

HARTZELL PROPELLER INC.

Aircraft Accident/Incident Report No.: 121229

Date of Accident: 29 December 2012
Location: Lakeside, CA

NTSB File No.: WPR12FA076

Aircraft: McKenzie Greg Lancair IV-P Turbine
Registration No.: N5M
Serial No.: LIV-490

Operator: per FAA registry:
Stern William A Jr.
████████████████████
Phoenix, AZ 85018-1929

Written by: Dan Boggs
Air Safety Investigation Manager

Date:

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ACCIDENT SYNOPSIS

The NTSB preliminary report stated that the aircraft crashed near Lakeside California. The aircraft was on a personal cross-country flight which had originated from Montgomery Field, San Diego, CA. 9 minutes after takeoff, Witnesses reported seeing the airplane coming out of the clouds rotating until it impacted the ground. There was no post-impact fire.

Aircraft Damage: Substantial
Injuries: 3 Fatal

SUMMARY AND ANALYSIS OF FINDINGS

The crushing damage to the spinner dome showed evidence of contact with a blade counterweight and piston. The spinner damage clearly indicated that the blades and piston were in the feather position at the time the spinner was crushed.

The blades did not have any clear indications of rotational scoring and the blades did not have any twisting to suggest power or rotation at impact.

CONCLUSIONS

The propeller was in the feather position.

There were no discrepancies noted that would preclude normal operation. All damage was consistent with impact damage.

PROPELLER TEARDOWN REPORT

Date of Investigation: January 29-30, 2013

Location: Hartzell Propeller Inc.
Piqua, Ohio

Propeller Model: HC-B3TW-3X with T8290 blades
Experimental Propeller

Representatives: Dan Boggs Hartzell Propeller Inc.
Tom McCreary Hartzell Propeller Inc.
Zoe Keliher NTSB

General Comments:

This type propeller is a 3-blade single-acting, hydraulically operated, constant speed model with feathering and reversing capabilities. Oil pressure from the propeller governor is used to move the blades to the low pitch (blade angle) direction. Blade mounted counterweights and feathering springs actuate the blades towards the high pitch direction in the absence of governor oil pressure. The propeller incorporates a Beta mechanism that actuates when blade angles are lower than the flight idle position.

The blades are of aluminum construction. The hub and blade clamps are steel. Propeller rotation is clockwise as viewed from the rear.

The propeller was not removed from the engine. The propeller was not disassembled. Aside from the blade damage, the hub and pitch change components were intact and very lightly damaged. Because of this, a complete teardown was not performed as there would not be any meaningful impact marks/blade angle indications to be found.

Installation Data: (Data reference the 30-inch station)

Reverse:	-10 ± 0.5 degrees
Flight idle:	13.8± 0.1 degrees
Feather:	84.0± 0.5 degrees
Counterweight	2.0 ± 1.0 degrees

Engine/Propeller Mounting:

The mounting flange and bolts were intact and unremarkable. The carbon block had disengaged from the beta feedback collar. The carbon block was intact and remained attached to the engine linkage.

Blade/Clamp Rotation:

None of the blades had rotated in the clamps.

Pitch Stops:

Reverse Pitch Stop: The reverse pitch stop was not observed.

Feather Stop: The feather stop was not observed.

Beta rods: The beta mechanism (beta rods, flight idle stops, feedback collar) were intact and unremarkable.

Piston:

The piston was intact and unremarkable except that two screw heads (that retain a piston link pin) had been sheared.

Link Arms:

Intact and unremarkable

Cylinder:

Not observed

Feathering Spring Assembly:

Not observed

Pitch Change Rod:

Not observed

Clamps and Counterweights:

All three blade clamps, link screws, and counterweights were intact and unremarkable.

Clamp serial numbers:

- 1: EM15100
- 2: EM15095
- 3: EM15092

Hub Unit:

The hub was intact and unremarkable.

Blades:

Blade # 1 was sharply bent forward and fractured at $\frac{1}{4}$ radius. The outer 8 inches of the tip had multiple small bends in the lead and trail edges. It had a large gouge/tear in the trail edge at mid-blade. The blade was not twisted.

Blade # 2 was bent aft approximately 90 degrees at mid-blade. The blade was not twisted.

Blade # 3 was bent forward approximately 30 degrees with a large radius bend. The outer 4 inches of the tip was bent further forward with multiple small bends in the tip area. The blade was not twisted.