersed, and she pulled the bag back in. She reiterated that the airplane banked gently during the maneuver, and the bank never felt exaggerated.

A friend of the passenger stated that he had initially been approached by her to drop the ashes, but he turned her down due to the design of his airplane not being conducive to performing the procedure. Another friend stated that he had been approached by her to drop the ashes and that they had agreed to do it on March 23. However, about 5 days before, he called asking that they reschedule because the weather looked bad. At that time, she stated that she had decided to cancel the drop altogether.

## Airframe Examination

Following recovery, the airplane was examined by the NTSB investigator-in-charge and an airframe and powerplant mechanic who specialized in AT-6 aircraft maintenance. A complete examination report is included in the public docket for this investigation, and the following is a summary of pertinent findings.

The forward fuselage sustained crush damage, compressing and fracturing most of the truss and shedding and separating the side skins. Aft of the cabin, the tailcone remained intact and sustained buckling damage to the forward skins. Aft of that damage, the horizontal and vertical stabilizers remained attached, and the left elevator had bent up about 90° midspan.

The airplane was equipped with dual controls, and the rear control stick was detachable. Examination revealed that the rear control stick, which was found separated from the airframe, was undamaged. Its female socket fitting in the airframe control system did not reveal any indications of damage, and the upper tang of its storage dock on the cabin side had detached, consistent with the aft control stick being disconnected and stowed at the time of the accident.

The rear seat was a swiveling "gunners seat" design and was found in the forward-facing position. Its adjustment pedal was forward and locked, and its locking pin was fully engaged with the forward position detent. The rear lap belt clasp was in the latched and closed position; the lap belt remained attached to the seat on both sides and had been cut by the Sheriff's Department divers during recovery of the passenger. The shoulder straps remained attached to the chair frame and were intact, with both belt clasps free, consistent with the shoulder straps not being used at the time of the accident. Neither the cremation bag, nor its attachment rope were located.

The airplane was equipped with two sliding canopies and a fixed center canopy. The forward (pilot) canopy slid aft to allow for forward cockpit access, and the rear (passenger) canopy slid forward for rear cockpit access. A tubular-steel overturn pylon was mounted just behind the pilot's seat and about midspan of the center canopy. The sliding canopies and the forward cockpit had sustained extensive damage, such that the right sides of both canopy frames, the right sliding rails, and all the plexiglass had detached. Examination of the remaining components on the left side revealed that the rear sliding canopy remnants were in the full-forward (open) position, and the front left side of the rear canopy had wrapped around the overturn pylon. The forward sliding canopy remained attached to the left rail, had bent upwards, and was about 2 inches short of the full-forward (closed) position.

The airplane was equipped with a hydraulically operated three-piece split flap. A wing flap was located below the trailing edge of each wing, and a center flap was located below the cabin. Both wing flaps sustained varying degrees of damage to their mounting hardware and actuation rods. The center flap remained attached and flush with the belly of the airframe. The flap actuator piston rods and the actuator control arm were in a position that corresponded to the flaps

being retracted.

The vertical stabilizer remained attached at its forward spar. The castellated nut on its mounting bolt was finger tight and had backed out by about 3 threads; no cotter pin was present.

The wing attach points were examined for indications of corrosion-induced failure of the angle attach brackets as described in FAA Airworthiness Directive (AD) 2005-12-51. The lower angle bracket had peeled away from the center section and remained attached to the lower wing skin. All separations were observed traversing through the bolt holes, and the entire area was free of indications of corrosion. According to the airframe logbook, AD 2005-12-51 had been complied with in August 2005 with an inspection due again at 3,128.3 flight hours.

The engine did not exhibit any indications of catastrophic internal failure, and cylinders Nos. 1 and 9 had detached from the crankcase in the aft direction. All spark plugs were manufactured by Champion Aerospace and were of the massive electrode type. Their plug electrodes were dark in color and exhibited wear signatures consistent with normal operation and short service life when compared to the Champion AV-27 Check-A-Plug chart.

#### ADDITIONAL INFORMATION

During the airframe examination, a 10-inch crescent wrench (with an opening set to about 9/16 inch), along with a 9/16-inch wrench, and a 3-inch-long 9/16-inch (head) bolt were found loose on the floor of the tailwheel strut box area, below the horizontal stabilizer main spar attach points. The rudder cables and lower elevator horn passed within the center of the box area. The errant items were well clear of (about 10 inches below) the flight controls, and no bolts were found to be missing in the tail section.



# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA250 07/02/2017 1800 CDT Regis# N9103F Moorhead, MN Apt: Moorhead Municipal JKJ  
Acft Mk/Mdl NORTH AMERICAN T-28A Acft SN 51-7606 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl WRIGHT R-1820 SER Fatal 1 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: TROJAN CORPORATION Opr dba: Aircraft Fire: NONE  
AW Cert: SPE

## Summary

The private pilot took off in the airplane for a cross-country personal flight. Shortly after reaching 1,800 ft mean sea level (msl), the pilot contacted the departure controller and said he was diverting to another nearby airport. He did not provide a reason for the diversion nor did he declare an emergency, and when asked if he needed assistance, he replied "no." Subsequently, the controller told the pilot that a frequency change was approved and that radar services were terminated; however, no further communications were received from the pilot.

Radar data showed the airplane in a controlled descent on a southerly heading toward the diversion airport. The descent distance from 1,800 ft msl to the point of impact was 7.5 miles, for an average descent rate of 120 ft per mile. One witness reported that he saw the airplane fly over him and that it was "obviously in distress" and making a "terrible racket." One witness said the engine was "popping," and another witness reported that the airplane "sounded like it was in trouble." One witness reported seeing the airplane's right wing clip a light pole. The airplane then impacted a cornfield 1/2 mile from the airport.

Examination and disassembly of the engine revealed damage to the propeller case and gear case that was consistent with the engine running at impact, which corroborated the witnesses' reports, and no evidence of malfunctions or failures that would have precluded normal operation. Oil specimens were within normal ranges. The reason for the abnormal engine sounds reported by the witnesses could not be determined.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: Controlled descent into terrain due to engine issues, the reason for which could not be determined because examination of the engine revealed no evidence of malfunctions or failures that would have precluded normal operation.

## Events

1. Maneuvering-low-alt flying - Course deviation
2. Approach-VFR pattern final - Loss of control in flight
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Not determined-Not determined-(general)-(general)-Unknown/Not determined - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Altitude-Not attained/maintained - C

## Narrative

### HISTORY OF FLIGHT

On July 02, 2015, about 1800 central daylight time, a North American T-28A airplane, N9103F, registered to and operated by the Trojan Corporation, Grand Forks, North Dakota, clipped a light pole and impacted terrain while on landing approach to Moorhead Municipal Airport (JKJ), Moorhead, Minnesota. The private pilot, the sole occupant on board, was fatally injured, and the airplane was destroyed. The flight was being operated as a 14 Code of Federal Regulations Part 91 personal flight, and no flight plan had been filed. Day visual meteorological conditions existed at the accident site at the time of the accident. The flight originated from Hector International Airport (FAR), Fargo, North Dakota, at 1750, and was originally en route to Lyons Field (47Y), Pelican Rapids, Minnesota.

According to the Federal Aviation Administration (FAA) inspector's statement, the airplane took off from runway 31 at FAR and climbed to 1,800 feet mean sea level (msl), about 900 feet above ground level (agl), at 160 knots. Shortly after reaching 1,800 feet, the pilot radioed FAR departure control and told them he was landing at JKJ. The controller asked the pilot if he needed any assistance and the pilot replied, "I don't think so." The pilot was given clearance to land at JKJ and when asked again if he needed any assistance, he replied "No." The controller told the pilot that a frequency change was approved and squawk VFR (transponder code 1200). There was no reply from the pilot. The controller advised the pilot that radar services were terminated. Again, there was no acknowledgement from the pilot. No further communications were made with the pilot. Radar showed the airplane in a controlled descent on a southerly heading towards JKJ. The descent distance from 1,800 feet msl to the point of impact was approximately 7.5 statute miles (an average descent rate of 120 feet per mile). Field elevation at JKJ was 918 feet.

One witness, located 2 miles north of the accident site, saw the airplane fly over in a southerly direction at an estimated altitude of 150 to 200 feet agl with the landing gear extended. It was "obviously in distress." He said there was a "terrible racket" and sounded like "a gearbox or engine that was failing or out of oil."

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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This witness submitted a written statement to FAA, which is included in this report's docket.

FAA telephonically interviewed two other witnesses who were in public park 2 miles north of the accident site. The first witness said they airplane flew over at an altitude of about 100 feet agl and that he could clearly see the pilot. He said the engine was missing and popping. The landing gear was down, but he did not notice the flap position. He watched the airplane all the way to impact. The second witness said the airplane was flying "very low" and "sounded like it was in trouble." He also watched the airplane impact the ground.

Clay County Sheriff's deputies interviewed 8 other witnesses, who corroborated what the other witnesses had reported. One noted that the airplane appeared to be flying slow and its wings were "rocking" before it clipped the light pole with its right wing. The light was destroyed but the pole was undamaged.

These witnesses and other passerby went the accident site to assist the pilot, who was conscious, coherent, and talking. A shirt was placed against a large laceration on the pilot's forehead. Shortly thereafter, the pilot succumbed to his injuries. He had to be extricated by emergency personnel.

The accident location was in a corn field, 600 feet south of the Moorhead DOT (Department of Transportation) weigh station, about 2 miles east of Moorhead, Minnesota, along I-94, and «-mile from the approach end of JKJ's runway 12. According to the FAA inspector, there were two open fields and 4 roads between the public park and accident site. The pilot made no attempt to make an emergency landing in either field.

## PERSONNEL INFORMATION

The pilot held a private pilot certificate with an airplane single-engine land rating. According to FAA documents, when he applied for medical certification in March 2017, he estimated his total flight time to be 791 hours. His flight time in the T-28A could not be determined.

## AIRCRAFT INFORMATION

N9103F, serial number 51-7606, was manufactured by the North American Aircraft Corporation in 1951, and certificated in the experimental category. It was powered by a Wright R-1820 engine, rated at 1,475 horsepower.

## METEOROLOGICAL INFORMATION

According to the weather observation recorded at KKJK at 1814, the wind was from 030ø at 6 knots, visibility was 10 miles, and the sky was clear. The temperature was 23øC., the dew point was 1øC., and the altimeter setting was 30.07 inches of mercury.

The weather observation recorded at KFAR at about the same time was wind 020ø at 8 knots, visibility 10 miles, and there were a few clouds at 4,800 feet. The temperature was 24øC., the dew point was 12øC., and the altimeter setting was 30.07 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

According to the FAA inspector's report, the right main landing gear struck the ground first, followed by the nose of the airplane. The impact caused the propeller and gear case to separate from the engine, and were located 20 feet from the impact crater. The fuselage rotated clockwise 180ø and came to rest facing north. The engine separated from the fuselage and was found 60 feet to the south. The right wing separated from the fuselage and was lying inverted slightly behind the aircraft. The right-wing flap was torn off and the outboard end was pointed away from fuselage. The landing gear was extended and the strut was broken off at the axle attachment. The FAA inspector noted paint transfer marks from the light to the right wing of the accident airplane.

The tail section was mostly intact and the right elevator had only tip damage. The horizontal stabilizer was deflected upward at the root. The intact left horizontal stabilizer had impact damage from debris. Flight control continuity could not be conclusively determined due to the extent of aircraft damage. The FAA inspector said the pilot was wearing a lap belt and shoulder harness, but the shoulder harness had failed. The radio was found set to the FAR departure

frequency.

First responders placed absorbent pads under the wings to capture leaking fuel. The fuel tanks were drained. The right wing contained 25 gallons and the left wing contained 7 gallons (a total of 12 gallons useable). This fuel total does not include fuel that was in the ruptured header tank or fuel leakage after impact. Hydraulic fluid from severed lines was also leaking on the ground.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Ramsey County Medical Examiner's Office conducted an autopsy on the pilot. Death was attributed to "multiple traumatic injuries."

FAA's Bioaeronautical Sciences Research Laboratory in Oklahoma City, Oklahoma, conducted toxicology tests on samples from the pilot. According to the toxicology report, no carbon monoxide was detected in cavity blood, and no ethanol was detected in vitreous. Diphenhydramine was detected in urine and cavity blood. Diphenhydramine is an antihistamine used in the treatment of sneezing, runny nose, watery eyes, and motion sickness.

## TESTS AND RESEARCH

On July 5, using the operator's mechanics, the engine was disassembled and examined under FAA auspices at Tri-State Aviation, Wahpeton, North Dakota. According to the FAA inspector's statement, the engine -- a Curtis Wright R1820-86B, SN: W507436 -- was running as reported by witnesses. Damage to the propeller and gear case was consistent with the engine developing power. The engine had no visible signs of failure. The oil filter was free from contamination, and no metal or carbon deposits were visible. Oil specimens were sent to Aviation Laboratories for analysis. According to its report, the specimens were within normal ranges.

The FAA inspector removed the airspeed indicator, manifold pressure gauge, and tachometer. Examination of these instruments revealed no transfer marks to indicate the power setting at the time of impact. After consulting with other T-28 pilots, the inspector learned that the engine would have to be developing power for the airplane to remain airborne in the landing configuration. The inspector calculated the airplane flew 1.6 miles in landing configuration before it impacted terrain.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|-----------------------------------|---------------------|-----------------|-----------------------|---------------------------------------|
| Accident Rpt# CEN18LA071          | 12/20/2017 1515 CDT | Regis# N47FP    | Angleton, TX          | Apt: Texas Gulf Coast Regional LBX    |
| Acft Mk/Mdl PIPER PA 12-NO SERIES |                     | Acft SN 12-2741 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320A33      |                     | Acft TT 2392    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: ROBERT LINN             |                     | Opr dba:        |                       | Aircraft Fire: NONE                   |
|                                   |                     |                 |                       | AW Cert: STN                          |

## Events

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

## Narrative

On December 20, 2017, about 1530 central standard time, a piper PA12 airplane, N47FP, registered to a private individual, sustained substantial damage following a loss of control and runway departure upon landing at the Texas Gulf Coast Regional Airport (LBX), Angleton, Texas. The pilot and one passenger were not injured. Visual meteorological conditions prevailed throughout the area and flight plan was not filed. The personal flight was being conducted under the provisions of Federal Code of Regulations Part 91. The flight originated from the Flyin Tiger Airport (81D), Angleton, Texas, about 1515.

According to the pilot, after an uneventful flight from 81D, the pilot checked the weather for landing at LBX and conducted a visual pattern and approach to runway 17. The winds were 220 degrees at 6 knots which would yield about a 5 knot right-to-left crosswind component. The landing was on airspeed and on centerline and in the touchdown zone. After lowering the left wheel to the ground, the aircraft immediately and uncontrollably veered sharply to the left. The pilot applied full right rudder and immediately held the stick full right and aft to keep the aircraft from ground looping or cartwheeling. The pilot was able to regain directional control of the aircraft and departed the runway to the left and proceeded to impact two of the four Precision Approach Path Indicator (PAPI) lights for runway 17. The propeller hit a PAPI light and the aircraft continued and came to a stop in the grass about 50-100 feet off the runway. There were no injuries and the pilot and passenger exited the aircraft. The pilot immediately suspected that a brake had somehow locked on the left main wheel. Braking marks on the runway and grass correlated to the left main landing gear tire as it passed from the runway surface onto the grass. The airplane was towed to a hangar for examination.

After an initial investigation by an on-scene FAA inspector and an A&P/IA, no anomalies were discovered with the left brake assembly. The experienced, 6000-hour ATP pilot reported on NTSB Form 6120, that he thought that the left brake was somehow activated upon landing, and knew that his feet were nowhere near the brakes, as he was planning a touch and go. After inspection of the brakes, the pilot stated that he believed that the passenger could have inadvertently had his foot on the brake pedal during the landing rollout.

The pilot also stated that he had thoroughly briefed his passenger prior to the flight regarding the basic use of flight controls, emergency procedures, and flight plan.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|---------------------------------|------------|----------|-----------------|-----------------------|---------------------------------------|
| Accident Rpt# ANC18CA017        | 11/29/2017 | 1202 AKS | Regis# N1386A   | Nikolai, AK           | Apt: Tatitna 8KA                      |
| Acft Mk/Mdl PIPER PA 18-125-125 |            |          | Acft SN 18-1219 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
|                                 |            |          | Acft TT 4321    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR PUBU         |
| Opr Name: STATE OF ALASKA       |            |          | Opr dba:        |                       | Aircraft Fire: NONE                   |

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--|--------------------|-----------------|-----------------------|--|
| Accident Rpt# GAA17CA352                 | 06/18/2017 830 PDT | Regis# N4420Z   | Red Bluff, CA         | Apt: N/a                               |
| Acft Mk/Mdl PIPER PA 18-150              |                    | Acft SN 18-8756 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320-A2B            |                    | Acft TT 2058    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: JASON C. BUNTING, ROSE BUNTING |                    | Opr dba:        |                       | Aircraft Fire: NONE                    |
|  |                    |                 |                       | AW Cert: STN                           |

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## Summary

The pilot of the tailwheel-equipped airplane reported that, during the landing roll on a gravel bar in gusting wind, the "tail seemed to pick up from the wind." Subsequently, the airplane nosed over.

The airplane sustained substantial damage to the empennage.

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

The automated weather observation station located about 6 nautical miles west of the accident site reported that, about 36 minutes before the accident, the wind was from 340° at 14 knots, gusting to 22 knots. The same weather observation station reported that, about 24 minutes after the accident, the wind was from 360° at 19 knots, gusting to 26 knots. The airplane was landing to the north.

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## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain pitch control during the landing roll in gusting wind conditions, which resulted in a nose-over.

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## Events

1. Landing - Other weather encounter
2. Landing - Loss of control on ground
3. Landing - Nose over/nose down

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## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Pitch control-Not attained/maintained - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
3. Environmental issues-Conditions/weather/phenomena-Wind-Gusts-Effect on operation

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## Narrative

The pilot of the tailwheel-equipped airplane reported that, during the landing roll on a gravel bar in gusting wind, the "tail seemed to pickup from the wind". Subsequently the airplane nosed over.

The airplane sustained substantial damage to the empennage.

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

The automated weather observation station located about 6 nautical miles west from the accident site reported that, about 36 minutes before the accident, the wind was from 340° at 14 knots, gusting 22 knots. The same weather observation station reported that, about 24 minutes after the accident, the wind was from 360° at 19 knots, gusting 26 knots. The airplane was landing to the north.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                     |                     |                    |                       |                                       |
|-------------------------------------|---------------------|--------------------|-----------------------|---------------------------------------|
| Accident Rpt# WPR18FA073            | 01/11/2018 1800 PST | Regis# N54857      | Elko, NV              | Apt: N/a                              |
| Acft Mk/Mdl PIPER PA 23-250-250     |                     | Acft SN 27-7554157 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING TI0-540 SER     |                     | Acft TT 17260      | Fatal 1 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: AIR AMERICA FLIGHT CENTER |                     | Opr dba:           |                       | Aircraft Fire: GRD                    |
|                                     |                     |                    |                       | AW Cert: STN                          |

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## Events

2. Enroute - Turbulence encounter

## Narrative

On January 11, 2018, about 1800 Pacific standard time, a Piper PA-23-250, twin engine airplane, N54857, collided with mountainous terrain about 42 miles south of Elko, Nevada. The commercial pilot was the sole person on board and was fatally injured. The airplane sustained substantial damage. The airplane was registered to Mach Tuck, LLC, and operated by Air America Flight Center, LLC., under the provisions of 14 Code of Federal Regulations Part 91 as a cross-country positioning flight. Visual meteorological conditions prevailed for the flight, and a VFR flight plan was filed. The flight departed about 1500 from McClellan Airfield (MCC), Sacramento, California and had a destination of Salt Lake City International Airport (SLC), Salt Lake City, Utah.

According to preliminary Air Traffic Control (ATC) information, the pilot reported that he was encountering clouds and was asked by the controller if he would like information on nearby airports. The pilot asked for the nearest airport and that he would "head over there." Directions and information on Elko Regional Airport (EKO), Elko, Nevada were provided to the pilot. He replied, "Alright, I'm getting super turbulent over here I'm going to head over there." Shortly after, communication and radar contact were lost.

Review of preliminary radar data revealed a primary target, consistent with the accident airplane, traveling on an eastbound heading at an altitude of about 11,000 ft mean sea level (msl). The target continued eastbound over Pearl Peak's with a summit of 10,848 ft msl, and dropped off from radar shortly after.

After an initial search for the airplane at local airports was unsuccessful, the Federal Aviation Administration (FAA) issued an Alert Notification (ALNOT) for the airplane. Search and rescue efforts ensued, and on January 19, 2018, wreckage was identified from aerial photography on the east face of Pearl Peak near it's summit. An onsite examination by ground personnel identified the wreckage as the accident airplane.

The nearest weather reporting station was EKO, about 42 miles north of the accident site. According to recorded information, the winds were 030 degrees at 3 knots, visibility 10 statute miles or greater, few clouds at 9,000 ft above ground level, temperature 5ø C, dew point -1ø C, and an altimeter setting of 30.12 inches of mercury.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA338 06/14/2017 915 CDT Regis# N33764 Estherville, IA Apt: Estherville Muni EST  
Acft Mk/Mdl PIPER PA 28-180 Acft SN 28-7505178 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING O-360 SER Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: MARK WENZEL Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The solo student pilot reported that, as the airplane entered ground effect, while landing in crosswind conditions, a wind gust lifted the airplane and pushed it to the left. He added that he initiated a go-around and "[pushed] the nose down slightly to gain lift." He further added that, during the go-around, he "must have relaxed the aileron countering the wind," and a wind gust pushed the airplane to the left. Subsequently, the airplane impacted the ground and spun around.

The airplane sustained substantial damage to the engine mount.

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

The automated weather observation system located on the airport reported that, about 23 minutes before the accident, the wind was from 180° at 15 knots, gusting to 21 knots. The student pilot landed on runway 16.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The student pilot's failure to maintain crosswind correction during a go-around in gusting wind conditions.

## Events

1. Landing-aborted after touchdown - Other weather encounter
2. Landing - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Student/instructed pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Crosswind correction-Not attained/maintained - C
3. Environmental issues-Conditions/weather/phenomena-Wind-Gusts-Effect on operation

## Narrative

The solo student pilot reported that, as the airplane entered ground effect, while landing in crosswind conditions, a gust of wind lifted the airplane and pushed it to the left. He added that he initiated a go-around and "[pushed] the nose down slightly to gain lift". He further added that, during the go-around, he "must have relaxed the aileron countering the wind", and a gust of wind pushed the airplane to the left. Subsequently, the airplane impacted the ground and spun around.

The airplane sustained substantial damage to the engine mount.

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

The automated weather observation system located on the airport reported, about 23 minutes before the accident, the wind was from 180° at 15 knots, gusting to 21 knots. The student pilot landed on runway 16.



# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                  |                     |                    |                       |  |
|----------------------------------|---------------------|--------------------|-----------------------|--|
| Accident Rpt# GAA17CA430         | 07/22/2017 2036 EDT | Regis# N2814T      | Whaleyville, VA       | Apt: Umphlett Airstrip VG37            |
| Acft Mk/Mdl PIPER PA 28-180-180  |                     | Acft SN 28-7205226 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O&VO-360 SER |                     | Acft TT 4716       | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: ROBERT R GRAY JR.      |                     | Opr dba:           |                       | Aircraft Fire: NONE                    |
|                                  |                     |                    |                       | AW Cert: STN                           |

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## Events

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

## Narrative

According to the pilot, he touched down on the approach end of the grass airstrip.

During the landing roll, he did not realize that, his "right foot was resting against the right toe brake." The airplane exited the right side of the airstrip and struck trees.

The airplane sustained substantial damage to the right-wing spar and the horizontal stabilizer.

The pilot did not possess a Federal Aviation Administration pilot certificate.

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

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16FA378 09/20/2016 1820 CDT Regis# N8983W Lee's Summit, MO Apt: Lee's Summit KLXT  
Acft Mk/Mdl PIPER PA 28-235-235 Acft SN 28-10562 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING 0-540 SERIES Acft TT 2884 Fatal 2 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: TEKO AIR LLC Opr dba: Aircraft Fire: NONE

## Summary

The pilot and one passenger were on a cross-country flight in a single-engine airplane. Review of the airplane's radar flight track revealed that it was on a southerly heading to the destination airport and made a straight-in approach to runway 18. As the airplane neared the airport, a passenger filmed the approach section of the flight using her phone. A review of the footage showed that the approach appeared normal; however, during the landing flare, the airplane drifted slightly right. The camera then recorded the sound of the engine power increasing, followed immediately by the airplane touching down right of the runway centerline. The engine power then increases (likely either for a touch-and-go or for a go-around) and the airplane begins to climb in a right bank. The camera also captured images of the control yoke, which showed the pilot manipulating it aft and turning it left.

Several witnesses also reported seeing segments of the accident flight, and several of the airport's security cameras captured portions of the flight. A review of the videos and witness statements confirmed that the airplane touched down on the runway and then lifted off in a nose-high, right-wing-low attitude. The airplane then entered a steep right climbing turn; one witness reported that the airplane reached about 200 to 300 ft above ground level. The airplane then completed a 180° turn with about a 90° bank angle; entered a rapid descent; impacted terrain in a right-wing-down, nose-low attitude; slid along the ramp; and came to rest on its right side.

An examination of the engine and airframe did not reveal any preimpact abnormalities.

Based on the available information, the pilot overcontrolled the airplane during takeoff, which resulted in it exceeding its critical angle of attack that led to an aerodynamic stall and loss of airplane control.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper control inputs during takeoff, which resulted in the exceedance of the airplane's critical angle of attack and subsequent departure stall, and loss of airplane control.

## Events

1. Takeoff - Aerodynamic stall/spin
2. Takeoff - Loss of control in flight

## Findings - Cause/Factor

1. Personnel issues-Action/decision-Action-Incorrect action selection-Pilot - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - C
4. Personnel issues-Experience/knowledge-Experience/qualifications-Total experience in position-Pilot

## Narrative

### HISTORY OF FLIGHT

On September 20, 2016, about 1820 central daylight time, a Piper PA-28-235 airplane, N8983W, impacted terrain near Lee's Summit, Missouri. The pilot and passenger were fatally injured, and the airplane was substantially damaged. The airplane was registered to and operated by TEKO Air, LLC, Des Moines, Iowa, as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions existed near the accident site about the time of the accident, and no flight plan had been filed. The cross-country flight originated from Ankeny Regional Airport, Des Moines, Iowa, and was en route to Lee's Summit Municipal Airport (KLXT), Lee's Summit, Missouri.

A review of the airplane's radar flight track revealed that the airplane was on a southerly heading to KLXT and then made a straight-in approach to runway 18. As the airplane neared KLXT, a passenger filmed the approach section of the flight using her phone, which was found on scene. The camera captured portions of the approach to the runway. The approach appeared normal; however, during the landing flare, the airplane drifted slightly right. The camera then recorded the sound of the engine power increasing, followed immediately by the airplane touching down right of the runway centerline. The camera captured images of the control yoke, which showed the pilot manipulating it aft and turning it left. The sound was consistent with the engine at high power until the end of the recording. The National Transportation Safety Board's (NTSB) Personal Electronic Device Specialist's Factual Report is located in the docket for this accident.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Several witnesses reported seeing segments of the accident flight. Additionally, several of the airport's security cameras captured portions of the flight. A review of the security camera videos and witness statements revealed that the airplane touched down on runway 18 and then lifted off in a nose-high, right-wing-low attitude. The airplane then made a steep, right climbing turn; one witness reported that the airplane reached about 200 to 300 ft above ground level. The airplane completed a 180° turn with about a 90° bank angle and then entered a rapid descent, impacted terrain in a right-wing-down, nose-low attitude, slid along the ramp, and came to rest on its right side.

## PILOT INFORMATION

The pilot held a private pilot certificate, which was issued on June 9, 2016, with an airplane single-engine land rating. Additionally, he held a control tower operator certificate. The pilot was issued a third-class medical certificate on Sept 29, 2015. A review of the pilot's logbook revealed that he had 92.3 total flight hours, 18.2 hours of which were accrued since the pilot certificate was issued, with the last entry dated September 14, 2016.

## AIRCRAFT INFORMATION

The accident airplane was a Piper PA-28-235, which is a low-wing, single-engine airplane with fixed landing gear. It was powered by a reciprocating 235-horsepower Lycoming, six-cylinder engine that drove a fixed-pitch propeller. A review of the airplane's maintenance records revealed that the last annual inspection was conducted on December 31, 2015, at a total time of 2,780.32 hours. A review of the engine maintenance records revealed that the engine was removed, overhauled, and reinstalled on August 22, 2016, at an airframe tachometer time of 2,822.2 hours. The tachometer read 2,883.6 hours at the accident site.

## METEOROLOGICAL INFORMATION

At 1853, the weather observation facility at KLXT recorded wind from 190° at 10 knots, 10 miles visibility, clear sky, temperature 90°F, dew point 73°F, and an altimeter setting of 30.04 inches of mercury.

## AIRPORT INFORMATION

KLXT is a publicly owned, nontowered airport located 3 miles north of Lee's Summit, Missouri. Pilots are to use the common traffic advisory frequency for communications. KLXT has two concrete runways 18/36, which is 4,016 ft by 75 ft, and 11/29, which is 3,800 ft by 75 ft. The airport is at an elevation of 1,004 ft mean sea level.

## WRECKAGE AND IMPACT INFORMATION

The on-site examination of the wreckage revealed that the airplane impacted terrain and an asphalt ramp just behind a building west of runway 18. Propeller cuts in the asphalt and ground scars were consistent with a right-wing-down, nose-low impact. The right wing had separated from the fuselage and was located about 92 ft from, and west of, the initial impact point. The wreckage path was 305 ft long and proceeded from the initial impact point on a heading of about 340° to the main wreckage, which consisted of the fuselage, left wing, empennage, and engine compartment. The two-bladed propeller had separated from the engine's crankshaft flange and was located about 20 ft beyond the main wreckage. About 8 inches of one propeller blade was torn off, whereas the other blade was severely distorted. There was no postcrash fire.

The airplane's left wing remained with the fuselage but was only partially attached. An undetermined amount of fuel remained in the left- and right-wing fuel tanks. An area near the right wing showed evidence of a fuel spill.

The main cabin floor and engine firewall were pushed back into the cabin area, and the front, right side of the fuselage had also sustained extensive damage. The top engine cowling was impact separated and was located along the wreckage path. The empennage sustained major damage to the right side of the stabilator.

Left aileron continuity was established from the control surface to the bellcrank; the aileron control and balance cable were attached to the left bellcrank, aileron control wheel chain, and right bellcrank. The right aileron remained attached; however, the control rod was broken, and the bellcrank had separated, pulled through wing ribs, and was found with the fuselage. Rudder control continuity was established to the cockpit rudder pedals. The flap handle was in the retracted

position; however, due to damage to the flap controls, the actual position of the flaps during landing could not be determined.

The engine sustained impact damage and was examined on-site by the NTSB and a technical representative from the engine manufacturer. The engine was cut from the airframe and hung by a forklift to aid examination. The bottom set of spark plugs were removed and exhibited light-colored combustion deposits, and the electrodes exhibited normal wear signatures. The engine was rotated by hand; a thumb suction compression test was conducted, and continuity through the engine valve train and accessory section was confirmed. The left and right magnetos were removed from the engine and tested by hand; spark was observed on each terminal. The fuel pump and carburetor were examined, and no abnormalities were noted.

No preimpact abnormalities were noted during the airframe or engine examinations.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Jackson County Medical Examiner, Kansas City, Missouri, conducted an autopsy on the pilot. The cause of death was determined to be "multiple blunt force injuries."

The Federal Aviation Administration's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, conducted toxicological testing on specimens from the pilot. The tests were negative for ethanol and tested drugs.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR17LA164 07/23/2017 1247 PDT Regis# N4594J San Jose, CA Apt: Reid-hillview Of Santa Clara C RHV  
Acft Mk/Mdl PIPER PA 28R-180-180 Acft SN 28R-30470 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING IO-320 SERIES Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: GLYNN FALCON Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The commercial pilot reported that the accident flight was the first flight following maintenance, which included the installation of right-seat rudder pedals with brake controls. The pilot stated that, during a preflight inspection of the airplane, he actuated the ailerons; however, he did not verify which direction the control yoke moved. He again checked the flight control movement before takeoff but did not verify which direction the aileron moved when he moved the control yoke. During the takeoff sequence, as the airplane became airborne, it immediately entered an uncommanded left roll. The pilot attempted to correct for the roll; however, he was unable to do so and subsequently reduced the engine power. The airplane then impacted the ground and came to rest upright on an adjacent runway.

Postaccident examination of the airplane revealed that, when the control yoke was rotated for input of right aileron, the right aileron moved down, and the left aileron moved up, which is opposite of what would be expected. Examination of the aileron cables revealed that they remained attached to the "T" bar aileron control chains; however, the right aileron control cable was attached to the left aileron control chain, and the left aileron control cable was attached to the right aileron control chain; thus, the cables were connected backward.

The cables were oriented such that they crossed underneath the flap handle and center console area. The two mechanics who performed the maintenance on the airplane reported that they had disconnected the aileron control cables to facilitate the installation of the rudder pedals and brake controls. After completing the maintenance, they checked the flight control cable tension and aileron movement; however, they did not observe which direction the control yoke moved when the aileron was moved. It is likely that the mechanics attached the aileron control cables backward during the reassembly of the aileron control system, which resulted in roll control that was opposite of that commanded by the pilot.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: Maintenance personnel's incorrect installation of the aileron control cables and subsequent failure to verify proper aileron functionality following the maintenance, which resulted in roll control that was opposite of that commanded by the pilot, and the pilot's inadequate preflight inspection, during which he did not verify that the aileron movement matched the control yoke input.

## Events

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

## Findings - Cause/Factor

1. Aircraft-Aircraft systems-Flight control system-Aileron control system-Incorrect service/maintenance - C
2. Aircraft-Aircraft systems-Flight control system-Aileron control system-Inadequate inspection - C
3. Personnel issues-Task performance-Inspection-Post maintenance inspection-Pilot - C
4. Personnel issues-Task performance-Inspection-Post maintenance inspection-Maintenance personnel - C
5. Personnel issues-Task performance-Maintenance-Installation-Maintenance personnel - C

## Narrative

On July 23, 2017, about 1247 Pacific daylight time, a Piper PA-28R-180, N4594J, was substantially damaged during takeoff from the Reid-Hillview Airport (RHV), San Jose, California. The commercial pilot, sole occupant of the airplane, was not injured. The airplane was registered to Foluain Fabhcun LLC., Aptos, California, and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed and no flight plan was filed for the cross-country flight, which was originating at the time of the accident with an intended destination of Marina, California.

The pilot reported that the airplane had just had extensive maintenance performed, which included installation of several avionics upgrades, and right seat brake pedals; the accident flight was the first flight since the maintenance had been completed. During takeoff on runway 31R, as the airplane became airborne at an airspeed of about 80 miles per hour, it immediately entered an uncommanded roll to the left. The pilot said that he attempted to correct for the roll; however, he was unable to, and instead reduced engine power. Subsequently, the airplane impacted the ground and came to rest upright on runway 31L.

Examination of the airplane by a Federal Aviation Administration inspector revealed that the fuselage and left wing were structurally damaged.

Examination of the airplane by the National Transportation Safety Board investigator-in-charge revealed that when the control yoke was rotated for input of right aileron, the left aileron moved upward and the right aileron moved downward. Examination of the aileron cables revealed that they remained attached to the "T" bar aileron control chains. The right aileron control cable was attached to the left side aileron control chain and the left aileron control cable was attached to the right-side aileron control chain. The cables were oriented in a nature that they crossed underneath the flap handle and center console area.

During a telephone conversation with one of the two mechanics that had worked on the airplane prior to the accident flight, he reported that he performed an oil change along with various other work while another mechanic was installing a second set of rudder pedals with brake controls on the right seat side of the airplane. In addition, the mechanic stated that he checked the airplane for flight control cable tension, noting that the operation was smooth, and visually looked at the ailerons while he was moving the control yoke. He added that at no time did he noticed that the aileron cables were installed backwards. The mechanic further reported that all work on the airplane was performed in accordance with the Piper Aircraft Maintenance Manual.

The second mechanic reported that he disconnected aileron cables to facilitate installation of rudder pedals and brake assemblies, and subsequently reattached the aileron cables. The mechanic stated that he did not observe the ailerons while the other mechanic checked aileron control deflections.

During a telephone conversation with the pilot, he reported that prior to the flight, he performed a walk around inspection of the airplane and recalled that he moved the ailerons, but did not verify which direction the control yoke moved. In addition, he said that prior to takeoff, he checked the movement of all the flight controls, but did not verify which direction the ailerons moved when he moved the control yoke. The pilot stated that his primary focus was on the rudder and brakes as they were recently worked on.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                  |                     |                  |                       |                                       |
|----------------------------------|---------------------|------------------|-----------------------|---------------------------------------|
| Accident Rpt# WPR18LA070         | 01/17/2018 1520 PST | Regis# N4027W    | Reno, NV              | Apt: Reno/tahoe Intl RNO              |
| Acft Mk/Mdl PIPER PA 32-300-301  |                     | Acft SN 32-40043 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-540-K1G5D |                     | Acft TT 5979     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: GAMBEE TROY M          |                     | Opr dba:         |                       | Aircraft Fire: NONE                   |
|                                  |                     |                  |                       | AW Cert: STN                          |

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## Events

1. Enroute-climb to cruise - Loss of engine power (total)
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## Narrative

On January 17, 2018, about 1520 Pacific standard time, a Piper PA-32-300, N4027W, was substantially damaged when it impacted the ground during a forced landing in Reno, Nevada. The private pilot and flight instructor were not injured. The airplane was operated as a personal flight, conducted under the provision of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and a flight plan was not filed for the cross-country flight, which departed Reno/Tahoe International Airport (RNO), Reno, Nevada at 1520 and was destined for Hawthorne Industrial Airport (HTH), Hawthorne, Nevada.

According to the flight instructor, and pilot at the time of the accident, he was instructing the airplane owner to satisfy a checkout requirement imposed by the owner's insurance company. Prior to takeoff, the pilot and the owner performed a weight and balance computation, visually inspected the airplane for fuel quantity, verified oil quantity, and completed a walk-around inspection of the airplane's control surfaces. After an uneventful engine start, the pilot contacted ground control who instructed him to taxi to runway 16L. He followed the airplane's "before takeoff" checklist and performed an engine run-up to 2,000 rpm at which time he leaned the fuel/air mixture about 50ø rich of peak to accommodate a departure from a high field elevation. The pilot observed a drop of about 100 rpms when he selected each magneto. He then set 10ø of wing flaps, verified the fuel selector was on the left main fuel tank and turned the auxiliary fuel pump on. The takeoff and initial climb were normal; however, the airplane experienced a total loss of engine power when it reached an altitude of approximately 300 ft. above ground level. According to the pilot, the engine stopped firing rapidly with no pre-indication. He started a turn to the right over runway 16R, but quickly determined the airplane would not be able to land on the remaining runway, but continued the turn. The airplane's stall warning horn annunciated during the descent, and the pilot responded by decreasing the airplane's pitch attitude. During touchdown, the airplane impacted gravel, slid, and came to rest between taxiways "A" and "B."

A postcident examination of the airplane by the Federal Aviation Administration revealed substantial damage to fuselage and wings.

The wreckage has been retained for further examination.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                      |                     |                 |                       |  |
|--------------------------------------|---------------------|-----------------|-----------------------|--|
| Accident Rpt# GAA17CA293             | 05/18/2017 1000 EDT | Regis# N34JM    | Tunkhannock, PA       | Apt: Skyhaven 76N                      |
| Acft Mk/Mdl PIPER PA 34-220T         |                     | Acft SN 3449177 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl CONTINENTAL LTSIO-360RB2B |                     | Acft TT 1422    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: AUTO MILESTONES LLC        |                     | Opr dba:        |                       | Aircraft Fire: NONE                    |
|                                      |                     |                 |                       | AW Cert: STN                           |

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## Summary

The pilot reported that, during landing and while in ground affect, "the airplane suddenly, and without an aural stall warning, lost lift and was forced onto the runway." Subsequently, the nose gear landing collapsed, and the airplane veered off the runway to the right.

The airplane sustained substantial damage to the left wing.

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

The automated weather observation system located about 15 miles from the accident site reported that, about 6 minutes before the accident, the wind was from 230ø at 10 knots. The pilot landed on runway 19.

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## Cause Narrative

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

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## Events

1. Landing - Aerodynamic stall/spin
2. Landing - Hard landing
3. Landing - Landing gear collapse
4. Landing - Runway excursion

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## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Not attained/maintained - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
4. Environmental issues-Conditions/weather/phenomena-Wind-Crosswind-Effect on operation

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## Narrative

The pilot reported that, during landing and while in ground affect, "the airplane suddenly, and without an aural stall warning, lost lift and was 'forced' onto the runway". Subsequently the nose gear collapsed, and the airplane veered off the runway to the right.

The airplane sustained substantial damage to the left wing.

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

The automated weather observation system located about 15 miles from the accident site reported, about 6 minutes before the accident, the wind was from 230ø at 10. The pilot landed on runway 19.



# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA16LA022 10/23/2015 1530 EDT Regis# N43249 Bluemont, VA Apt: N/a  
Acft Mk/Mdl PIPER PA-32-260 Acft SN 32-7400042 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING O-540 SERIES Acft TT 4610 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: BEC INDUSTRIES LTD Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The commercial pilot stated that, after departure, while climbing through 4,500 ft mean sea level, engine power decreased, the engine "vibrated violently," and he noted that the oil pressure dropped to zero. Soon after, the engine experienced a total loss of power and the pilot elected to perform a forced landing to a nearby field. An examination of the engine revealed that the No. 5 connecting rod had separated from the crankshaft. While several of the cylinders and connecting rods exhibited corrosion, the root cause for the separation of the No. 5 connecting rod from the crankshaft could not be determined. The manufacturer recommended a time between overhaul of 2,000 hours of operation or 12 years, whichever occurs first. At the time of the accident, the engine had accumulated about 2,500 hours of operation in the approximate 17 years since its last overhaul.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: A total loss of engine power as a result of the separation of the No. 5 connecting rod for reasons that could not be determined based on the available information.

## Events

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

## Findings - Cause/Factor

1. Aircraft-Aircraft power plant-Engine (reciprocating)-Recip eng cyl section-Failure - C
2. Aircraft-Aircraft power plant-Engine (reciprocating)-(general)-Not serviced/maintained

## Narrative

### HISTORY OF FLIGHT

On October 23, 2015, about 1530 eastern daylight time, a Piper PA-32-260, N43249, was substantially damaged during a forced landing to a field near Bluemont, Virginia. The commercial pilot and passenger were not injured. Day visual meteorological conditions prevailed and no flight plan was filed for the personal flight, which was conducted under the provisions of 14 Code of Federal Regulations Part 91. The flight originated from Upperville Airport (2VG2), Upperville, Virginia, about 1520, and was destined for Monmouth Executive Airport (BLM), Farmingdale, New Jersey.

According to the pilot, after departure, while climbing through 4,500 feet mean sea level (msl), the engine power decreased, the engine "vibrated violently," and he noted that the oil pressure dropped to zero. He contacted air traffic control and attempted to return to the departure airport; however, he realized the airplane would not make the airport. Therefore, he elected to perform a forced landing to a nearby field.

According to the passenger, the pilot performed a preflight inspection of the airplane and added a quart of oil to the engine prior to departure. During the climb, the "engine sound became very loud with obvious serious knocking." Soon after, the engine seized and the pilot elected to land the airplane in a field. During the landing, the airplane slid across the field, struck two fences, and then came to rest upright. After the pilot and passenger egressed the airplane, the pilot checked the oil level and the passenger reported that it was "full."

### PERSONNEL INFORMATION

According to the pilot, he held a commercial pilot certificate with a rating for airplane single-engine land and instrument airplane. He reported 3,195 total hours of flight experience, 2,500 hours of which were in the accident airplane make and model. His most recent Federal Aviation Administration (FAA) second-class medical certificate was issued on October 26, 2013.

### AIRPLANE INFORMATION

According to the FAA, the airplane was manufactured in 1974 and was registered to a corporation in 1991. According to the maintenance records, the most recent annual inspection was performed on June 2, 2015, at which time the airplane had a total time of 4,610 hours and a tachometer time of 2,414.2 hours. At

that time, the oil and oil filter were changed, and the oil filter was inspected for contaminants, with none noted. Then two other oil changes were noted in the engine logbook, which corresponded to 2,462 hours and 2,512.5 hours. There was no indication in the engine logbook that the oil filters were examined for contaminants at the time they were changed. The oil filter installed on the airplane at the time of the accident indicated it was installed on September 9, 2015, at a tachometer time of 100 hours, and there was no corresponding entry in the engine logbook.

The tachometer in the airplane at the accident location indicated 117.5 hours; however, no maintenance log entry was found that corresponded to a tachometer replacement.

The airplane was equipped with a Lycoming O-540-E4B5, 260-hp engine. The most recent engine overhaul occurred in 1998. At the most recent annual inspection, the engine had accumulated 2,285.8 hours of time since major overhaul, it was calculated that at the most recent oil change in the engine logbook, the engine had accumulated 2,384.1 hours. Since there was no maintenance log entry that corresponded with the tachometer replacement, the engine had at least an estimated total time of 2,501.6 hours at the time of the accident.

## WRECKAGE AND IMPACT INFORMATION

An examination of the airplane revealed that the right wing was impact separated and the left wing was removed by recovery personnel. The engine remained attached to the airplane and the propeller remained attached to the engine. One propeller blade was bent aft in an approximate 45-degree angle and the other blade was bent aft in an approximate 5 degree angle.

The engine cowling was removed and no damage was noted on the exterior of the engine crankcase. The carburetor drain nut was removed and about 12 ounces of fluid similar in color to 100LL aviation fuel was drained out of the carburetor. No debris was noted in the fluid. About 9 quarts of oil was noted in the engine, which had a capacity for 12 quarts. Crankshaft continuity was confirmed by rotating the propeller by hand without resistance, and crankshaft continuity was confirmed to the rear accessory section of the engine. The top spark plugs were removed and thumb compression was confirmed on all cylinders except cylinder No. 5.

The bottom of the crankcase was fractured near the No. 5 connecting rod. The oil pump was removed from the engine and rotated freely by hand. It was disassembled with no anomalies noted. The engine oil sump was removed from the engine and there were multiple pieces and particles of metal in the oil sump. The oil filter was removed from the engine, disassembled, and metallic debris was noted in the filter. The oil suction screen was examined and metallic debris was noted in the screen.

All cylinders except cylinder No. 5 were removed, and corrosion was noted on the Nos. 2, 3, and 4 cylinder walls. The No. 5 connecting rod was separated from the crankshaft and corrosion was noted on the connecting rod surface that interfaced with the crankshaft bearing. Cylinder No. 5 was unable to be removed due the connecting rod damage. In addition, corrosion was noted on the No. 6 connecting rod.

The No. 3 piston exhibited scoring on one side of the piston and the piston pin cap was deformed into an oval shape. The No. 3 cylinder was sent to the NTSB Materials Laboratory for further examination.

## No. 3 Cylinder Assembly Examination

The piston exhibited a wear scar around the piston pin hole. The lines within the wear scar on the piston were consistent with reciprocating rubbing along the axis of the cylinder. The piston pin did not exhibit deformation, but it did exhibit superficial circumferential wear scars, consistent with rotation inside the piston crown. The inside walls of the cylinder exhibited deposits that were consistent with rust. Furthermore, the inner cylinder had a circular wear scar, which was consistent with the shape of the piston pin plug. There was a lack of corrosion in the circular wear region, which suggested that the corrosion of the cylinder was present before the wear or rubbing between the piston assembly and the cylinder occurred.

## ADDITIONAL INFORMATION

According to the Lycoming Service Instruction on the required time between overhaul, it stated that the time between overhaul (TBO) takes "into account service experience, variations in operating conditions, and frequency of operation. Continuous service assumes that the aircraft will not be out of service for more than 30 consecutive days." The investigation was unable to conclusively determine if the engine was out of service for any period greater than 30 days.

"Engine deterioration in the form of corrosion (rust) and the drying out and hardening of composition materials such as gaskets, seals, flexible hoses and fuel pump diaphragms can occur if an engine is out of service for an extended period of time. Due to the loss of protective oil film after an extended period of inactivity, abnormal wear on soft metal bearing surfaces can occur during engine start. Therefore, all engines that do not accumulate the hourly period of TBO specified in this publication are recommended to be overhauled every twelfth year."

The TBO listed for an O-540-E4B5 engine was 2,000 hours.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA17FA195 06/03/2017 1417 AST Regis# N21WW San Juan, PR Apt: Luis Munoz Marin Intl TJSJ  
Acft Mk/Mdl PIPER PA23-250 Acft SN 27-7554066 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING IO-540-C4B5 Acft TT 9182 Fatal 1 Ser Inj 2 Flt Conducted Under: FAR 135  
Opr Name: AIR AMERICA INC Opr dba: Aircraft Fire: NONE

## Summary

The commercial pilot was conducting an on-demand air taxi flight with three passengers on board the multiengine airplane. The majority of the pilot's multiengine experience was in a larger airplane with more powerful engines. He had about 20 hours of experience in the accident airplane make and model and had completed training in it about 9 days before the accident. The pilot stated that, after receiving clearance for takeoff from air traffic control, he performed the takeoff roll and rotated the airplane at 85 knots. The airplane climbed to about 100 ft above ground level (agl), but then did not continue to climb or accelerate. The airplane then yawed left, and the left engine rpm needle indicated less than the right engine rpm, but it remained in the green arc. Subsequently, the pilot turned the airplane left with the yaw to return to the airport, but the airplane was unable to maintain altitude and subsequently impacted water. The pilot further stated that, other than the rpm difference, there were no other preimpact mechanical malfunctions with the airplane.

The front seat passenger reported that he was not a pilot but that he was familiar with airplanes. He stated that the airplane initially gained some altitude, but that it then yawed left. He then noticed that the pilot did not correct the yaw and let the airplane turn perpendicular to the wind, at which point he mentally questioned the pilot's competency and felt compelled to take the controls, but he did not touch anything. The airplane lost altitude and then flew under a tree line while remaining in a left banking turn. The pilot then moved the yoke abruptly right, and the airplane collided with the water. The front seat passenger added that the sound of the engines did not change during the flight and that he noted no smoke or fuel odor.

Airport surveillance video confirmed that the airplane climbed to about 100 to 150 ft agl, which is out of ground effect, as it passed over the departure end of the runway. The airplane remained in a nose-up attitude as it then began to descend and, begin a shallow left turn; it then impacted the water.

Examination of the airplane did not reveal any preimpact mechanical malfunctions that would have precluded normal operation, and the airplane was about 350 lbs below its maximum gross weight. Additionally, the airplane was equipped with constant-speed propellers, and a loss of left engine power would have been noticeable on the manifold pressure gauge and not the rpm gauge.

The airplane's airspeed indicator revealed that mph were depicted by the larger numbers on the outer ring and that knots were depicted by the smaller numbers on the inner ring. Given the airspeed indicator's configuration, it is likely that the pilot rotated and then attempted to climb the airplane at 85 mph and not 85 knots, but either airspeed was significantly less than airplane's best rate-of-climb speed of 120 mph (102 knots). It is likely that the airplane climbed at the lower airspeed until out of ground effect, but then could not maintain a climb and began to descend back into ground effect. Further, the airplane was not equipped with counter-rotating engines to offset the left yaw at slower airspeeds, and the airplane began to yaw to the left. Rather than lower the nose, correct for the yaw, and continue straight into a 15-knot headwind to increase airspeed, the pilot allowed the airplane to continue to yaw left and exceeded the airplane's critical angle of attack, which resulted in an aerodynamic stall and subsequent descent into water.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain adequate airspeed, properly correct for left yaw, and his exceedance of the airplane's critical angle of attack during initial climb, which resulted in an aerodynamic stall and subsequent uncontrolled descent into water.

## Events

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

## Findings - Cause/Factor

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

## Narrative

### HISTORY OF FLIGHT

On June 3, 2017, about 1417 Atlantic standard time, a Piper PA-23-250, N21WW, impacted water and a reef shortly after takeoff from Luis Munoz Marin International Airport (TJSJ), San Juan, Puerto Rico. The commercial pilot sustained minor injuries, two passengers were seriously injured, and one passenger was fatally injured. The airplane was destroyed. The flight was being operated by Air America, Inc., as a Title 14 Code of Federal Regulations Part 135 on-demand air taxi flight. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the planned flight to Benjamin Rivera Noriega Airport (TJCP), Isla de Culebra, Puerto Rico.

According to air traffic control (ATC) information provided by the Federal Aviation Administration (FAA), the flight was cleared for an intersection takeoff on runway 8 from taxiway S5. Runway 8 was 10,400 ft long, and the intersection takeoff at S5 allowed about half of the runway length for takeoff. At 1414:09, the pilot contacted ATC and stated that he was ready for takeoff. The tower controller replied that there was about 30 seconds left of a wake turbulence delay due to an Embraer 190 that had departed about 2 minutes 30 seconds earlier. The pilot waived the delay, and the tower controller cleared the flight for takeoff at 1414:26. At 1416:33, the tower controller instructed the pilot to contact departure control; however, the pilot stated that he was "unable" and was returning to the airport. At 1416:46, the pilot stated, "we are trying hard we lost power on an engine we're trying to go back." The controller asked what engine, and the pilot replied, "we. [lost] an engine." No further communications were received from the pilot.

Review of radar data revealed that, at 1415:52, the airplane was near the departure end of the runway, indicating an altitude of 100 ft. The last radar target was recorded at 1416:16, about 1,000 ft beyond the departure end of the runway, indicating an altitude of 0 feet (about 100 ft agl). Review of airport surveillance video revealed that the airplane had lifted off the runway by about 1415:40 and had climbed to between about 100 and 150 ft agl, out of ground effect, as it passed over the departure end of the runway at 1416:01. The airplane remained in a nose-up attitude and began to descend; it then entered a shallow left turn at 1416:17. The airplane continued turning left at a low altitude to a position consistent with the left downwind leg of the airport traffic pattern and then disappeared from the camera's view at 1416:43. The airplane reappeared in the camera's view as it impacted water about .75 mile abeam the departure end of runway 8 at 1417:07.

According to the pilot's written statement and recorded interview, after he completed a preflight inspection, the passengers walked toward the airplane. The pilot then completed a final walkaround and visually checked the fuel in the fuel tanks. After the baggage was loaded and the passengers boarded the airplane, the pilot performed a safety/emergency briefing and started the engines. He received instructions from ATC to taxi to runway 8 via N taxiway and to hold short of the runway at S5. The pilot performed a run-up using the checklist, and everything was within acceptable parameters.

After receiving clearance for takeoff from ATC, the pilot performed a takeoff roll and rotated the airplane at 85 knots. About 100 ft agl, he retracted the landing gear and noted that the airplane did not seem to be climbing or accelerating beyond 85 to 90 knots. He verified that the magnetos and fuel pumps were on and that the throttle, mixture, and propeller levers were in the "full forward" position. He also noted that all the engine instruments were in the green arc normal operating range. The airplane then yawed left, and the pilot noticed that the left engine rpm was less than the right, but that it remained in the green arc. The pilot subsequently turned left with the yaw to return to the airport, but the airplane was unable to maintain altitude. He then attempted to avoid a populated beach and ditched in shallow water. The pilot did not remember how he exited the airplane, but recalled that his face burned when he swam to the water's surface because of a fire. He tried two more times to reach the water's surface far enough away from the fire. He then saw two of the three passengers and attempted to swim back for the third passenger, but was in shock and had ingested too much water. A person on a paddle board then pulled the pilot from the water.

During a postaccident interview with two FAA inspectors, the front seat passenger stated that he was not a pilot, but that he was familiar with airplanes because he was an aerospace engineer and had spent some time in a Boeing 757 simulator with a friend. He stated that the pilot did not provide a safety briefing and that, instead, he (the front seat passenger) instructed the other passengers (minors) to fasten their seatbelts, and he fastened his seatbelt. As the airplane approached the runway, the pilot secured the door and started the takeoff process without reading any checklist. The airplane initially gained some altitude, but it then yawed left. The front seat passenger then noticed that the pilot did not correct the yaw and let the airplane turn perpendicular to the wind, at which point, he mentally questioned the pilot's competency and felt compelled to take the controls, but he did not touch anything. The airplane lost altitude and flew under a tree line while remaining in a left banking turn. The pilot then moved the yoke abruptly right, and the airplane collided with the water.

The front seat passenger reported that the pilot egressed first, but he did not recall how because the door was on the passenger's side of the airplane. The front seat passenger then egressed, followed by one other passenger. The third passenger did not egress, and the front seat passenger tried to go back toward the airplane, but the fire was too intense, and he was badly burned. The front seat passenger added that the sound of the engines did not change during the flight

and that he noted no smoke or fuel odor.

## PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single-engine land, airplane multiengine land, and instrument airplane. He also held a flight instructor certificate with ratings for airplane single-engine and airplane multiengine. The pilot's most recent FAA first-class medical certificate was issued on December 14, 2016. The pilot reported a total flight experience of about 1,200 hours, about 200 hours of which were in multiengine airplanes and about 20 hours of which were in the accident airplane make and model.

Review of company records revealed that the pilot was hired in December 2016 and completed ground and flight training. At the time of his hire, he reported a total flight experience of 900 hours, 110 hours of which were in multiengine airplanes. From December 2016 through May 2017, the pilot flew about 220 hours in a Britten-Norman BN-2A-21 Islander, which could carry up to nine passengers and was equipped with two 300-horsepower Lycoming engines. The pilot completed training in the accident airplane make and model on May 25, 2017. He had accumulated about 20 hours in it during the 6 months before the accident. At the time of the accident, the last recorded entry in the pilot's logbook was dated February 28, 2017. At that time, the logbook indicated that the pilot had accumulated a total flight experience of about 933 hours, 234 hours of which were in multiengine airplanes.

Review of the pilot's FAA records revealed that he received a Notice of Disapproval of Application for a private pilot certificate on November 8, 2014. The pilot subsequently obtained his private pilot certificate on November 12, 2014. The pilot then obtained a multiengine rating during his first attempt on December 4, 2014. He received another Notice of Disapproval of Application for an instrument rating on January 30, 2015. The notice included comments that, upon reapplication, the pilot would be reexamined on preflight preparation and preflight procedures. He subsequently obtained an instrument rating on February 6, 2015. The pilot obtained a commercial pilot license (single-engine land) during his first attempt on March 18, 2015. He also obtained a commercial pilot certificate (multiengine land and instrument airplane) during his first attempt on April 11, 2015.

The pilot received another Notice of Disapproval of Application for a flight instructor certificate (multiengine rating) on June 16, 2015. The notice included comments that the pilot needed to review and understand the airplane's systems. The pilot subsequently obtained his flight instructor certificate with a multiengine rating on July 7, 2015. At that time, the pilot reported a total flight experience of 221 hours, 96.9 hours of which were in multiengine airplanes. The pilot received another Notice of Disapproval of Application for a flight instructor certificate (single-engine rating) on July 14, 2015. The notice included comments that the pilot needed more training teaching takeoffs and landings. The pilot subsequently obtained his flight instructor certificate with a single-engine rating on July 22, 2015.

## AIRCRAFT INFORMATION

The six-seat, low-wing, tricycle-retractable-gear airplane was manufactured in 1975. It was powered by two Lycoming IO-540, 250-horsepower engines, each equipped with a Hartzell controllable pitch full-feathering propeller. According to maintenance records, the airplane's most recent annual inspection was completed on November 16, 2016. At that time, the airframe had accumulated 9,087.3 total hours of operation, and the engines had accumulated 695.3 hours since major overhaul. The airplane had flown about 95 hours from the time of that inspection until the accident.

Review of the airspeed indicator revealed that mph were depicted in the larger numbers on an outer ring and that knots were depicted in the smaller numbers on the inner ring. The airplane was not equipped with counter-rotating engines to offset yaw at slower airspeeds.

## METEOROLOGICAL INFORMATION

The recorded weather at TJSJ, at 1421, was wind from 070ø at 17 knots; visibility 10 miles; few clouds at 2,400 ft, scattered clouds at 4,000 ft, and scattered clouds at 7,000 ft; temperature 31øC; dew point 24øC; and altimeter setting 29.98 inches of mercury.

## WRECKAGE INFORMATION

Examination of the wreckage following recovery to a hangar revealed that both wings had separated during impact. The right wing exhibited leading edge impact damage and buckling at the outboard section. The right flap and right aileron had separated from the wing and were recovered. The right engine remained attached to the wing, and the right propeller remained attached to the engine. The two propeller blades appeared undamaged and were in the normal operating

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range and not in a feathered position. The valve covers, spark plugs, oil filter, and vacuum pump were removed from the right engine. The spark plug electrodes, vacuum pump vanes, and drive coupling were intact. When the propeller was rotated by hand, crankshaft, camshaft, and valve train continuity were confirmed to the rear accessory section, and thumb compression was attained on all cylinders. The fuel injector servo and magnetos were removed. The fuel injector servo screen was absent of debris. Fuel was recovered from the fuel line to the engine-driven pump, the engine-driven fuel pump, the fuel line to the fuel servo, and the fuel servo. The fuel odor was consistent with 100 low lead aviation gasoline. The left magneto did not produce spark when rotated by hand, consistent with saltwater immersion. The right magneto produced spark at five of the six leads. The right flow divider attachment bolts were found loose. Two of the flow divider lines had separated, consistent with impact, and one line was found loose, and its B-nut was removed by hand with two turns. The fuel injector nozzles were unobstructed.

The left wing exhibited leading edge impact damage and buckling at the outboard section. The left flap remained attached to the wing. The left aileron had separated and was recovered. The left engine remained attached to the wing, and the left propeller remained attached to the engine. One propeller blade appeared undamaged, and the other blade was bent aft, but both blades were in the normal operating range and not in a feathered position. The valve covers, spark plugs, oil filter, and vacuum pump were removed from the left engine. The spark plug electrodes, vacuum pump vanes, and drive coupling were intact. When the propeller was rotated by hand, crankshaft, camshaft, and valve train continuity were confirmed to the rear accessory section, and thumb compression was attained on all cylinders. The fuel injector servo and magnetos were removed. The fuel injector servo screen was absent of debris. Fuel was recovered from the fuel line to the engine driven fuel pump, the engine-driven fuel pump, the fuel line to the fuel servo, the fuel servo, and the flow divider. The fuel odor was consistent with 100 low lead aviation gasoline. The fuel inlet hose B-nut at the fuel servo was loose. The magnetos did not produce spark when rotated by hand, consistent with saltwater immersion. Five of the six fuel injector nozzles were unobstructed, and one nozzle was obstructed. The oil filter element and oil suction screen were absent of metallic contamination.

Examination of the cockpit revealed that the landing gear and flaps were in the "retracted" position. The seatbelts and shoulder harnesses remained intact. The master switch was in the "off" position, and the left and right fuel pumps were in the "on" position. The left magneto switches were in the "on" position, and the right magneto switches were in the "off" position. Underwater photographs provided by law enforcement revealed that the right throttle lever was forward, whereas the right mixture and propeller levers were midrange. The left throttle lever was midrange, whereas the left propeller and mixture levers were forward. However, the preimpact positions of the levers could not be verified because the wings had separated during impact. The left engine fuel selector was found positioned to the left inboard main fuel tank position, and the right engine fuel selector was found positioned to the right outboard main fuel tank position. The crossfeed switch was found midrange and fragmented. Measurement of the rudder trim jackscrew corresponded to a neutral rudder trim position. Measurement of the stabilator trim jackscrew corresponded to full nose-up stabilator trim position, but damage was present near the jackscrew, and its trim indicator cable had separated. Control continuity was confirmed from the rudder to the rudder pedals in the cockpit. Continuity was also confirmed from the stabilator to the cockpit area. Aileron continuity was confirmed from the respective aileron bellcranks, through the separated wing roots, to the cockpit area.

## MEDICAL AND PATHOLOGICAL INFORMATION

The FAA's Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma, conducted toxicological testing on a serum sample from the pilot. The results were negative for alcohol.

## TESTS AND RESEARCH

The lap belt that secured the deceased passenger was retained and forwarded to an National Transportation Safety Board Survival Factors Specialist for further examination. The examination did not reveal any preimpact mechanical malfunctions, and the insert tab released from the buckle when the latch was lifted about 90°.

## ADDITIONAL INFORMATION

### Fuel

The airplane was equipped with six fuel tanks. Each wing had a 36-gallon inboard fuel tank, a 36-gallon outboard fuel tank, and a 24-gallon auxiliary wingtip tank. The pilot reported that "all tanks" were full; however, the fueler stated that he always filled the four main fuel tanks, but not the auxiliary fuel tanks. The former director of operations of the operator stated that the auxiliary fuel tanks were usually left empty. The estimated fuel onboard at takeoff was 144 gallons in the four full main fuel tanks, or 864 lbs.

## Weight and Balance

Review of the pilot's operating manual (POM) for the make and model airplane revealed that the airplane's maximum gross takeoff weight was 5,200 lbs. The pilot had calculated the airplane's weight for the accident takeoff as 4,335 lbs. A recalculation was completed after the accident based on the four main fuel tanks being full of fuel. The recalculation also included the weights of the front seat occupants (220 lbs and 190 lbs) and the middle seat occupants (115 lbs and 120 lbs). The recalculation also included 125 lbs of baggage, which was in the rear of the airplane. The recalculated weight and balance revealed that the accident takeoff weight was about 4,850 lbs, which was 350 lbs below the maximum takeoff weight. The center of gravity was near the forward limit.

## Performance

Review of a takeoff performance chart from the POM revealed that, given the conditions that existed at the time of the accident, 88°F, at sea level, at a takeoff weight of 4,850 lbs, and with a 15-knot headwind, the airplane required about 1,250 ft to take off and climb over a 50-ft obstacle. However, the performance chart noted a liftoff speed of 80 mph (70 knots) and the speed at the obstacle at 97 mph (84 knots). Further, the POM stated that the best angle-of-climb speed was 107 mph (93 knots) and that the best rate-of-climb speed was 120 mph (102 knots). The airplane's single-engine rate-of-climb speed was 240 ft per minute, with a best single-engine rate-of-climb speed of 102 mph (89 knots).



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|-------------------------------|---------------------|--------------------|-----------------------|--|
| Accident Rpt# GAA18CA032      | 10/27/2017 1000 EDT | Regis# N4509F      | West Seneca, NY       | Apt: Buffalo Airfield 9G0              |
| Acft Mk/Mdl PIPER PA28-151    |                     | Acft SN 28-7715044 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320-D3G |                     | Acft TT 7903       | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: ARTHUR HANSEN       |                     | Opr dba:           |                       | Aircraft Fire: NONE                    |
|                               |                     |                    |                       | AW Cert: STN                           |

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## Events

1. Landing-landing roll - Wildlife encounter (non-bird)
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## Narrative

The flight instructor reported that, in day visual meteorological conditions, during the landing roll, a deer "appeared from high grass and bushes" from the right of the runway. He added that, before he could react, the deer impacted the inboard section of the right wing. The flight instructor stopped the airplane on the runway, and then taxied to the ramp without further incident

The right wing 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 Chart Supplement for the airport stated in part: Deer on and invof [in the vicinity of] arpt [airport].

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|-----------------------------------|---------------------|-----------------|-----------------------|--|
| Accident Rpt# GAA18CA092          | 12/20/2017 1000 CST | Regis# N284MK   | Mankato, MN           | Apt: Mankato Rgnl MKT                  |
| Acft Mk/Mdl PIPER PA28-161        |                     | Acft SN 2842135 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320-D3G     |                     | Acft TT 7745    | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: NORTH STAR AVIATION INC |                     | Opr dba:        |                       | Aircraft Fire: NONE                    |
|                                   |                     |                 |                       | AW Cert: STN                           |

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## Events

1. Landing - Loss of control in flight
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## Narrative

The student pilot reported that, during landing, the airplane bounced hard. She added power to go around, and as the airplane became airborne it began to drift to the left. The airplane aerodynamically stalled, impacted terrain, and collided with a golf cart adjacent the runway, which was occupied by the student pilot's flight instructor.

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

The Chief Pilot of the flight school reported that there were no preaccident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

A review of recorded data from the automated weather observation station located on the airport reported that, about 4 minutes before the accident, the wind was from 080ø at 6 knots. The airplane landed on runway 33.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|-----------------------------|---------------------|------------------|-----------------------|---------------------------------------|
| Accident Rpt# ERA18LA062    | 12/13/2017 1215 EST | Regis# C6RVT     | Oakland Park, FL      | Apt: Fort Lauderdale Executive FXE    |
| Acft Mk/Mdl PIPER PA32-300  |                     | Acft SN 32-40067 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
|                             |                     | Acft TT 4077     | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: VINCENT COLEBROOK |                     | Opr dba:         |                       | Aircraft Fire: NONE                   |
|                             |                     |                  |                       | AW Cert: STN                          |

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## Events

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

## Narrative

On December 13, 2017, about 1215 eastern standard time, a Piper PA-32-300, Bahamian Registration C6-RVT, experienced a loss of engine power and impacted a lake near Oakland Park, Florida. The airplane sustained substantial damage and the Bahamian certificated commercial pilot was not injured. The airplane was registered to and operated by a private individual as a Title 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed at the time of the accident and no flight plan was filed for the flight. The flight originated at Fort Lauderdale Executive Airport (FXE), Fort Lauderdale, Florida, around 1210, and was destined for Lynden Pindling International Airport (MYNN), Nassau, Bahamas.

According to the pilot, on the day before the accident, he topped off the fuel in the airplane at the Grand Bahama International Airport (MYGF), Freeport, Bahamas, and flew to FXE. On the day of the accident, the pilot completed a preflight inspection and no anomalies were noted. He started the engine, "let it warm up" prior to taxiing, and called the air traffic control tower to request flight following to MYNN. The airplane departed on runway 27 and about 500 ft above ground level (agl), the pilot initiated a left turn and reduced the engine power to "climb power." Then, about 700 ft agl, the engine started to lose power. It "intermittently came back," the pilot applied full power, and declared an emergency. He verified that the fuel boost pump was on, started to set up an approach to runway 31, however, he realized that the airplane would not reach the airport, and he elected to land in a lake just south of the airport. The pilot "secured" the fuel, extended the flaps for landing, and the airplane impacted the water. The pilot egressed just prior to the airplane sinking in the lake.

The airplane was recovered from the lake about 1 month after the accident and taken to a salvage facility. Initial examination of the airplane revealed that the fuselage was substantially damaged. In addition, the landing gear were impact damaged aft. The airplane was retained for further examination

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|---------------------------------|---------------------|-----------------|---------------------|--|
| Accident Rpt# GAA18CA021        | 10/01/2017 1230 EDT | Regis# N1054S   | Block Island, RI    | Apt: Block Island State BID            |
| Acft Mk/Mdl PIPER PA32R-301T    |                     | Acft SN 3257448 | Acft Dmg: DESTROYED | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING TIO-540-HIA |                     | Acft TT 2215    | Fatal 0 Ser Inj 0   | Flt Conducted Under: FAR 091           |
| Opr Name: THOMAS PEPE           |                     | Opr dba:        |                     | Aircraft Fire: NONE                    |
|                                 |                     |                 |                     | AW Cert: STN                           |

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## Events

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

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## Narrative

The pilot reported that during landing, the airplane touched down about "150 ft. beyond [the runway] numbers" and he immediately "removed flaps and applied brakes." He added that he was "unable to stop the forward momentum of the plane," and he believed he was going to overrun the runway, so he applied full power to go-around. Subsequently, the airplane overran the runway before a climb rate could be established, and during the runway excursion, the airplane struck a chain link fence. During the impact, the right wing separated from the fuselage, and the airplane rolled inverted down a ravine before coming to a stop back on the main landing gear. The pilot further reported after the accident that he believed he came in "too fast" for landing.

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

The pilot did not report that there were any preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|--------------------------------------|--------------------|----------------------------------|---------------------|--|
| Accident Rpt# ERA17FA112             | 02/22/2017 956 EST | Regis# N2452C                    | East Haven, CT      | Apt: Tweed-new Haven Airport HVN       |
| Acft Mk/Mdl PIPER PA38-112           |                    | Acft SN 38-79A0192               | Acft Dmg: DESTROYED | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-235            |                    | Acft TT 8473                     | Fatal 1 Ser Inj 1   | Flt Conducted Under: FAR 091           |
| Opr Name: INTERNATIONAL AVIATION LLC |                    | Opr dba: AMERICAN FLIGHT ACADEMY |                     | Aircraft Fire: NONE                    |

## Events

1. Initial climb - Sys/Comp malf/fail (non-power)

## Narrative

### HISTORY OF FLIGHT

On February 22, 2017, about 0956 eastern standard time, a Piper PA-38-112, N2452C, was destroyed when it impacted terrain in East Haven, Connecticut, during the initial climb from Tweed-New Haven Airport (HVN), New Haven, Connecticut. The flight instructor was seriously injured, and the student pilot was fatally injured. The airplane was operated by American Flight Academy as an instructional flight conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight.

According to an air traffic control transcript provided by the Federal Aviation Administration (FAA), the airplane completed four touch-and-go landings on runway 20, a 5,600-ft-long by 150-ft-wide asphalt runway. At 0955:43, during initial climb after the fourth landing, one of the pilots declared an emergency and stated, "mayday mayday mayday we're going to land on the other runway." The controller cleared the airplane to land, and no further communications were received from the pilots. Another flight instructor, who was also flying in the HVN airport traffic pattern at the time of the accident, stated that he heard the emergency transmission and could hear the airplane's stall warning horn in the background during the transmission. According to a witness, the airplane then spun to the left, descended in a nose-down attitude, and impacted terrain about 1,000 ft southeast of the departure end of runway 20. Review of radar data did not reveal any targets that could be correlated with the accident airplane during the initial climb in which the accident occurred.

The flight instructor was subsequently interviewed at a hospital by an FAA inspector. The flight instructor told the FAA inspector that he remembered practicing airwork and then returning to the airport to practice touch-and-go landings, but he did not recall the accident sequence.

### PILOT INFORMATION

The flight instructor held a commercial pilot certificate with ratings for airplane single-engine land, airplane multi-engine land, and instrument airplane. He also held a flight instructor certificate with a rating for airplane single-engine. His most recent FAA first-class medical certificate was issued on November 14, 2014. Review of the flight instructor's logbook revealed that he had accumulated a total flight experience of about 236 hours, of which 12 hours were in the same make and model as the accident airplane. The flight instructor had flown about 28 hours during the 30-day period preceding the accident.

Review of the student pilot's logbook revealed that he had accumulated a total flight experience of about 17 hours of which 15 hours were in the same make and model as the accident airplane. The student pilot had not yet flown solo.

### AIRCRAFT INFORMATION

The two-seat, low-wing, fixed tricycle-gear airplane was manufactured in 1978. It was powered by a Lycoming O-235, 112-horsepower engine, equipped with a two-blade, fixed-pitch Sensenich propeller.

Review of the airplane's logbooks revealed that, at the time of the accident, the airframe had accumulated about 8,473 total hours of operation, and the engine had accumulated 2,508 hours since major overhaul. The airplane had been operated for 78 hours since its most recent 100-hour inspection, which was completed on September 30, 2016. Review of maintenance records did not reveal any prior anomalies with the airplane's fuel selector. Review of the airplane maintenance manual revealed instructions, applicable to 100-hour inspections, for the fuel selector to be inspected for condition, security, and operation. According to the instructions, if the fuel selector valve binds, sticks, or is otherwise difficult to operate, the fuel selector valve should be lubricated. Specifically, the insert, position washer, and "O" rings should be lubricated.

### METEOROLOGICAL INFORMATION

The reported weather at HVN, at 0953, included wind from 210ø at 5 knots, visibility 10 statute miles, and an overcast ceiling at 7,500 ft.

## WRECKAGE INFORMATION

No debris path was observed, and the wreckage came to rest upright in a marsh, oriented on a near north magnetic heading. Both wings remained attached to the airframe, and the ailerons and flaps remained attached to their respective wings. The ailerons were about neutral, and the flaps were partially extended. The fuel caps remained secured to their respective wing fuel tanks, and, although both wing fuel tanks were breached during impact, several gallons of fuel remained in each wing. The right wing was buckled. The left wing exhibited more leading edge damage than the right wing, and its wingtip was bent upward, consistent with the left wing impacting terrain before the right wing.

The empennage was curled up and to the left. The horizontal stabilizer, vertical stabilizer, rudder, and elevator remained intact. Flight control continuity was confirmed from all flight control surfaces to the cockpit area. Examination of the elevator trim wheel revealed that the elevator trim cable remained wrapped around the spool twice, which equated to an elevator trim position between neutral and full nose up. Examination of the cockpit revealed that the seatbelts and shoulder harnesses remained intact. The throttle and mixture levers were in the forward position, and the magnetos were selected to both. The fuel selector handle was found positioned to the right main fuel tank.

The engine was partially buried in mud but remained attached to the airframe, and the propeller remained attached to the engine. The two propeller blades did not exhibit rotational damage. The wreckage was further examined at a recovery facility, and the engine was separated from the airframe for the examination. The valve covers were removed, and oil was noted throughout the engine. The top spark plugs were removed, and the propeller was rotated by hand. Camshaft, crankshaft, and valve train continuity were confirmed to the rear accessory section. Thumb compression was attained on all cylinders. The engine-driven fuel pump was removed from the engine. Several drops of fuel were recovered from the pump. When the pump was actuated by hand, suction and compression were confirmed at the inlet and outlet ports. The electric fuel pump activated when connected to a battery.

The throttle and mixture cables remained attached to the carburetor. The carburetor was disassembled, and its float and needle were intact. The carburetor inlet screen was absent of contamination. The carburetor bowl contained a mixture of fuel and water, consistent with its submersion in the marsh. The oil filter was opened, and no contamination was observed. The left magneto remained attached to the engine and produced spark at all four leads when rotated by hand. The right magneto had separated from the engine during impact and did not produce spark when rotated. The right magneto was disassembled, and the plastic housing that secured the breaker points was found fractured, resulting in no gap in the points. The spark plug electrodes remained intact and exhibited normal wear signatures when compared to a Champion Aviation Check-A-Plug chart. The bottom spark plugs exhibited corrosion consistent with submersion in the brackish marsh water.

During the airframe examination, the fuel selector valve would not move when the fuel selector handle was moved. The fuel selector was then removed and partially disassembled for examination. The examination revealed that the fuel selector valve's polymeric insert had fractured and was in a position that provided openings of about 20% to the right main fuel tank inlet and to the engine outlet, instead of the 100% openings that would have been present with an intact polymeric insert. The fuel selector valve was retained and forwarded to the NTSB Materials Laboratory, Washington, DC.

Metallurgical examination of the fuel selector valve revealed that the lower portion of the polymeric insert exhibited fracture features consistent with rotational ductile overstress. Abrasive wear was present on the outer portion of the insert due to contact with burs on the valve housing. (For more information, see the Materials Laboratory Factual Report in the public docket for this accident.)

## MEDICAL AND PATHOLOGICAL INFORMATION

The State of Connecticut, Office of the Chief Medical Examiner performed an autopsy on the student pilot. The cause of death was reported as blunt trauma.

Toxicological testing was performed by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma, on samples from both pilots. The results were negative for the student pilot. Positive results for the flight instructor were consistent with the emergency medical treatment that he received after the accident.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|   |                     |                       |                              |                                       |
|---|---------------------|-----------------------|------------------------------|---------------------------------------|
| Accident Rpt# CEN18LA085                  | 01/24/2018 1415 CST | Regis# N515BW         | Omaha, NE                    | Apt: Millard MLE                      |
| Acft Mk/Mdl QUARTZ MOUNTAIN AEROSPACE 11E | Acft SN 1006        | Acft Dmg: SUBSTANTIAL | Fatal 0                      | Rpt Status: Prelim Prob Caus: Pending |
|   |                     | Ser Inj 0             | Fit Conducted Under: FAR 091 |                                       |
| Opr Name: ORACLE AVIATION, LLC            | Opr dba:            |                       | Aircraft Fire: NONE          |                                       |
|   |                     |                       | AW Cert: STN                 |                                       |

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## Events

1. Approach - Loss of engine power (total)

## Narrative

On January 24, 2018, about 1415 central standard time, a Quartz Mountain Aerospace (Luscombe) 11E, N515BW, struck trees and a fence during a forced landing following a total loss of engine power in Omaha, Nebraska. The certificated airline transport instructor pilot and a certificated flight instructor were not injured. The airplane sustained substantial damage. The airplane was registered to and operated by Oracle Aviation, LLC, Omaha, Nebraska, and operated under the provisions of Title 14 Code of Federal Regulations Part 91 as an instructional flight. Visual meteorological conditions prevailed, and a visual flight rules flight plan was filed. The flight originated from Millard Airport (MLE), about 1100.

Preliminary information indicates the airplane was serviced to capacity, and the pilots had filed an IFR (instrument flight rules) flight plan prior to departing. After about a 3 hour flight, the pilots returned to the airport and were on approach when the engine lost power. The instructor assumed control and made a forced landing in a school ball park near 138th and Millard Avenue. During the forced landing, the airplane struck trees and a fence, incurring wing spar damage.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN16FA122 03/11/2016 1627 MST Regis# N28GX Española, NM Apt: Ohkay Owingeh Airport E14  
Acft Mk/Mdl REMOS ACFT GMBH FLUGZEUGBAU Acft SN 356 Acft Dmg: DESTROYED Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl ROTAX 912 ULS Acft TT 2917 Fatal 2 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: NEW MEXICO SPORT AVIATION, LLC Opr dba: Aircraft Fire: GRD

## Summary

The private pilot was conducting a personal flight in the airport traffic pattern. A witness reported seeing the single-engine airplane enter left traffic for runway 16 and land. The airplane then made a second takeoff and continued to make left turns. The witness reported that, while airplane was turning from the crosswind leg to the downwind leg, he heard a reduction in engine power and saw the airplane descend toward the ground. Another witness reported that he heard the airplane takeoff from the airport and then saw the airplane make a left turn. He stated that, while the airplane was in the left turn, it pitched nose-down and descended toward the ground. The witness also noted that the airplane's engine sounded normal during the flight.

A postaccident examination established that the airplane had impacted the ground in a nose-low attitude and was destroyed by impact and postimpact fire damage. The examination did not reveal any anomalies that would have precluded normal operation of the airplane during the flight. Based on the witness descriptions and the impact geometry, it is likely that the pilot did not maintain adequate airspeed during the 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 failure to maintain adequate airspeed while operating in the airport traffic pattern, which resulted in the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall at a low altitude.

## Events

1. Approach-VFR pattern crosswind - Aerodynamic stall/spin
2. Uncontrolled descent - Collision with terr/obj (non-CFIT)
3. Post-impact - Fire/smoke (post-impact)
4. Post-impact - Explosion (post-impact)

## Findings - Cause/Factor

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

## Narrative

### HISTORY OF FLIGHT

On March 11, 2016, about 1627 mountain standard time, a Remos Aircraft GmbH Flugzeugbau Remos GX airplane, N28GX, impacted terrain following a loss of control in the airport traffic pattern at the Ohkay Owingeh Airport (E14), Española, New Mexico. The private pilot and the pilot-rated passenger were fatally injured, and the airplane was destroyed. The airplane was registered to and operated by New Mexico Sport Aviation, LLC, under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. Day visual meteorological conditions prevailed for the personal flight that departed E14 about 1620 with the intended destination of Santa Fe Municipal Airport (SAF), Santa Fe, New Mexico.

According to the operator, the airplane was based at SAF, and the pilot rented it to gain familiarity with the takeoff-and-landing procedures used at the Los Alamos Airport (LAM), Los Alamos, New Mexico. Because of the restricted airspace immediately to the south of the runway and the noise-sensitive residential area just west of the runway, LAM employs a non-standard traffic pattern. All landings are made on runway 27, and all departures are made in the opposite direction on runway 9.

A review of available Federal Aviation Administration (FAA) air traffic control (ATC) radar data established that the airplane departed SAF about 1350, flew north-northwest toward LAM, and landed about 1405 on runway 27 at LAM. At 1417:25, the airplane reappeared on radar after it departed LAM on runway 9. The airplane flew about 8.5 miles northeast of LAM before it returned to land on runway 27 about 1427. At 1433:25, the airplane reappeared on radar after it departed LAM on runway 9. The airplane again flew about 8.5 miles northeast of LAM before it returned to land on runway 27 about 1443. At 1449:13, radar data indicated that the airplane had departed LAM and that it continued northeast toward E14. At 1455:29, the airplane descended below available radar coverage about 3.3 miles southwest of E14.



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# National Transportation Safety Board - Aircraft Accident/Incident Database

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The airplane was equipped with a GlobalStar SPOT satellite tracking device, which reported its position every 5 minutes when activated. According to available track data, the device recorded the airplane on the ramp at E14 about 1503. During the next 15 minutes, the device recorded three stationary data points, consistent with the airplane parked on the airport ramp. No position reports were recorded between 1518 and 1627. At 1627:31, a final data point was recorded near the approach end of runway 16. The GlobalStar SPOT data did not include any altitude information. Additionally, there was no recorded ATC radar data for the accident flight because the airport traffic pattern altitude at E14 was below available radar coverage for the area.

There were two witnesses to the accident flight. Both witnesses were standing outside a residence located about 0.4 mile southeast of the runway 16 departure threshold at E14. The first witness reported seeing the airplane enter left traffic for runway 16 and land. The airplane then made a second takeoff and continued to make left turns. The witness reported that, while the airplane was turning from the crosswind leg to the downwind leg, he heard a reduction in engine power and saw the airplane descend toward the ground in a level pitch attitude. The witness reported seeing an explosion shortly after the airplane descended behind a hill. The second witness reported that he heard the airplane takeoff from the airport and then saw the airplane make a left turn. He stated that, while the airplane was in a left turn it pitched nose-down and descended toward the ground. He reported that there was a large explosion and ascending fireball when the airplane impacted terrain. He also noted that the airplane's engine sounded normal during the flight.

## PERSONNEL INFORMATION

--- Pilot ---

According to FAA records, the 46-year-old pilot held a private pilot certificate with a single-engine land airplane rating. Her most recent FAA third-class medical certificate was issued on May 4, 2015, with a limitation for corrective lenses. A search of FAA records showed no previous accidents, incidents, or enforcement proceedings.

The pilot's flight history was established using her logbook. The final logbook entry was dated March 9, 2016, at which time she had 132.9 hours total flight time, all of which occurred in the year before the accident. All logged flight time had been completed in single-engine airplanes. The pilot had flown 127.1 hours in the accident airplane make/model. She had logged 41.8 hours as pilot-in-command, 4.6 hours at night, and 4.1 hours in simulated instrument conditions. She had flown 89.5 hours during the 6 months before the accident, 36.8 hours during the 90 days before the accident, and 12.5 hours during the month before the accident. The logbook did not contain any recorded flight time for the 24-hour period before the accident flight. The pilot's most recent flight review, as required by 14 CFR 61.56, was completed upon the issuance of her private pilot certificate dated January 2, 2016.

--- Pilot-Rated Passenger ---

According to FAA records, the 53-year-old passenger held a private pilot certificate with a single-engine land airplane rating. His most recent FAA third-class medical certificate was issued on April 13, 2006, with no limitations. The medical certificate expired on April 30, 2008. On the application for the expired medical certificate, the passenger reported having accumulated 300 total hours of flight experience, of which 35 hours were flown within the previous 6 months. A pilot logbook for the passenger was not located during the investigation.

## AIRCRAFT INFORMATION

The 2009-model-year airplane, serial number 356, was a high-wing monoplane of composite carbon-fiber monocoque construction. The airplane was powered by a 100-horsepower, 4-cylinder Rotax 912 ULS reciprocating engine, serial number 6783105. The engine provided thrust through a ground-adjustable, three-blade, Neuform CR3-65-(IP)-47-101.6 propeller. The two-seat airplane was equipped with a fixed tricycle landing gear and wing flaps. The airplane had a maximum allowable takeoff weight of 1,320 pounds. The special-light sport aircraft (S-LSA) was issued an airworthiness certificate on May 13, 2010. New Mexico Sport Aviation, LLC, purchased the airplane on February 21, 2011.

The airplane's 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. However, according to dispatch documentation, the airplane's hour meter indicated 2,916.7 hours before the flight departed SAF. According to maintenance documentation, the airframe had a total service time of 2,916.7 hours, and the engine had accumulated 916.7 hours since new. The last condition and 100-hour inspection of the airplane were completed on March 1, 2016, at 2,898.8 total airframe hours. A postaccident review of the maintenance records found no history of unresolved airworthiness issues. The airplane had a total fuel capacity of 22 gallons contained in a single fuselage tank. A review of fueling

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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records established that the fuel tank was topped-off before the accident flight departed SAF.

## METEOROLOGICAL INFORMATION

A postaccident review of available meteorological data established that day visual meteorological conditions prevailed at the accident site. The nearest aviation weather reporting station was located at LAM about 14 miles southwest of the accident site.

At 1615, about 12 minutes before the accident, the LAM automated surface observing system reported: wind 170ø at 10 knots with wind gusts of 15 knots, a clear sky, 10 miles surface visibility, temperature 17øC, dew point -11øC, and an altimeter setting of 30.10 inches of mercury.

At 1635, about 8 minutes after the accident, the LAM automated surface observing system reported: wind 180ø at 10 knots with wind gusts of 16 knots, a clear sky, 10 miles surface visibility, temperature 18øC, dew point -11øC, and an altimeter setting of 30.10 inches of mercury.

## AIRPORT INFORMATION

E14, a public airport located about 3 miles northeast of Española, New Mexico, was owned and operated by the Ohkay Owingeh Tribal Council. The airport field elevation was 5,790 ft mean sea level. The airport was served by a single asphalt runway, runway 16/34, that measured 5,007 ft by 75 ft. The airport was not equipped with an air traffic control tower.

## WRECKAGE AND IMPACT INFORMATION

The accident site was in an open field located about 885 ft east of the runway 16 departure threshold. The damage to the airplane was consistent with it impacting the ground in a nose-down pitch attitude on a southeast heading. There was no appreciable wreckage propagation from the point-of-impact. The main wreckage consisted of the entire airplane. All major structural components and flight controls were identified at the accident site; however, a majority of the carbon-fiber composite fuselage, wings, and empennage were destroyed during the postimpact fire. The pitot tube, which was installed on the leading edge of the left wing, had penetrated the ground at a 45ø angle. A majority of the flight control push-pull tubes for the elevator and ailerons were destroyed by the postimpact fire. Flight control cable continuity for the rudder was confirmed from the control surface to the cockpit. The entire cockpit and instrument panel were destroyed during the postimpact fire. Two of the three propeller blades exhibited impact and fire damage. The remaining propeller blade appeared undamaged.

The engine sustained extensive thermal damage during the postimpact fire. Disassembly of the engine revealed no mechanical failures of the crankshaft, camshaft, connecting rods, or pistons. Additionally, there were no anomalies observed with the cylinders or their respective valve assemblies. The sparkplugs and piston domes exhibited normal wear and combustion signatures. Both carburetors exhibited extensive thermal damage that was consistent with prolonged exposure to fire. The throttle and choke arms remained attached to the carburetor control cables. The ignition modules, secondary coil pack, and stator exhibited extensive thermal damage from the postimpact fire that precluded testing of the ignition system. The fuel pump remained intact with minor heat damage. A small amount of automobile fuel was ejected from the outlet fitting when the fuel pump was actuated by hand. Further disassembly of the fuel pump revealed no anomalies or contamination. The oil pump remained intact, and its drive shaft rotated freely. The oil pump shaft drive pin was found fractured and was retained for additional testing. The engine disassembly revealed ample lubrication throughout the engine and there was no evidence of oil starvation. The coolant pump housing exhibited thermal damage that was consistent with prolonged exposure to fire. The coolant impeller remained attached to the drive shaft; however, the impeller had partially melted during the postimpact fire. The reduction gearbox assembly remained intact, and the drive gear exhibited no pitting or galling.

## MEDICAL AND PATHOLOGICAL INFORMATION

The New Mexico Office of the Medical Investigator in Albuquerque, New Mexico, performed autopsies on the pilot and pilot-rated passenger. The cause of death for both individuals was attributed to multiple blunt-force injuries sustained during the accident.

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology tests on specimens obtained during each autopsy. The pilot's toxicology results were negative for carbon monoxide, ethanol, and all tested drugs and medications.

The pilot-rated passenger's toxicology results were negative for ethanol. Atorvastatin, losartan, and warfarin were detected in liver. Additionally, losartan and warfarin were detected in muscle. Atorvastatin, brand name Lipitor, is a prescription medication used for lowering high blood cholesterol. Losartan, brand name Cozaar, is a prescription medication used to treat high blood pressure. Warfarin, brand name Coumadin, is a prescription medication used to prevent clot formation. The detected substances are not generally considered performance-impairing.

## TESTS AND RESEARCH

The engine crankcase, camshaft, oil pump shaft, and oil pump drive pin were submitted to the National Transportation Safety Board (NTSB) Materials Laboratory for additional examination. The examination indicated that the camshaft had a yoke machined into the end opposite the drive gear that drove the oil pump shaft. As designed, a drive pin passed through the body of the oil pump shaft, which engaged the camshaft yoke. The camshaft yoke did not exhibit any abnormal wear or deformation. The bearing bore in the crankcase that corresponded with the oil pump drive yoke exhibited scoring on the inner surface about mid-depth. The depth of the scoring was about 0.024 inch. The scoring was consistent with the profile of the oil pump shaft drive pin. The drive pin fractured inboard of the outer diameter of the oil pump shaft on both sides, leaving a portion of the drive pin within each side of the shaft. Examination of the fracture surfaces revealed crack arrest marks consistent with a fatigue fracture. Hardness measurements made across the diameter of the drive pin were consistent with the manufacturer's design specification. Although the drive pin had fractured, it remained engaged to the camshaft yoke and continued to rotate the oil pump shaft. Additionally, the postaccident engine disassembly revealed ample lubrication throughout the engine, and there was no evidence of oil starvation.

According to the engine manufacturer, a fractured oil shaft drive pin is indicative of an oil system with restrictive hoses and fittings that can result in a pulsating oil supply to the oil pump. The pulsating loading of the drive pin can result in a fractured drive pin. The Rotax 912 installation manual stipulates that oil hoses have an inside diameter of 11 millimeters. The oil hoses recovered with the wreckage had inside diameters that measured 9 millimeters. Additionally, the Rotax 912 installation manual stipulates full-flow angled fittings for oil hose connections. Examination of the oil cooler revealed a right-angle fitting that did not meet the engine manufacturer's full-flow fitting specification.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA18CA113    01/28/2018 900 EST    Regis# N127AG    Homstead, FL    Apt: N/a  
Acft Mk/Mdl ROBINSON HELICOPTER R22    Acft SN 0814    Acft Dmg: SUBSTANTIAL    Rpt Status: Prelim    Prob Caus: Pending  
Fatal 0    Ser Inj 0    Flt Conducted Under: FAR 091  
Opr Name:    Opr dba:    Aircraft Fire: NONE

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|-------------------------------------|---------------------|---------------|-----------------------|--|
| Accident Rpt# GAA17CA356            | 06/21/2017 1130 CDT | Regis# N901KC | Matagorda, TX         | Apt: N/a                               |
| Acft Mk/Mdl ROBINSON HELICOPTER R22 |                     | Acft SN 1450  | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320-B2C       |                     | Acft TT 3477  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 137           |
| Opr Name: NELSON FLYERS INC         |                     | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                     |                     |               |                       | AW Cert: STN                           |

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## Summary

The pilot of the helicopter reported that, while flying downwind during rice field pollination operations, he "lost control" of the helicopter. The helicopter impacted the ground and rolled onto its right side.

The helicopter sustained substantial damage to the tailboom.

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

The automated weather observation station located about 12 miles west of the accident site reported that, about 37 minutes before the accident, the wind was from 360° at 19 knots, gusting to 26 knots. The same weather observation station reported that, about 23 minutes after the accident, the wind was from 360° at 18 knots, gusting to 26 knots.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain helicopter control during an agricultural flight in gusting wind conditions.

## Events

1. Maneuvering-low-alt flying - Loss of control in flight

## Findings - Cause/Factor

1. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-(general)-Not attained/maintained - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
3. Environmental issues-Conditions/weather/phenomena-Wind-Gusts-Effect on operation

## Narrative

The pilot of the helicopter reported that, while flying downwind during rice field pollination operations, he "lost control" of the helicopter. The helicopter impacted the ground and rolled onto its right side.

The helicopter sustained substantial damage to the tail boom.

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

The automated weather observation station located about 12 miles west of the accident site reported that, about 37 minutes before the accident, the wind was from 360° at 19 knots, gusting 26 knots. The same weather observation station reported that, about 23 minutes after the accident, the wind was from 360° at 18 knots, gusting 26 knots.

# National Transportation Safety Board - Aircraft Accident/Incident Database

|                                     |                     |               |                       |  |
|-------------------------------------|---------------------|---------------|-----------------------|--|
| Accident Rpt# ANC17LA013            | 12/18/2016 1100 AKS | Regis# N121MR | Palmer, AK            | Apt: N/a                               |
| Acft Mk/Mdl ROBINSON HELICOPTER R22 |                     | Acft SN 0496  | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-320-B2C       |                     | Acft TT 3417  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: CASTOR AVIATION LTD       |                     | Opr dba:      |                       | Aircraft Fire: NONE                    |
|                                     |                     |               |                       | AW Cert: STN                           |

## Summary

The flight instructor stated that he was providing flight instruction to the private pilot, practicing pinnacle landings to an area of remote, snow-covered mountainous terrain. The flight instructor said that just before the accident, the private pilot accomplished two successful pinnacle landings. After a third pinnacle landing site was selected, a gravel-covered site on a mountain ridgeline, the private pilot circled the site several times for reconnaissance. He reported that as the helicopter neared the site, about 10 to 20 feet above the surface, he realized that it had a steep uphill grade making the site unsuitable for landing. He explained that, as he was getting ready to tell the private pilot to initiate a go-around, the low rotor revolutions per minute (RPM) warning light and horn activated. The private pilot reported that when the low rotor RPM warning light and horn activated, he observed the gauge indicated about 90 percent RPM.

The flight instructor then took control of the helicopter, attempting to maneuver it to the right and towards the predetermined escape route, but it descended and the skids subsequently struck the uneven terrain. He said that after the initial collision, he increased collective pitch and applied right cyclic, but it began to spin to the right, while descending. The helicopter continued to spin, while descending, and it subsequently struck an area of steep, snow-covered terrain. The helicopter then rolled downhill multiple times before coming to rest in an area of steep, snow-covered terrain.

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's failure to maintain main rotor revolutions per minute (RPM) during a pinnacle landing, which resulted in a main rotor stall condition, a loss of control, and a subsequent impact with terrain. A contributing factor was the flight instructor's failure to monitor the main rotor RPM during the pinnacle landing.

## Events

1. Landing - Simulated/training event
2. Landing - Miscellaneous/other
3. Landing - Attempted remediation/recovery
4. Landing - Loss of control in flight
5. Landing - Collision with terr/obj (non-CFIT)

## Findings - Cause/Factor

1. Personnel issues-Action/decision-Action-Delayed action-Instructor/check pilot - C
2. Personnel issues-Task performance-Use of equip/info-Aircraft control-Student/instructed pilot - C
3. Personnel issues-Action/decision-Action-Incorrect action performance-Student/instructed pilot - C
4. Personnel issues-Psychological-Attention/monitoring-Task monitoring/vigilance-Instructor/check pilot - C
5. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Prop/rotor parameters-Not attained/maintained - C

## Narrative

On December 18, 2016, about 1100 Alaska standard time, a Robinson R-22 Alpha helicopter, N121MR, sustained substantial damage during a collision with mountainous, snow-covered terrain about 12 miles north of Palmer, Alaska. The two occupants aboard, the certificated flight instructor seated in the left seat, and the private helicopter pilot seated in the right seat, sustained minor injuries. The helicopter was registered to, and operated by, Castor Aviation Ltd. of Wasilla, Alaska, as a visual flight rules (VFR) instructional flight under the provision of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed. The flight originated from the Wolf Lake Airport, Palmer, at 1002.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on December 18, the flight instructor stated that he was providing flight instruction to the private pilot who was working towards a commercial helicopter pilot certificate. He added that at the time of the accident, they were practicing pinnacle landings to an area of remote, snow-covered mountainous terrain in the Hatcher Pass Management Area.

The flight instructor said that just before the accident, the private pilot accomplished two successful pinnacle landings to sites situated about 4,200 and 4,600 feet mean sea level (msl). After a third pinnacle landing site was selected, a gravel-covered site on a mountain ridgeline situated about 4,300 feet msl, the private pilot circled the site several times for reconnaissance. He said that while circling, the pair discussed the maneuver, which included a preplanned escape route that was just to the right of the landing site.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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The flight instructor said that during the accident approach, while the private pilot was manipulating the flight controls, he confirmed that all cockpit indications were "in the green," no warning lights were illuminated, the manifold pressure was between 20 to 21 inches, and the descent rate was at 150 feet per minute. He reported that as the helicopter neared the site, about 10 to 20 feet above the surface, he realized that it had a steep uphill grade making the site unsuitable for landing. He explained that, as he was getting ready to tell the private pilot to initiate a go-around, the low rotor revolutions per minute (RPM) warning light and horn activated. The private pilot reported that when the low rotor RPM warning light and horn activated, he observed the gauge indicated about 90 percent RPM.

The flight instructor then took control of the helicopter, attempting to maneuver it to the right and towards the predetermined escape route, but it descended and the skids subsequently struck the uneven terrain. He said that after the initial collision, he increased collective pitch and applied right cyclic, but it began to spin to the right, while descending. The helicopter continued to spin, while descending, and it subsequently struck an area of steep, snow-covered terrain. The helicopter then rolled downhill multiple times before coming to rest in an area of steep, snow-covered terrain. Both occupants egressed from the wreckage, a cellular phone was utilized to request rescue assets, and the occupants were extracted from the accident site via a helicopter from a separate operating company.

The helicopter sustained substantial damage to the main rotor system, fuselage, tail boom, and tail rotor system.

The flight instructor reported that there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

In the recommendation section of the NTSB Accident/Incident Reporting Form 6120.1, the flight instructor reported that to never execute a practice approach to an area you are not 100 percent sure you could land the helicopter to in the event of something happening in the last 25 to 50 feet. He further reported that if the landing surface would have been a bit more suitable, the helicopter might have been able to touch down and then come back up to take the planned escape route.

## METEOROLOGICAL INFORMATION

The closest official weather observation station is located at the Palmer Airport, Palmer about 12 miles south of the accident site. At 1053, an Aviation Routine Weather Report (METAR) was reporting, and stated in part: Wind, 20 degrees (true) at 18 knots, gusting 24 knots; visibility, 10 statute miles; clouds and sky condition, scattered clouds at 8000 feet, broken clouds at 14,000 feet; temperature, 34 degrees F; dew point, 14 degrees F; altimeter, 28.86 inHg.

## SURVIVAL ASPECTS

The accident helicopter was not equipped, nor was it required to be equipped with an emergency locator transmitter. The pilot and passenger were not wearing flight helmets for the flight. The helicopter was equipped with 3-point restraint systems for the two seats.

## ADDITIONAL INFORMATION

Robinson Helicopter Company has published the R-22 Pilot's Operating Handbook (2016). This document discusses the low RPM light and horn system and states in part:

The low RPM light and horn indicate rotor RPM at 97 percent or below.

Robinson Helicopter Company has published Safety Notice SN-24 Low RPM Rotor Stall Can Be Fatal (1994). This document discusses main rotor stall and states in part:

Rotor stall due to low RPM causes a very high percentage of helicopter accidents, both fatal and non-fatal. Frequently misunderstood, rotor stall is not to be confused with retreating tip stall which occurs only at high forward speeds when stall occurs over a small portion of the retreating blade tip. Rotor stall, on the other hand, can occur at any airspeed and when it does, the rotor stops producing the lift required to support the helicopter and the aircraft literally falls out of the sky. Fortunately, rotor stall accidents most often occur close to the ground during takeoff or landing and the helicopter falls only four or five feet. The helicopter is wrecked but the occupants survive. However, rotor stall also occurs at higher altitudes and when it happens at heights above 40 or 50 feet above

ground level it is most likely to be fatal.



# National Transportation Safety Board - Aircraft Accident/Incident Database

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|  |                    |               |                       |  |
|--|--------------------|---------------|-----------------------|--|
| Accident Rpt# GAA17CA551                 | 09/24/2017 925 PDT | Regis# N177SR | Santa Barbara, CA     | Apt: Santa Barbara Muni SBA            |
| Acft Mk/Mdl ROBINSON HELICOPTER R22-BETA |                    | Acft SN 3275  | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-360 SERIES         |                    | Acft TT 2626  | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: TUMBLEWEED LEASING CO INC      |                    | Opr dba:      |                       | Aircraft Fire: NONE                    |
|  |                    |               |                       | AW Cert: STN                           |

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## Events

1. Landing - Dynamic rollover

## Narrative

According to the flight instructor in the skid-equipped helicopter, he was providing hover instruction to his airplane rated student, about three feet above the ground.

The instructor reported that he allowed the student to make the necessary flight control inputs, as he guarded the controls. The area was level, with 1ft tall weeds. The helicopter began to drift laterally and descend. The right skid contacted the weeds and the helicopter rolled onto its right-side. The instructor reported that, "I was not quick enough in lowering the collective to prevent full rollover."

The helicopter sustained substantial damage to the tailboom and engine mounts.

Per the National Transportation Safety Board's Pilot Aircraft Accident Report, the instructor reported that the accident could have been prevented by instructing hover practice at a, "higher altitude and away from obstacles that may serve as a pivot point leading to dynamic rollover."

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

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                 |                     |              |                       |  |
|---------------------------------|---------------------|--------------|-----------------------|--|
| Accident Rpt# GAA18CA072        | 12/05/2017 1315 EST | Regis# N99RW | Fort Pierce, FL       | Apt: Treasure Coast Intl FPR           |
| Acft Mk/Mdl ROBINSON HELICOPTER |                     | Acft SN 0793 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-540-F1    |                     | Acft TT 2559 | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: ATLAS AVIATION LP     |                     | Opr dba:     |                       | Aircraft Fire: NONE                    |
|                                 |                     |              |                       | AW Cert: STN                           |

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## Events

1. Landing - Loss of control in flight
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## Narrative

The helicopter pilot reported that, while hovering to land on a helipad, the tail struck the ground. He added that the helicopter landed hard and rolled over onto the left side.

The helicopter sustained substantial damage to the fuselage, main rotor blades, and tail boom.

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

A review of recorded data from the automated weather observation station located on the airport reported that, about 20 minutes before the accident, the wind was from 130ø at 10 knots.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|   |              |         |              |                       |  |
|---|--------------|---------|--------------|-----------------------|--|
| Accident Rpt# GAA17CA434                | 07/21/2017   | 830 MDT | Regis# N28VH | Bozeman, MT           | Apt: Bozeman Yellowstone Intl BZN      |
| Acft Mk/Mdl ROBINSON HELICOPTER COMPANY | Acft SN 3687 |         |              | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O-360 SERIES        | Acft TT 2641 |         |              | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: ROCKY MOUNTAIN ROTORS LLC     | Opr dba:     |         |              |                       | Aircraft Fire: NONE                    |
|   |              |         |              |                       | AW Cert: STN                           |

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## Events

1. Autorotation - Hard landing
- 

## Narrative

According to the helicopter flight instructor, he was demonstrating simulated 180° right turn autorotations.

He reported that during the entry of the third autorotation, the helicopter attitude was excessively nose low and the rate of descent was high.

He initiated a power-on recovery; however, the flare was initiated too late.

He applied forward cyclic to level the skids and increased collective to its mechanical limit, but the helicopter touched down and one of the main rotor blades struck the tailboom.

The helicopter sustained substantial damage to the tailboom.

The pilot reported in the National Transportation Safety Board's, Pilot Aircraft Accident Report, "The event could have been avoided by recovering the autorotation sooner and doing a go-around."

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

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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|   |                     |                       |                              |  |
|---|---------------------|-----------------------|------------------------------|--|
| Accident Rpt# GAA18CA066                | 11/29/2017 1630 CST | Regis# N744WT         | New Orleans, LA              | Apt: Lakefront NEW                     |
| Acft Mk/Mdl ROBINSON HELICOPTER COMPANY | Acft SN 11489       | Acft Dmg: SUBSTANTIAL | Fatal 0                      | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-540-AE1A5        |                     | Ser Inj 0             | Flt Conducted Under: FAR 091 |  |
| Opr Name: JAMES TULL                    | Opr dba:            | Aircraft Fire: NONE   |                              | AW Cert: STN                           |

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## Events

1. Landing - Miscellaneous/other

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## Narrative

The helicopter pilot reported that, while positioning the helicopter on a trailer for maintenance, the helicopter landed on the trailer with the left skid off the platform and the tail rotor struck the ground. The pilot added that the helicopter climbed about 50 ft. and he reduced power. During the descent, the main rotor blade struck the tail boom and the helicopter impacted the pavement.

The helicopter sustained substantial damage to the fuselage, tail boom, and 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

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|                                  |                     |               |                       |                                       |
|----------------------------------|---------------------|---------------|-----------------------|---------------------------------------|
| Accident Rpt# CEN18LA073         | 01/11/2018 1130 EST | Regis# N353RA | Wadsworth, OH         | Apt: Wadsworth Muni 3G3               |
| Acft Mk/Mdl S.O.C.A.T.A. MS893E  |                     | Acft SN 13180 | Acft Dmg: SUBSTANTIAL | Rpt Status: Prelim Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING O&VO-360 SER |                     |               | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091          |
| Opr Name: KEENE ROGER D          |                     | Opr dba:      |                       | Aircraft Fire: NONE                   |

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## Events

1. Approach-VFR pattern final - Loss of engine power (total)
- 

## Narrative

On January 11, 2018, about 1130 eastern standard time, a S.O.C.A.T.A. MS893E airplane, N253RA, was substantially damaged during a forced landing at Wadsworth Municipal Airport (3G3), Wadsworth, Ohio. The private pilot was not injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a ferry flight. Day visual meteorological conditions prevailed for the flight, which departed without a flight plan from Reader-Botsford Airport (67D), Wellington, Ohio, about 1120.

The pilot stated that the purpose of the flight was to ferry the airplane, which had an expired annual inspection, to a new hangar. During the approach to 3G3, the pilot noticed a loss of engine power. Following unsuccessful attempts to restore engine power, the pilot executed a forced landing, during which the airplane impacted trees and damaged both wings.

# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ERA17LA048 11/17/2016 1430 CST Regis# N65968 Moscow, TN Apt: Hawks Nest 4TN3  
Acft Mk/Mdl SCHWEIZER SGS126-E Acft SN 608 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Acft TT 2709 Fatal 0 Ser Inj 1 Flt Conducted Under: FAR 091  
Opr Name: WILKINSON EPHRIAM B Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

A tow plane pilot on the ground reported that he watched the glider fly for about 20 minutes after it was released from the tow plane. After the glider turned onto the left downwind approach to land and while about 300 ft above ground level (agl), he saw the glider enter a right 360° turn while on the base leg, followed shortly after by a 180° right turn. The glider then entered an aerodynamic stall/spin from about 100 ft agl and descended into trees. Although the glider pilot stated that he was unable to recall the sequence of events that occurred after entering the traffic pattern, he did not believe that there were any mechanical anomalies with the glider that would have precluded normal operation. It is likely that the pilot did not maintain adequate airspeed and exceeded the glider's critical angle of attack, which resulted in the aerodynamic stall/spin.

## Cause Narrative

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

## Events

1. Approach-VFR pattern base - Aerodynamic stall/spin

## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Airspeed-Not attained/maintained - C
3. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Angle of attack-Capability exceeded - C
4. Environmental issues-Physical environment-Object/animal/substance-Tree(s)-Contributed to outcome

## Narrative

On November 17, 2016, about 1430 central standard time, a Schweizer SGS 1-26E glider, N65968, was substantially damaged when it impact trees and terrain while maneuvering in the airport traffic pattern at Hawks Nest Airport (4TN3), Moscow, Tennessee. The airline transport pilot sustained serious injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which was operated under the provisions of Title 14 Code of Federal Regulations Part 91.

After an aerial tow to 3,000 feet above ground level (agl) the glider disconnected from the tow plane and the pilot flew for approximately 20 minutes between an altitude of 2,500 and 3,000 feet agl. A tow plane pilot, who witnessed the accident from the ground, observed the glider flight for approximately 20 minutes. He observed the glider enter a normal left downwind approach to runway 18. He further stated that he observed the glider execute a 360-degree right turn while on the base leg at about 300 feet agl. He reported that after the 360-degree turn, the glider made another 180-degree right turn which appeared to "develop into a slow spin" from about 100 feet agl; the glider descended into the trees. The pilot stated he could not recall the left base turn and had no recollection of the accident, but offered the possibility of wind shear as a cause. In addition, he indicated that he possibly made the turn to lose altitude. He further stated there were no mechanical irregularities or anomalies with the glider.

Post-accident examination by a Federal Aviation Administration (FAA) inspector revealed the glider was upright and level on flat ground with both left and right wing leading edges pushed up against trees in an area approximately one quarter of a mile northeast of runway 18. Both wings were partially detached from the fuselage and 4 feet of the left outboard wing was crumpled. The right wing was crumpled and nearly severed mid-span. The empennage and rudder remained attached to the airframe and the cockpit sustained minor damage.

The pilot held an airline transport pilot certificate with a rating for airplane single-engine land, multi engine land, and glider. His most recent FAA first-class medical certificate was issued on September 6, 2016. At the time of the accident, he reported a total flight experience of 8,500 hours total time with 17.4 hours in a glider and 1.6 hours in this make and model.

The single-seat, mid-wing, glider, serial number 608, was manufactured in 1974. Its most recent annual inspection was completed on December 15, 2015. At that time, the airframe had accumulated approximately 2,709 total hours of operation. The glider's flight manual detailed that its stalling speed in level flight was 28 mph. At a 20-degree bank, it was 29 mph, and at 30 and 45 degrees, it was 30 and 33.4 mph respectively.

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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The William L. Whitehurst Field Airport (M08) Bolivar, Tennessee was located about 17 miles south of the accident site. The recorded weather at MJX, at 1425, was wind from 170 degrees at 7 knots, gusting to 14 knots, and a clear sky. The temperature was 27 degrees C; dew point 06 degrees C, and the altimeter setting was 29.97 inches Hg. An hour before the accident through an hour after, the winds remained steady from 170 degrees at 7 knots with gusts up to 15 knots.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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|                                     |                     |                     |                       |  |
|-------------------------------------|---------------------|---------------------|-----------------------|--|
| Accident Rpt# GAA18CA035            | 10/27/2017 1750 EDT | Regis# N211W        | Tallahassee, FL       | Apt: Tallahassee Intl TLH              |
| Acft Mk/Mdl SMITH AEROSTAR 600A-600 |                     | Acft SN 60-0460-153 | Acft Dmg: SUBSTANTIAL | Rpt Status: Factual Prob Caus: Pending |
| Eng Mk/Mdl LYCOMING IO-540-K1J5     |                     | Acft TT 5932        | Fatal 0 Ser Inj 0     | Flt Conducted Under: FAR 091           |
| Opr Name: CHARLES E. VERCELLI, JR.  |                     | Opr dba:            |                       | Aircraft Fire: NONE                    |
|                                     |                     |                     |                       | AW Cert: STN                           |

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## Events

1. Initial climb - Loss of control in flight
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## Narrative

The pilot of the multi-engine, retractable landing gear airplane reported that, during the initial climb, he "noted 105 IAS [indicated airspeed] as normal and reached down to retract the gear." He added that he "glanced down" to make sure he had grabbed the landing gear selector, and when he looked back outside, the airplane was "near the runway." He further added that he "pulled back hard on the yoke," but the propellers struck the runway, the airplane settled on the runway, and skidded into the grass to the left.

The pilot reported additional factors related to the accident on the National Transportation Safety Board Form 6120.1 Pilot/Operator Aircraft Accident/Incident Report Safety Recommendation section. He added that the airplane was "not high enough above [the] ground to raise the gear," and he may have "relaxed back-pressure on the yoke after rotation," and when leaning slightly forward for the gear handle, the yoke may have been pushed forward slightly.

The airplane sustained substantial damage to the fuselage.

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's Airplane Flying Handbook stated in part:

Avoid premature landing gear retraction and do not retract the landing gear until a positive rate of climb is indicated on the flight instruments. If the airplane has not attained a positive rate of climb, there is always the chance it may settle back onto the runway with the gear retracted. This is especially so in cases of premature lift-off. Remember that leaning forward to reach the landing gear selector may result in inadvertent forward pressure on the yoke, which causes the airplane to descend.



# National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17LA036 11/06/2016 1222 CST Regis# N4252K San Marcos, TX Apt: San Marcos Regional HYI  
Acft Mk/Mdl STINSON L 5 Acft SN 3551 Acft Dmg: SUBSTANTIAL Rpt Status: Factual Prob Caus: Pending  
Eng Mk/Mdl LYCOMING O-435-1 Acft TT 1257 Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: PATTERSON JERRY E Opr dba: Aircraft Fire: NONE  
AW Cert: STN

## Summary

The private pilot reported that the airplane bounced while landing on the runway, so he conducted a go-around. During climbout, the engine lost power at 500 ft above ground level. The pilot turned the airplane to land on another runway; however, the airplane was not able to reach the runway, so he landed on wet grass between the runways. Upon touchdown, the left main landing gear collapsed when it dug into the soft terrain, and the airplane nosed over.

The pilot reported that, for the entire flight, he had the fuel selector positioned on the left tank. The pilot added that the airplane usually burned between 9 and 10 gallons of fuel per hour. Therefore, given the flight was about 1 hour 22 minutes long and the tank held 15 gallons of usable fuel, the left tank probably contained about 2 to 3 gallons of usable fuel at the time of the accident. The right fuel tank was full.

A postaccident examination of the airplane revealed that there was no fuel in the fuel line leading into the engine. The position of the fuel pick-up line in the wing would have allowed the fuel in the wing to unport during the climbing turn. Given the low fuel level in the selected left fuel tank, it is likely that the fuel supply to the engine was interrupted during the climbing turn. If the pilot had selected the full right fuel tank, the loss of power would likely not have occurred.♣

## Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's improper fuel management before landing, which resulted in fuel starvation and the subsequent total loss of engine power during a subsequent go-around when the fuel became unported during the climbing turn.

## Events

1. Initial climb - Fuel starvation
2. Initial climb - Loss of engine power (total)
3. Landing-landing roll - Landing gear collapse
4. Landing-landing roll - Nose over/nose down

## Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Use of equip/system-Pilot - C
2. Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid management - C
3. Environmental issues-Physical environment-Runway/land/takeoff/taxi surface-Soft surface-Contributed to outcome

## Narrative

On November 6, 2016, about 1222 central standard time, a Stinson L5, N4252K, nosed over during a forced landing at the San Marcos Regional Airport (HYI), San Marcos, Texas. The private pilot and passenger received minor injuries. The airplane was substantially damaged. The aircraft was registered to a private individual and was operated under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not on a flight plan. The flight originated from HYI about 1100.

The pilot reported the airplane bounced while landing on runway 13, so he performed a go-around. He reported the engine lost power at an altitude of about 500 ft above the ground during climbout. The pilot made a turn to land on runway 35; however, the airplane was not able to make it to the runway, so he landed on the wet grass between the runways. Upon touchdown, the left main gear collapsed when it dug into the soft terrain and the airplane nosed over resulting in substantial damage to the vertical stabilizer and wings.

The airplane was full of fuel, 15 gallons usable in each tank, when the flight was initiated. The pilot reported he had the left fuel tank selected during the entire 1 hour, 22-minute-long flight. The pilot reported the fuel quantity indicator showed between 1/4 and 3/8 of a tank of fuel remaining in the left fuel tank at the time of the accident. The right fuel tank was full, and the pilot reported he should have switched tanks before the landing. He reported the left fuel tank had previously shown signs of fuel seeping and that the fuel quantity gauges were not reliable. The pilot stated the airplane usually burned between 9 and 10 gallons per hour fuel.

A postaccident examination of the airplane by a Federal Aviation Inspector revealed fuel was not present in the fuel line leading into the engine and there was very little fuel in the left fuel tank. The inspector stated that the location of the fuel pick-up line in the wing, would have allowed the fuel in the wing to un-port during the climb.