

**National Transportation Safety Board
Washington, DC 20594**

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Brief of Accident

Adopted 09/30/2014

ERA13LA174
File No. 33124

03/18/2013

Panama City ,FL

Aircraft Reg No. N86AB

Time (Local): 14:05 CDT

Make/Model: Piper/PA-25-235
Engine Make/Model: Lycoming / O-540-B2C5
Aircraft Damage: Substantial
Number of Engines: 1
Operating Certificate(s): None
Type of Flight Operation: Banner Tow
Reg. Flight Conducted Under: Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	0	1
Pass	0	0	0

Last Depart. Point: Panama City, FL
Destination: Local Flight, FL
Airport Proximity: Off Airport/Airstrip

Condition of Light: Day
Weather Info Src: Weather Observation Facility
Basic Weather: Visual Conditions
Lowest Ceiling: 2600 Ft. AGL, Broken
Visibility: 10.00 SM
Wind Dir/Speed: 130 / 016 kts
Temperature (°C): 23
Precip/Obscuration: No Obscuration; No Precipitation

Pilot-in-Command Age: 60

Flight Time (Hours)

Certificate(s)/Rating(s)
Airline Transport; Commercial; Multi-engine Land; Single-engine Sea

Total All Aircraft: 4273
Last 90 Days: 73
Total Make/Model: 67
Total Instrument Time: 183

Instrument Ratings
Airplane

*** Note: NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this aircraft accident report. ***

The pilot departed and picked up an aerial advertising banner for a local flight. About 6 minutes later, the airplane's engine suddenly lost all power. The pilot unsuccessfully attempted to troubleshoot the loss of engine power, jettisoned the banner at an altitude of about 500 feet, and performed a forced landing to a pine forest below, which resulted in substantial damage to the airplane. Postaccident examination of the engine revealed that the crankshaft gear alignment dowel had sheared and that the gear had rotated from its normal position. The gear's attaching hardware remained installed and undamaged. Detailed examination of the gear and alignment dowel showed that their hardness was consistent with that required by the design and that they were within or nearly within nominal dimensional tolerances described by the manufacturer. The counter-bored pilot hole at the aft of the crankshaft where the gear was seated was between 0.0008 and 0.0013-inch oversized. There were no discrepancies found with the retaining bolt, and it could be threaded into the crankshaft with minimal resistance. A definitive cause for the loss of preload to the crankshaft gear attaching bolt could not be determined during the engine examination. Review of maintenance records showed that the engine had been installed onto the accident airplane following an overhaul, which was originally precipitated by a propeller strike. The records provided that documented the overhaul and returned the airplane/engine to service lacked language specifying compliance with a manufacturer service bulletin that provided explicit instructions for the installation of the crankshaft gear to the crankshaft; however, the provided records did document part numbers and torque values consistent with those specified by the service bulletin.

Brief of Accident (Continued)

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03/18/2013

Panama City ,FL

Aircraft Reg No. N86AB

Time (Local): 14:05 CDT

Updated at Sep 30 2014 11:28AM

Brief of Accident (Continued)

ERA13LA174
File No. 33124 03/18/2013 Panama City ,FL Aircraft Reg No. N86AB Time (Local): 14:05 CDT

OCCURRENCES

Enroute-cruise - Loss of engine power (total)
Emergency descent - Off-field or emergency landing
Emergency descent - Controlled flight into terr/obj (CFIT)

FINDINGS

Aircraft-Aircraft power plant-Engine (reciprocating)-Recip eng rear section-Fatigue/wear/corrosion - C
Not determined-Not determined-(general)-(general)-Unknown/Not determined - C

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:
A loss of preload to the crankshaft gear attachment bolt, resulting in rotation of the crankshaft gear and a subsequent total loss of engine power. The root cause for the loss of preload could not be determined during a postaccident examination of the components.