



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Lakewood, Washington	Accident Number:	WPR23LA186
Date & Time:	May 9, 2023, 12:15 Local	Registration:	N416AG
Aircraft:	AVIAT AIRCRAFT INC A-1C-180 Husky	Aircraft Damage:	Destroyed
Defining Event:	Collision during takeoff/land	Injuries:	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot and passenger reported they visually confirmed that the landing gear were up and the corresponding blue lights on the gear position indicator panel were illuminated, indicating all the gear were up during the normal approach for a water landing. About 2 to 3 ft above the water, the Landing Gear Advisory System (LGAS) gave an aural “CHECK GEAR” advisory, indicating a landing gear mismatch with the terrain. The pilot was unable to visually confirm the left nose landing gear was fully retracted (UP) and elected to go around. The airplane subsequently impacted trees on climbout and descended to impact the driveway of a residence. A postimpact fire ensued.

The lake the pilot intended to land on was about 1.5 miles long from the north to south. However, it was dissected in the middle by a peninsula and a roadway bridge. The landing area chosen by the pilot took him over his house and provided an available water distance of about 3,370 ft, with rising terrain and tall trees directly at the end. If the pilot had approached over the bridge, the water distance would have increased about an additional 900 ft. The pilot reported the wind was calm at the time of the landing. It is unknown how much distance the pilot had remaining over the water when he executed the go-around.

The airplane’s LGAS is advisory in nature and should not replace a visual check of the gear. However, the airplane flight manual (AFM) supplement for the float system states that anytime an annunciation occurs below 50 ft above ground level (agl), the pilot should initiate an immediate go-around, regardless of the alert. Only if the gear position is absolutely confirmed should the landing be continued. After hearing the advisory, the pilot was unable to confirm the left nose gear was up and he followed the AFM guidance by initiating a go-around.

Postaccident examination of the airplane did not reveal any preimpact mechanical malfunction. Examination of the floats and landing gear revealed the gear was in the retracted (UP) position.

Probable Cause and Findings

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

An erroneous landing gear warning that led to the pilot’s decision to abort the landing, which resulted in a collision with trees during a go-around.

Findings	
Personnel issues	Decision making/judgment - Pilot
Aircraft	Gear position and warning - Malfunction
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Approach-VFR go-around	Sys/Comp malf/fail (non-power)
Approach-VFR go-around	Collision during takeoff/land (Defining event)
Post-impact	Fire/smoke (post-impact)

On May 9, 2023, about 1215 Pacific daylight time, a float-equipped Aviat A-1C-180 Husky, N416AG, was destroyed when it was involved in an accident near Steilacoom Lake, Lakewood, Washington. The pilot and pilot-rated passenger were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot and pilot-rated passenger, who was the pilot’s airframe and powerplant mechanic, they departed from Olympia Regional Airport (OLM) and planned to overfly the pilot’s house and land on Lake Steilacoom, where the pilot lived. The pilot reported the accident occurred on what would have been his second water landing of the day. On approach, the gear selector lever was in the up position with the corresponding four blue lights displayed on the gear position indicator panel. The pilot aimed to touchdown near the midpoint of a waterski slalom course marked by buoys, which were about 1,800 ft from the south shoreline. About 2 to 3 ft above the water, the landing gear advisory system (LGAS) gave an aural “CHECK GEAR” advisory indicating a landing gear mismatch with the terrain. The pilot stated that he was unable to visually confirm the left nose wheel was fully retracted and elected to conduct a go-around.

The pilot stated that the previous landing on another lake, located about 1.5 miles away, was a glassy water landing with calm winds. For the accident flight, he radioed McChord Field Airport (TCM) tower which is about 2.5 miles from the lake of intended landing, to obtain the current wind conditions, which were reported as calm. He overflew the lake and observed the water surface and flags on the lake perimeter and was confident the wind was calm. He stated that he would never have opted to land with a tailwind had he thought there was one present. The automated weather at TCM at 1155 reported wind out of the north at 5 knots and at 1255 wind was reported at 6 knots. The landing was being made to the south.

Automatic dependent surveillance - broadcast (ADS-B) data revealed the airplane departed OLM about 1100 and the last data point was at 1209 on a southern track at a 450 ft elevation on final approach to Steilacoom Lake. The distance between the last data point and the aircraft wreckage was about 5,200 ft.

According to the passenger, in preparation for landing, the pilot gave him the checklist to read aloud. They both confirmed the landing gear was up for a water landing, and during the approach they checked a second time. About 2 to 3 ft above the water, they heard an aural gear advisory warning “CHECK GEAR”. Both pilots looked outside to verify the gear was up.

The passenger further reported that the pilot added power to perform a go-around, and at some point, the stall warning horn sounded. The passenger believed the indicated airspeed on go around was about 60 knots and instructed the pilot to “keep the nose down.” As they were approaching the trees, the pilot expressed concern that they were going to hit the trees and shortly afterwards the airplane impacted and rapidly descended to the ground.

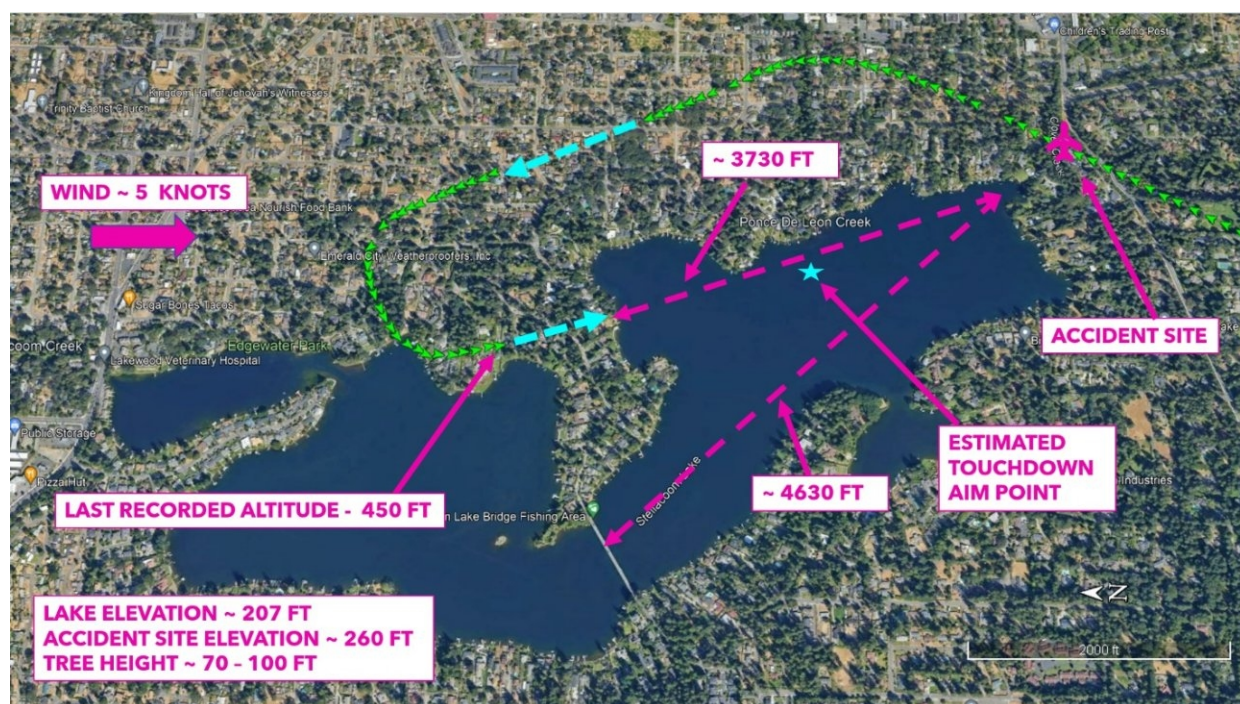


Figure 1 – ADS-B landing track (green)

The lake was about 1.5 miles long from the north to south. However, it was dissected in the middle by a peninsula and a roadway bridge. The landing area chosen by the pilot took him over his house and would have given him an available water distance of about 3,370 ft, with rising terrain and tall trees directly at the end. An approach slightly south over the bridge had a water distance of about 4,630 ft (Figure 1).

The pilot obtained his airplane single-engine sea rating in February 2023, and purchased the airplane a little more than a month before the accident. He had acquired 37 hours of flight experience in the airplane make and model.

The pilot’s flight instructor stated he had flown with him in the accident airplane for about 30 hours, providing instruction for his airplane single-engine sea rating and to ferry the airplane. He stated the nose gear was hard to see in the airplane and the LGAS could often be a distraction to the pilot. He stated the lake was small and it would be “tight” to execute a go-around.

The airplane came to rest surrounded by 70 to 100 ft-tall trees, in a residential area, about 600 ft south of the shoreline and 60 ft above the lake surface.

The first point of impact was with the trees and the wreckage was located directly below in a resident's driveway.

According to representatives of the float system manufacturer Wipaire, there are 3 ways to determine gear position: visually via the nose gear, visually through two indicator rods on the step of each float for the main gear, and through the LGAS system. The LGAS incorporated a laser array assembly mounted in the wing to determine if the aircraft is directly over land or water. The LGAS activates if the airplane descends below 400 ft agl and below the airspeed threshold set by the airplane manufacturer. The LGAS compares the surface directly below the airplane with the gear position switches to determine if the gear is properly configured. The LGAS will issue an advisory, consisting of an audible "Check Gear" announcement along with a flashing red annunciator light, if the gear position and laser indications are not in agreement with each other below 50 ft agl. The pilot can press the red annunciator light to cancel both advisories.

The AFM supplement states the LGAS is advisory in nature and shall not replace visual checks of the gear position. According to Wipaire, under certain conditions such as landing approaches where the surface changes from land-to-water when less than 30 ft agl and below the airspeed threshold, it is possible for the LGAS to provide an advisory even though the gear may be in the correct position. The LGAS can exhibit errors due to relative speed effects and shallow or muddy water or water with heavy wind streaks; foam or floating debris can also distort the surface reflectivity of the water. It is also possible to get a "CHECK GEAR" warning during an intended water landing with the gear up if the laser detects something for one second or more that it perceives to have the same reflectivity as land. The AFM states, "Any time annunciation occurs below 50 ft agl, the pilot should abort the landing and initiate an immediate go-around regardless of the alert, and only then attempt to determine the cause of the annunciation. After go-around, at safe altitude, gear position can be confirmed by visual means. Only if the gear position is absolutely confirmed should the landing be continued."

A postaccident examination of the airframe established flight control continuity from all flight control surfaces to their respective controls in the cockpit. The flap position could not be determined, and the flight instruments were destroyed by fire. The entire fuselage through to the trailing edge of the horizontal stabilizer, along with most of the right and left wing and left float, sustained extensive thermal damage.

Examination of the floats and landing gear revealed all 4-landing gear were in the retracted (UP) position.



The left and right nose gear assembly remained intact on the left and right tracks. Both nose gear wheel tire assemblies could free castor.

The right main gear visual indicator rod and gear actuator indicated the right main was retracted in the up (water) position. The left main gear visual indicator rod was thermally damaged; however, the left gear actuator indicated that the left main wheel was retracted, in the up (water) position.

According to the AFM Supplement, at maximum gross weight with full flaps, the landing distance is about 1,350 ft. The takeoff and balked landing rate of climb performance chart indicates, at maximum gross weight with a 76-inch propeller and flaps up, the rate of climb is about 778 feet per minute.

Pilot Information

Certificate:	Private	Age:	67,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	BasicMed Without waivers/limitations	Last FAA Medical Exam:	October 7, 2021
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 2, 2023
Flight Time:	(Estimated) 1297 hours (Total, all aircraft), 37 hours (Total, this make and model), 37 hours (Last 90 days, all aircraft)		

Pilot-rated passenger Information

Certificate:	Private	Age:	42,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Rear
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	BasicMed Without waivers/limitations	Last FAA Medical Exam:	March 12, 2020
Occupational Pilot:	No	Last Flight Review or Equivalent:	January 16, 2021
Flight Time:	120 hours (Total, all aircraft), 62 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AVIAT AIRCRAFT INC	Registration:	N416AG
Model/Series:	A-1C-180 Husky	Aircraft Category:	Airplane
Year of Manufacture:	2019	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	3329
Landing Gear Type:	None; Amphibian	Seats:	2
Date/Type of Last Inspection:	April 1, 2023 Annual	Certified Max Gross Wt.:	2250 lbs
Time Since Last Inspection:	38 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	241 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	C126 installed, activated, did not aid in locating accident	Engine Model/Series:	O-360-A1P
Registered Owner:	On file	Rated Power:	180 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KTCM,323 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	11:55 Local	Direction from Accident Site:	101°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	340°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.12 inches Hg	Temperature/Dew Point:	16°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Olympia, WA (OLM)	Type of Flight Plan Filed:	None
Destination:	Lakewood, WA	Type of Clearance:	None
Departure Time:	11:01 Local	Type of Airspace:	Class D

Airport Information

Airport:	Lake Steilacoom	Runway Surface Type:	
Airport Elevation:	207 ft msl	Runway Surface Condition:	Water-calm
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Go around

Wreckage and Impact Information

Crew Injuries:	2 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	47.155739,-122.52666

Administrative Information

Investigator In Charge (IIC):	Blum, Contessa
Additional Participating Persons:	Justin Hanson; FAA SEA FSDO; Seattle, WA
Original Publish Date:	June 26, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=139292

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