Aviation Investigation Final Report

Location:	Saint Helens, Oregon	**Accident Number:**	SEA01LA063
Date & Time:	March 8, 2001, 12:30 Local	**Registration:**	N6337P
Aircraft:	Piper PA-24	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While en route in conditions conducive to carburetor icing, the pilot noticed a reduction in the aircraft's exhaust gas temperature (EGT). Although he leaned the fuel mixture, this did not seem to increase the EGT to where he thought it should be. He therefore momentarily applied the carburetor heat and checked for a decrease in engine rpm, as is the proper procedure in an aircraft equipped with a fixed-pitch propeller. But since this aircraft was equipped with a constant-speed propeller, he should have checked for a drop in manifold pressure, which he did not do. Soon thereafter, the engine lost all power and the pilot descended to a forced landing in a soft wet field. Although the intentional gear-up touch-down was uneventful, as the aircraft slid across the field, it encountered a barbed wire fence. In a telephone interview after the accident, the pilot stated that he had been unaware that the proper procedure to use in checking for the accumulation of carburetor icing with a constant-speed propeller was to check manifold pressure drop. He was also not aware that as ice accumulated in the carburetor throat, resulting in a gradual reduction of power, that the propeller governor would keep the rpm constant as long as it was able to flatten the pitch of the propeller. He was also unaware that a drop in EGT may also be an indication of ice accumulating in the carburetor throat.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's improper use of the carburetor heat while attempting to determine if there was ice accumulating in the carburetor throat. Factors include flight in conditions conducive to carburetor icing, and a fence running across the field in which the forced landing took place.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE

Findings
1. (C) CARBURETOR HEAT - IMPROPER USE OF - PILOT IN COMMAND
2. (F) WEATHER CONDITION - CARBURETOR ICING CONDITIONS

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING - ROLL

Findings
3. (F) OBJECT - FENCE
4. TERRAIN CONDITION - SOFT
5. TERRAIN CONDITION - WET

Factual Information

On March 8, 2001, approximately 1230 Pacific standard time, a Piper PA-24, N6337P, collided with a fence while sliding across a field during an intentional gear-up landing after the aircraft experienced a total loss of engine power while in cruise flight near Saint Helens, Oregon. The private pilot and his passenger where not injured, but the aircraft, which was owned and operated by Walker's Crushing and Grading, sustained substantial damage. The 14 CFR Part 91 personal flight, which departed Portland-Hillsboro Airport about 20 minutes prior to the accident, was en route to Paine Field, Everett, Washington. The aircraft descended through instrument meteorological conditions after loosing power, but the pilot executed the forced landing in visual meteorological conditions. The pilot had filed and activated an IFR flight plan. There was no report of an ELT activation.

According to the pilot, because he was flying in conditions that were conducive to the accumulation of carburetor ice, he applied carburetor heat a couple of times while he was climbing through the clouds to his assigned IFR altitude. Soon after he leveled off at 8,000 feet (above the clouds), he applied the carburetor heat again and noted no significant change in engine rpm. About five minutes later, while in cruise flight, he noticed that the aircraft's exhaust gas temperature (EGT) had decreased about 20 degrees. Not being able to determined why the exhaust temperature had dropped, he leaned the fuel mixture, but this action did not seem to result in the desired increase in EGT. Since leaning did not seem to effect the exhaust temperature, the pilot pulled the carburetor heat on momentarily. As he applied the carburetor heat, he checked for an RPM drop, which did not occur. He did not check to see if there was any effect on the manifold pressure, or if the pressure had dropped from what it was at in the preceding few minutes. About one minute after this last brief application of carburetor heat, the engine suddenly quit. The pilot then descended through the overcast and executed a forced landing in an open field located in densely forested terrain. Because the field looked soft and wet, the pilot elected to keep the gear retracted. Although the touchdown was uneventful, as the aircraft was sliding to a stop, it encountered a barbed wire fence.

After the accident, the engine's air induction, fuel delivery, and ignition systems where inspected, and no indication was found of any anomaly or malfunction the would have contributed to a power loss. After the inspection, the engine was started and successfully run on the fuel that remained in the fuel gasculator bowl.

In a post-accident phone interview, the pilot said that he had not been aware that on an aircraft equipped with a constant-speed propeller, such as the one he was flying, a buildup of ice in the carburetor throat would be indicated by a decrease in manifold pressure. He had thought that carburetor icing would cause a decrease in engine rpm (as it does with a fixed-pitch propeller), and therefore had been concentrating on that instead of checking for a drop in manifold pressure. He said that he also had been unaware that as ice built up in the carburetor throat,

resulting in a gradual reduction in power, that the propeller governor would maintain a constant engine rpm as long as it was able to continue flattening (reducing) the pitch of the propeller. He also stated that he was unaware that a drop in EGT is also an indication of possible icing of the carburetor throat.

Pilot Information

Certificate:	Private	**Age:**	51,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	June 24, 1999
Occupational Pilot:		**Last Flight Review or Equivalent:**	June 28, 2000
Flight Time:	467 hours (Total, all aircraft), 401 hours (Total, this make and model), 467 hours (Pilot In Command, all aircraft), 38 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6337P
Model/Series:	PA-24	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1447
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 22, 2000 Annual	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:	94 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4600 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-360
Registered Owner:	Walker's Crushing and Grading	**Rated Power:**	180 Horsepower
Operator:	Steven D. Talbot	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSPB,58 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	12:53 Local	**Direction from Accident Site:**	170°
Lowest Cloud Condition:		**Visibility**	8 miles
Lowest Ceiling:	Broken / 2000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	8°C / 7°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Hillsboro, OR (HIO)	**Type of Flight Plan Filed:**	IFR
Destination:	Everett, WA (PAE)	**Type of Clearance:**	IFR
Departure Time:	12:08 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	45.88063,-122.92073(est)

Administrative Information

Investigator In Charge (IIC):	Anderson, Orrin
Additional Participating Persons:	Lori Brand; Portland FSDO
Original Publish Date:	July 30, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=51924