



National Transportation Safety Board Aviation Accident Factual Report

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| Location: | WILDWOOD, NJ | Accident Number: | NYC00LA214 |
| Date & Time: | 08/01/2000, 1430 EDT | Registration: | N6195Z |
| Aircraft: | Piper PA-25 | Aircraft Damage: | Substantial |
| Defining Event: | | Injuries: | 1 None |

Flight Conducted Under: Part 91: General Aviation -

On August 1, 2000, at 1430 Eastern Daylight Time, a Piper PA-25, N6195Z, was substantially damaged during an emergency landing on a grass strip near Wildwood, New Jersey. The certificated commercial pilot was not injured. Visual meteorological conditions prevailed and no flight plan was filed for the local banner-towing flight conducted under 14 CFR Part 91.

According to the pilot, he departed the Paramount Air Airport (JY04), Green Creek, New Jersey, around 1330. After about 45 minutes, he had "completed his run," and decided to return to JY04. While en route, the pilot advanced the throttle to initiate a climb; however, he got "no response from the engine." As he continued the flight toward JY04, the airplane was "loosing power," and smoke appeared from under the cowling. The pilot dropped the banner he was towing to reduce drag on the airplane, and noticed the engine was "overtopping fast." The oil temperature gauge was "approaching red line speed," and the RPM gauge was decreasing; however, the oil pressure remained constant at 80 psi. The pilot prepared for an emergency landing on a grass strip, performed one "circle pass" over the field, and added one notch of flaps. After touchdown, the airplane struck a tree with its right wing, which spun the airplane around 180 degrees.

The pilot reported that just before landing, the oil temperature gauge had exceeded its red line value of 240 degrees, and was indicating 270 degrees.

On August 1, 2000 an on-scene examination of the airplane was conducted by a Federal Aviation Administration (FAA) inspector. The examination revealed that the engine was "very stiff to rotate." The spark plugs were light gray in color, and all produced a spark, when current was applied to them. In addition, metal residue was observed on both oil screens when extracted from the engine.

The engine was removed from the accident site and disassembled in a hangar on August 22, 2000, under the supervision of an FAA inspector. According to the inspector's written statement, the cylinders were removed and observation of the #3 cylinder revealed a hole burned through the top of the piston "consistent with detonation." The oil sump was removed and a fragment of a piston ring and metal residue was observed. The oil pump drive gear and

shaft were removed; however, the oil pump idler gear had seized and had to be forcibly removed. The idler gear was unable to be rotated by hand. The engine case halves were then separated and engine rotation could be observed. Visual examination of the bearing shells revealed metal residue.

According to FAA publication AC65-12A, detonation is "the instantaneous and explosive burning of the fuel/air mixture. The explosive burning during detonation results in an extremely rapid pressure rise. This rapid pressure rise and the high instantaneous temperature, combined with the high turbulence generated, cause a 'scrubbing' action on the cylinder and the piston. This can burn a hole completely through a piston."

The advisory circular further stated, "...the presence of severe detonation during its operation is indicated by dished piston heads, collapsed valve heads, broken ring lands, or eroded portions of valves, pistons, or cylinder heads."

Factors affecting detonation were described as design, cylinder cooling, magneto timing, mixture distribution, and carburetor settings.

Pilot Information

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|----------------------------------|---|--|------------|
| Certificate: | Commercial | Age: | 32, Male |
| Airplane Rating(s): | Multi-engine Land; Single-engine Land | Seat Occupied: | Front |
| Other Aircraft Rating(s): | None | Restraint Used: | |
| Instrument Rating(s): | Airplane | Second Pilot Present: | No |
| Instructor Rating(s): | Airplane Single-engine; Instrument Airplane | Toxicology Performed: | No |
| Medical Certification: | Class 2 Valid Medical--no waivers/lim. | Last FAA Medical Exam: | 09/20/1999 |
| Occupational Pilot: | | Last Flight Review or Equivalent: | |
| Flight Time: | 389 hours (Total, all aircraft) | | |

Aircraft and Owner/Operator Information

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|-------------------------------|--------------------------|--------------------------------|-----------------|
| Aircraft Make: | Piper | Registration: | N6195Z |
| Model/Series: | PA-25 PA-25 | Aircraft Category: | Airplane |
| Year of Manufacture: | | Amateur Built: | No |
| Airworthiness Certificate: | Restricted | Serial Number: | 25-229 |
| Landing Gear Type: | Tailwheel | Seats: | 1 |
| Date/Type of Last Inspection: | 06/19/2000, Annual | Certified Max Gross Wt.: | 2900 lbs |
| Time Since Last Inspection: | 53 Hours | Engines: | 1 Reciprocating |
| Airframe Total Time: | 1848 Hours | Engine Manufacturer: | Lycoming |
| ELT: | Installed, not activated | Engine Model/Series: | O-320 |
| Registered Owner: | PARAMOUNT AIR SERVICE | Rated Power: | 160 hp |
| Operator: | PARAMOUNT AIR SERVICE | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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|----------------------------------|------------------------|--------------------------------------|------------------|
| Conditions at Accident Site: | Visual Conditions | Condition of Light: | Day |
| Observation Facility, Elevation: | WWD, 23 ft msl | Distance from Accident Site: | 6 Nautical Miles |
| Observation Time: | 1435 EDT | Direction from Accident Site: | 170° |
| Lowest Cloud Condition: | Clear / 0 ft agl | Visibility | 10 Miles |
| Lowest Ceiling: | None / 0 ft agl | Visibility (RVR): | 0 ft |
| Wind Speed/Gusts: | 9 knots / | Turbulence Type Forecast/Actual: | / |
| Wind Direction: | 160° | Turbulence Severity Forecast/Actual: | / |
| Altimeter Setting: | 30 inches Hg | Temperature/Dew Point: | 29° C / 23° C |
| Precipitation and Obscuration: | | | |
| Departure Point: | GREEN CREEK, NJ (JY04) | Type of Flight Plan Filed: | None |
| Destination: | | Type of Clearance: | None |
| Departure Time: | 1330 EDT | Type of Airspace: | Class G |

Wreckage and Impact Information

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|---------------------|--------|----------------------|-------------|
| Crew Injuries: | 1 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | N/A | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 1 None | Latitude, Longitude: | |

Administrative Information

Investigator In Charge (IIC): ROBERT HANCOCK

Additional Participating Persons: DAVE GRASSO; PHILADELPHIA, PA

Investigation Docket: NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.