National Transportation Safety Board
Aviation Accident Final Report

Location:	Algonac, MI	**Accident Number:**	CEN10FA182
Date & Time:	04/01/2010, 1305 EDT	**Registration:**	N853CZ
Aircraft:	CZECH AIRCRAFT WORKS SPOL SRO MERMAID	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Local residents observed the airplane flying low along the river. They reported that it entered a bank in the direction of their residence and at one point the wings were perpendicular to the water. The nose of the airplane suddenly dropped and it descended, ultimately striking the dock and shallow water. The airplane came to rest inverted, partially supported by the boat dock and partially in the river. A postaccident examination of the airframe and engine did not identify any anomalies consistent with a preimpact failure or malfunction. While Diphenhydramine, an over-the-counter antihistamine that commonly results in impaired performance, was found in the pilot's blood at a level consistent with recent use, the investigation was not able to definitively conclude that the pilot suffered from impairment.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of control resulting from an aerodynamic stall/spin while maneuvering at low altitude.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HISTORY OF FLIGHT

On April 1, 2010, at 1305 eastern daylight time, a Czech Aircraft Works Mermaid amphibious airplane, N853CZ, piloted by a private pilot, was destroyed during an in-flight collision with a boat dock near Algonac, Michigan. The local flight was being conducted under 14 Code of Federal Regulations Part 91 without a flight plan. Visual meteorological conditions prevailed. The pilot sustained fatal injuries. The local flight departed Oakland-Troy Airport (VLL), Troy, Michigan, about 1200.

A firefighter observed the accident airplane from his location at the fire station. He estimated the airplane's altitude at 500 feet above ground level (agl) and reported that it entered a turn over the river. The airplane's nose subsequently dropped and it descended upside-down toward the river. He lost sight of the airplane prior to impact.

Local residents observed the airplane flying low along the river. They reported that it entered a bank in the direction of their residence and at one point the wings were perpendicular to the water. The nose of the airplane suddenly dropped and it descended, ultimately striking the dock and shallow water.

The airplane came to rest inverted, partially supported by the boat dock and partially in the river. The water depth was about 1 foot at that location.

PERSONNEL INFORMATION

The pilot, age 80, held a private pilot certificate with single-engine land and sea airplane ratings. He was issued a third-class airman medical certificate on June 18, 2009, with a restriction for corrective lenses.

The pilot's flight time logbook was not available to the NTSB. On his most recent application for a medical certificate, the pilot reported 2,200 hours total flight time, with 40 hours flown within the past 6 months.

AIRCRAFT INFORMATION

The accident airplane was a 2007 Czech Aircraft Works Mermaid, serial number 06MM008. It was a two-place, amphibian design and certified as a light sport airplane. It was powered by a 120 horsepower Jabiru 3300 reciprocating engine, serial number 33A-1065.

The most recent annual inspection was completed on November 3, 2009, at 4.0 hours total airframe time. An engine oil change was accomplished on March 23, 2010, at 13.9 hours. There were no subsequent entries contained in the logs. There was no record of unresolved maintenance issues related to the airframe or engine.

Federal Aviation Administration (FAA) records indicated that the airplane was imported from the Czech Republic, and was issued an FAA Airworthiness Certificate in December 2007. The accident pilot purchased the airplane on October 30, 2009.

METEOROLOGICAL CONDITIONS

Conditions at the Selfridge Air National Guard Base (MTC), located approximately 13 miles west of the accident site, at 1255, were recorded as: Wind from 160 degrees at 11 knots, visibility 12 miles, broken clouds at 22,000 feet above ground level, temperature 22 degrees

Celsius, dew point 8 degrees Celsius, and altimeter 29.87 inches of mercury.

Conditions at the Coleman A. Young Municipal Airport (DET), located approximately 24 miles southwest of the accident site, at 1253, were recorded as: wind from 200 degrees at 9 knots, visibility 10 miles, clear skies, temperature 22 degrees Celsius, dew point 8 degrees Celsius, and altimeter 29.88 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted a boat dock along the St. Clair River. It came to rest inverted with the left wing supported by the boat dock and the right wing in the river. The accident site was about 60 feet from the shoreline/retaining wall. The water depth was approximately 1 foot.

The nose of the aircraft was crushed and the cockpit area was compromised. Both wings remained attached to the airframe. The right wing was dislocated aft approximately 15 degrees. The wings exhibited leading edge crushing (impact) damage, and the wing skins were deformed and buckled. The right aileron was partially separated. The right flap remained attached to the wing, but it was rotated against the lower wing skin, past its normal extended position. The left flap and aileron remained attached to the wing. Aileron control continuity was confirmed. However, the rod ends common to both the left and right aileron push-pull tubes at the inboard wing roots were separated consistent with overload.

The empennage was partially separated from the aft fuselage. The rudder, horizontal stabilizer and elevators remained attached to the vertical stabilizer. Elevator and rudder control continuity was confirmed to the empennage separation. The elevator control push-pull tube was separated at the aft fuselage separation point. The tube was deformed at the separation point and the appearance of the fracture surface was consistent with an overload failure. Elevator continuity was confirmed from the aft fuselage separation point to the cockpit area.

The left side of the engine and engine shroud exhibited damage consistent with impact. The engine appeared to be otherwise intact. Internal engine continuity was confirmed through crankshaft rotation. The carburetor contained fluid consistent in odor and appearance with fuel. No sediment or water was observed. The throttle body and air induction assembly appeared intact.

The propeller blades and hub appeared intact. (The propeller blades had been removed from the hub prior to the post accident examination.) One propeller blade exhibited cracking of the finish surface on the aft face of the blade.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed on April 2, 2010. The pilot's death attributed to a neck fracture sustained in the accident.

The FAA Civil Aerospace Medical Institute forensic toxicology report noted the presence of Diphenhydramine and Metoprolol in the submitted samples. Specifically, the report noted:

Diphenhydramine detected in Liver;

0.081 (ug/ml, ug/g) Diphenhydramine detected in Blood;

Metoprolol detected in Urine;

Metoprolol detected in Blood.

The pilot had a Special Issuance of his FAA Medical Certificate due to a history of prostate cancer in remission and high blood pressure controlled with medication (metoprolol and valsartan). He had undergone cataract surgery with intraocular lens replacement, and a recent opthalmologic evaluation had noted a history of elevated blood sugar controlled with diet and age-related macular degeneration with normal visual acuity.

Diphenhydramine is an over-the-counter antihistamine that can have sedative effects.

History of Flight

Maneuvering	Aerodynamic stall/spin (Defining event) Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	80, Male
Airplane Rating(s):	Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With Waivers/Limitations	**Last Medical Exam:**	06/18/2009
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2200 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CZECH AIRCRAFT WORKS SPOL SRO	**Registration:**	N853CZ
Model/Series:	MERMAID	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Special Light-Sport	**Serial Number:**	06MM008
Landing Gear Type:	Amphibian; Tricycle	**Seats:**	2
Date/Type of Last Inspection:	11/03/2009, Annual	**Certified Max Gross Wt.:**	1430 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4 Hours	**Engine Manufacturer:**	Jabiru
ELT:	Installed, not activated	**Engine Model/Series:**	3300
Registered Owner:	Michigan Sport Aviation LLC	**Rated Power:**	120 hp
Operator:	Michigan Sport Aviation LLC	**Air Carrier Operating Certificate:**	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	MTC, 580 ft msl	**Observation Time:**	1255 EDT
Distance from Accident Site:	13 Nautical Miles	**Condition of Light:**	Day
Direction from Accident Site:	276°	**Conditions at Accident Site:**	Visual Conditions
Lowest Cloud Condition:		**Temperature/Dew Point:**	22°C / 8°C
Lowest Ceiling:	Broken / 22000 ft agl	**Visibility**	12 Miles
Wind Speed/Gusts, Direction:	11 knots, 160°	**Visibility (RVR):**	
Altimeter Setting:	29.87 inches Hg	**Visibility (RVV):**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Troy, MI (VLL)	**Type of Flight Plan Filed:**	None
Destination:	Troy, MI (VLL)	**Type of Clearance:**	None
Departure Time:	1200 EDT	**Type of Airspace:**	

Airport Information

Airport:	Oakland-Troy (VLL)	**Runway Surface Type:**	
Airport Elevation:	727 ft	**Runway Surface Condition:**	
Runway Used:	N/A	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal		

Administrative Information

Investigator In Charge (IIC):	Timothy Sorensen	**Adopted Date:**	04/12/2011
Additional Participating Persons:	Roland Standring; FAA-Detroit FSDO; Belleville, MI		
Publish Date:	04/12/2011		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=75626		

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