On July 4, 2015, about 1420 central daylight time, a Champion 7BCM, N10497, sustained substantial damage when it impacted the 16th-tee box of the Northshore Gulf Course located on Corpus Christi Bay in Portland, Texas, while maneuvering at a low altitude. The pilot and passenger received fatal injuries. The airplane was owned by a private individual and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Day visual meteorological conditions prevailed at the time of the accident and no flight plan was filed. The flight departed the McCampbell-Porter Airport (TFP), Ingleside, Texas, at an unknown time.

A witness reported that he observed the accident airplane flying about 100 feet above the bay and about 250 feet from the shoreline numerous times within the last month. On the day of the accident, he observed the airplane flying even lower over the bay – about 50 ft. However, he did not observe the accident.

A witness reported seeing the airplane flying "right over the rooftop" of one the homes near the shoreline before turning north along the shoreline at a "really, really" low altitude of 20 to 50 ft off the ground. He initially thought the airplane was going to land. Then he saw the airplane go straight up into a loop maneuver, went upside down, and then "nosed dived" into the ground. Another witness said the airplane did 3 to 4 "wing waves" before it completed 1/2 of a loop, and then it went straight down.

Witnesses attempted to assist the pilot and passenger until the local emergency responders arrived about 5 minutes after the accident occurred. The location of the accident site was near one of the pilot’s relative’s home that overlooked the bay and the golf course.
The 28-year-old pilot held a private pilot certificate with a single-engine land airplane rating. He held a second class airman medical certificate that was issued on July 18, 2014, with the restriction to wear corrective lenses. During his medical examination in July 2014, the pilot reported that his total flight time was 700 hours.

The airplane was a tandem two-seat, single-engine Champion 7BCM, serial number 47-934. It was equipped with a 95-horsepower Continental C90-8F engine, serial number 15452-9-8R, which powered a two-bladed, wooden Sensenich propeller. The airplane's maintenance records were not obtained during the course of the investigation.
Meteorological Information and Flight Plan

<table>
<thead>
<tr>
<th>Conditions at Accident Site:</th>
<th>Visual Conditions</th>
<th>Condition of Light:</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation Facility, Elevation:</td>
<td>NGP, 18 ft msl</td>
<td>Distance from Accident Site:</td>
<td>11 Nautical Miles</td>
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<tr>
<td>Observation Time:</td>
<td>1356 CDT</td>
<td>Direction from Accident Site:</td>
<td>180°</td>
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<tr>
<td>Lowest Cloud Condition:</td>
<td>Visibility</td>
<td>Visibility (RVR):</td>
<td></td>
</tr>
<tr>
<td>Lowest Ceiling:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Wind Speed/Gusts:</td>
<td>18 knots / 25 knots</td>
<td>Turbulence Type Forecast/Actual:</td>
<td>/</td>
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<tr>
<td>Wind Direction:</td>
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<td>Turbulence Severity Forecast/Actual:</td>
<td>/</td>
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<td>Altimeter Setting:</td>
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<td>Temperature/Dew Point:</td>
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<tr>
<td>Precipitation and Obscuration:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Departure Point:</td>
<td>Ingleside, TX (TFP)</td>
<td>Type of Flight Plan Filed:</td>
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<tr>
<td>Destination:</td>
<td>Ingleside, TX (TFP)</td>
<td>Type of Clearance:</td>
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<tr>
<td>Departure Time:</td>
<td>CST</td>
<td>Type of Airspace:</td>
<td></td>
</tr>
</tbody>
</table>

The 1356 surface weather observation at the Corpus Christi Naval Air Station (NGP) located about 11 miles to the south the accident site was: wind 150 degrees at 18 knots gusting to 25 knots; 10 miles visibility; few clouds at 2,100 feet; scattered clouds at 4,000 feet; temperature 31 degrees C; dew point 26 degrees C; altimeter 29.99 inches of mercury.

Wreckage and Impact Information

<table>
<thead>
<tr>
<th>Crew Injuries:</th>
<th>1 Fatal</th>
<th>Aircraft Damage:</th>
<th>Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Injuries:</td>
<td>1 Fatal</td>
<td>Aircraft Fire:</td>
<td>None</td>
</tr>
<tr>
<td>Ground Injuries:</td>
<td>N/A</td>
<td>Aircraft Explosion:</td>
<td>None</td>
</tr>
<tr>
<td>Total Injuries:</td>
<td>2 Fatal</td>
<td>Latitude, Longitude:</td>
<td>27.876111, -97.303056</td>
</tr>
</tbody>
</table>

The airplane impacted the terrain in a steep, nose down attitude. There was no post impact ground fire. The engine compartment, fuselage, wings, and empennage exhibited extensive crushing and buckling, but otherwise remained intact. The propeller and engine compartment were crushed up and aft from the impact. The wings remained attached to the fuselage. The right wing was broken and buckled forward about mid-span. The inboard leading edge of the right wing was found resting over the engine compartment. The outboard leading edge of the right wing impacted the edge of the tee box where the terrain dropped down about 3 feet. The left wing exhibited aft crushing along its outboard lower leading edge. The ailerons remained
attached to the wings. The tail and empennage exhibited forward buckling. There was no impact damage to the horizontal and vertical stabilizers. Flight control cable continuity was confirmed from all flight control surfaces to their respective cockpit controls. The elevator trim continuity was confirmed from the elevator trim to the elevator trim control.

Witnesses, who arrived at the accident site before the emergency first responders, reported that they saw fuel leaking from the wings and smelled fuel. Both wing fuel tanks were split open along the leading edge of the fuel tanks. The grass exhibited fuel blight when it was examined about 48 hours after the accident occurred.

The examination of the Continental 95-horsepower engine revealed that it had power train continuity when the propeller was turned. Thumb compression and suction were observed on all four cylinders. The left and right magnetos fired on all four towers when the magneto shaft was rotated. The spark plugs exhibited a light gray color and the electrodes exhibited normal wear patterns. The carburetor was broken at the air intake attachment. The carburetor bowl did not contain fuel and the carburetor floats were intact.

The examination of the two-bladed wooden Sensenich propeller revealed that one blade was fractured about mid-span. About six to ten inches of the remaining wooden blade was splintered opposite the direction of rotation. The other blade remained intact, but it was cracked along the length of the span. The leading edge of the blade had a metal cap installed and it exhibited chordwise scratching.

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**Medical And Pathological Information**

The autopsy of the pilot was performed by the Medical Examiner, County of Nueces, Corpus Christi, Texas, on July 6, 2015. The cause of death was blunt head trauma and the manner of death was an accident. No significant natural disease was identified.

Toxicology testing performed by AIT labs in Indianapolis, Indiana, at the request of the medical examiner identified alprazolam at 3.0 ng/ml, its metabolite, 7-aminoclonazepam at 12.2 ng/ml, benzoylecgonine at 116 ng/ml, hydrocodone at 18.7 ng/ml, and ethanol at 0.163 gm/dl in femoral blood.

A Forensic Toxicology Fatal Accident Report was prepared by the FAA Civil Aerospace Medical Institute. No carbon monoxide was detected in the blood (heart). 153 (mg/dL, mg/hg) of ethanol was detected in the blood (femoral); 159 (mg/dL, mg/hg) of ethanol was detected in the urine; and 160 (mg/dL, mg/hg) of ethanol was detected in the vitreous. N-Propanol was detected in the urine.

Anhydrolecgonine methyl ester was not detected in the blood (heart), but it was detected in the urine. 0.133 (ug/ml, ug/g) of benzoylecgonine was detected in the blood (heart), and 2.9091(ug/ml, ug/g) of benzoylecgonine was detected in the urine. Dihydrocodeine was not...
detected in the blood (femoral), but 0.019 (ug/ml, ug/g) of dihydrocodeine was detected in the urine. Ecgonine methyl ester was detected in the urine and the blood (heart). 0.085 (ug/ml, ug/g) of hydrocodone was detected in the urine, and 0.021 (ug/ml, ug/g) of hydrocodone was detected in the blood (femoral). Hydromorphone was not detected in the blood (femoral), but 0.026 (ug/ml, ug/g) of hydromorphone was detected in the urine.

The National Transportation Safety Board's (NTSB) Chief Medical Officer provided the following information concerning the toxicology results. (The NTSB Medical Factual Report is in the docket material associated with this accident report)

Alprazolam is a benzodiazepine prescription medication available as a Schedule IV controlled substance. Benzodiazepines cause dose-related central nervous system depression varying from mild impairment to hypnosis. The usual therapeutic window for alprazolam is between 6 ng/ml and 20 ng/ml and it carries the following warning: The side effects of alprazolam are typical of benzodiazepines and include sedation, impaired coordination and muscle relaxation. Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).

Benzylecgonine and ecgonine methyl ester are inactive metabolites of cocaine and anhydroecgonine methyl ester is a metabolite of cocaine that is only present after cocaine has been smoked. Cocaine is rapidly metabolized; its half-life is approximately 0.8 ± 0.2 hours, while the half-life of benzylecgonine is 6 hours. Smoking cocaine acutely results in euphoria, excitation, feelings of well-being, general arousal, and increased sexual excitement; higher doses may result in psychosis, delusions, hallucinations, irritability, fear, paranoia, antisocial behavior, and aggressiveness. After the brief "high" wears off, users may exhibit dysphoria, depression, agitation, nervousness, drug craving, fatigue, and inability to sleep.

Hydrocodone is an opioid analgesic available as a prescription medication and listed as a Schedule II controlled substance, most commonly in combination with acetaminophen (also known as Tylenol). It is commonly sold with the names Vicodin, Lortab, and Norco. Hydrocodone does not undergo significant post mortem redistribution and post mortem levels likely represent antemortem ones. Its usual therapeutic range is between 0.010 and 0.050 ug/ml and it carries this warning: Hydrocodone is more toxic than codeine, with a greater addiction liability. May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery). Hydromorphone and dihydrocodeine are metabolites of hydrocodone and are both also active opioid analgesics.

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. Federal Aviation Regulations, Section 91.17 (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 pilots' performance, even at very low levels.
Tests And Research

The pilot's iPhone 6+ and the passenger's iPhone 5S were sent to the NTSB's Vehicle Recorder Division for examination. The pilot's iPhone 6+ had received severe internal damage which precluded data recovery. (The NTSB Personal Electronic Devises Factual Report is in the docket material associated with this accident report)

The passenger's iPhone 5S was not damaged and it contained text messages, photos, and videos pertinent to the accident. The in-flight videos taken by the passenger showed the following (all imagery was from N10497):

1. The male pilot was not wearing a shirt throughout the flight and had an orange audio cable coming out of his left front pants pocket (the cable was identified as belonging to the pilot and was plugged into his iPhone). The pilot was wearing a headset. N10497 had no door on the right side. The female passenger was wearing a headset. Pilot and passenger were not wearing parachutes.

2. The aircraft took off on a paved runway, accelerated in ground effect above the runway, then climbed rapidly, turned to the right, descended, and flew within 10 feet of grass and brush covered land before climbing rapidly.

3. The aircraft flew through thin clouds as the pilot and passenger reached their arms out into the airstream.

4. The aircraft flew one complete aileron roll or barrel roll and attempted another roll; in both instances, the aircraft lost altitude.

5. The last video ended at 13:28:10 CDT, as the aircraft was descending, in a slight nose down attitude (similar to a normal, power-off descent), with the engine at idle. The accident was not captured.

Administrative Information

<table>
<thead>
<tr>
<th>Investigator In Charge (IIC):</th>
<th>James P Silliman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Participating Persons:</td>
<td>Carlos F Gallardo; FAA San Antonio FSDO; San Antonio, TX</td>
</tr>
<tr>
<td>Note:</td>
<td>The NTSB traveled to the scene of this accident.</td>
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<tr>
<td>Investigation Docket:</td>
<td><a href="http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=91493">http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=91493</a></td>
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