Date of Accident: May 5, 2016

Location: North Little Rock Municipal Airport (KORK)
North Little Rock, AR

NTSB File No.: CEN16FA172

Aircraft: Cessna 310F

Registration No.: N6770X

Serial No.: 310-0070 (Year of Manufacture 1961)

Owner/Operator: Per FAA Registry:

Lashbrook Inc.
7523 Warden Road
Sherwood, AR 72120-5042

Written by: Les Doud
Air Safety Investigator

Date: February 1, 2017

Contents:

ACCIDENT SYNOPSIS

Aircraft Damage: Destroyed
Injuries: Two onboard; one fatal, one serious

The following are excerpts from NTSB Preliminary Report:

On May 5, 2016, about 1331 central daylight time, a Cessna model 310F twin-engine airplane, N6770X, was destroyed when it impacted terrain following a loss of control near the North Little Rock Municipal Airport (ORK), North Little Rock, Arkansas. A post impact fire ensued. The airline transport pilot (ATP) applicant sustained serious injuries. The pilot examiner was fatally injured. The airplane was registered to and operated by Lashbrook Inc. under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Day visual meteorological conditions (VMC) prevailed for the local area flight that was originating at the time of the accident.

The accident occurred during an ATP checkride that was being administered by a Federal Aviation Administration (FAA) designated pilot examiner. According to available radar track data, at 1329:43 (hhmm:ss), the accident airplane appeared on radar shortly after departing from runway 5 and did not subsequently climb above 800 feet msl. The airplane continued on a northeast heading of 050 degrees for approximately 24 seconds before it entered a left turn to a southwest heading of 225 degrees. The 175 degree left turn took about 29 seconds to complete and had a turn radius of about 1/3 mile. The turn rate averaged about 6 degrees per second during the left turn. After completing the left turn, the airplane continued to the southwest, on a ground track toward runway 17, while maintaining 800 feet msl, until the final recorded radar point at 1330:56. The final radar data point was located about 1/3 mile northeast of the runway 17 displaced threshold.

Preliminary performance calculations, based on available radar data, indicated that the airplane initially maintained a calculated true airspeed of 85-96 knots during the upwind leg from runway 5; however, the calculated true airspeed decreased from 96 knots to 84 knots during the left turn to the southwest. During the final 20 seconds of recorded radar data, the calculated true airspeed further decreased from 84 knots to 79 knots. According to airplane manufacturer documentation, the minimum controllable airspeed (Vmc) for the accident airplane was 70 knots (80 mph), the single-engine best angle-of-climb (Vxse) was 83 knots (95 mph), and the single-engine best rate-of-climb (Vyse) was 97 knots (111 mph).

A witness photographed the airplane shortly before it impacted the ground. According to the associated file metadata, the photo was captured at 1330:59. At that time, the airplane was observed in a left wing low, 45-degree bank, in a slightly nose low attitude. Additional review of the photograph established the airplane was on a southerly heading and was at or below treetop level.

A surveillance camera partially captured the accident impact sequence. The surveillance camera's field-of-view was aligned to the southwest and primarily focused on an industrial yard that was located about 450 feet east of the initial impact point. At 1331:00.35 (hhmm:ss.ss), the accident airplane appeared in the upper right corner of the field-of-view; however, the airplane was partially obscured by a tree that was positioned between the camera and the initial impact point. At 1331:00.54, a fire/explosion emerged and continued to grow, over a period of about 2.6

seconds, as the impact sequence progressed from right-to-left in the field-of-view. At 1331:02.35, the left engine emerged from the central explosion, tumbling away from the main wreckage, and came to rest in an open field about 1331:07.35. A ground fire was observed along the debris path and the associated smoke plumes appeared to drift toward the southeast. There was a power interruption to the surveillance camera, between 1331:15.78 and 1337:35.72. When the footage resumed, a majority of the ground fire had subsided; however, the main wreckage remained on fire. There was a second power interruption, between 1337:55.76 and 1342:44.66. After the footage resumed, the fire at the main wreckage had been extinguished by responding fire department personnel.

At 1253, about 38 minutes before the accident, an automated surface observing system located at Bill and Hillary Clinton National Airport/Adams Field (LIT), about 7.5 miles south of the accident site, reported the following weather conditions: wind 320 degrees true at 13 knots, gusting 19 knots; surface visibility 10 miles; few clouds at 25,000 feet agl; temperature 24 degrees Celsius, dew point 5 degrees Celsius, and an altimeter setting of 30.01 inches of mercury.

At 1353, about 22 minutes after the accident, the LIT automated surface observing system reported the wind 340 degrees true at 7 knots, surface visibility 10 miles, few clouds at 4,500 feet agl, temperature 25 degrees Celsius, dew point 5 degrees Celsius, and an altimeter setting of 29.99 inches of mercury.

SUMMARY AND ANALYSIS OF FINDINGS

The left propeller blade damage included aft bending and limited chordwise/rotational marks on one blade only, suggesting one blade hit while rotating but rotation stopped quickly. The internal impact marks on the preload plates and hub, as well as the presence of oil in the hub cavity indicated the propeller was not in the feathered position (oil pressure had not been dumped) and that impact forces were in the aft direction with the blades in flat pitch.

The right propeller blade damage included prominent chordwise/rotational scoring and leading edge gouging indicating the propeller was rotating under power at time of impact. The internal impact marks on the preload plates, pitch change knobs and hub suggested the blades were forcibly rotated towards low pitch.

Examination of the propeller governors concluded the right propeller governor was operating normally and the left propeller governor sustained too much impact damage to assess its operating condition prior to impact.

CONCLUSIONS

There were no discrepancies noted that would degrade or prevent normal operation on both propellers. All damage was consistent with high impact forces. Damage of the left propeller suggested it was rotating under little to no power, or windmilling at near the low pitch stop angle. Damage to the right propeller indicates it was rotating with power ON at time of impact.

Propeller Teardown Report

Date of Investigation: September 27-28, 2016

Location: Hartzell Propeller Inc., Engineering Test Lab
350 Washington Ave.
Piqua, OH 45356

Representatives:

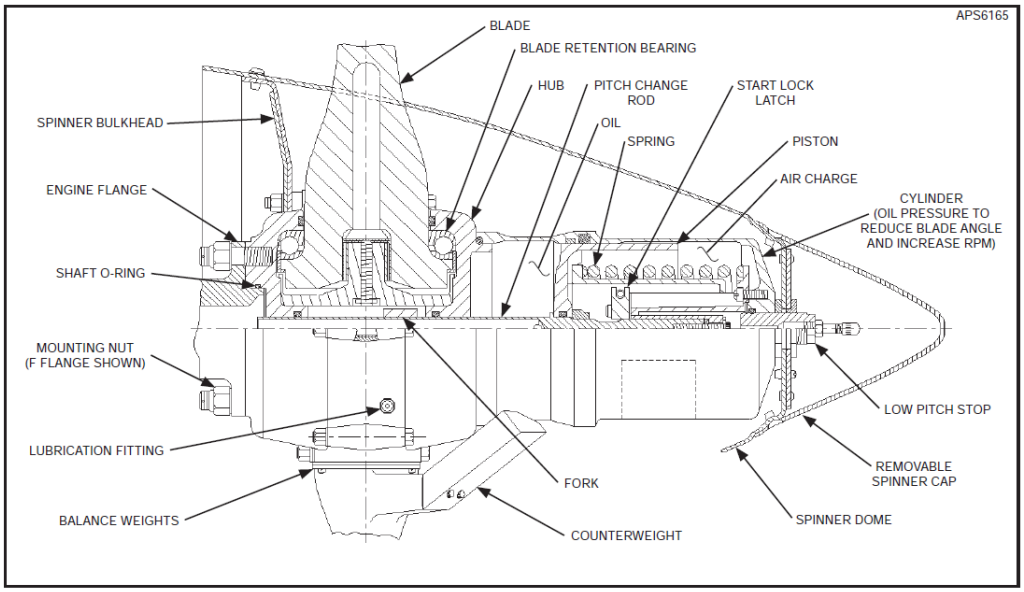
Les Doud	Hartzell Propeller ASI
Todd Fox	NTSB Investigator in Charge
Ricardo Asensio	Textron ASI
Steve Reindel	Hartzell Product Support Rep.

General Comments:

This type propeller is a 2-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 propeller incorporates start locks to keep propeller blade angle low to minimize the starting torque. The blades and hub are of aluminum construction. Propeller rotation is clockwise as viewed from the rear.

Installation Data: Refer to Hartzell Propeller Installation Data Sheet No. 1390 (Data reference the 30-inch radius).

Low Pitch:	13.5 ± 0.2 degrees
Start lock:	20.0 ± 2.5 degrees
Feather:	82.0 ± 0.5 degrees



Cutaway of -2 Series Constant Speed, Feathering Propeller ( )HC-( )( )Y( )-2

Position: **LEFT**

Propeller Model: HC-C2YF-2CUF with FC8468-3 blades

Propeller Assembly Serial Number: AN7313B

Service History: The propeller was installed new on 4/1/2000. The propeller was overhauled and new blades installed on 7/16/2007 by Sunstate Propeller. The last propeller service was a 100-hour inspection conducted on 5/1/16 by A&P Nicholas Franke. Propeller times recorded were as of 5/1/16.

	S/N	Date of Manufacture	TTSN	TSO
Hub/Factory	A48834B	1/26/2000	720.1	273.4
Blade L1	J95963	11/3/2003	273.4	NA
Blade L2	J95964	11/3/2003	273.4	NA

Blade Orientation: The blades were arbitrarily identified L1-L2 clockwise as viewed from the rear of the propeller. The hub serial number was between the L1 and L2 blades.

As Received Condition: The propeller was received in the condition shown in Photos #1 and #2. The spinner dome was crushed and scored predominantly on one side. One blade was bent aft, the other had some forward bending damage near the tip. Both blades appeared to be at or near a start lock position. The low pitch stop/air valve assembly appeared intact and there was an approximate 10 psig residual aircharge. The blades could not be rotated by hand or air pressure.

Spinner Dome: The spinner dome was crushed. The dome and air valve were removed simultaneously from the propeller. The dome cap was missing and not presented for examination.

Spinner Bulkhead: The spinner bulkhead dome attach flange was bent in the area adjacent to the majority of the dome damage.

Propeller Cycling: Propeller cycling was attempted with air pressure but was not possible due to damage. There was also an audible air leak that also prevented the cylinder from holding air pressure.

Engine/Propeller Mounting: The propeller mounting flange was intact with all six studs and two dowels appearing undamaged. There was minor corrosion and fretting visible on the flange face.

Cylinder: The cylinder had a gouge/crease adjacent to blade L1. The internal surface of the cylinder appeared normal and undamaged (except for gouge/crease previously mentioned) with no evidence of engine oil on the forward side of the piston.

Piston: The piston was intact and appeared undamaged other than a circumferential rub mark.

Pitch Change Rod: The pitch change rod was intact but bent on either side of the fork (see Photo #3). This bend prevented removal of the fork, and also the rod from the hub assembly without cutting. Therefore, the rod with the piston and fork attached remained in the forward hub half.

Fork: The fork was intact and threaded on the pitch change rod. The plastic fork bumpers were broken and debonded from the fork and found loose in the hub cavity. The fork slots had pitch change knob block wear marks on both the forward and aft sides.

Spring/Spring Guides: The feathering spring was intact and appeared undamaged. The spring guides appeared undamaged. The spring retainer cup was intact but had visible cracks in one area.

Pitch Stops:

Low Pitch Stop:	The low pitch stop was intact and had "chatter" type impression marks from the pitch change rod cap screw.
Feather Stop:	The feather stop was intact and appeared undamaged.
Start Lock:	The start lock assembly was intact and appeared undamaged.

Hub Assembly: The external surfaces of the hub appeared undamaged. When opened, there was a mild to moderate amount of grease in the hub cavity indicating overservicing (Photo #4). There was also engine oil in the hub cavity suggesting the propeller had oil pressure from the governor and not feathered at time of impact. There was a fork impact mark on the forward hub half. There was preload plate shelf damage in both blade sockets (Photo #5). There was also black paint overspray on the L2 blade arm.

Preload Plates: See Photo #6

NOTE: For this propeller model, when the blade knob is aligned with the hub parting line, the blade angle at the reference station is approximately 48° (knob 12° + 36° = 48°).

L1 preload plate had impact/rub marks at 18° and 27.5° from the hub splint line which are approximately equal to blade angles of 30° and 20.5° respectively. The L1 preload plate was fractured on the forward/low pitch side due to the blade rotating towards low pitch. The aft corner of the preload plate was deformed and the lip sheared due to impact forces in the aft direction.

L2 preload plate had a rub mark that was 17° from the hub split line approximately equal to a blade angle of 21°. The forward and aft lips had deformation damage or partially sheared due to impact forces.

Propeller Blade Properties: See Photos #7 through #10

Blade # L1

Camber side	Chordwise/rotational scoring near tip, some sooting near shank
Face side	Chordwise/rotational scoring near tip
Bend	Aft
Twist	Leading edge down
Lead edge damage	Nicks and dents
Trail edge damage	Gouge 4" from tip
Knob condition	Knob was fractured off, knob block fractured into multiple pieces. Knob post had impact mark from preload plate. Although this propeller was overhauled in 2007, the knobs did not appear to be shot peened.
Counterweight	Intact and undamaged, was removed to gain access to hub clamping bolts
Blade bearings	Hub side bearing race fractured with ball impression marks
Butt/shank impact marks	There were crescent-shaped, circumferential impression/scoring marks on the face side of the blade butt.
De-Ice boot	NA

Blade # L2

Camber side	Spanwise scraping near tip, chordwise scrapes 10-12" from tip
Face side	Spanwise scraping near tip
Bend	Aft
Twist	Not remarkable
Lead edge damage	Appeared to be normal erosion
Trail edge damage	Tearing, feathering/fracture at tip
Knob condition	Not remarkable
Counterweight	Intact and undamaged, was removed to gain access to hub clamping bolts
Blade bearings	Not remarkable
Butt/shank impact marks	Not remarkable
De-Ice boot	NA

Photo #1 – Left propeller as-received

Photo #2 – Left

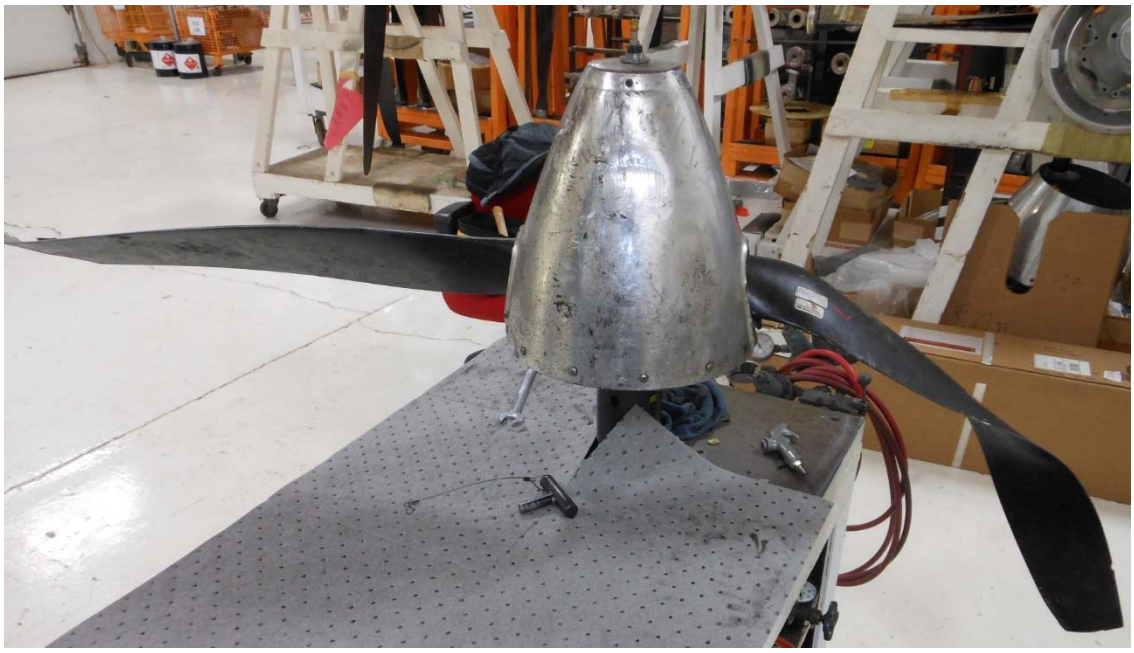


Photo #3 – Left

Photo #4 – Left

Photo #5 – Left

Photo #6 – Left

Photo #7 – Left

Photo #8 – Left

Photo #9 – Left

Photo #10 – Left

Position: **RIGHT**

Propeller Model: HC-C2YF-2CUF with FC8468-3 blades

Propeller Assembly Serial Number: AN7312B

Service History: The propeller was installed new on 4/1/2000. The propeller was overhauled on 7/16/2007 by Sunstate Propeller. The last propeller service was a 100-hour inspection conducted on 5/1/16 by A&P Nicholas Franke. Propeller times recorded were as of 5/1/16.

	S/N	Date of Manufacture	TTSN	TSO
Hub/Factory	A48764B	1/19/2000	720.1	273.4
Blade 1	J38218	1/3/2000	720.1	273.4
Blade 2	J38221	1/3/2000	720.1	273.4

Blade Orientation: The blades were arbitrarily identified R1-R2 clockwise as viewed from the rear of the propeller. The hub serial number was between the R2 and R1 blades.

As Received Condition: The propeller was received in the condition shown in Photos #11 and #12. The blades appeared in the start lock position. Both blades had prominent leading edge gouging and chordwise/rotational scoring on the camber sides. One blade displayed S-bending and the other was bent aft. The spinner was crushed and bent leaning to one side. A counterweight had punctured through the spinner dome. The air valve was fractured off the low pitch stop assembly.

Spinner Dome: The spinner dome remained attached to the spinner bulkhead and cylinder. It was crushed and scored with some evidence of torsional buckling. The R1 counterweight had punctured through the dome. The dome cap was missing and not presented for examination.

Spinner Bulkhead: The spinner bulkhead remained attached to the propeller hub and was bent aft.

Propeller Cycling: Propeller cycling was not attempted due to damage. After removing the spinner dome it was evident the cylinder had fractured from its hub mounting threads and the pitch change rod was bent, thus making any cycling attempts futile. The air valve was fractured from the low pitch stop assembly and missing.

Engine/Propeller Mounting: The propeller mounting flange was intact with all six studs and two dowel pints. There was some minor corrosion and fretting.

Cylinder: The cylinder had fractured from the hub mounting threads and was bent over to one side of the hub (see Photo #13). It was punctured by the R2 counterweight.

Piston: The piston was trapped and not removed due to cylinder damage and therefore not inspected. The backside of the piston appeared undamaged.

Pitch Change Rod: The pitch change rod was bent as it exited the forward hub half. It had to be cut at the front of the forward hub half in order to remove the hydraulic unit (cylinder, piston, spring, etc.).

Fork: A crack was visible on the aft side of one arm of the fork. The fork bumpers had debonded from the fork.

Spring/Spring Guides: Due to cylinder damage, the spring, spring guides and spring retainer cup were trapped by the piston and not removed, so they were not inspected.

Pitch Stops:

Low Pitch Stop:	The low pitch stop was intact and displayed an impact mark from the pitch change rod cap screw suggesting the blades were forcibly twisted towards low pitch during the impact sequence.
Feather Stop:	The feather stop was not removed so it was not visually inspected.
Start Lock:	The start lock was not removed so it was not visually inspected.

Hub Assembly: The external surfaces of the hub appeared undamaged other than the cylinder mounting boss threads. The aft hub half was removed first due to the pitch change rod and cylinder damage initially preventing removal of the hydraulic unit from the front hub half. When opened, there was a mild to moderate amount of grease in the hub cavity indicating overservicing (see Photo #14). There were fork impact marks on the forward hub half. There was preload plate shelf damage in both blade sockets (Photo #15). The forward pitch change rod boss was cracked.

Preload Plates: (see Photo #16)

NOTE: For this propeller model, when the blade knob is aligned with the hub parting line, the blade angle at the reference station is approximately 48° (knob 12° + 36° = 48°).

R1 preload plate had bumper rub marks at between 34-20° from the hub splint line which are approximately equal to blade angles of 14-28° respectively. The aft corner of the preload plate was deformed and the lip sheared due to impact forces in the aft direction.

R2 preload plate had bumper rub marks at between 37-22° from the hub splint line which are approximately equal to blade angles of 11-26° respectively. There was a deep circular impression of the knob block bumper skirt at the 37° mark. The aft/trail edge lip sheared due to impact forces in the aft/opposing rotation direction.

Propeller Blade Properties: (See Photos #17 through #19)

Blade # R1

Camber side	Chordwise/rotational scoring and gouging.
Face side	Spanwise scoring near tip
Bend	S-bend; tip forward, mid blade aft
Twist	Leading edge up
Lead edge damage	Gouging, nicks and dents
Trail edge damage	Nicks near tip
Knob condition	Bent opposite low pitch. The knob block bumper skirt was fractured and the bumper smashed. There was a preload plate slot impact mark on low pitch side.
Counterweight	Intact and undamaged, was removed to gain access to hub clamping bolts
Blade bearings	Intact
Butt/shank impact marks	Crescent shaped material discoloration on the face side edge
De-Ice boot	NA

Blade # R2

Camber side	Chordwise/rotational scorning
Face side	Not remarkable
Bend	Aft
Twist	Leading edge down
Lead edge damage	Gouging, nicks and dents
Trail edge damage	Not remarkable
Knob condition	Not remarkable, The knob block bumper skirt was fractured and the bumper smashed.
Counterweight	Intact and undamaged, was removed to gain access to hub clamping bolts
Blade bearings	Intact
Butt/shank impact marks	Crescent shaped material discoloration on the face side edge
De-Ice boot	NA

Photo #11 – Right propeller as-received

Photo #12 – Right propeller as-received

Photo #13 – Right

Photo #14 – Right

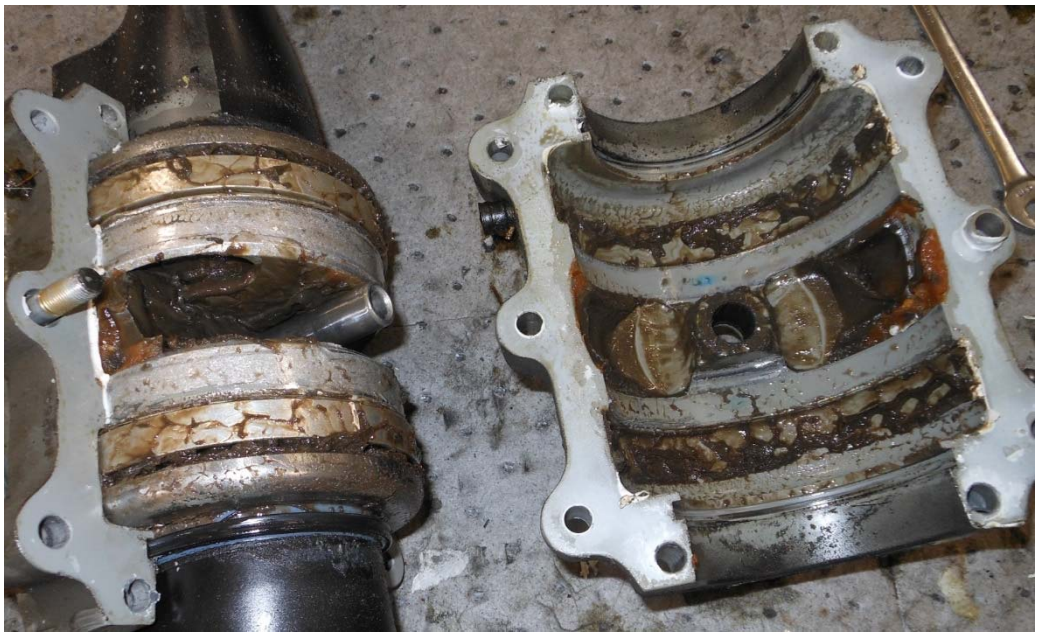


Photo #15 – Right

Photo #16 – Right

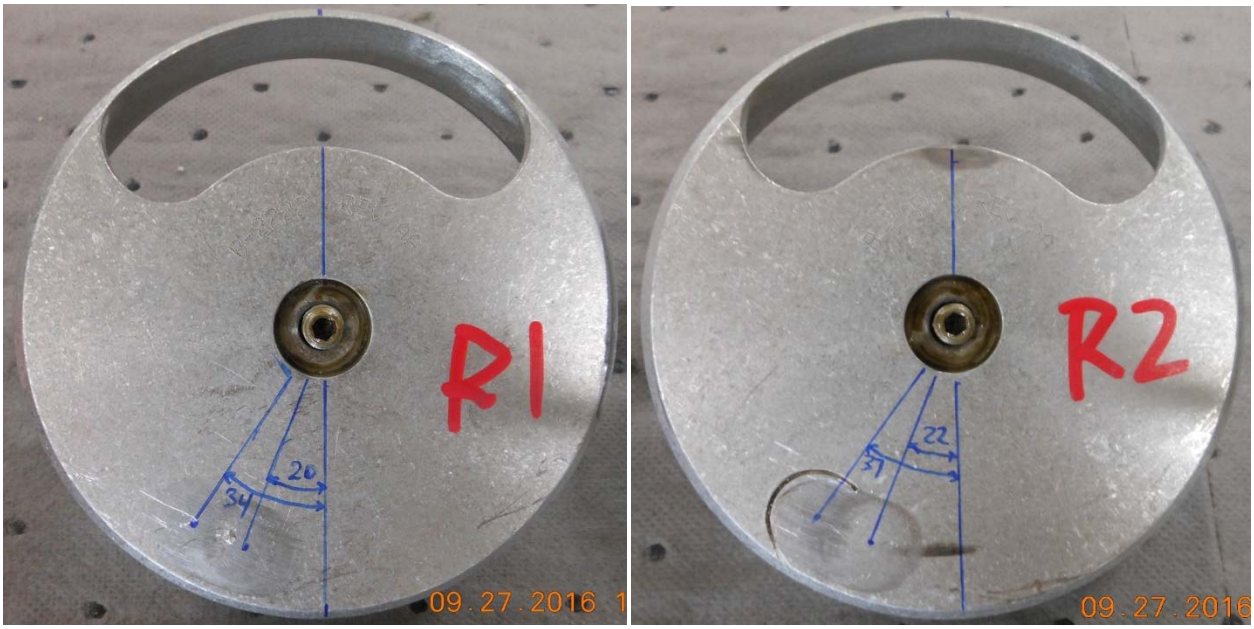


Photo #17 – Right

Photo #18 – Right

Photo #19 – Right

Propeller Governor Examination: The propeller governors from the accident airplane were examined in the Hartzell governor assembly room.

The right propeller governor P/N was 210280K, S/N 570370 and is pictured in Photo #20. The right propeller governor was intact and functionally tested on the test bench without any disassembly or adjustments (Photo #21). The following performance was recorded for the right propeller governor while operated on the test bench:

- 270 psi output pressure @ 900 RPM
- 280 psi output pressure @ 1550 RPM
- 295 psi output pressure @ 2070 RPM
- 305 psi output pressure (max relief setting) @ 2650 RPM
- The maximum RPM setting was determined to be 2745
- The minimum governor RPM setting was 2033
- The feather valve/dump was functional

The left propeller governor P/N was 210280D, S/N 530241 and is pictured in Photos #22 and #23 as-received. The governor was found at the crash scene fractured from the engine and was packed with dirt. The inlet screen was partially pried from the base and was bent and packed with dirt. The governor body was fractured open and the control arm, spool valve and flyweight assembly were missing. The governor pump shaft was frozen and would not rotate when hand torque was applied. Photos #24 and #25 show the governor after it was cleaned in a solvent tank. No further disassembly or testing of the left propeller governor was conducted.

Photo #20 – Right propeller governor as-received

Photo #21 – Right propeller governor mounted on test bench

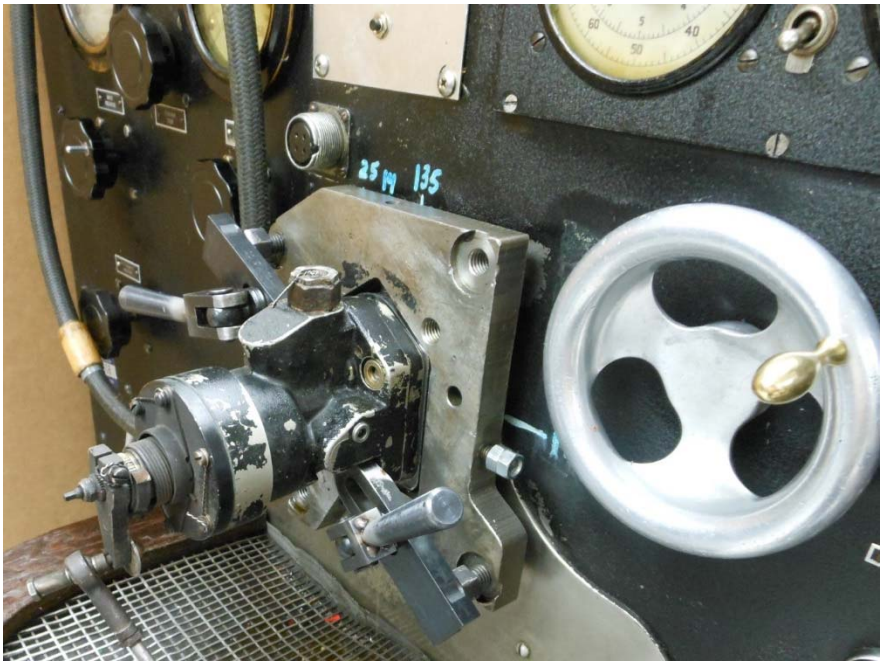


Photo #22 – Left propeller governor as-received

Photo #23 – Left propeller governor as-received

Photo #24 – Left propeller governor after cleaning

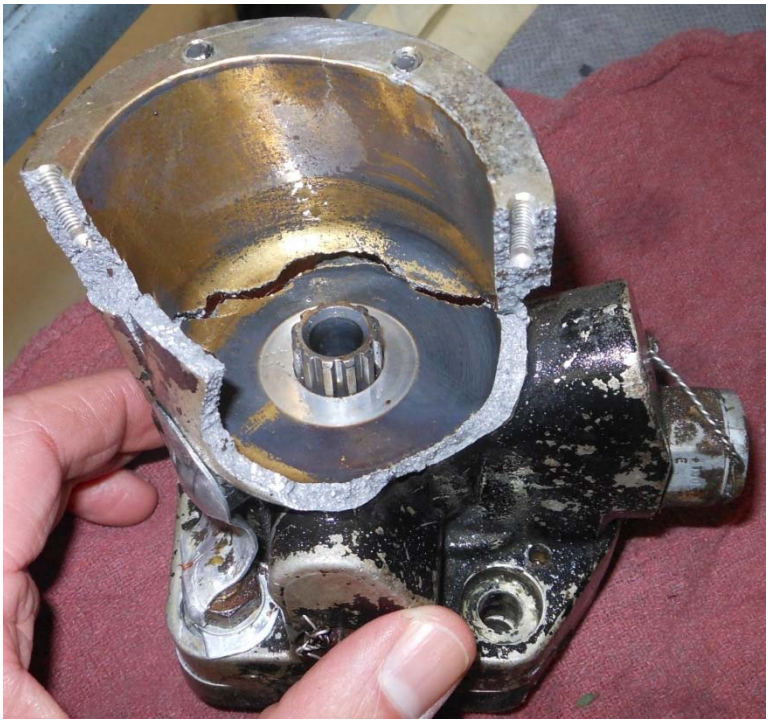


Photo #25 – Left propeller governor after cleaning

PHOTOGRAPHIC SUMMARY

NOTE: The following is a list of the original and unedited digital photographs. The photographs are available in digital format (CD, memory stick/card, FTP). 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.

Picture File Name	Description
DSCN3909.JPG	Propellers as-received from AMF on shipping pallet
DSCN3910.JPG	Left propeller as-received and mounted on bench fixture A
DSCN3911.JPG	Left propeller as-received and mounted on bench fixture B
DSCN3912.JPG	Left propeller as-received and mounted on bench fixture C
DSCN3913.JPG	Left spinner dome internal surface A
DSCN3914.JPG	Left spinner dome internal surface B
DSCN3915.JPG	Left spinner dome internal surface C
DSCN3916.JPG	Left propeller assembly, L1 counterweight impact mark on cylinder
DSCN3917.JPG	Left low pitch stop contact surface
DSCN3918.JPG	Left low pitch stop
DSCN3919.JPG	Left start lock and feather stop sleeve assembly
DSCN3920.JPG	Left cylinder internal surface A
DSCN3921.JPG	Left cylinder internal surface B
DSCN3922.JPG	Left piston circumferential mark A
DSCN3923.JPG	Left piston circumferential mark B
DSCN3924.JPG	Left propeller cylinder removed
DSCN3925.JPG	Left piston internal view
DSCN3926.JPG	Left hub internal view
DSCN3927.JPG	Left aft hub half internal
DSCN3928.JPG	Left forward hub half internal
DSCN3929.JPG	Left hub pitch change rod and fork - side view showing bend
DSCN3930.JPG	Right propeller as-received and mounted on bench fixture A
DSCN3931.JPG	Right propeller as-received and mounted on bench fixture B
DSCN3932.JPG	R1 camber side damage
DSCN3933.JPG	R2 camber side damage
DSCN3934.JPG	Right propeller - view into spinner dome, fractured cylinder
DSCN3935.JPG	Right propeller counterweight impression mark on spinner dome
DSCN3936.JPG	Right propeller, spinner dome tear at R2 lead edge
DSCN3937.JPG	Right propeller, counterweight impression in spinner dome A
DSCN3938.JPG	Right propeller, counterweight impression in spinner dome B
DSCN3939.JPG	R2 camber side chordwise scoring damage near tip
DSCN3940.JPG	Right prop assembly, spinner dome fractured, R2 counterweight puncture
DSCN3941.JPG	Right cylinder fracture/separation
DSCN3942.JPG	Right cylinder attachment thread fracture area
DSCN3943.JPG	Right cylinder puncture by R2 counterweight
DSCN3944.JPG	Left aft hub half internal cleaned up
DSCN3945.JPG	Left forward hub half internal cleaned up

DSCN3946.JPG	Left fork and pitch change rod cleaned up
DSCN3947.JPG	L2 forward blade pocket preload plate area damage
DSCN3948.JPG	L1 forward blade pocket preload plate area damage
DSCN3949.JPG	L2 aft blade pocket preload plate area damage
DSCN3950.JPG	L1 aft blade pocket preload plate area damage
DSCN3951.JPG	Left mounting flange detail
DSCN3952.JPG	Left fork and pitch change knob bumper fragments
DSCN3953.JPG	Left misc. hardware bag
DSCN3954.JPG	L2 blade retention bearings and counterweight
DSCN3955.JPG	L2 blade butt
DSCN3956.JPG	L1 blade retention bearings and counterweight
DSCN3957.JPG	L1 fractured blade bearing race
DSCN3958.JPG	L1 blade butt
DSCN3959.JPG	L1 fractured pitch change knob A
DSCN3960.JPG	L1 fractured pitch change knob B
DSCN3961.JPG	L1 pitch change knob fracture surface A
DSCN3962.JPG	L1 pitch change knob fracture surface B
DSCN3963.JPG	L1 preload plate marked
DSCN3964.JPG	L2 preload plate marked
DSCN3965.JPG	L1 preload plate damage (forward knob slot fracture)
DSCN3966.JPG	L1 preload plate damage (aft corner/impact with hub)
DSCN3967.JPG	L2 preload plate aft corner
DSCN3968.JPG	L2 preload plate fwd. corner
DSCN3969.JPG	L1 preload plate internal damage of forward knob slot A
DSCN3970.JPG	L1 preload plate internal damage of forward knob slot B
DSCN3971.JPG	L1 bearing race fracture/ball bearing impressions
DSCN3972.JPG	Right propeller governor data plate
DSCN3973.JPG	Left propeller governor data plate
DSCN3974.JPG	Left prop gov body damage A
DSCN3975.JPG	Left prop gov missing spool valve, flyweights and cup
DSCN3976.JPG	Left prop gov body damage B
DSCN3977.JPG	Left prop gov damage
DSCN3978.JPG	Left prop gov mounting face/gasket damage
DSCN3979.JPG	Left prop gov damage after solvent tank A
DSCN3980.JPG	Left prop gov damage after solvent tank B
DSCN3981.JPG	Left prop gov damage after solvent tank C
DSCN3982.JPG	Left prop gov mounting face after solvent tank
DSCN3983.JPG	Left prop gov data plate after solvent tank
DSCN3984.JPG	Left prop gov mounting base damage
DSCN3985.JPG	Left prop gov gasket screen pulled back
DSCN3986.JPG	Right propeller governor gasket removed/before mounting to test stand
DSCN3987.JPG	Right governor as installed on test stand
DSCN3988.JPG	Left cylinder, feathering spring and spring cup
DSCN3989.JPG	Left spring cup wear/crack
DSCN3990.JPG	Left spinner bulkhead A
DSCN3991.JPG	Left spinner bulkhead B
DSCN3992.JPG	Left spinner dome A
DSCN3993.JPG	Left spinner dome B
DSCN3994.JPG	Right spinner dome (view from forward end)

DSCN3995.JPG	Right spinner dome (view at R1 opening)
DSCN3996.JPG	Left blades leading edge view
DSCN3997.JPG	Left blades trailing edge view
DSCN3998.JPG	Left blades camber side (view from shank)
DSCN3999.JPG	Left blades camber side (view from tip)
DSCN4000.JPG	L1 blade camber side tip area
DSCN4001.JPG	Left blades face side (view from shank)
DSCN4002.JPG	Left blade butts A
DSCN4003.JPG	Left blade butts B
DSCN4004.JPG	Left blades face side view
DSCN4005.JPG	Right low pitch stop/screw head impression A
DSCN4006.JPG	Right low pitch stop/screw head impression B
DSCN4007.JPG	Right propeller aft hub half removed - internal over-serviced with grease A
DSCN4008.JPG	Right propeller aft hub half removed - internal over-serviced with grease B
DSCN4009.JPG	Right propeller front view after cutting pitch change rod
DSCN4010.JPG	R1 blade butt A
DSCN4011.JPG	R1 blade butt B
DSCN4012.JPG	R2 blade butt
DSCN4013.JPG	R1 pitch change knob
DSCN4014.JPG	R2 pitch change knob
DSCN4015.JPG	R1 bent blade pitch change knob
DSCN4016.JPG	Right blades face side (view from shank)
DSCN4017.JPG	Right blades face side (view from tip)
DSCN4018.JPG	Right blades camber side (view from tip) A
DSCN4019.JPG	Right blades camber side (view from shank)
DSCN4020.JPG	Right blades camber side (view from tip) B
DSCN4021.JPG	Right blades camber side tip area
DSCN4022.JPG	R1 camber side tip area chordwise scoring
DSCN4023.JPG	R2 camber side tip area chordwise scoring
DSCN4024.JPG	Right blades lead edge view A
DSCN4025.JPG	Right blades lead edge view B
DSCN4026.JPG	Right blades trail edge view
DSCN4027.JPG	R1 preload plate marked A
DSCN4028.JPG	R1 preload plate marked B
DSCN4029.JPG	R2 preload plate marked
DSCN4030.JPG	R2 preload plate, bearings and pitch change block
DSCN4031.JPG	R1 preload plate, bearings and pitch change block
DSCN4032.JPG	Right mounting flange area
DSCN4033.JPG	Right S/N
DSCN4034.JPG	Right model and S/N
DSCN4035.JPG	Right forward hub half cylinder mounting area boss/thread fracture
DSCN4036.MOV	Erroneous movie file
DSCN4037.JPG	Right aft hub half A
DSCN4038.JPG	Right aft hub half B
DSCN4039.JPG	Right forward hub half, fork and bent pitch change rod A
DSCN4040.JPG	Right forward hub half, fork and bent pitch change rod B
DSCN4041.JPG	Right cylinder assembly view of piston and cut pitch change rod A
DSCN4042.JPG	Right piston and intentionally cut pitch change rod
DSCN4043.JPG	Right cylinder assembly view of piston and cut pitch change rod B

DSCN4044.JPG	Right spinner bulkhead damage (fwd. side)
DSCN4045.JPG	Right spinner bulkhead damage (aft side)
DSCN4046.JPG	Right spinner dome damage/counterweight puncture
DSCN4047.JPG	Right misc. hardware bag
DSCN4048.JPG	R1 aft blade pocket damage
DSCN4049.JPG	R2 aft blade pocket damage
DSCN4050.JPG	R2 fwd. blade pocket damage
DSCN4051.JPG	R1 fwd. blade pocket damage
DSCN4052.JPG	Right propeller fork, pitch change rod and hub damage A
DSCN4053.JPG	Right propeller fork, pitch change rod and hub damage B
DSCN4054.JPG	Right propeller components lay-out A
DSCN4055.JPG	Right propeller components lay-out B
DSCN4056.JPG	Left piston, pitch change rod and fork at low pitch position
DSCN4057.JPG	Left piston, pitch change rod and fork at high pitch position
DSCN4058.JPG	L1 blade pocket forward half blade damage
DSCN4059.JPG	Left propeller components lay-out
DSCN4060.JPG	Propeller components as ready for shipment back to AMF A
DSCN4061.JPG	Propeller components as ready for shipment back to AMF B