

Aircraft Accident/Incident report No.: 150102

Date of Accident: January 2, 2015

Location: Kuttawa, KY

NTSB File No.: ERA15FA088

Aircraft: Piper PA-34-200T

Registration No.: N81291

Serial No.: 34-8070037

Operator: per the FAA registry:
Fro-Gutz Air LLC
[REDACTED]
Mount Vernon IL 62864

Written by: Dan Boggs
Air Safety Investigation Manager

Date: March 16, 2015

Contents:	Page
Accident Synopsis	2
Summary and Analysis of Findings.....	2
Conclusion.....	2
Propeller Teardown Report	3
Photographic Summary	11

ACCIDENT SYNOPSIS

According to the NTSB preliminary report. "On January 2, 2015, about 1800 central standard time, a Piper PA-34-200T, N81291, was substantially damaged when it impacted trees and terrain during a forced landing near Kuttawa, Kentucky. The commercial pilot, and three passengers were fatally injured, and another passenger was seriously injured. Night instrument meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the personal flight which was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. The flight departed Tallahassee Regional Airport (TLH), Tallahassee, Florida, around 1600 eastern standard time, with the intended destination of Mount Vernon Airport (MVN), Mount Vernon, Illinois."

"Preliminary information from the Federal Aviation Administration (FAA) revealed that at 1750, the pilot contacted air traffic control and requested vectors to the nearest airport in visual flight rules (VFR) weather conditions due to "problems" with both engines. The controller advised him that Kentucky Dam State (M34) was 11 miles west of his position. The pilot announced he had the airport in sight, and that the airplane's right engine had stopped producing power. The controller then cleared the airplane for a visual approach. The pilot acknowledged the clearance, advised that he had lost sight of the airport, and asked for the airport common traffic advisory frequency. There were no further radio communications from the airplane. "

Aircraft Damage: Destroyed.
Injuries: 5 on board, 4 fatal, 1 injured.

SUMMARY [REDACTED]

Both propellers had similar damage. The cylinders were fractured off the hub. The blades had mild bending. The spinner domes were crushed by trees.

CONCLUSIONS

Both propellers showed signs of little to no power.

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

Aircraft Accident/Incident report No.: 150102**Propeller Teardown Report****Date of Investigation:** March 5, 2015**Location:** AMF, Springfield, TN**Propeller Model:** HC-C2YF-2UF with FJC8459-8R blades

Representatives:	Dan Boggs	Hartzell Propeller Inc.
	Heidi Moats	NTSB

General Comments:

This type propeller is a 3-blade single-acting, hydraulically operated, constant speed model with feathering capability. Oil pressure from the propeller governor is used to move the blades to the low pitch (blade angle) direction. A spring, counterweights, and an air charge move the blades to the high pitch/feather 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:	14.4 $\pm$ 0.2 degrees
Start lock:	19.9 $\pm$ 1.5 degrees
Feather:	80.75 $\pm$ 0.75degrees

Service History:

	<u>S/N</u>	<u>Date of manufacture</u>	<u>TTSN</u>	<u>TSO</u>
Left Hub	JS399B	04/08/2010	Unknown	Unknown
Blades	H21956	01/25/1990	Unknown	Unknown
	H21954	01/25/1990	Unknown	Unknown
Right Hub	AN6291	03/04/1981	Unknown	Unknown
Blades	D67573	08/24/1977	Unknown	Unknown
	D66296	08/24/1977	Unknown	Unknown

Aircraft Accident/Incident report No.: 150102

Position: LEFT
Hub Serial Number: JS399B
Blade Model: FJC8459-8R
S/N L1: H21956
S/N L2: H21954

As Received Condition:

See pictures on page 5.

The propeller was fractured off the engine at the engine shaft. An AMF salvage technician removed the engine shaft for shipping purposes. The spinner dome was crushed on all sides. The spinner dome cap was fractured and the air valve was missing the valve stem. The cylinder was stripped off the hub but remained attached to the pitch control rod.

Spinner Dome:

The spinner dome was crushed on all side with the cap fractured and only a small piece remained attached to the dome.

Spinner Bulkhead:

The spinner bulkhead was bent around the edges.

Propeller Cycling:

Propeller cycling was not possible due to impact damage and the cylinder being stripped off the hub.

The air valve was missing the valve stem.

Engine/Propeller Mounting:

The mounting flange was intact and unremarkable.



Photo #1, left propeller as received.



Photo #2, left propeller as received.

Cylinder:

The cylinder was gouged by the blade "A" counter weight going over center and contacting the side of the cylinder.

Piston:

The piston could not be observed due to being jammed inside the cylinder.

Pitch Change Rod:

The entire pitch change rod could not be observed due to being jammed inside the cylinder. It appeared to be intact, however it was bent from the cylinder being stripped off the hub.

Fork:

The fork was intact and unremarkable.

Spring/Spring Guides:

The spring and guides could not be observed due to being stuck inside the cylinder.

Pitch Stops:

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

Feather Stop: The feather stop could not be observed.

Start Lock: The start locks could not be observed.

Hub Assembly:

The hub was intact, however the cylinder mounting threads were stripped off.

Preload Plates:

NOTE: For this propeller model, when the blade knob is aligned with the hub parting line, the blade angle at the reference station is 46° (knob $10^{\circ} + 36 = 46^{\circ}$).

LA preload plate was fractured in several areas.

L2 preload plate was intact and showed normal wear.

Propeller Blades:

See pictures on page 8.

L1 blade

paint, camber side - Intact.
paint, flat side - Intact.
bend - forward and aft.
twist - none.
lead edge damage - none.
trail edge damage - none.
knob condition - fractured off.
counterweight - Intact and unremarkable.

L2 blade

paint, camber side - Intact.
paint, flat side - Intact.
bend - aft.
twist - none.
lead edge damage - none.
trail edge damage - gouges and nicks near base.
knob condition - intact and unremarkable.
counterweight - intact and unremarkable.



Photo #3, left propellers blades.



Photo #4, left propeller blades.

Position: RIGHT

Hub Serial Number: AN6291

Blade Model: FJC8459-8R

S/N R1: D67573
S/N R2: D66296

As Received Condition:

See pictures on page 10.

The propeller was fractured off the engine at the engine shaft. An AMF salvage technician removed the engine shaft for shipping purposes. The spinner dome was crushed on one side. The cylinder was fractured off the hub, however it was still attached to the pitch change rod. Both blades were bent aft midblade. There was an impression mark in the spinner dome from a counterweight that shows the propeller in a low blade angle setting at impact.

Spinner Dome:

The spinner dome was crushed on one side. A counterweight made an impression mark in the dome that shows the propeller in a low blade angle setting at impact.

Spinner Bulkhead:

The spinner bulkhead was intact and bent around the edges.

Propeller Cycling:

Propeller cycling was not possible due to impact damage.

The air valve was depressed and compressed air was released.

Engine/Propeller Mounting:

The mounting flange was intact.



Photo #5, right propeller as received.



Photo #6, right propeller as received.

Cylinder:

The cylinder was fractured off the hub. One counterweight punctured the side of the cylinder and jammed the piston, start locks, feathering spring assembly and pitch change rod inside the cylinder.

Piston:

The piston could not be observed due to being stuck inside the cylinder.

Pitch Change Rod:

The pitch change rod could not be completely observed due to being stuck inside the cylinder. It appeared to be intact, however it was bent from the cylinder being fractured off the hub.

Fork:

The fork was intact and unremarkable.

Spring/Spring Guides:

The spring and guides could not be observed due to being stuck inside the cylinder.

Pitch Stops:

Low Pitch Stop: The low pitch stop was intact.

Feather Stop: The feather stop could not be observed.

Start Lock: The start lock could not be observed.

Hub Assembly:

The hub assembly was fractured at the cylinder mounting threads, otherwise it was intact.

Preload Plates:

NOTE: For this propeller model, when the blade knob is aligned with the hub parting line, the blade angle at the reference station is 46° (knob $10^\circ + 36 = 46^\circ$).

Propeller Blades:

See pictures on page 13.

R1 blade

paint, camber side - intact.
paint, flat side - intact.
bend - aft.
twist - none.
lead edge damage - none.
trail edge damage - none.
knob condition - intact and unremarkable.
counterweight - intact and unremarkable.

R2 blade

paint, camber side - intact.
paint, flat side - intact.
bend - aft.
twist - none.
lead edge damage - none.
trail edge damage - none.
knob condition - intact and unremarkable.
counterweight - bents towards hub.



Photo #7, right propeller blades.



Photo #8, right propeller blades.

Aircraft Accident/Incident report No.: 150102**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

P1020026.JPG	left propeller.
P1020027.JPG	left propeller as received.
P1020028.JPG	left propeller as received.
P1020029.JPG	spinner dome and bulkhead.
P1020030.JPG	air valve.
P1020031.JPG	fork.
P1020032.JPG	fork.
P1020033.JPG	serial number.
P1020034.JPG	hub cylinder mount.
P1020035.JPG	cylinder.
P1020036.JPG	pitch change rod.
P1020037.JPG	piston inside cylinder.
P1020038.JPG	blade butt A.
P1020039.JPG	blade knob.
P1020040.JPG	blade butt B.
P1020041.JPG	left propeller blades.
P1020042.JPG	left propeller blades.
P1020043.JPG	right propeller.
P1020044.JPG	right propeller as received.
P1020045.JPG	right propeller as received.
P1020046.JPG	spinner dome and bulkhead.
P1020047.JPG	spinner dome.
P1020048.JPG	spinner dome.
P1020049.JPG	cylinder.
P1020050.JPG	pitch change rod.
P1020051.JPG	hub.
P1020052.JPG	serial number.
P1020053.JPG	slip ring.
P1020054.JPG	preload plates.
P1020055.JPG	preload plate.
P1020056.JPG	preload plate.
P1020057.JPG	air valve.
P1020058.JPG	blade knobs.
P1020059.JPG	fork.
P1020060.JPG	fork.
P1020061.JPG	blade butt A.
P1020062.JPG	blade butt B.
P1020063.JPG	right propeller blades.

Aircraft Accident/Incident report No.: 150102

P1020064.JPG
P1020065.JPG
P1020066.JPG

right propeller blades.
right propeller blades.
spinner dome.