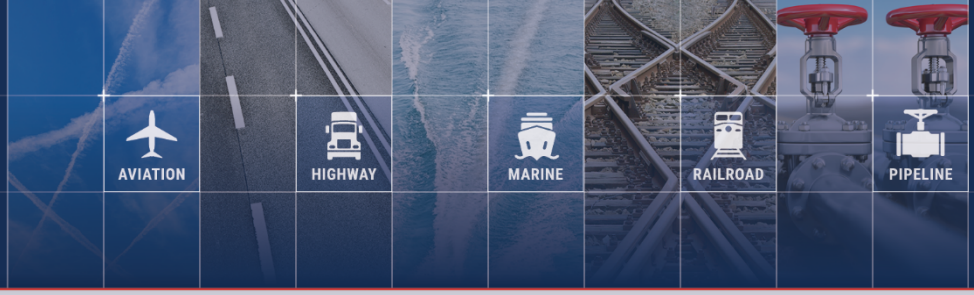

Aviation Investigation Final Report

Location:	JOSHUA TREE, California	**Accident Number:**	LAX95FA082
Date & Time:	January 20, 1995, 08:45 Local	**Registration:**	N4279E
Aircraft:	PIPER PA-38-112	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

THE STUDENT PILOT WAS UNABLE TO RAISE THE ELEVATORS DURING THE TAKEOFF GROUND ROLL. THE PILOT ABORTED THE TAKEOFF, BUT THE REMAINING RUNWAY WAS INSUFFICIENT TO STOP THE AIRPLANE ON THE RUNWAY. THE AIRPLANE OVERRAN THE RUNWAY AND THE NOSE GEAR COLLAPSED WHEN IT ENTERED THE ROUGH/UNEVEN TERRAIN. THE POSTACCIDENT EXAMINATION REVEALED THAT THE HORIZONTAL 'T' BAR JAMMED AGAINST THE ATTITUDE INDICATOR HOSES. THIS JAMMING INHIBITED REARWARD MOVEMENT OF THE FLIGHT CONTROL WHEEL. THE VACUUM HOSES AND THE AVIONICS INSTALLATION BOX BRACKETS EXHIBITED NUMEROUS RUBBING AND CHAFING SIGNATURES. A 100-HOUR/ANNUAL INSPECTION WAS ACCOMPLISHED 2 MONTHS BEFORE THE ACCIDENT. THE AIRPLANE ACCRUED 99 HOURS SINCE THE INSPECTION.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the operator's inadequate annual inspection by failing to find that the flight control's horizontal section of the 'T' bar was rubbing against the vacuum hoses behind the instrument panel. The jammed 'T' bar and the rough terrain were factors in this accident.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (F) FLT CONTROL SYST,ELEVATOR CONTROL CABLE/ROD - JAMMED
2. (C) MAINTENANCE,ANNUAL INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL

Occurrence #2: OVERRUN
Phase of Operation: TAKEOFF - ABORTED

Occurrence #3: NOSE GEAR COLLAPSED
Phase of Operation: TAKEOFF - ABORTED

Findings
3. (F) TERRAIN CONDITION - ROUGH/UNEVEN
4. LANDING GEAR,NOSE GEAR STRUT - OVERLOAD

Factual Information

HISTORY OF FLIGHT

On January 20, 1995, at 0845 hours Pacific standard time, a Piper PA-38-112, N4279E, overran runway 6 after the pilot aborted the takeoff ground run at Hi Desert Airport, Joshua Tree, California; the nose gear collapsed when the airplane entered the rough/uneven terrain. The pilot was beginning a local area visual flight rules solo instructional flight. The airplane, operated by Hi Desert Airport, sustained substantial damage. The student pilot received minor injuries. Visual meteorological conditions prevailed.

The pilot reported in the aircraft accident report that she initially intended to fly to Palm Springs Airport to practice takeoffs and landings at a controlled airport. Hi Desert Airport is a noncontrolled airport. However, after checking the current Palm Springs Airport weather, she elected to practice takeoffs and landings at Hi Desert Airport.

The pilot conducted a preflight inspection of the airplane. During the inspection, she checked the flight controls twice for proper and freedom of movement. She also checked the flight controls before taking the runway for the flight. She said that the flight controls operated normally and smoothly.

During the takeoff roll, after reaching the proper lift-off speed (about 60 knots), she applied rearward control pressure. The control wheel went back, but the airplane did not respond to the control wheel movement. Realizing that the airplane was not going to lift-off, she retarded the throttle and applied heavy braking.

The airplane struck a berm at the west end of the runway and the nose gear collapsed.

The operator observed the accident. He said that the airplane was traveling down the runway and then the pilot applied the brakes. The remaining runway was insufficient to stop the airplane on the runway. The airplane exited the east side of the runway and collided with the terrain.

The operator also said that the pilot told him that the airplane would not respond to the elevator control movements. Realizing the airplane would not lift-off, the pilot aborted the takeoff and applied the brakes.

A Federal Aviation Administration (FAA), Riverside (California) Flight Standards District Office operations inspector conducted the on-scene investigation. The inspector reported that the elevator control mechanisms were binding. He said that the nose landing gear collapsed and was found beneath the flight controls "T" bar.

PERSONNEL INFORMATION

The pilot held a student pilot/third-class medical certificate. A certified flight instructor endorsed the student pilot's certificate for solo flight. The medical certificate did not contain any limitation endorsements.

National Transportation Safety Board investigators did not review the pilot's flight hours logbook. The flight hours reflected on page 3 of this report were obtained from the aircraft accident report.

The pilot showed that she accrued 116 total flight hours. All of the flight hours were flown in the accident airplane. During the preceding 90 days of the accident, the pilot accrued 28 flight hours and 30 days before the accident she accrued 8 hours. She logged 13.1 hours of solo flight.

The pilot's husband is her instructor. She said that he approved the flight and also monitored her preflight inspection.

AIRCRAFT INFORMATION

The airplane is registered to Gordon M. and Edith Y. Poppell, Twentynine Palms, California, and is operated by Hi Desert Airport. The operator said that he hired the mechanic/inspector to perform the last annual inspection.

Safety Board investigators recovered the airplane's No. 2 airframe and engine logbooks. Examination of the logbooks revealed an aircraft mechanic with airframe, powerplant, and inspection authorization ratings did the last annual inspection on November 10, 1994. The airplane accrued 3,448.98 hours and the engine accrued 948.25 hours since a major overhaul at the time of the inspection. The airplane accrued 3,547.98 hours at the time of the accident. The annual inspection logbook entry stated that the inspection was conducted according to the Piper PA-38 100-hour checklist.

The logbooks' examination revealed that another mechanic showed that he "straightened and tightened the artificial horizon (attitude indicator)." This work was accomplished on January 19, 1991, and the airplane accrued 2,397.33 hours.

No recorded maintenance entries were found that showed the attitude indicator or any of its vacuum hoses had been removed or replaced.

WRECKAGE AND IMPACT INFORMATION

Safety Board investigators examined the airplane at AirCraftsman, Chino, Airport, Chino, California, on January 27, 1995. Both wings and elevators were removed from their respective

attach points.

Continuity of the control cables to the elevators and rudder bellcrank was established. The flight control wheels are connected with a "T" bar and a "bicycle" chain. The elevator controls move forward (toward the nose of the airplane) and aft. The horizontal portion of the "T" bar is beneath the attitude indicator's vacuum hoses and the lower avionics housing installation brackets.

Safety Board investigators found binding, chafing, and rubbing marks on the vacuum hoses connected to the attitude indicator. The control tube bicycle chain exhibited multiple rub marks on the lower side of the avionics installation brackets. Investigators also found a wrapped bundle of avionics red wire resting on the bicycle chain.

When the flight control wheel was pushed forward (elevator down), the horizontal section of the "T" bar seized against the attitude indicator vacuum hoses. This seizure also inhibited rearward (elevator up) movement.

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot was treated for minor injuries at a local hospital and released. Toxicological examinations were not conducted nor were they requested.

Tests and Research

Piper PA-38 100-hour checklist

The 100-hour checklist requires that all instrument panel hoses be inspected for rubbing and chafing.

Title 14 CFR 43.15

(a) General. Each person performing an inspection required by Part 91, 123, 125, or 135 of this chapter shall -

(1) Perform the inspection so as to determine whether the aircraft, or portion(s) thereof under inspection, meets all applicable airworthiness requirements. . . .

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(c) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the cabin and cockpit group;

(1) Generally - for uncleanliness and loose equipment that might foul the controls.

(5) Flight and engine controls - for improper installation and improper operation.

(7) All systems - for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.

ADDITIONAL INFORMATION

The Safety Board released the aircraft wreckage to AirCraftsman, Chino Airport, Chino, California, on January 27, 1995. The Safety Board did not retain any airplane documents or components.

Pilot Information

Certificate:	Student	**Age:**	39,Female
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 8, 1994
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	116 hours (Total, all aircraft), 116 hours (Total, this make and model), 13 hours (Pilot In Command, all aircraft), 28 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	PIPER	**Registration:**	N4279E
Model/Series:	PA-38-112 PA-38-112	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	38-78A0527
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	November 10, 1994 Annual	**Certified Max Gross Wt.:**	1700 lbs
Time Since Last Inspection:	99 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3547 Hrs	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	O-235-L2C
Registered Owner:	POPPELL, GORDON H. & EDITH Y.	**Rated Power:**	118 Horsepower
Operator:	HI DESERT AIRPORT	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	25 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	08:45 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	HI DESERT L80	**Runway Surface Type:**	Asphalt
Airport Elevation:	2464 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	6	**IFR Approach:**	None
Runway Length/Width:	2493 ft / 50 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	34.149871,-116.270706(est)

Administrative Information

Investigator In Charge (IIC):	Llorente, A.
Additional Participating Persons:	MICHAEL MONROE; RIVERSIDE , CA
Original Publish Date:	May 18, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=28910