



# Aviation Investigation Final Report

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<b>Location:</b>	Oroville, California	<b>Accident Number:</b>	LAX04FA300
<b>Date &amp; Time:</b>	August 21, 2004, 11:45 Local	<b>Registration:</b>	N1238L
<b>Aircraft:</b>	Consolidated Aeronautics, Inc Lake LA-4-200	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The amphibious airplane collided with the surface of a lake just after takeoff while flying low over the glassy-surfaced water. According to witnesses, the airplane was about 20 feet above the water and traveling about 70 miles per hour. Then, it "kissed" the surface, abruptly climbed up about 50 feet, turned to the left, and then descended into the water. Post-accident examination of the airframe and engine did not reveal any mechanical malfunctions or anomalies. The airplane was equipped with pontoons on each wing that were secured to the wings using two forward brackets and a smaller aft attachment. The left pontoon was torn from the wing and located in the floating debris field. The right wing pontoon's aft attachment secured it to the wing; however, the pontoon had rotated from its installation position approximately 270 degrees and was lying with its right side flush against the bottom surface of the wing. The pontoon attach brackets remained on the wing structure and were bent in an inboard direction. The damage to the airplane, and the right pontoon deformation, was consistent with the right pontoon impacting the water unevenly first, with the final impact consistent with a nose and left wing down attitude. The pilot had accumulated about 278 hours in seaplanes prior to the accident and had last landed the airplane on water about 3 months prior to the accident. The pilot's toxicology report was positive for ephedrine and pseudoephedrine which, would not have a negative effect on the pilot's performance.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to maintain clearance from the water's surface, which resulted in his dragging of the right wing pontoon during low-altitude flight. The glassy-surfaced water was a contributing factor to the accident.

## Findings

Occurrence #1: DRAGGED WING, ROTOR, POD, FLOAT OR TAIL/SKID

Phase of Operation: TAKEOFF

### Findings

1. (F) TERRAIN CONDITION - WATER, GLASSY
2. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

### Findings

3. TERRAIN CONDITION - WATER

## Factual Information

### HISTORY OF FLIGHT

On August 21, 2004, at 1145 Pacific daylight time, a Consolidated Aeronautics, Inc. Lake LA-4-200, N1238L, drug a pontoon during low-flight and descended into a lake about 4 miles southwest of Oroville Municipal Airport, Oroville, California. The airplane sank and was submerged in 15 feet of water. The private pilot was operating the airplane, registered to Take Flight, Inc., under the provisions of 14 CFR Part 91. The airplane was destroyed. The pilot and one passenger sustained fatal injuries. Visual meteorological conditions prevailed for the local area flight that departed from Live Oak earlier that day. No flight plan had been filed, nor was one required.

According to a family member of the pilot, the pilot and passenger were old friends. The purpose of the flight was for pleasure and they were intending to fly around the local area.

A witness, who was on a jet ski in the Thermalito Afterbay of Oroville Lake, noticed the airplane flying overhead. Due to the uniqueness of the airplane, he noticed it immediately. The airplane made one landing, took off again, then circled the area and landed again. The airplane taxied around to the boat area, and then someone in the airplane closed the cockpit door. The airplane started building speed, traveling southbound. As it lifted from the glassy-surfaced water, the airplane was about 20 feet above it, traveling about 70 miles per hour. Then, it "kissed" the surface of the water. It abruptly headed up to about 50 feet above the water. The airplane fell straight down and sank immediately. The witness could not recall what the attitude was of the airplane upon impact with the surface of the water.

An additional witness reported that he was sailing his boat in the afterbay. He saw the airplane make several touch-and-go landings on the water. As the airplane was headed in a southerly direction, it appeared to be attempting to land. The witness stated in part, "It seemed as though it hit the water too hard and the airplane bounced into the air, listing to starboard, lost lift, and when the tail hit the water the aircraft flipped end over end and crashed." The witness was about 150 yards from the accident site.

### PERSONNEL INFORMATION

A review of the Federal Aviation Administration (FAA) airman records from Oklahoma City, Oklahoma, revealed that the pilot held a private pilot certificate for airplane single and multiengine land, single engine sea, and instrument. He held a third-class medical certificate that was issued on July 22, 2004. A review of copies of the pilot's personal logbook indicated that the pilot recorded a total flight time of 1,923 hours as of August 8, 2004. He had accumulated about 278 hours in seaplanes prior to the accident. According to the logbook,

the pilot had not flown the accident airplane since June 15, 2004. The last landings logged as "water landings" were logged on June 5. He had flown 12 hours in single and multiengine land airplanes from June 28 until August 8.

#### AIRCRAFT INFORMATION

The amphibious, single engine, pusher propeller airplane was a Consolidated Aeronautics, Inc., Lake LA-4-200, commonly known as a Lake Buccaneer. The airplane was manufactured in 1976, serial number 737. The last annual was completed on the airplane on September 5, 2003. The total airframe and engine time was 1,112 hours.

#### METEOROLOGICAL INFORMATION

An automated surface weather observation (METAR) was issued for Oroville, California, at 1153. The wind was variable at 3 knots; there was 10 statute miles visibility with clear skies; and the altimeter read 29.89 inches of mercury.

#### WRECKAGE AND IMPACT INFORMATION

The Butte County Sheriff's Department personnel initially responded to the accident scene. The FAA coordinator responded later that day to oversee the recovery efforts. The accident site was located in the Thermolito Afterbay of Oroville Lake. The afterbay has agricultural and recreational uses. According to a Butte County Sheriff deputy, the useful landing area of the bay is about 3 miles. The wreckage site was located about halfway through the usable landing area.

After impact, local recreational boaters attempted to move the airplane closer to shore during a rescue effort and the attempts were unsuccessful. The airplane moved about 200 yards from its original impact point before becoming lodged in silt. The approximate global positioning satellite coordinates of 39 degrees 27.824 minutes north by 121 degrees 40.719 minutes west are those of the airplane after it was moved. The elevation was about 192 feet mean sea level. The airplane was covered in an estimated depth of 15 feet of water.

Airplane recovery photos were viewed by the National Transportation Safety Board Investigator-in-Charge (IIC). The vertical stabilizer was above the water level. The remainder of the airplane was submerged. As the airplane was pulled from the water, the right wing remained attached to the fuselage. The left wing was partially attached to the fuselage. The empennage section was attached to the fuselage. The nose of the airplane from the instrument panel, forward, was recovered separately.

#### MEDICAL AND PATHOLOGICAL INFORMATION

The Butte County Coroner completed an autopsy on the pilot. The medical examiner concluded that the pilot died as the result of injuries sustained in the accident sequence. The

passenger's death was attributed to drowning. The FAA Bioaeronautical Sciences Research Laboratory performed toxicological testing of specimens of the pilot and the passenger. The pilot's and passenger's results were both positive for ephedrine and pseudoephedrine.

## TESTS AND RESEARCH

The wreckage was examined on August 23, 2004, by the Safety Board IIC, the FAA coordinator, and a representative from the engine manufacturer. The main fuselage structure was extensively crushed aft. The nose section was separated from remaining airplane structure. The right wing was attached to the fuselage, which ran back to include the empennage section. The left wing was partially attached to the fuselage but was completely removed during the airplane's recovery.

Aft of the aft cabin bulkhead, the fuselage was circumferentially buckled. The left side was significantly more compressed than the right. The empennage section aft of the buckling was bent 30 degrees to the left.

The section of the nose, forward of the instrument panel, was examined. Two distinct damage patterns were evident. The forward right side exhibited a crush line of 30 degrees to the longitudinal axis of the airplane from aft lower to forward upper. The left side was buckled with the crush folds oriented vertically, and the entire nose section was noticeably curved to the left.

The examination of the instrument panel disclosed a tachometer time of 1,152.61. The flap and landing gear selector levers were found in the up positions. The propeller control was in a full forward position; the mixture control was in a full rich position.

The cockpit canopy was made up of two frames hinged to a center post with the doors opening out and up. The center post is rigidly attached to the nose structure forward of the glare shield and the cabin roof. The center post and canopy framework was separated from the structure as a unit. The right side frame was deformed along the forward lower edge. The right upper aft frame was bent away from the center post. The left side frame was not distorted. The majority of the Plexiglass windows were missing from both sides; however, Plexiglass shards remained within the framework.

Each side of the canopy had operating handles and locking mechanisms. The canopy latching bracket that the tang hooks into was deformed on the left side. The latching bracket on the right side was not deformed. The hooked tang extending from the latching handle on the right side was broken at a 45-degree angle at its end. The throttle control was located on the canopy center frame and was in a "FULL OPEN" position.

The airplane's seats were not recovered.

The left wing separated from the airplane structure during the airplane's recovery. A 4-foot outboard leading edge section of the wing was accorded at an angle about 30 degrees to the lateral axis of the airplane from forward inboard, to aft outboard, with the tip end displaced about 5 inches aft. The fiberglass wing tip structure remained attached to the tip rib. A 3-inch section of the wingtip leading edge from the tip rib to the outboard edge was missing and subsequently located in the floating debris field.

The main spar's upper cap was fractured and the face of the fracture was at 45 degrees just outboard of the carry through attach point. The fracture on the lower cap was in a flatter plane and the spar cap outboard of the fracture was torn from the web and bent downward about 120 degrees. The aileron remained attached to the wing.

The flap was attached by its center hangar hinge attach bracket; the inboard and outboard hangar hinge attach brackets were separated from the wing structure. All three brackets were bent in an inboard direction. The rivets that attach the hangar bracket to the wing structure were pulled out. About 10 inches inboard from the flap inboard edge, the skin was bent upward 4 inches.

The left aileron control surface was crushed on its inboard section and the profile of the crush was an airfoil shape. The aileron crush was dimensionally similar to the outboard edge of the flap. The crushed surface of the aileron was matched with the outboard section of the flap. The surfaces would only match up with the aileron near the full down deflection and the flap was in the fully retracted position.

The right aileron control surface was undamaged. The right flap was undamaged and appeared to be in an up position. The right flap could not be moved.

The right wing remained attached to the main fuselage structure. An 18-inch outboard section encompassing the wing tip and about 10 inches inboard from the tip rib was completely separated from the remainder of the wing. A 6-foot outboard leading edge section of the wing was accorded at an angle of about 20 degrees to the lateral axis of the airplane from forward inboard, to aft outboard, with the tip end displaced about 10 inches aft. A 6-inch inboard root rib was buckled outboard, the adjacent fuselage sidewall was wrapped around it.

The airplane was equipped with pontoons on each wing. The pontoons were made up of upper and lower bulkheads, to which the skins were attached. The pontoons were secured to the wings using two forward brackets and a smaller aft attachment.

The left pontoon was torn from the wing and located in the floating debris field. Approximately 10 rivet holes along the right portion of the pontoon upper bulkhead appeared pulled in an aft and outboard direction. The rivets along the left side upper bulkhead remained attached. The bottom front section of the pontoon was crushed upward. The pontoon was pulled from the attachment brackets; the brackets were not deformed. The pontoon sidewall doubler was pulled vertically through the pontoon sidewall.

The right wing pontoon's aft attachment secured it to the wing; however, the pontoon had rotated from its installation position approximately 270 degrees and was lying with its right side flush against the bottom surface of the wing. The pontoon attach brackets remained on the wing structure and were bent in an inboard direction.

The vertical and right horizontal stabilizers remained attached to the empennage. The rudder remained attached to the vertical by its hinges. The right elevator remained attached to the horizontal stabilizer by its hinges. The right horizontal stabilizer was attached to the stub carry through bracket; however, the bracket was fractured.

The left horizontal stabilizer was separated from the empennage attach points and its associated elevator remained attached via the hinges. The bolts that secured the elevator to the torque tube flange remained on the flange and had pulled out of the elevator. The bolts remained attached to the flange.

The airplane's control system is made up of a series of push-pull tubes and cables. The ailerons are controlled through cables that run from the control yoke, aft down the sides of the fuselage to a bellcrank and balance bar. The bellcrank is attached to a series of push-pull tubes and follower bellcranks that extend out to the ailerons.

The elevator control tube series extends the length of the fuselage. At the empennage section, a tube runs diagonally upward and attaches to a fitting, which in turn secures a braced tube attached to the elevators.

The rudder is controlled through two push-pull tubes that are connected from the pedals to a mixing bellcrank under the cockpit floor. From this bellcrank, one push-pull tube extends aft into the empennage. The tube is attached to a follower assembly and from there runs up to the rudder.

The aileron control cables were found on their respective pulleys where they attach to the yoke. The cables were separated at the separation point of the nose and fuselage sections. The cable ends had a "broomstrawed" appearance. The rear sections of the cable were attached to their respective bellcranks. The right elevator control tube was attached to the bellcrank and was continuous out to the aileron bellcrank.

The left side contained a stub section of the push-pull tube and its rod end, which was attached to the bellcrank. The left aileron control tubes were continuous within the wing structure and the control tubes moved when the ailerons and control tubes were manually operated. The left aileron control tube was sheared near the root rib lightening hole and bent downward, consistent with the wing separation point.

The hydraulically actuated flap bellcrank and rod arm assemblies were examined in the main landing gear wheel wells of each wing. The bellcrank are for each flap visually appeared to be

the same approximate position and measured approximately 75 degrees to the lateral axis of the airplane. The flap actuator measured 2.8 inches from the center of the bolt to the shoulder of the actuator. The actuator rod was extended approximately 0.75 inches from the shoulder out to the edge of the threaded portion.

The elevator control tube was detached from the control yoke. The threaded portion of the rod end of the control tube's attachment was fractured at a 45-degree angle. The section of push-pull tube running from this rod end, aft, was located in the wreckage. The other end was cut by recovery personnel. From the cut portion, the tube ran aft through the fuselage and a series of followers. The aft portion of the tube approximately mid-fuselage was bent to the left. The elevator control tube moved when the control surface and the tube were manually operated.

The rudder pedals remained attached to their design location. The passenger side right rudder pedal had fallen aft. The two control tubes extended aft to the mixing bellcrank. One tube ran aft from the mixing bellcrank down the length of the fuselage to the empennage section. The aft portion of the tube was bent to the left at the same location as the elevator control tube. The rod end attachment at the elevator control surface was bent upward. The control tube and rudder control surface moved when they were manually operated.

A hydraulically actuated trim system was installed in the empennage section. The actuator connected to a 0.25-inch diameter control tube that ran the span of the horizontal to the outboard tips. The push-pull tube that extended to the trim was severed at the bushing that passes through the vertical stabilizer skin. When the trim surfaces were moved, hydraulic fluid pumped out of the hydraulic lines and the control tube moved.

The landing gear was examined. The left main landing gear was not stowed. The landing gear was not damaged and the linkages appeared intact. The right main landing gear was stowed and its uplock was hooked. The nose landing gear was stowed and was just out of the uplocks.

The emergency locator transmitter (ELT) was removed from the airplane. It was manufactured by Narco Avionics, model number TSO-C91. The battery expiration date was October 2005. The switch was in the "armed" position.

The engine was examined. The bottom spark plugs were removed. The spark plugs from cylinder numbers two and four were gray colored, which was consistent with a normal operation when compared to a Champion Check-A-Plug chart. The spark plugs from cylinder numbers one and three were oily. All of the electrodes were elliptical in shape and had similar gapping. The spark plugs did not exceed the erosion parameters of the Champion CT-482 Erosion Gauge. Thumb compression was obtained on all four cylinders and the valves produced the same amount of lift, in firing order.

The engine was borescoped. The cylinder walls did not display any evidence of foreign object ingestion and the coloration was tan. The valves were intact. Cylinder numbers one and three



contained oil.

The fuel flow divider contained a residual amount of fuel. The diaphragm was intact and the fuel lines were unobstructed. The fuel injector servo was removed and examined. The diaphragm was intact and the servo screen was clean and unobstructed.

The oil filter was removed. It was stamped with a date of June 9, 2004, at a tachometer time of 1134.6. The filter contained flakes of shiny material, consistent with normal engine operation according to the Lycoming representative.

The exhaust system on the airplane does not include a muffler. The exhaust stacks were examined and were clean in appearance.

The induction system of the airplane was clean and free of obstruction.

The left magneto contained the impulse coupling and all four posts produced spark when hand rotated. The right magneto produced spark on three out of the four posts when hand rotated. The coloration of the magnetos was normal and there was no evidence of carbon arcing or heat damage.

The magneto timing on the left magneto was 25 degrees; the magneto timing on the right magneto was 23 degrees.

The pusher-propeller was examined. The propeller was attached to the engine and appeared minimally damaged during the impact sequence. Blade A had light scratching along its tip on convex side. Blade B displayed light scratches at its tip on the convex side. The bends of the blades were similar.

Two GPS units were recovered from the wreckage. No usable data was obtained from either unit.

#### ADDITIONAL INFORMATION

According to the Airplane Flying Handbook (FAA-H-8083-3), Chapter 16, "...water can exert a tremendous force. This force, a result of resistance, produces drag as the water flows around or under an object being propelled throughout or on its surface." It also noted the following: "Glassy water presents a uniform mirrorlike appearance from above, and without visual references to judge height, it can be extremely deceptive. Also, if waves are decaying and setting up certain patterns, or if clouds are reflected from the water surface, distortions result that are even more confusing for inexperienced, as well as experienced pilots."

The airplane was released to Plain Parts, Pleasant Grove, California, on September 7, 2004. A Garmin GNC 300XL was released to Plain Parts on September 9, 2004. A Lowrance GPS was released to the pilot's representative on December 28, 2004. No parts or pieces were retained.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	50, 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>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 Valid Medical—no waivers/lim.	<b>Last FAA Medical Exam:</b>	June 1, 2004
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	September 1, 2003
<b>Flight Time:</b>	1923 hours (Total, all aircraft), 278 hours (Total, this make and model), 1781 hours (Pilot In Command, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Consolidated Aeronautics, Inc	<b>Registration:</b>	N1238L
<b>Model/Series:</b>	Lake LA-4-200	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	737
<b>Landing Gear Type:</b>	Retractable - Tricycle; Amphibian	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	September 1, 2003 Annual	<b>Certified Max Gross Wt.:</b>	2600 lbs
<b>Time Since Last Inspection:</b>	40.6 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	1112 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Textron Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360-A1B
<b>Registered Owner:</b>	Take Flight, Inc.	<b>Rated Power:</b>	200 Horsepower
<b>Operator:</b>	Weldon Hord	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	ORV,192 ft msl	<b>Distance from Accident Site:</b>	4 Nautical Miles
<b>Observation Time:</b>	11:53 Local	<b>Direction from Accident Site:</b>	40°
<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 /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.88 inches Hg	<b>Temperature/Dew Point:</b>	26°C / 13°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Oroville, CA	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	11:29 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<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	<b>Latitude, Longitude:</b>	39.463611,-121.678611

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Dunks, Kristi
<b>Additional Participating Persons:</b>	Gary Jestice; Federal Aviation Administration ; Sacramento, CA Mark Platt; Textron Lycoming; Williamsport, PA
<b>Original Publish Date:</b>	January 31, 2006
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=59969">https://data.ntsb.gov/Docket?ProjectID=59969</a>

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](#).