



Williams International

CERTIFICATE OF CONFORMANCE

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SALES ORDER: 10000013 CUSTOMER P.O.: 142808 SHIPPER/INVOICE: N/A

<u>ITEMS</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>REV</u>	<u>QTY</u>	<u>SERIAL NUMBER</u>
1	79400-201 CIRRUS ENGINE	Turbo-Fan Engine, FJ33-5A	M	1	233661

REMARKS:

DATE OF EXECUTION: 21, Apr 2018

SIGNATURE OF WILLIAMS INTERNATIONAL REPRESENTATIVE:

Kelly Smith 

TITLE OF WILLIAMS INTERNATIONAL REPRESENTATIVE:

Quality Assurance, Assembly & Test, Ogden

AUTHORIZED CUSTOMER REPRESENTATIVE SIGNATURE & DATE:

N/A

FORM 3092 JAN 2018

FJ33-5A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 113484 Rev. B
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 79400-201	Eng S/N: 233661	Eng Bld: 1	Test Date: 04/20/2018
ATRC Ver: CP475.01	Date: 4/25/2017	Thrust Tare: 4.454	Test Cell: 05
CFG Ver: CP406.02.05.00	Date: 10/03/2016	Pc1: 1.9876	Oil Type: MOBIL JET II
Acq Ver: CP318.01	Date: 05/08/2009	Pc2: 2.0189	Exh Noz: TL-240986 S/N 001
Inlet: TL-240923	Inlet Cd: 0.995	Inlet Dia: 16.515	SPLHV: 18400
Fuel Type: OG TANK 5	Spec Grav: 0.7958	Temp Slope: 0.0004080	LHV: 18658
Dir: FJ33-5A_CP406/180420194038			

TRIM SUMMARY

N1 Trim Value 105
Takeoff N1 Trim Spd (SLS, 59F Dry Day, Unin) 21781 rpm

PERFORMANCE @ TAKEOFF TRIM SPEED (Referred to SLS, 59F dry day, Uninstalled, 14 deg Vectored Nozzle)

Parameter	Actual	Allowable	Deviation
FN	1829 lbf	1825 (min)	0
		1894 (max)	
ITT	1804 R	1920 (max)	0
N2	48923 rpm	49383 (max)	0

PERFORMANCE @ 1814 LBF RATED THRUST (Referred to SLS, 59F dry day, Uninstalled, 14 deg Vectored Nozzle)

Parameter	Actual	Allowable	Deviation
SFC	0.490 lbm/hr/lbf	0.510 (max)	0.000

GROUND IDLE THRUST (Referred to SLS, 59F dry day, Uninstalled, 14 deg Vectored Nozzle)

Parameter	Actual	Allowable	Deviation
Thrust	73 lbf	98 (Figure A7)	0
N2	27627 rpm	N/A	N/A

ACCELERATION TIME (Flight Idle to 95% Take-off Thrust)

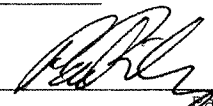
Parameter	Actual	Allowable	Deviation
Accel Time (Std Day)	4.8 sec	5.7 (Figure A3)	0.0
Tt2	54.0 F	N/A	N/A
Pt2	12.556 psia	N/A	N/A

DECELERATION TIME (Take-off to 95% of Thrust Change from Take-off to Flight Idle)

Parameter	Actual	Allowable	Deviation
Decel Time (Std Day)	5.3 sec	6.3 (Figure A6)	0.0
Tt2	54.0 F	N/A	N/A
Pt2	12.542 psia	N/A	N/A

MECHANICAL SYSTEMS PERFORMANCE (Steady-State)

Parameter	Actual	Allowable	Deviation
Max Main Oil Temp	161.9 F	275.0	0.0
Min Main Oil Press	45.8 psig	35.0	0.0
Max Main Oil Press	75.2 psig	120.0	0.0
Oil Consumption	<u>.005</u> gal/hr	0.012 (max)	<u>0.0</u>
Engine Dry Weight	<u>299.3</u> lb	318.5 (max)	<u>0.0</u>
Total Engine Run Time	<u>2:16</u>		
Total Engine Cycles	<u>11,0</u>		

Engineering 

Date: 4/21/18



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Component Checks with Engine Running (Ground Idle)

Component	Measurement	Allowable	Deviation
Fuel Filter DeltaP Switch	3.1 volts	2.0 to 4.0	0.0
Oil Filter DeltaP Switch	3.1 volts	2.0 to 4.0	0.0
Oil Debris Sensor #1	3.8 volts	2.0 to 4.0	0.0
Oil Debris Sensor #2	3.8 volts	2.0 to 4.0	0.0

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VIBRATION SURVEY (PEAK LEVELS)

Parameter	Actual	Max Allowable	Deviation
Max 1E HP radial vib	0.29 ips 48.445 krpm	1.10	0.00
Max 1E LP radial vib	0.12 ips 15.637 krpm	0.25	0.00

Engineering

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DATA POINTS

PARAMETER	DATA					
	7	8	9	10	11	12
Data Point Number	7	8	9	10	11	12
Percent N1TO	24.59	82.10	88.07	93.02	97.17	99.82
Power Lever Angle	17.57	42.01	46.57	52.38	62.69	70.71
Referred N1 Speed, RNoz	5502	18359	19698	20841	21808	22428
Referred N2 Speed, RNoz	27627	46119	47272	48268	49134	49758
Referred Thrust, RNoz	81.6	1162.4	1403.2	1637.9	1868.2	2030.0
Referred Fuel Flow, RNoz	84.4	565.9	682.4	801.7	918.8	1012.7
Referred SFC, RNoz	1.033	0.487	0.486	0.489	0.492	0.499
Referred ITT (R), RNoz	1180	1627	1699	1765	1822	1867
Referred Airflow, RNoz	11.7	41.8	45.9	49.6	52.7	54.8
Overall Press Ratio, RNoz	2.30	13.17	15.40	17.61	19.76	21.26
Referred N1 Speed, VNoz	5516	18359	19698	20841	21808	22428
Referred N2 Speed, VNoz	27627	45915	47068	48064	48930	49554
Referred Thrust, VNoz	72.8	1142.2	1378.7	1609.3	1835.6	1994.7
Referred Fuel Flow, VNoz	84.1	552.3	666.0	782.4	896.8	988.4
Referred SFC, VNoz	1.155	0.484	0.483	0.486	0.489	0.496
Referred ITT (R), VNoz	1177.89	1608.98	1681.31	1746.81	1804.30	1849.08
Referred Airflow, VNoz	11.9	42.1	46.3	50.0	53.2	55.3
Overall Press Ratio, VNoz	2.35	13.04	15.25	17.43	19.56	21.05
Reynolds Number Index	0.86376	0.86259	0.86273	0.86417	0.86559	0.86646
Specific Humidity	0.00239	0.00236	0.00234	0.00238	0.00232	0.00235
Theta Referred to 59 F	0.99129	0.99182	0.99164	0.99025	0.98889	0.98799
Delta	0.85450	0.85392	0.85386	0.85380	0.85375	0.85364
Net Thrust (lbf)	69.8	992.6	1198.1	1398.4	1594.9	1732.9
Average Fuel Flow (lb/hr)	71.1	476.4	574.4	674.2	772.0	850.3
Air Flow (lbm/sec)	10.0	35.8	39.3	42.5	45.2	47.0
CDP (psia)	28.9	165.3	193.3	221.0	247.9	266.7
N1 Speed (rpm)	5480	18291	19623	20747	21695	22302
N2 Speed (rpm)	27502	45922	47066	48026	48854	49453
Inlet Temperature (F)	54.5	54.8	54.7	54.0	53.3	52.8
Fuel Temperature (F)	56.6	56.4	55.9	55.6	55.5	55.3
Dewpoint (F)	17.3	17.0	16.9	17.2	16.7	16.9
Average ITT (F)	713	1159	1230	1293	1348	1391
Inlet Delta Press. (psia)	0.075	1.053	1.301	1.555	1.804	1.988
Cell Pressure (psia)	12.558	12.549	12.548	12.547	12.547	12.545
Oil Temperature (F)	161.4	161.9	161.8	160.0	157.8	156.0
Oil Pressure (psig)	45.8	68.7	70.4	72.3	74.0	75.2
Oil Tank Pressure (psig)	7.9	13.9	15.2	16.6	18.0	19.2
Date	04/20/18	04/20/18	04/20/18	04/20/18	04/20/18	04/20/18
Time	21:56:01	22:00:32	22:04:49	22:09:14	22:14:01	22:18:21

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SF50 FJ33-5A Oil Consumption tracking sheet

Do not add oil unless required by indication on sight glass to ensure oil consumption record is accurate

ASN: 0057		Williams published oil consumption limit is .012 gal (1.54 oz.) per hr.					
Engine Serial: 233661		If oil consumption exceeds limits, contact Williams International for disposition					
Flight #	Hobbs Hrs.	Flight Hrs.	Oil Added (oz.)	Oil Type	Consumption Rate = Oil added / Flt Hrs.	Checked/Service By (Print/Sign)	Date (MM/DD/YY)
INITIAL SERVICING	0.0	0.0	56	Mobil Jet II	N/A	Line Technician	05/14/68
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