



# Aviation Investigation Final Report

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<b>Location:</b>	Oshkosh, Wisconsin	<b>Accident Number:</b>	CEN17FA287
<b>Date &amp; Time:</b>	July 27, 2017, 19:43 Local	<b>Registration:</b>	N1400P
<b>Aircraft:</b>	AEROFAB INC LAKE LA 4 250	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Aerodynamic stall/spin	<b>Injuries:</b>	2 Fatal, 1 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The airline transport pilot, a pilot-rated passenger, and a second passenger arrived at the seaplane base midday and planned to depart later that afternoon. When they returned to the airplane to depart, the pilot spent time draining the left sponson tank of water and fuel and replacing a missing inspection cover on the left wing. Before departing, seaplane base staff warned the pilot that the water conditions had deteriorated and took the pilot out on a boat to observe the conditions firsthand. The observed wave height was estimated 1 1/2 to 2 ft and exceeded the maximum demonstrated wave height for the accident airplane, which was 18 inches. The pilot initially agreed that the water conditions were too poor; however, he later elected to depart with a tailwind despite the unsuitable water conditions and strong objections of seaplane base staff and other seaplane pilots. According to witnesses, the pilot demonstrated a strong resistance to the advice of those who he interacted with throughout the afternoon.

The airplane was towed out of the harbor by boat. The pilot indicated several times he was going to start the engine while still being towed but had to be told to wait. The pilot started the engine as soon as the boat and tow line were clear, applied takeoff power within about 10 seconds of the engine starting, and immediately departed downwind. The airplane accelerated on the water for about 60 seconds before it began pitching up and down, rose steeply out of the water, then rolled over to the left. The left wing impacted the water and the airplane spun left and sank. The pilot-rated passenger was able to egress, while the pilot and the other passenger were pulled from the airplane by first responders who witnessed the accident and responded immediately. Video footage of the accident, and the wreckage examination all corroborated that the engine was performing normally and the wing flaps were retracted throughout the takeoff.

The airplane flight manual (AFM) stated that the wing flaps are to be extended for all takeoffs and landings, and a checklist stating the same was posted in a visible location on the instrument panel. Although the pilot-rated passenger recalled the pilot verbalizing that the flaps were in the down position before takeoff, evidence indicates the flaps were never extended during the takeoff sequence. The pilot-rated passenger, who was a flight instructor and had provided the pilot seaplane instruction, also

provided a statement contrary to the AFM that flaps did not have to be extended for takeoff. It could not be determined whether the pilot was taught this during his flight instruction and elected to take off with the flaps retracted, or if he overlooked this step from the checklist. However, the circumstances of the accident are consistent with the pilot rushing to depart and failing to ensure the airplane was properly configured with flaps extended before taking off. Additionally, the pilot elected to take off with unfavorable water and wind conditions despite the advice from other pilots that he not do so. The pilot's decision to takeoff with unfavorable water conditions and a tailwind, combined with his failure to lower the flaps for takeoff, likely contributed to the airplane stalling as soon as it became airborne and resulted in a loss of control.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to properly configure the airplane for takeoff and his decision to takeoff with a tailwind in unfavorable water conditions, which resulted in the airplane entering an aerodynamic stall and the pilot losing control.

### Findings

<b>Personnel issues</b>	Weather planning - Pilot
<b>Personnel issues</b>	Use of checklist - Pilot
<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Personnel issues</b>	Aircraft control - Pilot
<b>Aircraft</b>	TE flap control system - Incorrect use/operation
<b>Aircraft</b>	Airspeed - Not attained/maintained
<b>Aircraft</b>	Angle of attack - Not attained/maintained
<b>Environmental issues</b>	Tailwind - Decision related to condition
<b>Environmental issues</b>	Tailwind - Effect on operation
<b>Environmental issues</b>	Choppy surface - Decision related to condition
<b>Environmental issues</b>	Choppy surface - Effect on operation

## Factual Information

### History of Flight

<b>Prior to flight</b>	Preflight or dispatch event
<b>Takeoff</b>	Aerodynamic stall/spin (Defining event)
<b>Takeoff</b>	Collision with terr/obj (non-CFIT)

On July 27, 2017, at 1943 central daylight time, an Aerofab, Inc., Lake LA-4-250 amphibious airplane, N1400P, was substantially damaged when it impacted water during takeoff from Vette/Blust Seaplane Base (96WI), Oshkosh, Wisconsin. The airline transport pilot and one passenger were fatally injured, and the pilot-rated passenger received minor injuries. The airplane was owned by the pilot who was operating it under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed at the accident site about the time of the accident, and no flight plan was filed for the personal flight, which was originating at the time of the accident with an intended destination of Southwest Regional Airport, Marshall, Minnesota.

The harbormaster and the chairman of the seaplane base both provided statements that indicated that the airplane arrived at 96WI about 1230 on the day of the accident. After landing, the pilot requested assistance during taxi because the left wing sponson was taking on water. Boats were used to tow the airplane to the seabase.

The pilot and two passengers departed the seaplane base and returned about 2 hours later. Around 1430 the pilot was taken to his airplane while it was moored in the bay. He started the engine while the airplane was still tied to a mooring plug and the airplane began to turn in a circle. When the volunteer boat crew stopped him and asked what he was trying to do he was very argumentative and said, "you can't prevent me from leaving with my aircraft." The volunteer proceeded to explain he simply wanted to help and that he wasn't going to be able to move the airplane unless he untied from the mooring plug. The airplane was then untied and towed to the ramp where the pilot drained water from the left sponson. Four to five gallons of fuel was also drained from the left sponson fuel tank (a separate tank isolated inside the sponson). At this time an inspection cover was discovered missing from the underside of the left wing, outboard of the sponson. A field repair was made to cover the hole. The airplane was subsequently moored and appeared to sit normally in the water. No additional issues were noted with the sponson taking on water prior to the airplane departing for the accident flight.

After the accident pilot drained the sponson, seaplane base personnel and other pilots expressed concern to the accident pilot regarding the rough water conditions and attempted to discourage him from departing. In order to convince the pilot of the conditions, the harbormaster and chairman took the pilot out on the lake by boat to observe the water conditions. The harbormaster described the waves being 1 ½ to 2 ft at that time. The chairman stated that the pilot indicated on two occasions during the boat ride that the waves were too big and the water conditions were unacceptable. The pilot later said he would take off parallel to the swells in a northwesterly direction. The chairman questioned the pilot as to why he would take off in that direction, since it would clearly be a downwind takeoff in large wave conditions.

The chairman then told the pilot . "you will never get airborne with a Lake, with full fuel, three passengers, heavy wave conditions and downwind - never!" The chairman showed the pilot that all the seaplanes moored at the base were pointing southeast, into the wind. The pilot then asked to be taken back to the dock and to have the airplane fueled. The airplane's main tanks were fueled, but no fuel was put into either sponson tank.

The pilot later approached the seaplane base staff and indicated that he was ready for departure. The harbormaster towed the seaplane from the dock, through a narrow gap from the base to the bay referred to as "the cut", and into the bay outside the seabase. The pilot told the harbor master he was going to start the engine as the plane was being towed through the cut, and the harbormaster held up a finger to indicated not yet and to wait a minute (see figure 1). According to the harbormaster, the pilot asked to start the engines several more times as the airplane was still under tow, and the harbormaster indicated to him to wait each time. Once the tow ropes were disconnected and the harbormaster moved out of the way, the pilot started the engine, which "went to full power" very soon thereafter. The sound of the engine starting and accelerating for takeoff can be heard on audio from a video taken before and during the accident. About 10 seconds elapsed between when the sound of the engine starting is heard and the sound of the engine power increasing is heard. The engine continues to run at high power throughout the takeoff and impact sequence.

The airplane began its takeoff run with the wing flaps retracted from the bay toward the northwest immediately after the engine power increased. Video of the takeoff showed the airplane accelerate across the water for about 60 seconds before it porpoised up and down two to three times and the nose rose steeply out of the water (see figure 2). The airplane then rolled to the left and the left wing impacted the water. The airplane subsequently spun to the left and turned about 180°. The nose entered the water and the airplane subsequently started to sink. The pilot-rated passenger was able to egress the airplane; the other two occupants were extracted by first responders who saw the accident and responded immediately to the airplane.

The pilot-rated passenger recalled the pilot verbalizing that the flaps were down and the trim indicator was "in the green" prior to starting the takeoff.



Figure 1 - Photo, extracted from unknown witness video



Figure 2 - Witness photo obtained from Kathryn's Report website

## Pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	84, Male
<b>Airplane Rating(s):</b>	Single-engine land; Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Unknown
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	May 1, 2016
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	33467 hours (Total, all aircraft)		

## Pilot-rated passenger Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	73, Male
<b>Airplane Rating(s):</b>	Single-engine land; Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Unknown
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2	<b>Last FAA Medical Exam:</b>	November 1, 2016
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 2443 hours (Total, all aircraft), 150 hours (Total, this make and model)		

## Pilot

The pilot, who was the owner of the airplane, was issued a third class Federal Aviation Administration (FAA) medical certificate on May 30, 2016, with limitations for corrective lenses and the use of hearing amplification. The certificate was not valid for any class after May 2017. At the time of the examination, the pilot reported 33,467 total hours of flight experience, with 30 hours civilian flight experience in the previous 6 months.

An FAA Form 8700-2, Comprehensive Medical Examination Checklist for a BasicMed medical certificate was found in the pilot's belongings. The checklist was completed; however, the checklist was not signed by a physician and no record was found that the checklist had been submitted to the FAA or that the BasicMed application process had been completed.

The pilot's flight logbook was recovered from the accident scene, but most entries were illegible due to water damage. One legible page contained a summary of flight time that indicated 33,309 total hours flight experience, 19,700 hours in single-engine airplanes, and 888 hours in single-engine seaplanes.

## Pilot-Rated Passenger

The pilot-rated passenger told investigators he had about 3,000 total flight hours, 1,600 hours as a flight instructor, and about 150 hours in Lake LA-4-250 (Renegade) airplanes. He stated that he had provided the pilot with seaplane instruction and had conducted about 100 water landings in Lake Renegade airplanes. He also stated water takeoffs could be performed with the flaps retracted in the Lake Renegade.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	AEROFAB INC	<b>Registration:</b>	N1400P
<b>Model/Series:</b>	LAKE LA 4 250 NO SERIES	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1983	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	3
<b>Landing Gear Type:</b>	Tricycle; Amphibian; Hull	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	3150 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>		<b>Engine Model/Series:</b>	IO-540 SER
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	0 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

The elevator trim system is a hydraulic system. The hydraulic valves are opened and closed mechanically when the trim control is moved in the cockpit, which drives the hydraulic actuator located in the elevator which changes the position of the trim tab. There is a trim position indicator in the cockpit collocated with the trim control.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KOSH,782 ft msl	<b>Distance from Accident Site:</b>	3 Nautical Miles
<b>Observation Time:</b>	00:53 Local	<b>Direction from Accident Site:</b>	303°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	3 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	80°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	24°C / 16°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Oshkosh, WI (96WI)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	MARSHALL, MN (MML )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	VETTE/BLUST 96WI	<b>Runway Surface Type:</b>	Water
<b>Airport Elevation:</b>	750 ft msl	<b>Runway Surface Condition:</b>	Rough;Water-choppy
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal, 1 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 Fatal	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Fatal, 1 Minor	<b>Latitude, Longitude:</b>	43.955833,-88.498886

The wreckage was located about 0.7 mile northwest of the reported takeoff starting point. The airplane remained intact and came to rest in about 15 ft of water. The right wing was partially buried in mud under the water. The airplane was recovered 4 days after the accident and taken to a secure location for examination. Both left and right wing spars exhibited buckling. The right wingtip was bent upward into the right aileron and the fuselage exhibited buckling deformation immediately forward of the empennage. Continuity was verified between all control surfaces and the cockpit flight controls. The landing gear handle was in the UP position and the landing gear were found retracted. The flap lever was found in the UP position and the flaps were retracted.

The takeoff trim position indicator was near the neutral position and within the green band range for takeoff, and the takeoff trim tab was in a position close to or at its maximum up position. Continuity was verified from the Trim Tab to the indicator in the cockpit. The trim tab was in the full up position, and the trim control and indicator was near the neutral (no trim up or down) position on the indicator.

No preimpact anomalies were noted that would have prevented normal operation of the airplane or engine.

## Medical and Pathological Information

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The Fond du Lac County Medical Examiner, Fond du Lac, Wisconsin, performed an autopsy of the pilot. The cause of death was determined to be an anoxic brain injury due to near drowning. The results for toxicology testing performed at the FAA Forensic Sciences Laboratory were negative for all tested-for substances.

## Additional Information

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The Airplane Flight Manual (AFM) for the Lake L-250 "NORMAL OPERATING PROCEDURES" states:

*NOTE: Flaps are used for all takeoffs and landings.*

Step 14 of the Before Takeoff checklist in the AFM also states: *Wing flaps – DOWN.*

During the wreckage examination, a printed checklist for a water landing and takeoff was found affixed to the instrument panel in a prominent location visible to the pilot. It stated in part, *Flaps – Down.*

The AFM also states,

*WATER OPERATION – The maximum demonstrated wave height is 18" (trough to crest). This figure does not necessarily represent the limiting value for the airplane, which depends on the judgement of the pilot concerning airplane loading, wind conditions, wave height and form, and his own level of proficiency.*

The FAA handbook for Seaplane operations, FAA-H-8083-23, states the following regarding the effects of water conditions on operations,

*"Even relatively small waves and swell can complicate seaplane operations. Takeoffs on rough water*

*can subject the floats to hard pounding as they strike consecutive wave crests. Operating on the surface in rough conditions exposes the seaplane to forces that can potentially cause damage or, in some cases, overturn the seaplane. When a swell is not aligned with the wind, the pilot must weigh the dangers posed by the swell against limited crosswind capability, as well as pilot experience."*

According to an experienced Lake instructor pilot, a water takeoff with a 2 ft sea state is unadvisable unless the pilot is experienced. He also stated a rule of thumb taught to inexperienced pilots is to retard the throttle immediately during a water takeoff if the airplane starts porpoising and you feel one "thump" when the fuselage makes contact with the water. Experienced pilots should to retard the throttle immediately during a water takeoff if they feel 2-3 "thumps". He also stated that a takeoff downwind is never a good idea on the water, particularly in [the sea state present during the accident takeoff]. "A take off without flaps, downwind, in [the sea state present during the accident takeoff] is a disaster in the making."

## Administrative Information

**Investigator In Charge (IIC):** Baker, Daniel

**Additional Participating Persons:**

**Original Publish Date:** July 8, 2019

**Last Revision Date:**

**Investigation Class:** [Class](#)

**Note:** The NTSB traveled to the scene of this accident.

**Investigation Docket:** <https://data.ntsb.gov/Docket?ProjectID=95685>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).