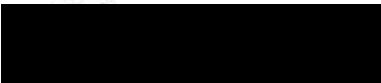




ENGINE EXAMINATION REPORT

692043

ENGINE MODEL	IO550N (51B) Modified by Turbo Alley per STC-Turbo Normalized
ENGINE SERIAL NUMBER	692043
AIRCRAFT MAKE & MODEL	Cirrus SR22 (TN)
AIRCRAFT SERIAL NUMBER	3359
AIRCRAFT REGISTRATION	N597CP
FILE NUMBER	18-306

NAME	SIGNATURE	DATE
Phillip Grice		7/22/2019
NAME	SIGNATURE	DATE
Mike Council		7-22-2019

ENGINE EXAMINATION REPORT

FILE NUMBER: 18-306 ENGINE S/N: 692043 PAGE 2 of 46

GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	5-8-2019	NTSB ACCIDENT #	ERA19LA059
FACILITY	Continental Aerospace Technologies-Analytical	NTSB INVESTIGATOR	Adam Gerhardt, IIC-Non-traveling. Doug Brazy-Attending
ADDRESS	2039 South Broad Street Mobile, Alabama	FAA INVESTIGATOR	Mark Fayerman, Atlanta FSDO-Non-attending
		ACCIDENT DATE	11-29-2018
		ACCIDENT LOCATION	Kennesaw, GA

ENGINE INFORMATION

ENGINE POSITION	Single
TOTAL TIME	1662.2 at last engine service-Epps Aviation-11-15-2018
TIME SOH	NA51
TYPE & TIME SLI	34.5 since last 100-hour inspection according to the owner/pilot statement on NTSB form 6120.
BUILD DATE	10-16-2008
IN SERVICE DATE	11-26-2008

Significant logbook information: Epps Aviation-Work package P6826. Tach time 1633.7. TT engine 1633.7 hours. Engine logbook entry for Pre-Purchase Inspection:

Performed pre-inspection ground run performance checks. Performed 100 hour inspection and service. Ref Appendix D and SR-22 MM and compressions are as follows Cy1-68/80, Cy2-73/80, Cy3-72/80, Cy4-60/80, Cy5-70/80, Cy6-62/80 and MO 42/80. Drained engine oil and removed filter. Cut filter open and found no defects. Installed new filter P/N AA48108. Replenished oil with M Type Phillips 20W50XC. Performed post run and found no defects. Removed A/C Drive, and Removed all old Gaskets and Seals. Re-Installed AC drive with new Gasket and seals P/N 654012, 25102 and AS3491-01 Referencing TCM Maintenance Manual Chapter 12-3 and 17-6. Installed new Loaded Cylinders on # 2 Cylinder P/N 658595A2, S/N AC18DC312 and # 3 Cylinder P/N 658595A2, S/N AC18AA844. Referencing TCM Overhaul Maintenance Manual Chapter 12-13 and 17-3 (Torque Wrench . Cylinder 4 push rod tubes are leaking.. Removed Push rod tube seals and replaced with new seals P/N 534610 Referencing TCM Overhaul Maintenance Manual For IO-550-N Chapter 12-13 and 17-3. Oil intake is leaking on the turbo on pilots side.. Removed and Replaced with New Gasket P/N 652100 Referencing Tornado Alley 22-6460004 Continued Airworthiness Instructions. Removed old slave wastegate P/N: 22-6150026 and installed new wastegate P/N: 22-6150026. Removed old #1 alternator P/N 656802 S/N: H-P020097 and installed new #1 alternator P/N: 656802 S/N: H-R090892 referencing Continental Maintenance Manual CH 10-4. Pilot side intercooler is cracked at bracket. Removed Intercooler P/N 22-6450014 and sent out to be repaired. Re-Installed repaired Intercooler P/N 22-6450014 Referencing Tornado Alley Maintenance Manual. Installed 12 each new spark plugs P/N: URHB32E Cylinder drains on #2, #3 and #6 are leaking fuel...Removed and Replaced seals with new P/N 633958-2 on 2, 3 and #6 Cylinder

Report Summary: No source of an oil leak was discovered.

Search code(s):

Disposition of engine following exam: The engine was released by the NTSB IIC and shipped to Atlanta Air Salvage per shipper #AD01161 dated 6-10-2019.

ENGINE EXAMINATION REPORT**FILE NUMBER:**

18-306

ENGINE S/N:

692043

PAGE 3 of 46**INSPECTION WITNESSES**

NAME	Phillip Grice	NAME	Lisa Jersild
ADDRESS	2039 South Broad Street Mobile, Alabama	ADDRESS	2039 South Broad Street Mobile, Alabama
ORGANIZATION	Continental Aerospace Technologies	ORGANIZATION	Continental Aerospace Technologies
PHONE	██████████	PHONE	██████████
NAME	Randy Bryant	NAME	Mike Council
ADDRESS	2039 South Broad Street Mobile, Alabama	ADDRESS	2039 South Broad Street Mobile, Alabama
ORGANIZATION	Continental Aerospace Technologies	ORGANIZATION	Continental Aerospace Technologies
PHONE	██████████	PHONE	██████████
NAME	Doug Brazy	NAME	Daniel M. Lane
ADDRESS	Ashburn, VA	ADDRESS	DeKalb Peachtree Airport, Atlanta, GA
ORGANIZATION	NTSB-Attending	ORGANIZATION	Epps Aviation-Chief Inspector
PHONE	2 ██████████	PHONE	██████████

NAME	Joe Jordan	NAME	NA
ADDRESS	DeKalb Peachtree Airport, Atlanta, GA	ADDRESS	
ORGANIZATION	Epps Aviation-Piston Shop Manager	ORGANIZATION	
PHONE	██████████	PHONE	

ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 4 of 46

EXTERNAL INSPECTION OF ENGINE

The engine crate was opened in the presence of the NTSB Investigator (Attending). All four engine mounts were broken. An engine data plate was attached to the upper right crankcase half which identified this engine as a Continental Motors model IO-550-N (51B) serial number 692043. This engine was modified by STC with the addition of a Turbo Alley Turbo, Inc. turbo-normalizing kit installed by Cirrus Design. Two induction "after-coolers" were loose in the engine crate as was a Sky-Tec starter motor, exhaust tailpipes, and several Turbo Alley induction tubes. The left turbocharger was also shipped loose in the engine crate.

Cylinder # 5 exhibited thermally damaged paint on the cooling fins and the exhaust valve push rod tube was impact damaged. Cylinder # 5 induction tube was impact damaged.



ENGINE EXAMINATION REPORT				
FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 5 of 46

PAGE 5 of 46



ENGINE EXAMINATION REPORT			
FILE NUMBER:	18-306	ENGINE S/N:	692043
		PAGE 6 of 46	

AIRFRAME COMPONENTS RETURNED WITH ENGINE

Left and right exhaust tailpipes

Air Conditioner compressor and drive coupling

Note: Two turbo chargers were shipped to Hartzell Engine Technologies at the request of the NTSB IIC per shipper # AD01160 dated 6-10-2019. Turbos S/N (Right) LHL00161, (Left) LGL00028

ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 7 of 46

ENGINE TEARDOWN AND COMPONENT EXAMINATION

EXHAUST SYSTEM

Condition:

The right exhaust tailpipe was impact damaged (pinched).



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 8 of 46

INDUCTION SYSTEM

Condition:

The top mounted factory installed induction components were intact except # 5 which was impact damaged. The aftermarket induction components had been removed and shipped loose in the shipping crate. Some items exhibited impact damage.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 9 of 46

IGNITION SYSTEM

MAGNETO-TO-ENGINE TIMING

Specification: 22° BTDC

L/H Magneto: *
Undetermined

R/H Magneto: *
Undetermined

*The engine could not be manually rotated due to internal mechanical damage. Magneto timing verification requires engine rotation.

LEFT MAGNETO

Manufacturer: Bendix

P/N: 10-50055G-101

S/N: D08IAI66

Condition:

No damage was noted. Bench testing produced normal operational results.



RIGHT MAGNETO

Manufacturer: Bendix

P/N: 10-50055G-101

S/N: D08IAI58

Condition:

No damage was noted. Bench testing produced normal operational results.



ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 10 of 46
--------------	--------	-------------	--------	---------------

IGNITION HARNESS

Manufacturer: CMI

P/N: Undetermined

S/N: Undetermined

Condition: Unremarkable



SPARK PLUGS

Manufacturer: Tempest

P/N: URHB32E

Condition: When compared to a Champion Sparkplug *Check-A-Plug* chart, the sparkplugs appeared normal.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 11 of 46

FUEL SYSTEM

FUEL PUMP

Manufacturer: CMI-modified
by Turbo Alley

P/N: ETI-5R22-2-12

S/N: GP5413

Condition:

The drive coupling was intact. The fuel pump was free to rotate normally.



ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 12 of 46
---------------------	--------	--------------------	--------	----------------------

THROTTLE BODY METERING UNIT

Manufacturer: CMI

P/N: 653353-8A

S/N: A0BJA005

Condition: Unremarkable



FUEL MANIFOLD VALVE

Manufacturer: CMI

P/N: 646433-9A4

S/N: C081A293

Condition: The fuel manifold was disassembled and examined. The assembly screws were properly secured. The diaphragm and spring were intact, and the fuel screen was clean. Traces of fuel were present in the valve body.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 13 of 46



FUEL NOZZLES AND LINES

Manufacturer: GAMI

Position	#1	#3	#5	#2	#4	#6
Size	19B	19B	19B	19B	19B	19B
Condition:	The aftermarket fuel injectors were all open.					



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 14 of 46

LUBRICATION SYSTEM

OIL SUMP

Condition: The oil sump had several small protrusions from the inside out. Once the oil sump was removed, damaged connecting rod ends, valve lifters and damaged engine bearings were discovered. The quick-drain crankcase oil drain was functional and secured properly.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 15 of 46

OIL PICK-UP TUBE & SCREEN

Condition: The oil pick-up tube was unremarkable. The screen was free of contamination.



OIL PUMP

Condition: Oil pump gears were unremarkable. The aluminum pump housing bore exhibited damage consistent with hard particle passage. The oil pressure valve spring was intact and the piston was unremarkable. The seat exhibited normal wear patterns.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 16 of 46



OIL FILTER

Manufacturer: Tempest

P/N: AA48108-2

Condition:

The oil filter was opened, and metal contamination was present. Writing on the exterior indicated that the oil filter was installed 11-14-2018 at tach/hobbs 1663.2 hours.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 17 of 46

OIL COOLER

Manufacturer: AAVID
Niagara

P/N: 10281A

S/N: D17-14006-183

Condition:

No impact damage was noted. The mounting rail was bent. The core was intact.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 18 of 46

CYLINDERS

CYLINDER #1

P/N: 658838A1

S/N: AC15CA704

Head Date: Undetermined

Condition:

Unremarkable

**CYLINDER #3**

P/N: 658593A1

S/N: AC18AA844

Head Date: Undetermined

Condition:

Unremarkable



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 19 of 46

CYLINDER #5

P/N: Undetermined

S/N: AC08IA441

Head Date: Undetermined

Condition:

Unremarkable



CYLINDER #2

P/N: 658595A1

S/N: AX18EC312

Head Date: Undetermined

Condition:

Unremarkable



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 20 of 46

CYLINDER #4

P/N:658538A1

S/N:AC15CA453

Head Date: Undetermined

Condition:

Unremarkable



CYLINDER #6

P/N:658595A1

S/N: AC17BB541

Head Date: Undetermined

Condition:

Unremarkable



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

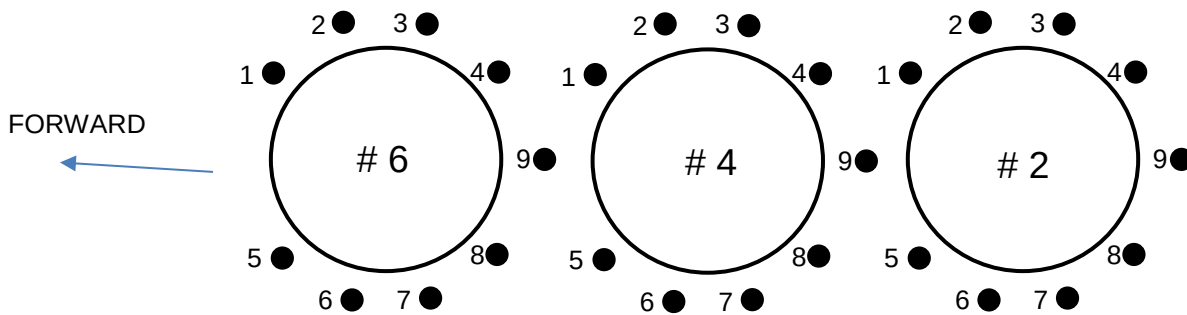
692043

PAGE 21 of 46

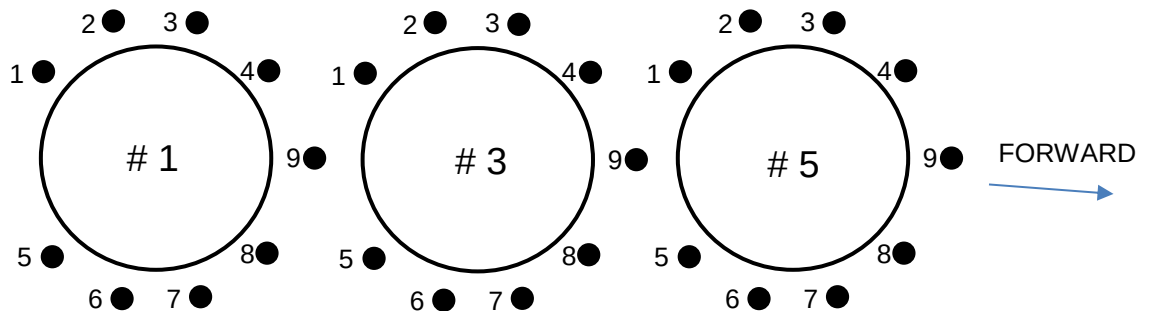
Cylinder Through-Bolt and Deck Stud Break-Away (Tightening/Loosening) Torque Measurements (in-lbs)

(NOTE: Position numbers 1 and 5 are through-bolts)

	Bolt 1	Stud 2	Stud 3	Stud 4	Bolt 5	Stud 6	Stud 7	Stud 8	Stud 9
	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose
Cylinder #2	867 / 173	Loose	Loose	443 / 363	805 / 636	696 / 548	719 / 518	463 / 353	581 / 646
Cylinder #4	719 / 551	655 / 545	647 / 558	619 / 512	682 / 558	683 / 543	686 / 531	456 / 358	625 / 546
Cylinder #6	728 / 545	Crankcase Broken	Crankcase Broken	Loose	684 / 520	598 / 453	621 / 458	452 / 355	316 / 261



	Bolt 1	Stud 2	Stud 3	Stud 4	Bolt 5	Stud 6	Stud 7	Stud 8	Stud 9
	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose	Tight / Loose
Cylinder # 1	870 / 679	591 / 514	552 / 489	435 / 408	996 / 809	724 / 611	707 / 617	677 / 633	336 / 326
326Cylinder # 3	802 / 645	683 / 559	623 / 520	646 / 543	1003/873	596 / 491	636 / 487	640 / 529	496 / 461
Cylinder # 5	711 / 602	762 / 605	802 / 690	700 / 617	818 /694	657 /515	614 / 486	707 / 607	716 / 562



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 22 of 46

VALVES

Condition:

All intake and exhaust valves were intact and exhibited normal combustion signatures.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 23 of 46

ROCKER ARMS AND SHAFTS

Condition:

All rocker arms and shafts were intact and in correct positions except # 5 exhaust. The push rod was impact damaged on cylinder # 5.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 24 of 46

#1 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

The piston skirt exhibited heat signatures. Red arrow points to valve strike witness mark.



#3 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

Impact marks on the piston face were from force required to remove the piston from the damaged cylinder. This damage was not accident related. Red arrow points to valve strike witness mark.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 25 of 46

#5 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

Impact marks on the piston face were from force required to remove the piston from the damaged cylinder. This damage was not accident related. Red arrow points to valve strike witness mark.



#2 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

Red arrow points to valve strike witness mark. Otherwise, unremarkable. Normal combustion deposits.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 26 of 46

#4 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

No damage noted. Normal combustion deposits.



#6 PISTON, RINGS AND PIN

Piston P/N: 654857

Condition:

Impact marks on the piston face were from force required to remove the piston from the damaged cylinder. This damage was not accident related. Otherwise unremarkable.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 27 of 46

CRANKCASE ASSEMBLY

CRANKCASE

Casting
Number:

1-3-5:655435

2-4-6: 655434

S/N: R08HA181

Condition:

The crankshaft halves were damaged by uncontained internal engine components.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 28 of 46

#1 MAIN BEARINGS

P/N: 653547

Date Code: 7/08

Condition:

Normal wear pattern



#2 MAIN BEARINGS

P/N: 653547

Date Code: 7/08

Condition:

Normal wear pattern



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 29 of 46

#3 MAIN BEARINGS

P/N: 634503

Date Code: 6/08

Condition:

Extruded-High heat damage.



#4 MAIN BEARINGS

P/N: 634503

Date Code: 6/08

Condition:

Normal wear pattern



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 30 of 46

#5 MAIN BEARINGS

P/N: 634503

Date Code: 6/08

Condition:

Normal wear pattern



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 31 of 46

CRANKSHAFT ASSEMBLY

CRANKSHAFT

Forging Number: 649878

S/N: N08GA096

Heat code: KMAC

Condition:

Crankshaft (Rod) journals # 4 and # 5 were destroyed



ENGINE EXAMINATION REPORT**FILE NUMBER:**

18-306

ENGINE S/N:

692043

PAGE 32 of 46**TRANSFER
COLLAR****Condition:**

Unremarkable

**COUNTER
WEIGHTS****Condition:**

Counter weights exhibited mechanical damage. All plates and clips remained intact.

**INTERNAL
TIMING****Condition:**

Undetermined. Engine could not be rotated manually due to internal mechanical damage.

ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 33 of 46
--------------	--------	-------------	--------	---------------

#1 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA946

Condition: Unremarkable

#1 CONNECTING ROD BEARING

P/N: 642398

Condition: Normal wear patterns



#3 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA 949

Condition: Separated

#3 CONNECTING ROD BEARING

P/N: Undetermined

Condition: Destroyed



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 34 of 46

#5 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA924

Condition:

Separated

#5 CONNECTING ROD BEARING

P/N: Undetermined

Condition:

Destroyed



#2 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA933

Condition:

Separated

#2 CONNECTING ROD BEARING

P/N: Undetermined

Condition:

Destroyed



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 35 of 46

#4 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA926

Condition:

The # 4 connecting exhibited signatures of extreme high heat.

#4 CONNECTING ROD BEARING

P/N: 642398

Condition:

The rod bearing indicated signatures of high heat.



#6 CONNECTING ROD

P/N: 646126Y

Forging or Serial Number: AE08HA937

Condition:

Separated

#6 CONNECTING ROD BEARING

P/N: Undetermined

Condition:

Destroyed



ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 36 of 46
---------------------	--------	--------------------	--------	----------------------

CAMSHAFT

CAMSHAFT	P/N: 654084	S/N: E08IA1A4
-----------------	-------------	---------------

Condition:	The camshaft exhibited mechanical damage from the internal engine components
------------	--



LIFTERS	#1	#3	#5	#2	#4	#6
INTAKE	653888	653888	653888	653888	653888	653888
EXHAUST	653877	653877	653877	653877	653877	653877

Condition:	All unremarkable except #5 Intake and Exhaust valve lifters separated. Mechanically damaged.
------------	--



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 37 of 46

ACCESSORY GEARS

Condition:

Unremarkable



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 38 of 46

ACCESSORIES

STARTER

Manufacturer: Sky-Tec

M/N: C24ST5

S/N: 4C5-381608

Condition:

The starter motor was intact. The broken mounting flange from the damaged starter adapter remained attached.



STARTER ADAPTER

P/N: No ink stamp/part number

Condition:

The adapter operates normally when the drive is manually rotated.



ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 39 of 46
---------------------	--------	--------------------	--------	----------------------

ALT/GEN #1	Manufacturer: Hartzell	P/N: 656802	S/N: H-R090892
-------------------	------------------------	-------------	----------------

Condition:	Unremarkable
------------	--------------



ALT/GEN #2	Manufacturer: Hartzell Engine Technologies	P/N: E5-7024-14	S/N: H-N050182
-------------------	---	-----------------	----------------

Condition:	The lower portion of the alternator housing exhibited thermal damage. Electrical terminals and wires were thermally damaged. The pulley and fan blades were impact damaged.
------------	---



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 40 of 46

PROPELLER GOVERNOR

Manufacturer: McCauley

M/N:C290 D3-R/T23

S/N:080603

Condition:

The propeller governor received thermal damage. The pump shaft will not rotate.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 41 of 46

LEFT TURBO

Manufacturer: Kelly Aerospace

P/N:466304-0003

S/N: LGL00029

Condition:

Turbine wheel will not rotate. Turbo chargers sent to Hartzell at the request of the NTSB IIC. Hartzell Report will be attached to this file. Turbo charger oil supply check valves were functionally tested and found capable of operating properly.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 42 of 46



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 43 of 46



RIGHT TURBO

Manufacturer: Kelly Aerospace

P/N: 466304-0003

S/N: LHL 00161

Condition:

Turbos were shipped to Hartzell for examination at the request of the NTSB IIC. Hartzell Report will be attached to this file. The turbo charger oil supply check valve appeared to be capable of operating normally.



ENGINE EXAMINATION REPORT

FILE NUMBER:

18-306

ENGINE S/N:

692043

PAGE 44 of 46



**TURBO
CONTROLLER**

Manufacturer: NA

P/N: NA

S/N: NA

Condition:

Turbo Controller – Was not received with engine

ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 45 of 46
---------------------	--------	--------------------	--------	----------------------

LEFT WASTEGATE

Manufacturer: Main Turbo
Systems

P/N: C165006-0304

S/N:470842-0004

Condition:

Unremarkable



RIGHT WASTEGATE

Manufacturer:

P/N: C165006-0304

S/N: Undetermined

Condition:

Unremarkable



ENGINE EXAMINATION REPORT

FILE NUMBER:	18-306	ENGINE S/N:	692043	PAGE 46 of 46
---------------------	--------	--------------------	--------	----------------------

OVERBOOST VALVE

Manufacturer: Kelly Aerospace

P/N: 470944-CO17

S/N: KLN00290

Condition:

Unremarkable



INDUCTION AFTERCOOLERS

Manufacturer: Undetermined

P/N: No data tag

S/N: No data tag

Condition:

Previously removed by persons unknown. Minor impact damage noted.

