Aviation Investigation Final Report

Location:	Copalis, Washington	**Accident Number:**	WPR19LA105
Date & Time:	March 30, 2019, 12:56 Local	**Registration:**	N215T
Aircraft:	Piper PA18	**Aircraft Damage:**	Destroyed
Defining Event:	Collision during takeoff/land	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot, who was the owner of the airplane, was conducting a personal cross-country flight to an airport that was a designated section of a sandy ocean beach. Most of the flight was conducted at an altitude of about 2,300 ft, and most of the underlying enroute terrain was inhospitable for landing. The pilot reported that, about 90 minutes into the flight, and 5 minutes after conducting a series of low altitude maneuvers and climbing to about 1,000 ft above the ground, the engine began running roughly and losing power. He said that he activated the carburetor heat, but that did not improve the situation, and he landed the airplane on a logging road in a forest clearing, during which the airplane impacted stumps and debris, resulting in substantial damage.

Examination revealed that the airplane was destroyed by fire. There was no evidence of any pre-impact failures or malfunctions. Fire and impact damage prevented determination of the pre-accident condition or functionality of any of the engine components, or of the engine itself. Temperature and dew point values from an airport located about 9.5 miles from the accident site on a graph of carburetor icing potential indicated the potential for serious icing at cruise power.

The altitude, speed, and ground track traces of the approach to the logging road, which included level-offs and speed increases, were consistent with a normal traffic pattern flown with an engine developing sufficient power for the entirety of the approach. The fact that both propeller blades were damaged, as well as their damage patterns, also indicated that the engine was developing power.

Based on the available information, the circumstances under which the pilot conducted the off-airport landing could not be determined.

Probable Cause and Findings

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

An off-airport landing under circumstances that could not be determined based on the available information, which resulted in substantial damage to the airplane.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Landing	Collision during takeoff/land (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

On March 30, 2019, about 1256 Pacific daylight time, a Piper PA-18-105 airplane, N215T, was destroyed when it was involved in an accident near Copalis Beach, Washington. The pilot sustained minor injuries. The personal flight was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, the preflight inspection, start-up, taxi out and takeoff were all normal. About 70 minutes into the cross-country flight, the engine "started acting up" by running "rough" and losing power. The pilot activated the carburetor heat and manipulated the throttle, but the engine operation did not improve, and he was unable to restore the engine to cruise power. The pilot reported that the airplane was at an altitude of 2,000 ft, and that he "did not have any time or altitude" to try to glide to a nearby airport. He performed an emergency landing on a "logging road" in a clearcut forest area.

The pilot reported that, during the landing roll, the left wing impacted stumps before coming to rest in a nose-down attitude. The pilot saw fuel "pouring" into the cockpit and onto him; he believed that the fuel was coming from the left side of the airplane. The pilot left the airplane and hiked out of the area to find help. He reported the accident two days later, and when first responders arrived at the airplane it had been consumed by a post-impact fire. The pilot also reported that the airplane was susceptible to carburetor icing and he had to use carburetor heat on several recent flights.

The pilot stated later that the "altitude started declining as soon as the engine started running rough," and that he turned towards the logging road "as soon as [he] saw" that the airplane was losing power and altitude. He estimated that it was only a few minutes between the power loss and the landing. When asked about his approach to the selected landing location, the pilot reported that he "still had enough [power] to circle around while loosing [sic] altitude and tried to aim for that little gravel road there which looked like my best bet due to the circumstances."

Pilot Information

Certificate:	Private	**Age:**	27,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 8, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 11, 2019
Flight Time:	145 hours (Total, all aircraft), 31 hours (Total, this make and model), 58 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 48 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N215T
Model/Series:	PA18 105 SPECIA	**Aircraft Category:**	Airplane
Year of Manufacture:	1952	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18-2329
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	December 21, 2018 Annual	**Certified Max Gross Wt.:**	1499 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4371 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed	**Engine Model/Series:**	O-320 SERIES
Registered Owner:		**Rated Power:**	160
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:	HQM,10 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	12:53 Local	**Direction from Accident Site:**	135°
Lowest Cloud Condition:	Clear	**Visibility**	9 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	Unknown / None
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	Unknown / N/A
Altimeter Setting:	30.38 inches Hg	**Temperature/Dew Point:**	12°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Puyallup, WA (PUL)	**Type of Flight Plan Filed:**	None
Destination:	Copalis, WA (S16)	**Type of Clearance:**	None
Departure Time:	11:45 Local	**Type of Airspace:**	Class G

According to the icing probability chart in FAA Special Airworthiness Information Bulletin (CE-09-35) – Carburetor Icing Prevention, weather conditions were conducive to “Serious Icing – Cruise Power”.

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	Unknown
Total Injuries:	1 None	**Latitude, Longitude:**	47.069999,-124.11972(est)

The airplane came to rest about 20 ft from the side of the logging road, in a clutter of various-sized cut tree branches and stumps. The airplane was upright, pitched nose down, with its tail about 6 ft off the ground. The fabric skin of the airplane, the tires, and most of the interior components were consumed or significantly damaged by fire. The cockpit was destroyed by fire, and the left wing was canted forward about 85°. Portions of the forward fuselage frame were impact damaged. The engine remained attached to the airframe and enclosed by the aluminum cowl, both sustained fire damage. The two-bladed aluminum propeller remained attached to the engine and the spinner was undamaged.

Both propeller blades exhibited moderate twisting and bending deformation on their outboard half-spans. The outboard end of one blade was embedded into the top of a previously cut tree stump, but still attached to the remainder of the blade. That blade end was bent in a tip-aft arc, and the cut displayed similar curvature at the blade's entry point into the stump. The stump bore a similar but linear cut about 10 inches behind (relative to airplane travel direction) the embedded propeller blade, consistent with another, previous blade strike.

Examination revealed that the engine was fire and impact damaged but did not exhibit any exterior evidence of any non-impact related damage. The top spark plugs were removed and examined. They did not display any evidence of mechanical failure or excessive wear. Manual rotation of the engine resulted in thumb compressions on all cylinders. The engine control cables remained connected to their respective engine components, but operability was impeded or prohibited due to impact and fire damage. Fire damage to the engine accessories, including the magnetos, as well as all fuel system components including the carburetor, prevented determination of their pre-accident condition and functionality. Fire and impact damage to the engine prevented determination of its pre-accident condition and functionality.

Additional Information

Accident Site Location

Based on Google Earth imagery, the logging road selected by the pilot as his intended landing site was in a forest clearing that was roughly circular in shape, with a diameter of about 2,300 ft. The logging road bisected the clearing and was oriented on a true heading of about 290°, which was parallel to the airplane's cruise flight track.

The flight track was south of the clearing, and at the point where it was abeam the eastern edge of the clearing, was about the same distance north of a straight 12,000 ft segment of a two-lane paved road that was oriented on a true heading of about 270°. The center of the forest clearing was about 13,000 ft from the linear shoreline that was oriented approximately perpendicular to the flight track. The shoreline consisted of a sandy beach that was about 600 ft wide and extended at least 5 miles each way to the north and south. The pilot's destination airport, S16, was situated on that same linear stretch of shoreline/beach, about 4 miles north of where the flight track would have intersected the shoreline if the pilot did not turn towards the forest clearing and logging road that became the accident site.

In its landing circuit for the forest clearing, the airplane traveled a total distance of about 16,000 ft from the point where it began the descent and turn from cruise flight to the last recorded data point (See Figure 1). From that same top of descent point and before the turn, the airplane was about 12,000 ft from, and headed almost directly toward, the shoreline/beach.

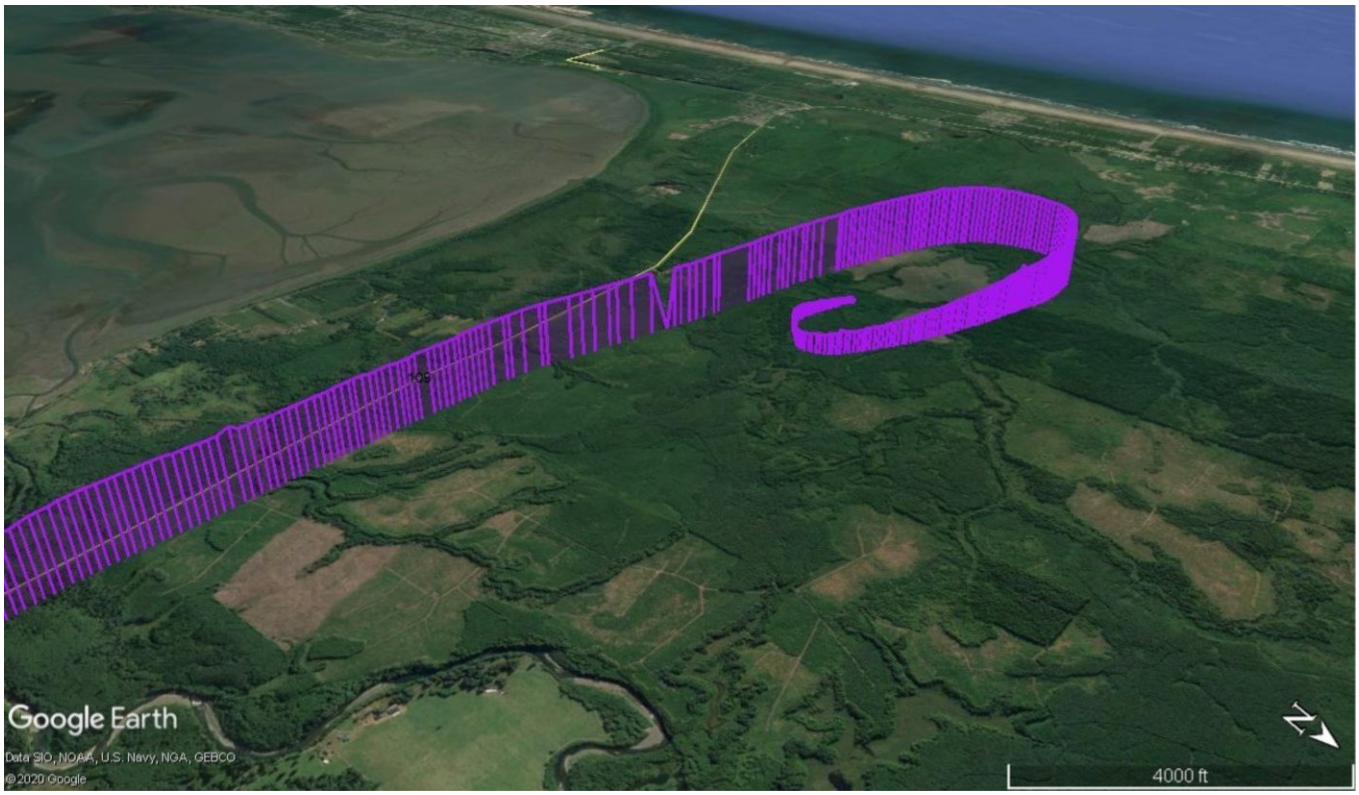

Figure 1. Landing/Accident Site Approach Flight Path (Note proximity to road and beach)

Administrative Information

Investigator In Charge (IIC):	Huhn, Michael		
Additional Participating Persons:	Kevin McKee; FAA; Des Moines, WA		
Original Publish Date:	January 20, 2022	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99226		

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