

TEARDOWN EXAMINATION

LOCATION Brenham Texas.

DATE 10/18/2018 N756NN C206

EXAMINATION ATTENDEES' NAMES AND PHONE NUMBERS

Michael Costillos - FAA
Brent Nedbrlek - Aviator Plus - owner.

Aircraft Make/Model	<u>Cessna T206G</u>
Accident Location	<u>8165 FM 390E Brenham Texas (Field)</u>
Accident Date	<u>09/20/2018</u>

Engine Make	<u>Continental TSI0-520-M7B</u>
Engine Model	<u>TSI0-520-M7B</u>
Serial Number	<u>1011575</u>
Engine Time	<u>From Wreckage</u> Hobbs <u>4242.7</u> Tach _____ <u>Last Inspection</u> ☒ Ann ☐ 100-hr ☐ Other Date <u>6/1/2018</u> Hobbs _____ Tach _____ TT _____ TSMOH _____

Is the engine runnable? ☐ YES ☒ NO

If YES did it run successfully? ☒ YES ☐ Operated smoothly through entire range ☐ No

If NO explain problems

RPM Max N/A Idle N/A

Magneto Drop L. _____ R. _____

The ENGINE was...

- ☐ REMOVED *Installed on AcFT*
- ☐ PLACED ON A STAND
- ☐ SECURED TO HOIST
- ☐ WOULD NOT ROTATE _____
- ☐ ROTATED MANUALLY
- ☐ WITH PROPELLER
- ☐ WITH TOOL IN ACCESSORY DRIVE GEAR
- ☐ ALL VALVES MOVED IN PROPER SEQUENCE
- ☐ APPROXIMATELY SAME AMOUNT OF LIFT IN ROCKER ARMS
- ☒ ACCESSORY GEARS TURNED
- ☐ VACUUM PUMP TURNED

THUMB COMPRESSION

- ☐ WAS OBTAINED ON ALL CYLINDERS IN PROPER FIRING ORDER
- ☐ WAS NOT OBTAINED ON CYLINDER NUMBER(S) _____

BORESCOPE INSPECTION REVEALED

- ☐ NO MECHANICAL DEFORMATION ON THE
- ☐ VALVES
- ☐ CYLINDER WALLS
- ☒ INTERNAL CYLINDER HEAD
- ☐ MECHANICAL DEFORMATION ON THE
- ☐ VALVES
- ☐ CYLINDER WALLS
- ☒ INTERNAL CYLINDER HEAD

Some heavy Depos. 1/3

AIR FILTER _____

IGNITION HARNESSSES *OK* _____

SPARK PLUGS

MAKE Tempest
PART NUMBER URHB 32 E

GAPS ~~SIMILAR~~

☒ YES (all)

☐ NO _____

DEPOSITS (top and bottom)

☐ None ☐ 1t ☐ 1b ☐ 2t ☒ 2b ☐ 3t ☐ 3b ☐ 4t ☒ 4b ☐ 5t ☐ 5b ☐ 6t ☒ 6b

MECHANICALLY DAMAGED (top and bottom)

☒ None ☐ 1t ☐ 1b ☐ 2t ☐ 2b ☐ 3t ☐ 3b ☐ 4t ☐ 4b ☐ 5t ☐ 5b ☐ 6t ☐ 6b

ELECTRODES (SHAPE: CIRCULAR vs. OVAL) (COLOR: GRAY vs. OILY vs. SOOTY)

1 _____ 2 _____ 3 _____
4 _____ 5 See pic. 6 _____

MAGNETOS

LEFT

MAKE Bendix
PART NUMBER 10349-350-4
SERIAL NUMBER F14LA 865

Impulse Coupling ☒ Yes ☐ No

Produced sparks when turn by hand (or indicate if equipment was used)...

☐ AT ALL POSTS

☐ OTHER _____

Timing _____ degrees

RIGHT

MAKE Bendix

PART NUMBER 10-349 350-5

SERIAL NUMBER F14KA213

Impulse Coupling ☒ Yes ☐ No

Produced sparks when turn by hand (or indicate if equipment was used)...

☐ AT ALL POSTS

☐ OTHER _____

Timing _____ degrees

FUEL LINES

☒ CLEAR

☐ BLOCKED

☐ BREACHED _____

FUEL SUMP

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

CARBURETOR

MAKE/MODEL _____

PART NUMBER _____

SERIAL NUMBER _____

Mechanical Damage ☐ YES ☐ NO ☐ Breached

Fuel in Bowl ☒ YES ☐ NO ☐ Unknown

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Floats ☐ Metal ☐ Comp

- ☐ INTACT
☐ CRUSHED
☐ FRACTURED _____

Finger Screen

- ☐ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☒ DEBRIS _____

Accelerator Pump ☐ OP ☐ INOP _____

Carburetor Heat ☐ ON ☐ OFF ☐ PARTIAL _____

THROTTLE

☐ Fractured _____ ☐ Separated _____

☒ Moves Freely

☐ Binds

☐ Stuck

Position ☐ OPEN ☐ $\frac{3}{4}$ ☐ $\frac{1}{2}$ ☐ $\frac{1}{4}$ ☐ $< \frac{1}{4}$ ☐ CLOSED

MIXTURE

☐ Fractured _____ ☐ Separated _____

☒ Moves Freely

☐ Binds

☐ Stuck

Position ☐ OPEN ☐ $\frac{3}{4}$ ☐ $\frac{1}{2}$ ☐ $\frac{1}{4}$ ☐ $< \frac{1}{4}$ ☐ CLOSED

FUEL PUMP

Fuel Found ☐ YES ☐ NO ☐ Unknown _____

Appears Functional ☐ YES ☐ NO _____

Diaphragm ☐ INTACT ☐ RUPTURED _____

AFT Fuel Pump never Turned ON
During Incident ???

Screen

☐ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

FUEL INJECTOR

Make/Model _____

Pump _____

Screen

☐ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Lines ☐ CLEAR ☐ BLOCKED

FUEL MANIFOLD VALVE

Diaphragm ☒ INTACT ☐ RUPTURED ☐ CONTAINS FUEL

Screen

☐ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Lines ☐ CLEAR ☐ BLOCKED

Nozzles ☐ CLEAR ☐ BLOCKED ☐ PARTIALLY OPEN _____

LUBRICATION

Oil Pump ☐ INTACT ☐ DAMAGED ☐ SCORED ☐ OP ☐ INOP

Oil Filter ☐ Not Installed _____

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Oil Screen ☒ Not Installed _____

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Oil Sump ☐ INTACT ☐ BREACHED _____

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Sump (Suction) Screen

☒ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS _____

Oil Cooler and Lines _____

VACUUM PUMP

Make/Model _____ *ok*

Part Number _____

☐ WET ☐ DRY

Sheer Coupling ☐ Intact ☐ Fractured _____

☐ Melted ☐ Stuck ☐ Turns Freely ☐ Binds

TURBOCHARGER ☐ Not Installed *NORMAL Free spinning.*

Make/Model _____

Part Number _____

Serial Number _____

☐ Immovable ☐ Rotates Freely ☐ Binds _____

Wastegate _____

Controller _____

CYLINDER 1

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CYLINDER 2

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CYLINDER 3

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CYLINDER 4

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CYLINDER 5

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CYLINDER 6

PUSH RODS _____

VALVES/SPRINGS _____

ROCKER ARMS/SHAFTS _____

BARREL _____

PISTON _____

PISTON PINS _____

RINGS _____

CRANKCASE

MAIN BEARINGS

CRANKSHAFT

COUNTERWEIGHTS ☐ All Free on Shafts ☐ Bind _____ ☐ Frozen _____

CONNECTING RODS and BEARINGS

Cyl 1 ☐ INTACT _____
Cyl 2 ☐ INTACT _____
Cyl 3 ☐ INTACT _____
Cyl 4 ☐ INTACT _____
Cyl 5 ☐ INTACT _____
Cyl 6 ☐ INTACT _____

CAMSHAFT

LIFTERS

PROPELLER

MAKE _____

PART NUMBER _____

SERIAL NUMBER _____

Total Time _____ TSPOH _____

Governor

Governor Screen

☐ CLEAN

CONTAMINATED WITH ☐ WATER ☐ DIRT ☐ DEBRIS

Blades

BLADE 1

BLADE 2

BLADE 3

Spinner

USDA-ARS
Attn: LEE DENHAM
3103 F & B RD

Aircraft: T206
S/N: U20604225
Tail No.: N756NN

Date: 9/28/2018
Engine S/N: 1011575
Engine Model: CONT. 520

COLLEGE STATION TX 77845
United States

Values in (parenthesis) below your results are average values from all our analysis data for the same engine model with similar engine hours and oil hours. See www.avlab.com/explain for detailed explanation of the statistical analysis used with your laboratory results.

CURRENT SAMPLE		** SEE LAB COMMENTS **											Normal	Elevated	High
Sample Date: 9/11/2018 Analysis Date: 9/26/2018 Sample Number: P34 Cylinder Type: steel TSN/TSO: 387.1 Oil Hours: unknown Filter Hours: 25 Oil Added: 4 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:		*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***													
Iron	Copper	Nickel	Chromium	Silver	Magnesium	Aluminum	Lead	Silicon	Titanium	Tin	Moly.				
206.8 (N/A)	15.2 (N/A)	72.3 (N/A)	19.8 (N/A)	N/A	N/A	13.8 (N/A)	5272 (N/A)	4.7 (N/A)	N/A	0.2 (N/A)	N/A				
*** FILTER ANALYSIS RESULTS ***															
Material:		Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.				
Amount:															
Type:															
Form:															
Comments: IRON AND NICKEL SEEM HIGH. IRON CAN TYPICALLY BE FROM CORROSION FROM AIRCRAFT INACTIVITY, WEAR FROM CYLINDERS, ROTATING SHAFTS OR THE VALVE TRAIN. NICKEL CAN POSSIBLY COME FROM VALVE GUIDES OR RINGS. ALL OTHER OIL VALUES SEEM FINE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE. PLEASE CONTACT THE ENGINE MANUFACTURER'S SERVICE REP IF FURTHER ASSISTANCE IS NEEDED.															
PREVIOUS SAMPLE 1		!!CAUTION!! Engine may require inspection. Contact Manufacturer.											Normal	Elevated	High
Sample Date: 6/3/2018 Analysis Date: 6/15/2018 Sample Number: P38 Cylinder Type: steel TSN/TSO: 346.8 Oil Hours: 50 Filter Hours: 50 Oil Added: 2 Filter Wt. (mgs): Flashpoint(deg. F): H2O (ppm): Total Acid No.:		*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***													
Iron	Copper	Nickel	Chromium	Silver	Magnesium	Aluminum	Lead	Silicon	Titanium	Tin	Moly.				
314.8 (50.7)	24.1 (5.8)	70.6 (8.3)	25.8 (9.3)	N/A	N/A	23.4 (9.6)	6293 (5714)	7.6 (6.5)	N/A	0.9 (0.3)	N/A				
*** FILTER ANALYSIS RESULTS ***															
Material:		Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.				
Amount:															
Type:															
Form:															
Comments: NOTE HIGH IRON. IRON CAN TYPICALLY BE FROM CORROSION FROM AIRCRAFT INACTIVITY, WEAR FROM CYLINDERS, ROTATING SHAFTS OR THE VALVE TRAIN. NOTE NICKEL SEEMS ELEVATED. NICKEL CAN POSSIBLY COME FROM VALVE GUIDES. NOTE ALUMINUM SEEMS HIGH. COMMON SOURCES OF ALUMINUM WEAR INCLUDE CORROSION, PISTON PIN CAPS OR PLUGS, BEARING OVERLAY, OR SHAVINGS FROM EITHER A HEAD OR THE CRANKCASE. A COMPRESSION CHECK AND BORESCOPE MAY BE USEFUL IN DETERMINING AND MONITORING CYLINDER AND PISTON AREA CONDITION. WE WILL CONTINUE TO MONITOR WEAR METAL TREND ON YOUR NEXT SAMPLE. PLEASE CONTACT THE ENGINE MANUFACTURER'S SERVICE REP IF FURTHER ASSISTANCE IS NEEDED.															

PREVIOUS SAMPLE 2		SAMPLE APPEARS NORMAL. Send next sample at normal interval.										☒ Normal ☐ Elevated ☐ High	
Sample Date: 6/25/2016 Analysis Date: 8/19/2016 Sample Number: P15 Cylinder Type: steel		*** OIL ANALYSIS RESULTS IN PARTS PER MILLION ***											
		Iron	Copper	Nickel	Chromium	Silver	Magnesium	Aluminum	Lead	Silicon	Titanium	Tin	Moly.
		76.8 (39.6)	12.0 (11.9)	27.6 (6.4)	22.0 (13.5)			16.5 (11.8)	3377 (4401)	9.3 (10.4)		< 0.1 (0.6)	
		*** FILTER ANALYSIS RESULTS ***											
TSN/TSO: 106.4		Material:		Stainless Steel	Carbon Steel	Alloy Steel	Bearing Alloy	Copper	Silver	Magn.	Alum.	Grit	Misc.
Oil Hours: 50		Amount:											
Filter Hours: 50		Type:											
Oil Added: 4		Form:											
Filter Wt. (mgs):													
Flashpoint(deg. F):													
H2O (ppm):													
Total Acid No.:													
Comments: ALL OIL VALUES SEEM FINE FOR THE ENGINE BREAK-IN CYCLE. WE WILL CONTINUE TO MONITOR THIS ENGINE WITH YOUR NEXT SAMPLE.													



10/18/2018 11:38



Bottom

10/18/2018 12:00



10/18/2018 12:35



10/18/2018 12:35