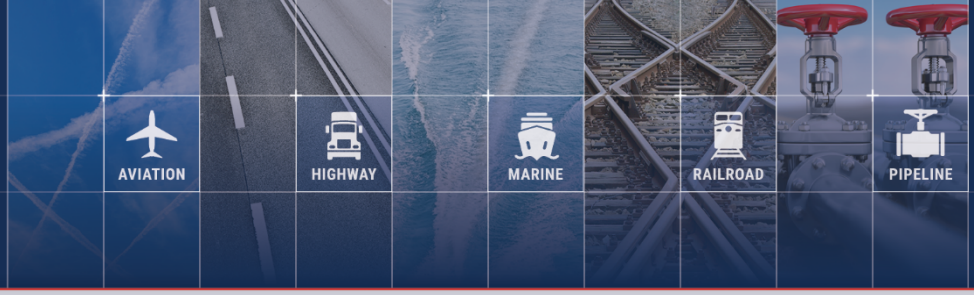

Aviation Investigation Factual Report

Location:	MOORPARK, California	**Accident Number:**	LAX99LA134
Date & Time:	March 29, 1999, 14:30 Local	**Registration:**	N9451D
Aircraft:	Cessna 172RG	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Factual Information

On March 29, 1999, about 1430 hours Pacific standard time, a Cessna 172RG, N9451D, sustained substantial damage when it nosed over during an off airport forced landing near Moorpark, California. The forced landing was precipitated by catastrophic failure of the engine. The airplane was owned and operated by ATE of California, d.b.a. American Flyers, under the provisions of 14 CFR Part 91. The flight was a cross-country instrument instructional flight. The airplane departed Montgomery Field in San Diego, California, about 1300 en route to Camarillo, California. The instrument flight instructor and private pilot instrument student were not injured. Visual meteorological conditions prevailed and an IFR flight plan was filed.

The instructor stated they were in level flight at 4,000 feet mean sea level (msl) at the initial approach fix (IAF) for the Camarillo VOR approach, and in contact with Pt. Magu terminal radar approach control. After hearing a loud bang in the engine compartment, smoke and flames were observed entering the cockpit by the rudder pedals. The instructor immediately turned the fuel selector valve to off and nosed the airplane over to land. He stated the fire went out and he set up to land in a plowed field. He secured the airplane, opened the doors, and then executed a soft-field landing with full flaps. After touchdown, he held the nose up as long as possible. When the nose wheel dropped into the soft dirt, it dug in and the airplane nosed over. The pilots exited the airplane without assistance.

The engine was a Textron Lycoming O-360-F1A6, serial number L-28458-36A. A review of the airplane's logbook revealed total time on the engine was 14,418.6 hours with 1,228.4 hours since an overhaul completed on July 20, 1997.

An examination of the wreckage was completed on April 7, 1999. The bottom of the airplane was charred from the firewall to the end of the cabin area. Sheet metal skin on the belly was bowed out and six holes with ragged external edges were observed in the charred area. The smallest hole measured approximately 3 inches by 4 inches and the largest approximately 6 inches by 12 inches. The cockpit floor on the left side was pushed up and cracked near the console; the floor under the right side was pushed up but not cracked. The floor inspection plates and snap buttons that hold them in place were dislodged and the bottoms of these plates were sooty.

The cowling on the front, lower left side of the engine was displaced about 6 inches and displayed an indentation at the midpoint with dimensions similar to a cylinder head. Multiple dents were in that indentation, and several scrapes were on the lower inside section of the cowling. Seven of the nine lowest cowl fasteners on the left side were missing, and the sheet metal around the fastener holes was sheared through to the cowling's edge.

The number 2 cylinder (front, left position), its intake tube, and a section of exhaust tube were missing and not recovered. The exhaust tube fractured and separated at the weld joining the individual exhaust to the tailpipe. The engine case was fractured and separated from the number 2 cylinder hold down studs to the top of the case. The primer line fractured near the cylinder attach point and the B-nut was missing. Charring was evident on the lower left side of the engine compartment down through the cowl flap opening

The following pieces were recovered from the engine compartment: the piston pin and one piston pin plug; fragments of piston consistent with skirt material; approximately 180 degrees (2 pieces) of compression ring; 270 degrees of oil control ring; the piston pin end of the connecting rod; portions of the cylinder barrel that normally protrude into the crankcase base; portions of the crankcase; three of the 1/2 - 20 cylinder hold down nuts with stud material retained in the threads; one tappet body and part of a hydraulic tappet; one bent push rod, and inner cylinder baffle retainer and hook.

The separated piece of crankcase found in the cowling was put back in its position. No fretting was observed where the cylinder base mated to the surface of the crankcase. The three 1/2 - 20 nuts had stud material in the threaded bore. The studs were fractured flush with the nut's bottom surface; the fracture surfaces were cupped and grainy. The camshaft was flattened; about 1 inch wide, on two points 180 degrees of rotation from each other. Mechanical damage on the No. 2 connecting rod was evident only on the side in the direction of rotation, and the rod was bent slightly aft. The connecting rod fractured and separated on both sides of the wrist pin across the midpoint. A dented area was evident across the nose wheel retract cover with dimensions similar to the remaining piece of connecting rod. The piston pin cap found in the engine compartment was dented around the edges. The piston pin, slightly burnished at each end, was found in the exposed opening of the exhaust tube; the piston pin bushing was not found.

The engine was rotated by the propeller and thumb compression was obtained on the remaining cylinders. The spark plug electrodes for the remaining cylinders were not mechanically damaged. None of the remaining pistons, observed through the spark plug holes, exhibited any evidence of valve to piston contact. Mechanical continuity was established through the remaining engine components. None of the moving components exhibited any discoloration.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	25,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	February 1, 1999
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	575 hours (Total, all aircraft), 150 hours (Total, this make and model), 480 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N9451D
Model/Series:	172RG 172RG	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1725RG1167
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 3, 1999 100 hour	**Certified Max Gross Wt.:**	2650 lbs
Time Since Last Inspection:	88 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	12881 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	O-360-F1A6
Registered Owner:	ATE OF CALIFORNIA	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	AMERICAN FLYERS	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CMA ,75 ft msl	**Distance from Accident Site:**	11 Nautical Miles
Observation Time:	14:50 Local	**Direction from Accident Site:**	233°
Lowest Cloud Condition:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	19°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MONTGOMERY (MYF)	**Type of Flight Plan Filed:**	IFR
Destination:	CAMARILLO (CMA)	**Type of Clearance:**	IFR
Departure Time:	13:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	CAMARILLO CMA	**Runway Surface Type:**	Asphalt
Airport Elevation:	75 ft msl	**Runway Surface Condition:**	
Runway Used:	26	**IFR Approach:**	VOR/DME
Runway Length/Width:	6010 ft / 150 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	In-flight
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	34.310581,-118.870742(est)

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	TERRY MC MASTER; VAN NUYS , CA MARK PLATT; VAN NUYS , CA
Report Date:	June 5, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46008