Date of Accident: May 28, 2013

Location: Mountainaire, AZ

NTSB File No.: WPR13FA244

Aircraft: Beechcraft A36, Bonanza

Registration No.: N999PK

Serial No.: E-3380

Operator: per FAA registry:

Mezger Matthews Trustee
2800 Sierra Blvd.
Sacramento CA 95864-4928

Written by: Daniel Boggs
Air Safety Investigation Manager

Date: September 5, 2013

Contents:

ACCIDENT SYNOPSIS:

According to the NTSB preliminary report, the aircraft took off from runway 21, and was observed to be climbing very slowly by a pilot in a Cessna 172, which departed just after the Beechcraft. The Cessna pilot eventually queried the Air Traffic Control about the Beechcraft's intentions, and the Beechcraft pilot then radioed that he was climbing very slowly. The Cessna pilot watched the Beechcraft maneuver slightly and then hit some trees and explode.

Aircraft Damage: Destroyed.

Injuries: 2 on board, 2 fatal.

SUMMARY AND ANALYSIS

The propeller had relatively mild impact damage. The blades have mild bending and some rotational scoring which indicated impact with power on. There was some thermal damage to the propeller.

There were witness marks from the fork onto the preload plates which indicated a blade angle of approximately 25° which is in the normal operating range.

CONCLUSIONS

A pre-impact blade angle from the witness marks were approximately 25°. Blade damage indicated impact with power on.

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

Propeller Teardown Report

Date of Investigation: August 28, 2013

Location: Piqua, Oh

Propeller Model: PHC-C3YF-1R with 8468-6 blades

Representatives: Daniel Boggs, Hartzell Propeller Inc.
Chris Richards, FAA

General Comments:

This type propeller is a 3-blade single-acting, hydraulically operated, constant speed model. Oil pressure from the propeller governor is used to move the blades to the high pitch (blade angle) direction. A spring and blade twisting moment move the blades toward the low pitch direction in the absence of governor oil pressure. The blades and hub are of aluminum construction. Propeller rotation is clockwise as viewed from the rear.

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

Low Pitch:	13.0 ± 0.1 degrees
High Pitch:	36.0 ± 1.0 degrees

Service History:

	S/N	Date of manufacture	TTSN	TSO
Hub	EE3747B	12/20/2000	Unknown	Unknown
Blades	J55690	12/20/2000	Unknown	Unknown
	J55700	12/20/2000	Unknown	Unknown
	J55697	12/20/2000	Unknown	Unknown

Hub Serial Number: EE3747B **Factory No.:** A53915B

Blade Model: F8468-A

S/N # A: J55690
S/N # B: J55700
S/N # C: J55697

Blade Orientation:

The blades were arbitrarily number A-B-C clockwise as viewed from the rear of the propeller. The hub serial number was between the __A__ and __B___ blades.

As Received Condition:

See pictures on page 4.

The propeller experienced some moderate thermal damage. “A” blade was spun 180 degrees when received. B-C blades were in extreme high blade angle. All three blades were moving independently of each other in the hub. A-B blades have the last 10” of the tips missing. Rotational scoring was noted on all blades.

Note: The NTSB field notes state that a follow up inspection of the accident site turned up the two missing blade tips and appear to be fractured in nature.

Spinner Dome:

The spinner dome was missing.

Spinner Bulkhead:

The spinner bulkhead was intact, however fractured in a couple areas and bent all around the circumference.

Propeller Cycling:

The propeller cycling was not possible due to impact damage.

Engine/Propeller Mounting:

The mounting flange was intact and unremarkable.

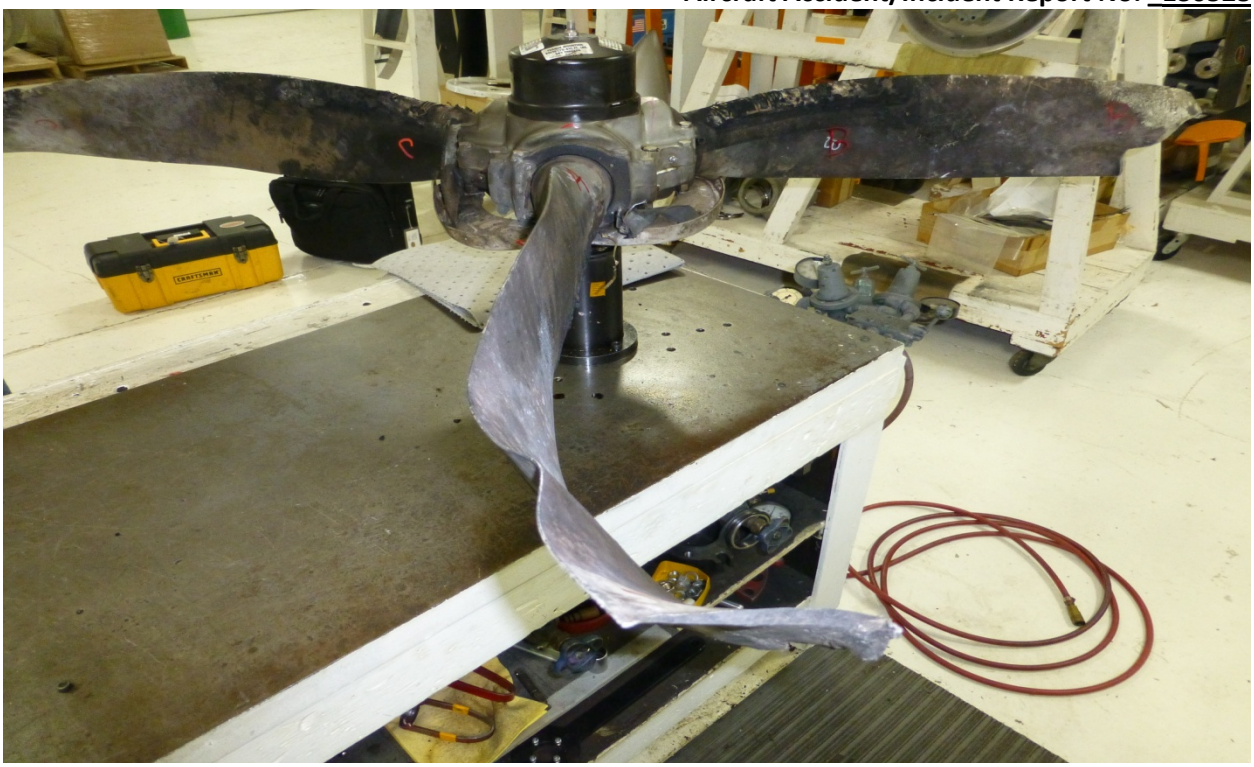

Photo #1, Propeller as received.

Photo #2, Propeller as received.

Cylinder:

The cylinder was intact and unremarkable.

Piston:

The piston was intact and unremarkable.

Pitch Change Rod:

The pitch change rod was intact; however it was bent at a 45° degree angle by the fork during the impact.

Fork:

The fork was intact and unremarkable.

Spring:

The spring was intact and unremarkable.

Pitch Stops:

Low Pitch Stop: The low pitch stop was intact and unremarkable.

High Pitch Stop: The high pitch stop was intact and unremarkable.

Hub Assembly:

The Hub Assembly was intact and unremarkable.

Preload Plates: B-2222 Rev. AA

NOTE: For this propeller model, when the blade knob is aligned with the hub parting line, the blade angle at the reference station is 45^{o} (knob 9^{o} + 36 = 45^{o}).

A preload plate was intact and had an impression mark about 20° off the hub parting line going in an increasing movement.

B preload plate was intact and had an impression mark about 20° of the hub parting line going in a decreasing movement.

#C preload plate was intact and had an impression mark about 15° of the hub parting line going in a decreasing movement.

Blade Bearings and Blade Pitch Change Knobs:

The blade bearings where all intact and unremarkable. All three blade pitch change knobs were fractured off.

Propeller Blades:

See pictures on page 8.

A blade

paint, camber side	-	missing, thermally damaged.
paint, flat side	-	missing, thermally damaged.
bend	-	slight bend forward on last ¼ of blade.
twist	-	slight twist towards tip, forward.
lead edge damage	-	nicks and gouges, tip missing.
trail edge damage	-	bends, tip missing.
knob condition	-	fractured.

B blade

paint, camber side	-	missing, thermally damaged.
paint, flat side	-	missing, thermally damaged.
bend	-	slight bend forward at midblade.
twist	-	none.
lead edge damage	-	nicks and gouges, tip missing.
trail edge damage	-	nicks and gouges, tip missing.
knob condition	-	fractured.

C blade

paint, camber side	-	missing, thermally damaged.
paint, flat side	-	missing, thermally damaged.
bend	-	bent aft at midblade.
twist	-	slight twist aft from leading edge.
lead edge damage	-	nicks and gouges, tip curled under.
trail edge damage	-	nicks and gouges, tip curled under.
knob condition	-	fractured.

Photo #3, Propeller blades.

Photo #4, Propeller blades.

PHOTOGRAPHIC SUMMARY

NOTE: The following digital photographs are original and unedited and available on compact disc. The numbering sequence may not be chronological as some may have been deleted if out-of-focus, too dark, redundant, etc. Photos used in the text of this report are taken from photos on this list but may have been adjusted from the original. Modifications to images used in the report are limited to cropping, magnification, file compression, or enhancement of color, brightness, or contrast for the sole purpose to improve clarity of the report. No other alterations are permitted.

PHOTOGRAPH NUMBER	DESCRIPTION
P1000555.JPG	Propeller as received.
P1000556.JPG	Propeller as received.
P1000557.JPG	Propeller as received.
P1000558.JPG	cylinder/hub
P1000559.JPG	Propeller as received.
P1000560.JPG	Propeller as received.
P1000561.JPG	Propeller as received.
P1000563.JPG	Hub model number.
P1000564.JPG	Hub serial number.
P1000565.JPG	Piston with cylinder removed.
P1000566.JPG	Fork.
P1000567.JPG	Fractured blade knobs.
P1000568.JPG	Propeller blades.
P1000569.JPG	Propeller blades.
P1000570.JPG	Propeller blades.
P1000571.JPG	Propeller blades.
P1000572.JPG	Spinner upper mount.
P1000573.JPG	Cylinder.
P1000574.JPG	Cylinder.
P1000575.JPG	Piston.
P1000576.JPG	Bulkhead.
P1000577.JPG	Bulkhead.
P1000578.JPG	Hub half.
P1000579.JPG	Hub half.
P1000580.JPG	Top hub half.
P1000581.JPG	Hub half.
P1000582.JPG	Fork and pitch change rod.
P1000583.JPG	Fork and pitch change rod.
P1000584.JPG	Pitch stop.
P1000585.JPG	Fractured blade knobs.
P1000586.JPG	Fractured blade knobs.
P1000587.JPG	Fractured blade knobs.
P1000588.JPG	Fractured blade knobs.
P1000589.JPG	Preload plates.
P1000590.JPG	A preload plate.
P1000591.JPG	B preload plate.

P1000592.JPG	C preload plate.
P1000593.JPG	A blade.
P1000594.JPG	B blade.
P1000595.JPG	C blade.
P1000596.JPG	Preload plates installed in hub.
P1000597.JPG	Preload plates installed in hub.
P1000598.JPG	Preload plates installed in hub.
P1000599.JPG	Preload plates installed in hub.