

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev. C
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 67000-200	Eng S/N: 141688	Eng Bld: REV 1	Test Date: 02/06/2017
ATRC Ver: CP362.01	Date: 1/2/13	Thrust Tare: 9	Test Cell: B08
CFG Ver: CP354.00.B08.00	Date: 12/17/2009	Pc1: 1.9960	Oil Type: Mobil Jet II
Acq Ver: CP318.02	Date: 04/08/2015	Pc2: 2.0450	Exh Noz: TL-99958 s/n 004
Inlet: TL-99999	Inlet Cd: 0.933	Inlet Dia: 20.644	SPLHV: 18400
Fuel Type: Tank 8 JET A	Spec Grav: 0.8112	Temp Slope: 0.00040000	LHV: 18505
Dir: FJ44-3A CP354/170206165132			

N1 TRIM

N1 Trim Increments (-10 rpm/incr.) 3 incr.
N1 Trim Speed (SLS, 79F Dry Day, Uninst) 17764 rpm

ITT TRIM

ITT Trim Increments (2.5 Deg. R/incr.) 0 incr.
Trimmed ITT 1945 Deg. R

PERFORMANCE AT N1 TRIM SPEED (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Allowable	Deviation
Referred FN	2868 lbf	2866 (min) 2907 (max)	0
Referred ITT	1945 R	1970 (max)	0
Referred N2	40489 rpm	N/A	N/A

PERFORMANCE AT RATED THRUST (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Allowable	Deviation
Referred SFC	0.498 lbm/hr/lbf	0.510 (max)	0.000

GROUND IDLE THRUST (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Max Allowable	Deviation
Referred FN	141 lbf	166 (max)	0
Referred N2	22885 rpm	N/A	N/A

ACCELERATION TIME (Flight Idle to 95% Rated Thrust)

Parameter	Actual	Max Allowable	Deviation
Time (Corr. to STD)	4.3 seconds	5.2	0.0
TT2	36.0 F	N/A	N/A
PT2	14.151 PSIA	N/A	N/A

MECHANICAL SYSTEMS PERFORMANCE (Steady-State)

Parameter	Actual	Allowable	Deviation
Max Main Oil Temp	140.7 F	275.0	0.0
Min Main Oil Press	46.9 psig	35.0	0.0
Max Main Oil Press	82.8 psig	90.0	0.0

Parameter	Actual	Allowable	Deviation
Oil Consumption	<u>.002</u> gal/hr	0.023 (max)	<u>0</u>
Engine Dry Weight	<u> </u> lb	518.5 (max)	<u> </u>

Total Engine Run Time

Total Engine Cycles

1999.2
2411.0

**ENGINE NOT WEIGHED
THIS SHIPMENT**

Engineering

 G. H. A.

Date:

 2/7/17

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev. C
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 67000-200	Eng S/N: 141688	Eng Bld: REV 1	Test Date: 02/06/2017
ATRC Ver: CP362.01	Date: 1/2/13	Thrust Tare: 9	Test Cell: B08
CFG Ver: CP354.00.B08.00	Date: 12/17/2009	Pc1: 1.9960	Oil Type: Mobil Jet II
Acq Ver: CP318.02	Date: 04/08/2015	Pc2: 2.0450	Exh Noz: TL-99958 s/n 004
Inlet: TL-99999	Inlet Cd: 0.933	Inlet Dia: 20.644	SPLHV: 18400
Fuel Type: Tank 8 JET A	Spec Grav: 0.8112	Temp Slope: 0.00040000	LHV: 18505
Dir: FJ44-3A CP354/170206165132			

Data Points

PARAMETER	DATA					
	2	3	4	5	6	7
Data Point Number	26.03	82.26	87.82	93.17	97.12	100.22
Percent N1TO	17.49	38.14	41.18	44.96	48.10	67.18
Power Lever Angle	4687	14820	15822	16789	17501	18062
Referred N1 Speed	22885	37732	38668	39540	40240	40776
Referred N2 Speed	141.1	1755.9	2085.5	2441.7	2749.6	3008.3
Referred Thrust	133.5	860.4	1021.2	1206.2	1368.9	1506.1
Referred Fuel Flow	0.946	0.490	0.490	0.494	0.498	0.501
Referred SFC	1208	1707	1787	1863	1922	1970
Referred ITT (R)	17.4	59.1	64.1	69.3	73.6	76.5
Referred Airflow	2.43	12.44	14.27	16.31	18.08	19.60
Overall Press Ratio	1.01652	1.01867	1.01907	1.01957	1.02017	1.02030
Reynolds Number Index	0.00323	0.00334	0.00334	0.00335	0.00335	0.00336
Specific Humidity	0.92168	0.91916	0.91866	0.91808	0.91748	0.91722
Theta Referred to 79 F	0.96287	0.96164	0.96137	0.96109	0.96087	0.96067
Delta	135.8	1688.5	2005.0	2346.7	2642.0	2889.9
Net Thrust (lbf)	122.0	784.2	930.2	1098.0	1245.4	1369.7
Average Fuel Flow (lb/hr)	17.4	59.2	64.2	69.4	73.7	76.6
Air Flow (lbm/sec)	34.5	175.7	201.6	230.3	255.3	276.8
CDP (psia)	4504	14223	15180	16103	16780	17315
N1 Speed (rpm)	22001	36226	37115	37940	38600	39108
N2 Speed (rpm)	36.8	35.5	35.2	34.9	34.5	34.4
Inlet Temperature (F)	44.7	38.8	40.2	39.7	39.8	39.9
Fuel Temperature (F)	27.3	28.0	28.1	28.1	28.1	28.1
Dewpoint (F)	663	1123	1196	1266	1319	1363
Average ITT (F)	0.091	1.146	1.371	1.642	1.889	2.078
Inlet Delta Press. (psia)	14.150	14.132	14.128	14.124	14.121	14.118
Cell Pressure (psia)	137.1	139.4	140.7	139.9	139.0	138.5
Oil Temperature (F)	46.9	76.5	78.5	80.3	81.8	82.8
Oil Pressure (psig)	7.9	15.4	16.9	18.7	20.1	21.4
Oil Tank Pressure (psig)	02/06/17	02/06/17	02/06/17	02/06/17	02/06/17	02/06/17
Date	19:33:00	19:38:46	19:43:23	19:47:59	19:52:42	19:57:03
Time						

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev. C
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 67000-200	Eng S/N: 141688	Eng Bld: REV 1	Test Date: 02/06/2017
ATRC Ver: CP362.01	Date: 1/2/13	Thrust Tare: 9	Test Cell: B08
CFG Ver: CP354.00.B08.00	Date: 12/17/2009	Pc1: 1.9960	Oil Type: Mobil Jet II
Acq Ver: CP318.02	Date: 04/08/2015	Pc2: 2.0450	Exh Noz: TL-99958 s/n 004
Inlet: TL-99999	Inlet Cd: 0.933	Inlet Dia: 20.644	SPLHV: 18400
Fuel Type: Tank 8 JET A	Spec Grav: 0.8112	Temp Slope: 0.00040000	LHV: 18505
Dir: FJ44-3A CP354/170206165132			

VIBRATION SURVEY (PEAK LEVELS)

Parameter	Actual	Max Allowable	Deviation
Max 1E HP rad vib	0.74 ips @ 38.302 krpm	1.10	0.00
Max 1E LP rad vib	0.14 ips @ 8.238 krpm	0.25	0.00

Engineering

Matt Anan

Date:

2/7/17

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev B
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 67000-200 Prog Ver: CP275.02 Acq Ver: CP169.03 ATP Ver: CP333.00 ATP Doc: 77438 Rev NC Fuel Type: JETA	Eng S/N: 141688 Date: 09/16/05 Date: 06/15/00 Date: 11/10/05 Inlet Sn: I 3603 LHV: 18618	Eng Bld: 1 Thrust Tare: 4.4 Pc1: 2.0010 Pc2: 2.0230 Inlet Cd: 0.933 Spec Grav: 0.7904	Test Date: 02/13/09 Test Cell: 05 Oil Type: MOBIL JET2 Exh Noz: TL99958 Inlet Dia: 20.64 Temp Slope: 0.00040800 Dir: 0902130044
--	---	--	---

N1 TRIM

Trim Increments (-10 rpm/incr.) 7 incr.
N1 Trim Speed (SLS, 79F Dry Day, Uninst) 17724 rpm

PERFORMANCE @ N1 TRIM SPEED (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Allowable	Deviation
Referred FN	2867 lbf	2866 (min) 2907 (max)	0 0
Referred ITT	1933 R	1970 (max)	0
Referred N2	40282 rpm	N/A	N/A

PERFORMANCE @ 2820 lbf RATED THRUST (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Allowable	Deviation
Referred SFC	0.500 lbm/hr/lbf	0.510 (max)	0.000

GROUND IDLE THRUST (Referred to Sea Level Static, 79F Dry Day, Uninstalled)

Parameter	Actual	Max Allowable	Deviation
Referred FN	150 lbf	172	0
Referred N2	23156 rpm	N/A	N/A

ACCELERATION TIME (FI to 95% Rated Thrust)

Parameter	Actual	Max Allowable	Deviation
Time (Corr. to STD)	4.9 seconds	5.7	0.0
TT2	25.7 F	N/A	N/A
PT2	12.565 psia	N/A	N/A

MECHANICAL SYSTEMS PERFORMANCE (Steady-State)

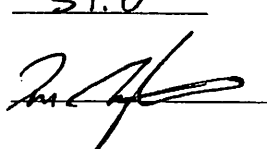
Parameter	Actual	Allowable	Deviation
Max Main Oil Temp	148.1 F	275.0	0.0
Min Main Oil Press	41.6 psig	35.0	0.0
Max Main Oil Press	81.0 psig	90.0	0.0

Parameter	Actual	Allowable	Deviation
Oil Consumption	<u>005</u> gal/hr	0.023 (max)	<u>0.0</u>
Engine Dry Weight	<u>516.0</u> lb	518.5 (max)	<u>0.0</u>

Total Engine Run Time 5:23

Total Engine Cycles 31.0

Engineering



ME
8613

Date: 2-13-09

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev B
WILLIAMS INTERNATIONAL CO.

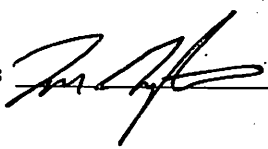
Eng P/N: 67000-200	Eng S/N: 141688	Eng Bld: 1	Test Date: 02/13/09
Prog Ver: CP275.02	Date: 09/16/05	Thrust Tare: 4.4	Test Cell: 05
Acq Ver: CP169.03	Date: 06/15/00	Pc1: 2.0010	Oil Type: MOBIL JET2
ATP Ver: CP333.00	Date: 11/10/05	Pc2: 2.0230	Exh Noz: TL99958
ATP Doc: 77438 Rev NC	Inlet Sn: I 3603	Inlet Cd: 0.933	Inlet Dia: 20.64
Fuel Type: JETA	LHV: 18618	Spec Grav: 0.7904	Temp Slope: 0.00040800

VIBRATION SURVEY (PEAK LEVELS) FROM VIB TEST DIRECTORY: 0902130241_FJ44-3A_vib

PARAMETER	ACTUAL	MAX ALLOWABLE	DEVIATION
Max 1E HP rad vib	0.56 IPS 38431 RPM	1.10	0.00
Max 1E LP rad vib	0.09 IPS 16539 RPM	0.25	0.00
Max ½ELP INTERSTAGE** (10200 - 13200 N1 RPM)	0.05 IPS 13059 RPM	0.13	0.00
Max ½ELP REAR MOUNT** (10200 - 13200 N1 RPM)	0.05 IPS 13059 RPM	0.18	0.00
Max 1ELP START VIB** (1500 - 2700 N1 RPM)	0.06 IPS 1316 RPM	0.20	0.00

** (REF ED W-8576)

ENGINEERING



ME
8613

Date 2-13-09

FJ44-3A TURBOFAN ENGINE
ACCEPTANCE TEST PERFORMANCE SUMMARY
IN ACCORDANCE WITH DOCUMENT 73332 Rev B
WILLIAMS INTERNATIONAL CO., L.L.C.

Eng P/N: 67000-200
Prog Ver: CP275.02
Acq Ver: CP169.03
ATP Ver: CP333.00
ATP Doc: 77438 Rev NC
Fuel Type: JETA

Eng S/N: 141688
Date: 09/16/05
Date: 06/15/00
Date: 11/10/05
Inlet Sn: I 3603
LHV: 18618

Eng Bld: 1
Thrust Tare: 4.4
Pc1: 2.0010
Pc2: 2.0230
Inlet Cd: 0.933
Spec Grav: 0.7904

Test Date: 02/13/09
Test Cell: O5
Oil Type: MOBIL JET2
Exh Noz: TL99958
Inlet Dia: 20.64
Temp Slope: 0.00040800
Dir: 0902130044

PARAMETER	DATA					
	14	15	16	17	18	19
DATA POINT NUMBER	25.51	81.78	88.07	92.92	96.89	99.86
PERCENT N1TO	15.59	35.52	38.78	42.49	46.21	68.61
POWER LEVER ANGLE	4781	15332	16512	17422	18167	18725
REFERRED N1 SPEED	23156	38027	39118	39963	40717	41354
REFERRED N2 SPEED	138.73	956.86	1169.79	1366.47	1555.93	1718.80
REFERRED Fuel Flow	150	1939	2363	2736	3085	3370
REFERRED THRUST	1210	1743	1838	1914	1971	2020
REFERRED ITT (R)	1.4	62.5	68.5	73.6	77.8	81.2
REFERRED AIRFLOW	0.923	0.494	0.495	0.499	0.504	0.510
REFERRED SFC	4541	14558	15665	16529	17231	17769
N1 SPEED	22003	36127	37134	37935	38642	39263
N2 SPEED	645	1132	1216	1285	1336	1382
AVERAGE ITT (F)	1.3	56.1	61.6	66.2	69.9	72.9
AIRFLOW	129	1656	2018	2337	2634	2877
NET THRUST	110.58	761.86	930.29	1086.52	1236.65	1366.63
FUELFLOW	31.1	171.2	202.5	230.4	256.5	277.7
CDP (PSIA)	2.47	13.64	16.14	18.36	20.44	22.13
OVERALL PRESS RATIO	25.7	25.5	24.7	24.7	24.5	24.9
INLET TEMP. (F)	14.3	14.3	14.2	14.0	14.1	14.9
DEWPOINT (F)	33.0	31.7	32.1	32.5	32.6	33.2
FUEL TEMP. (F)	12.564	12.553	12.551	12.549	12.547	12.545
CELL PRESSURE	12.564	11.404	11.136	10.871	10.632	10.409
INLET PRESSURE	0.00209	0.00210	0.00208	0.00207	0.00208	0.00215
SPECIFIC HUMIDITY	0.92834	0.92782	0.92961	0.92952	0.92999	0.92879
REYNOLDS NO. INDEX	0.85495	0.85414	0.85401	0.85390	0.85380	0.85362
DELTA	0.90104	0.90077	0.89925	0.89922	0.89878	0.89956
THETA79	148.1	129.2	130.8	131.4	132.0	133.1
OIL TEMPERATURE	41.6	76.2	78.1	79.5	80.4	81.0
OIL PRESSURE	7.9	14.8	16.5	18.1	19.5	20.8
OIL TANK PRES (PSIG)	02/13/09	02/13/09	02/13/09	02/13/09	02/13/09	02/13/09
DATE	02:14:26	02:20:01	02:24:01	02:28:00	02:32:01	02:36:01
TIME						