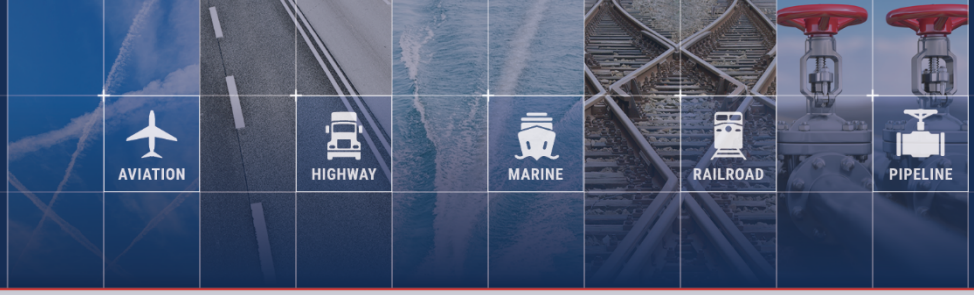

Aviation Investigation Final Report

Location:	Ontario, California	**Accident Number:**	WPR19LA021
Date & Time:	November 8, 2018, 15:53 Local	**Registration:**	N9914M
Aircraft:	Cessna 182	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane encountered severe turbulence and downdrafts after flying through a mountain pass, and the pilot applied full engine power in an effort to arrest the descent. The engine did not respond, and the pilot performed a forced landing onto a highway. While the pilot attempted to avoid automobiles, the airplane landed hard and sustained substantial damage.

Examination revealed that about 20 years and 300 flight hours before the accident, threaded studs had been used to mount the carburetor airbox to the carburetor inlet, rather than the appropriate bolts. The studs had been overdriven and penetrated the carburetor bowl, fracturing the bowl housing. Fragments of the damaged housing lay at the bottom of the bowl until the accident flight, when the turbulence likely caused them to migrate and interfere with either the float or the fuel mixture metering system.

Probable Cause and Findings

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

A partial loss of engine power during descent due to an incorrectly installed carburetor.

Findings

Personnel issues	Installation - Maintenance personnel
Aircraft	Fuel control/carburetor - Incorrect service/maintenance

Factual Information

History of Flight

Enroute-descent	Turbulence encounter
Enroute-descent	Loss of engine power (partial) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On November 8, 2018, at 1553 Pacific standard time, a Cessna 182P, N9914M, was substantially damaged when it was involved in an accident near Upland, California. The airline transport pilot, commercial pilot, and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The airplane was flying south through the Cajon Pass, and once clear of the pass at an altitude of 6,500 ft mean sea level (msl) the commercial pilot initiated a turn to the west. The airplane then encountered what the pilot presumed to be leeside turbulence from the mountain range, so she turned the airplane to the south to find smoother air; however, the turbulence became more severe, and the airplane began to rapidly descend. The airline transport pilot attempted to change the radio frequency to the Ontario Airport Control Tower, so he could advise controllers that the flight would need to transition through their airspace in order to escape the downdrafts. He was struggling to switch the radio's frequency control due to the turbulence, but eventually was able to establish contact. By this time the airplane had descended to 2,000 ft msl (about 500 ft above ground level), and the airline transport pilot requested that the commercial pilot arrest the descent. The commercial pilot applied full engine power, but the engine did not respond.

The airline transport pilot then took the flight controls, applied full rich fuel mixture and carburetor heat, and the engine momentarily regained power. Having reached about 2,300 ft msl, the engine again lost power, and the pilot decided to look for an area to land. With limited options, he decided to land on the westbound lanes of a freeway. He maneuvered over a set of trees, and just before touchdown, a vehicle appeared under the right wing. He attempted to avoid a collision, and while doing so, the airplane landed hard. The airplane sustained substantial damage to the forward fuselage.

Postaccident examination revealed that both fuel tanks and the gascolator contained fuel; the fuel tank vent was unobstructed, and fuel flowed to the carburetor when the "BOTH" position of the fuel tank valve was selected. The engine mounts were bent, and the engine sustained damage limited to a crack in the inlet "Y" manifold, which appeared to have struck the firewall on impact. All fuel lines along with the throttle, mixture, carburetor heat, and propeller controls were intact. The bottom spark plug electrodes were coated in light grey deposits and exhibited normal wear signatures when compared to the Champion AV-27 Check-A-Plug chart. No anomalies were noted with the engine or airframe that would have precluded normal operation.

The engine was removed from the airframe and configured in a test cell with a replacement "Y" manifold. After engine start, the engine reached its operating temperature, but would not accelerate beyond a speed of 1,200 rpm. The carburetor was replaced, and the engine then operated normally throughout its speed range.

The accident carburetor was a Marvel-Schebler model MA-4-5. Maintenance logbooks indicated that it was rebuilt and installed when the engine was last overhauled in September 1998, 288.4 flight hours before the accident. No other maintenance was performed on the carburetor assembly beyond the replacement of the carburetor heat airbox hardware, 27.8 flight hours after the engine overhaul.

The carburetor was disassembled and examined. Brass floats had been utilized and bore a date stamp of May 1997. The floats were intact and showed no evidence of leak. Examination revealed that four 1-inch-long studs had been used to mount the airbox assembly to the carburetor bowl, and the forward studs appeared to have penetrated about 1/8 inch into the carburetor bowl. (see Figure 1.) Three fragments of aluminum material ranging in size from 1/8 to 5/8 of an inch were found at the bottom of the bowl. (see Figure 2.) The material had a polished appearance and a shape that matched that of the bowl housing where the studs had broken through.

Examination of the Cessna illustrated parts catalog applicable to the accident airplane revealed that the appropriate hardware for mounting the airbox to the carburetor was four MS20074-04-3, 0.4690-inch-long bolts, rather than the 1-inch studs used. (see Figure 3.)

The carburetor was sent to the facilities of Marvel-Schebler for further examination under the oversight of an FAA inspector. During the examination, additional metallic particles were found within the fuel mixture metering sleeve, along with scratches and abrasions on the sides of the float.

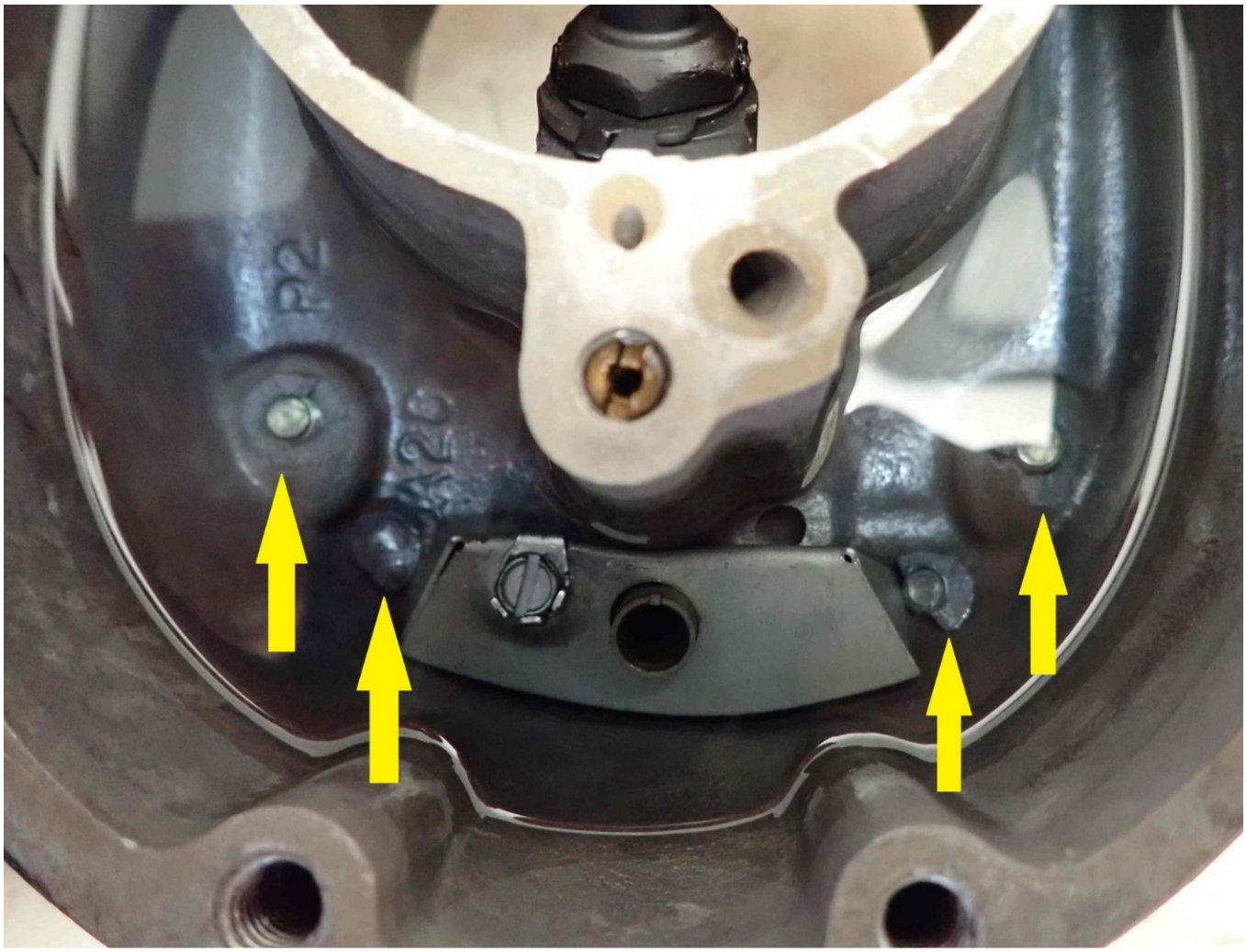

Figure 1 – Yellow Arrows Indicate Forward Studs Penetrating into the Bowl Housing, along with Housing Fragments

Figure 2 – Bowl Housing Fragments

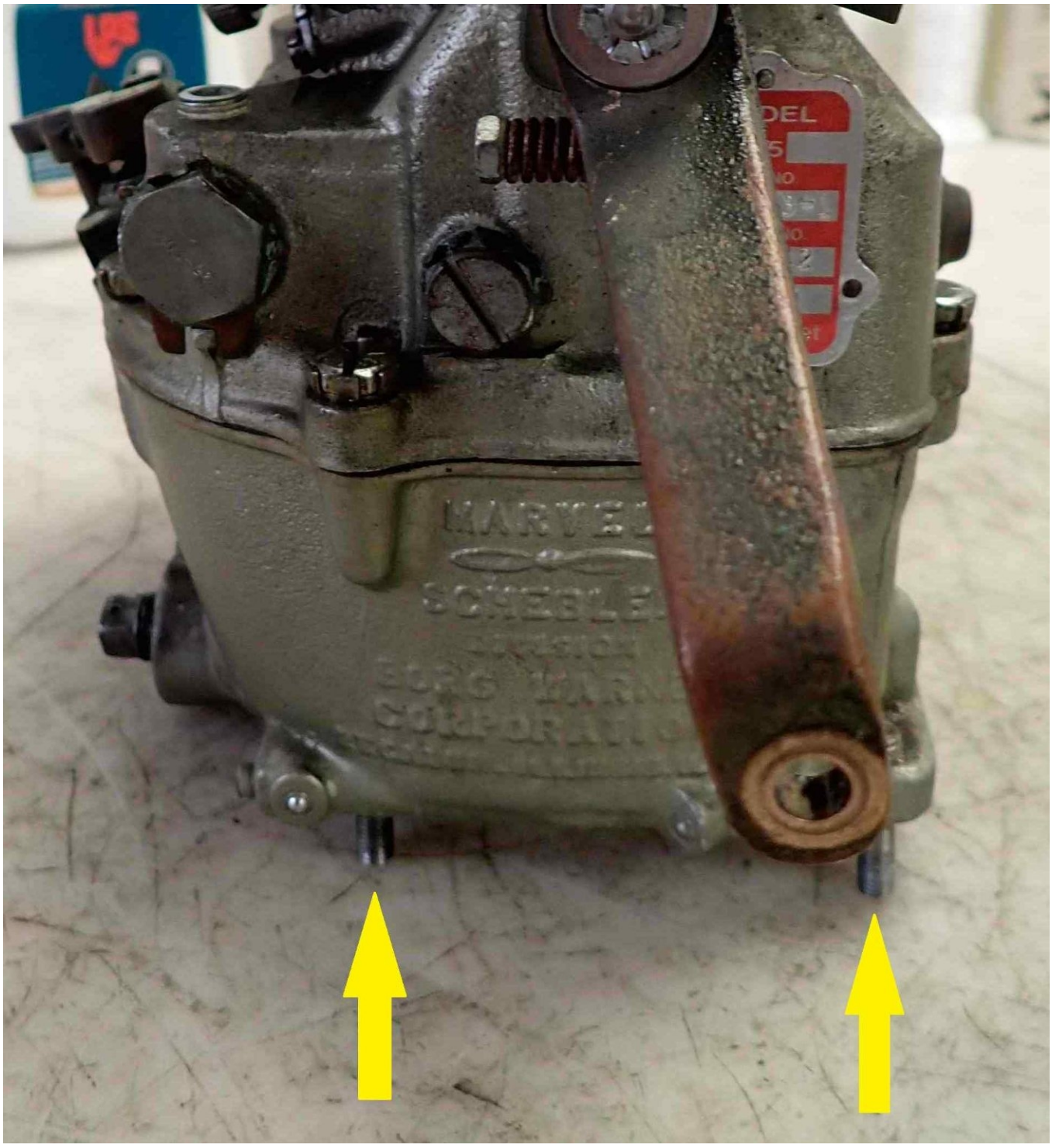

Figure 3 – Studs in Bowl Housing

Pilot Information

Certificate:	Airline transport	**Age:**	52,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	October 15, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 13, 2018
Flight Time:	9800 hours (Total, all aircraft), 75 hours (Total, this make and model), 7600 hours (Pilot In Command, all aircraft), 62 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 2.7 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Commercial	**Age:**	34,Female
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 800 hours (Total, all aircraft), 100 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N9914M
Model/Series:	182 P	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18264810
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 21, 2018 Annual	**Certified Max Gross Wt.:**	2348 lbs
Time Since Last Inspection:	18.2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3230.4 Hrs at time of accident	**Engine Manufacturer:**	Continental Motors
ELT:	C91A installed, not activated	**Engine Model/Series:**	O-470-S2
Registered Owner:		**Rated Power:**	230 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:	KONT,1439 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	23:53 Local	**Direction from Accident Site:**	145°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	25 knots / 33 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	40°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	24°C / -12°C
Precipitation and Obscuration:	In the vicinity - Blowing - Widespread dust		
Departure Point:	Yerington, NV (O43)	**Type of Flight Plan Filed:**	None
Destination:	Upland, CA (CCB)	**Type of Clearance:**	None
Departure Time:	13:18 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Cable CCB	**Runway Surface Type:**	
Airport Elevation:	1443 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	34.134723,-117.66333(est)

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott		
Additional Participating Persons:	Robert W Michaelson; Federal Aviation Adminstration FSDO; Riverside, CA		
Original Publish Date:	March 30, 2022	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98616		