# Aviation Investigation Final Report

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| **Location:** | Boyne City, Michigan | **Accident Number:** | CEN11FA480 |
| **Date & Time:** | July 16, 2011, 10:48 Local | **Registration:** | N50408 |
| **Aircraft:** | Taylorcraft DCO-65 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Aerodynamic stall/spin | **Injuries:** | 1 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

Witnesses saw the airplane flying southbound between their location and the airport's runway. The engine sounded normal and was "not running rough," and the airplane's altitude was between 50 and 75 feet above ground level. One witness stated that the airplane started a left turn and then abruptly pulled up, possibly reacting to a set of nearby power lines. The airplane entered a spin and impacted the road in a nearly vertical, nose-down attitude. The postaccident examination of the airplane revealed no preexisting anomalies that could be associated with a preimpact condition. The propeller exhibited characteristics indicative of engine power at impact. The pilot had medical conditions that included atrial fibrillation, some degree of bradycardia, depression, and the use of multiple potentially sedating medications. While the pilot was likely medically impaired to some extent, the investigation was unable to determine if that impairment played a role to the accident.

## Probable Cause and Findings

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

The pilot failed to maintain airplane control while maneuvering at low altitude, which resulted in a stall/spin and impact with the terrain.

## Findings

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| **Personnel issues** | Incorrect action performance - Pilot |
| **Aircraft** | (general) - Not attained/maintained |
| **Personnel issues** | Prescription medication - Pilot |
| **Personnel issues** | Cardiovascular - Pilot |
| **Personnel issues** | Neurological - Pilot |

# Factual Information

## History of Flight

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| **Maneuvering-low-alt flying** | Aerodynamic stall/spin (Defining event) |
| **Maneuvering-low-alt flying** | Collision with terr/obj (non-CFIT) |

HISTORY OF FLIGHT

On July 16, 2011, about 1048 eastern daylight time, a Taylorcraft DCO-65, N50408, sustained substantial damage when it impacted a city street that paralleled runway 27 at the Boyne City Municipal Airport (N98), Boyne City, Michigan. The pilot received fatal injuries. The airplane was registered to and operated by the pilot 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. No flight plan was filed. The airplane departed N98 on a local flight, but the departure time was unknown.

Witnesses reported seeing the airplane flying over the city before the accident occurred. Nothing was reported as being out of the ordinary. Three witnesses observed the accident as it occurred. The witnesses were located just south of the airport standing in a parking lot. They heard the airplane approaching from the north. They saw the airplane flying southbound between their location and the runway. The engine sounded normal and was "not running rough." The airplane's altitude was between 50 – 75 feet above ground level, not much higher than the adjacent buildings.

The witness who initially saw the airplane stated that the airplane started to turn left as if to circle back to the airport. He stated, "I don't think he [pilot] saw the power lines until late, so when he did, he tried to really turn the plane and pull up. The plane spun around and then the engine cut out. Then the plane nose-dived into the ground."

One of the three witnesses stated that he saw the airplane's left wing tip at a 60-degree angle to the ground. He stated, "The plane continued its tight corkscrew turn toward the ground, at which time I heard the engine rev up, then cut out, and then the plane struck the ground at a 90-degree angle to the ground…"

The witnesses reported that they ran to the accident site and observed fuel leaking from the airplane's fuel tanks. Emergency first responders arrived within minutes and took command of the accident site.

PERSONNEL INFORMATION

The 84-year-old pilot held a sport pilot certificate with a single-engine land rating. The pilot did not have a Federal Aviation Administration airman medical certificate, and none was required when operating under the sport pilot certificate.

The pilot's flight logbook indicated that he started his flight training on June 22, 2007. He had already purchased the accident airplane, and all of his flight training and subsequent flight time was in the

accident airplane. He successfully completed his sport pilot practical test on September 22, 2009, with 91.2 hours of logged flight time. At the time of the accident, he had a total of about 146.4 hours of flight time.

## AIRCRAFT INFORMATION

The airplane was a single-engine Taylorcraft DCO-65, serial number 6257, model L-2M, manufactured in 1944. The engine was a 100-horsepower Continental O-200A, serial number 275899R. According to the Type Certificate A-746, the maximum gross weight of the airplane was 1,325 pounds. The last annual maintenance inspection of the airplane and engine was conducted on July 11, 2011. At the time of the inspection, the airplane had a total time of 1,959.9 hours and a recording hour meter reading of 47.7 hours. The recording hour meter reading at the accident site indicated 48.8 hours, or 1.1 hours since the last annual maintenance inspection.

A light-sport aircraft as defined by 14 CFR Part 1.1 states that the maximum gross weight of a light sport aircraft cannot be more than 1,320 pounds or 1,430 pounds for an aircraft intended for operation on water.

## METEOROLOGICAL INFORMATION

At 1054 eastern daylight time, the surface weather observation at the Harbor Springs Airport (MGN), Harbor Springs, Michigan, 13 miles north of N98 was: wind 240 degrees at 5 knots; 10 miles visibility; sky clear; temperature 27 degrees Celsius (C); dew point 13 degrees C; altimeter 30.02 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

The airplane impacted Altair Road, an asphalt road which ran east and west and paralleled the runway. The impact site was about 440 feet south of the runway centerline. Fuel was leaking from the airplane, but there was no ground fire.

The airplane impacted the road in a nearly vertical attitude. The examination of the accident site revealed ground scars in the asphalt that were consistent with a propeller strike in rotation. The 2-bladed propeller separated from the propeller flange and was found near the nose of the airplane. The distance from the ground scars to the airplane wreckage was about 4 feet.

The forward fuselage and engine were crushed rearward and pushed into the cockpit, with more damage exhibited on the left side of the forward fuselage and engine compartment. The left wing exhibited aft crushing and buckling of the outboard 8 feet of the wing. The right wing exhibited aft crushing of the leading edge of the right wingtip. The remainder of the fuselage and empennage were intact and exhibited minimal damage. Flight control cable continuity was confirmed from the flight controls to their respective attach points on the flight control surfaces.

The examination of the propeller revealed that one blade exhibited leading edge gouges and chordwise scratching over 1/2 the span of the blade, as well as tip curl. The other blade was bent aft, but it also exhibited leading edge gouges, chordwise scratching, and blade tip curl. The fracture surface of the propeller flange exhibited signatures consistent with torsional overstress.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed at the Spectrum Health Blodgett Campus in Grand Rapids, Michigan, on July 8, 2011. The "Cause of Death" was blunt force injury to the head and chest. A Forensic Toxicology Fatal Accident Report was prepared by the FAA Civil Aerospace Medical Institute. The results were negative for carbon monoxide, cyanide, and ethanol. The following substances were identified in the toxicology report: desmethylvenlafaxine (O-) detected in the liver; 0.724 (ug/mL, ug/g) desmethylvenlafaxine (O-) detected in the blood (cavity); flecainide detected in the liver; flecainide detected in the blood (cavity); venlafaxine detected in the liver; and 1.047 (ug/ml,ug/g) venlafaxine detected in blood (cavity).

Flecainide is a cardiac anti-arrhythmic (class IC) marketed under the brand name Tambocor. Venlafaxine is an antidepressant in serotonin-norepinephrine reuptake inhibitor (SNRI) class and is marketed under the brand name Effexor. Venlafaxine 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)." It is not among the antidepressants approved by the FAA for use by aviators under any conditions. Exelon is indicated for the treatment of mild to moderate dementia from Alzheimer's or Parkinson's diseases. Exelon's cholinergic effects may potentiate vagal effects on heart rate causing low heart rates (bradycardia).

According to the autopsy report, the pilot's past medical history was significant for hyperlipidemia, hypothyroidism, depression, and atrial fibrillation. The cause of death was determined to be blunt force injury to the head and chest and the manner of death to be accident. No significant natural disease was identified.

## ADDITONAL INFORMATION

One witness reported that the pilot had flown very low over the city, just over the top of the trees, during the Memorial Day parade. He stated that was the only time he observed the pilot flying that low.

Another witness, who was the pilot's flight instructor, stated that the pilot would return from Florida in the spring and fly with him to get current again in the airplane. This year the pilot decided not to do that. The witness also stated that the pilot would take off and land downwind, because it was too long to taxi, otherwise.

## Pilot Information

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| **Certificate:** | Sport Pilot | **Age:** | 84 |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Center |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Sport pilot | **Last FAA Medical Exam:** | |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | September 22, 2010 |
| **Flight Time:** | 146 hours (Total, all aircraft), 146 hours (Total, this make and model), 10 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Taylorcraft | **Registration:** | N50408 |
| **Model/Series:** | DCO-65 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 6257 |
| **Landing Gear Type:** | Tailwheel | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | July 11, 2011 Annual | **Certified Max Gross Wt.:** | |
| **Time Since Last Inspection:** | 1960 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | as of last inspection | **Engine Manufacturer:** | CONT MOTOR |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | A&C65 SERIES |
| **Registered Owner:** | BALOGH EUGENE W | **Rated Power:** | 65 Horsepower |
| **Operator:** | BALOGH EUGENE W | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | MGN,686 ft msl | **Distance from Accident Site:** | 13 Nautical Miles |
| **Observation Time:** | 10:54 Local | **Direction from Accident Site:** | 360° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 5 knots / None | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 240° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.02 inches Hg | **Temperature/Dew Point:** | 27°C / 13°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Boyne City, MI (N98 ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Boyne City, MI (N98 ) | **Type of Clearance:** | None |
| **Departure Time:** | | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Boyne City Municipal Airport N98 | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 660 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 27 | **IFR Approach:** | None |
| **Runway Length/Width:** | 4001 ft / 75 ft | **VFR Approach/Landing:** | Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Fatal | **Latitude, Longitude:** | 45.20861,-84.989723(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Silliman, James |
| **Additional Participating Persons:** | Amanda Theisen; FAA Grand Rapids FSDO; Grand Rapids , MI |
| **Original Publish Date:** | June 23, 2014 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=81126 |