DOCKET NO.: SA-515

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

MAINTENANCE GROUP CHAIRMAN'S FACTURAL REPORT

ATTACHMENT 11

DELTA AIR LINES ENGINE TEST LOG
ENGINE S/N 726984
DATED DECEMBER 30, 1995

(7 PAGES)

DELTA AIR LINES

JT8D-219 MD-88 JET ENGINE TEST LOG

S/N: 726984 | TEST CELL # 1 | FILE NAME: !FCUE0 | TEST DATE: 12/30/95

		TAKEOFF	MIDRANGE	DATA PLATE	IDLE	PART POWER	TRIM T/OFF	#7	#8
DATE		12/30/95	0/00/00	12/30/95	0/00/00	0/00/00	0/00/00	0/00/00	0/00/00
TIME		15:31:55	0:00:00	15:34:58	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
EPR Pt7/Pcd		1.974	0.000	1.652	0.000	0.000	0.000	0.000	0.000
FN lbs	corr	21037.523	0.000	15269.289	0.000	0.000	0.000	0.000	0.000
HCR Ps4/Pcd	corr	18.365	0.000	14.044	0.000	0.000	0.000	0.000	0.000
LCR Ps3/Pcd	corr	6.954	0.000	5.417	0.000	0.000	0.000	0.000	0.000
WF lbs/hr	corr	10467.496	0.000	7170.695	0.000	0.000	0.000	0.000	0.000
N1 rpm	corr	7601.904	0.000	6660.341	0.000	0.000	0.000	0.000	0.000
N2 rpm	corr	11676.195	0.000	11090.613	0.000	0.000	0.000	0.000	0.000
EGT Deg F	corr	965.693	0.000	844.371	0.000	0.000	0.000	0.000	0.000
TCA Pcp/Ps4		.539	0.000	.548	0.000	0.000	0.000	0.000	0.000
TSFC	corr	.498	0.000	.470	0.000	0.000	0.000	0.000	0.000
Vibration mils pp									
VIOA (Overall)	obs	.651	0.000	.795	0.000	0.000	0.000	0.000	0.000
VIN1 Frequency	obs	.187	0.000	.369	0.000	0.000	0.000	0.000	0.000
VIN2 Frequency	obs	.013	0.000	.032	0.000	0.000	0.000	0.000	0.000
VTOA (Overall)	obs	1.303	0.000	1.620	0.000	0.000	0.000	0.000	0.000
VTN1 Frequency	obs	1.211	0.000	1.590	0.000	0.000	0.000	0.000	0.000
VTN2 Freqvency	obs	.198	0.000	.355	0.000	0.000	0.000	0.000	0.000
FN lbs	obs	20127.199	0.000	14600.600	0.000	0.000	0.000	0.000	0.000
EGT deg F	obs	948.950	0.000	829.463	0.000	0.000	0.000	0.000	0.000
N1 rpm	obs	7557.957	0.000	6622.870	0.000	0.000	0.000	0.000	0.000
N2 rpm	obs	11608.695	0.000	11028.219	0.000	0.000	0.000	0.000	0.000
N1 %	obs	91.971	0.000	80.580	0.000	0.000	0.000	0.000	0.000
N2 %	obs	94.799	0.000	90.063	0.000	0.000	0.000	0.000	0.000
WF lbs/hr	obs	10124.510	0.000	6942.397	0.000	0.000	0.000	0.000	0.000
CIT deg F	obs	53.020	0.000	53.180	0.000	0.000	0.000	0.000	0.000
OAT deg F	obs	53.790	0.000	53.790	0.000	0.000	0.000	0.000	0.000
WETB deg F	obs	52.770	0.000	52.730	0.000	0.000	0.000	0.000	0.000
Rhum %	obs	93.687	0.000	93.442	0.000	0.000	0.000	0.000	0.000
Shum Grains	obs	59.084	0.000	58.929	0.000	0.000	0.000	0.000	0.000
Pbar "hga	obs	29.198	0.000	29.198	0.000	0.000	0.000	0.000	0.000
Pcd "h2o	obs	-1.645	0.000	-1.355	0.000	0.000	0.000	0.000	0.000
Pt2 "h2o	obs	-2.362	0.000	-1.360	0.000	0.000	0.000	0.000	0.000
Ps3 psig	obs	84.972	0.000	63.083	0.000	0.000	0.000	0.000	0.000
Ps4 psig	obs	247.950	0.000	186.380	0.000	0.000	0.000	0.000	0.000
Pt7 "hgg	obs	28.199	0.000	18.874	0.000	0.000	0.000	0.000	0.000
Pcp psig	obs	126.990	0.000	95.710	0.000	0.000	0.000	0.000	0.000
Tt7 #1 deg F	obs	948.900	0.000	829.800	0.000	0.000	0.000	0.000	0.000
Tt7 #2 deg F	obs	948.900	0.000	829.400	0.000	0.000	0.000	0.000	0.000
Tt7 #3 deg F	obs	948.900	0.000	829.000	0.000	0.000	0.000	0.000	0.000
Tt7 #4 deg F	obs	949.300	0.000	830.300	0.000	0.000	0.000	0.000	0.000
Tt7 #5 deg F	obs	948.900	0.000	829.400	0.000	0.000	0.000	0.000	0.000
Tt7 #6 deg F	obs	948.500	0.000	829.400	0.000	0.000	0.000	0.000	0.000
Tt7 #7 deg F	obs	948.900	0.000	829.000	0.000	0.000	0.000	0.000	0.000
Tt7 #8 deg F	obs	949.300	0.000	829.400	0.000	0.000	0.000	0.000	0.000
Tt7 spread deg F	obs	.800	0.000	1.300	0.000	0.000	0.000	0.000	0.000
Fpdp psig	obs	84.450	0.000	92.900	0.000	0.000	0.000	0.000	0.000
Fit deg F	obs	46.200	0.000	44.800	0.000	0.000	0.000	0.000	0.000
Fuel sample Sp Gr		.813	0.000	.813	0.000	0.000	0.000	0.000	0.000
Fuel sample deg F		50.000	0.000	50.000	0.000	0.000	0.000	0.000	0.000
MOP psid	obs	49.018	0.000	48.679	0.000	0.000	0.000	0.000	0.000
PMOF psid	obs	.900	0.000	.950	0.000	0.000	0.000	0.000	0.000
BRTH "hgd	obs	.537	0.000	.575	0.000	0.000	0.000	0.000	0.000
EGTPAD DegF	obs	22.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N1 PAD RPM	corr	75.739	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N2 PAD RPM	corr	11.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WF PAD	corr	347.504	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DELTA FN	corr	-37.523	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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DELTA AIR LINES

JT8D-219 MD-88 JET ENGINE TEST LOG

!FCUED

| S/N: 726984 | CELL # 1 | TEST DATE: 12/30/95 |

START DATA:

364 15:17:15 ** START **

STARTER ON TO 50% N2 RPM	=	30 Sec.
LIGHT OFF TO 50% N2 RPM	=	22 Sec.
FUEL FLOW AT LIGHT OFF	=	581 Pph
PEAK EGT (TO 50% N2)	=	736 DgF
EGT EXCEEDED: 887 Deg F		0 Sec.
1004 Deg F		0 Sec.
1094 Deg F		0 Sec.
1184 Deg F		0 Sec.
MOP AT LIGHT OFF	=	41 Psi
MOP AT 50% N2	=	46 Psi

364 17:07:50 ** START **

STARTER ON TO 50% N2 RPM	=	31 Sec.
LIGHT OFF TO 50% N2 RPM	=	20 Sec.
FUEL FLOW AT LIGHT OFF	=	638 Pph
PEAK EGT (TO 50% N2)	=	744 DgF
EGT EXCEEDED: 887 Deg F		0 Sec.
1004 Deg F		0 Sec.
1094 Deg F		0 Sec.
1184 Deg F		0 Sec.
MOP AT LIGHT OFF	=	24 Psi
MOP AT 50% N2	=	45 Psi

364 18:01:19 ** START **

STARTER ON TO 50% N2 RPM	=	24 Sec.
LIGHT OFF TO 50% N2 RPM	=	23 Sec.
FUEL FLOW AT LIGHT OFF	=	691 Pph
PEAK EGT (TO 50% N2)	=	750 DgF
EGT EXCEEDED: 887 Deg F		0 Sec.
1004 Deg F		0 Sec.
1094 Deg F		0 Sec.
1184 Deg F		0 Sec.
MOP AT LIGHT OFF	=	20 Psi
MOP AT 50% N2	=	46 Psi

DELTA AIR LINES

JT8D-219 MD-88 JET ENGINE TEST LOG

!FCUE0

| S/N: 726984 CELL # 1 TEST DATE: 12/30/95 |

VIBRATION DATA:

** VIBRATION PEAK-DATA **

3:33 PM SAT., 30 DEC., 1995

Inlet case (mils)			Exhaust case (mils)				
40-215hz	N1hz	N2hz	40-215hz	N1hz	N2hz	N1	
.50	.16	.18	1.07	.43	.70	3630	(4000 N1 Inlt Peak
.47	.14	.11	1.18	.57	.93	3410	(4000 N1 Exh Peak
.70	.15	.08	1.45	1.06	.47	5310	)5000 N1 Inlt Peak
.65	.18	.07	1.56	1.31	.51	5110	)5000 N1 Exh Peak

SORTING PARAMETERS:

```
 1-CELL NUMBER          =      1
 2-OPEN DATE            = 951230.
 3-ENGINE TYPE          = JT8D-219 MD-88
 4-SERIAL NUMBER        = 726984
 5-ENGINE T.S.O.        =    5842.9004
 6-REPAIR CODE          = 7
 7-CELL CORRECTIONS?    = Y
 8-COMPLETE TEST RUN?   = N
 9-POD POSITION ONLY?   = N
10-FAN TRIM BALANCED?   = N
11-TURBINE TRIM BAL.?   = N
12-ACCEPTD FOR SERVICE= Y
13-REJECT CODE          = N/A
14-CLOSE DATE           = 951230.
```

MISC. INFORMATION:

```
364 14:59:22   S/B 6128 COMP.WITH?  = N
364 14:59:25  JOB NUMBER     .      = 7129
364 14:59:29  #1 BEARING O/D        = Y
364 14:59:29  #6 BEARING O/D        = Y
364 14:59:46  TEST OPERATOR         = DMS
364 14:59:49  TEST RECORDER         = TB
364 15:00:11  REASON FOR REMOVAL    = SMOKE IN CABIN.
364 18:05:16  D-PLATE SPEED RE-EST? = N
364 18:05:27  OLD D-PLATE N2 RPM    =      18918.
364 18:05:42  N1 RPM AT SURGE       =         -1.
364 18:05:49  TCA RATIO CHECK?      = N
364 18:06:40  FUEL USED (gal.)      =        247.
364 18:06:46  OIL CONSUMPTION (GPH.)=        0.00
364 18:06:50  ENGINE TEST FILE CLOSED BY: TB
364 18:06:50  ENGINE DATA REVIEWED BY TEST OPERATOR: [redacted] (signature)
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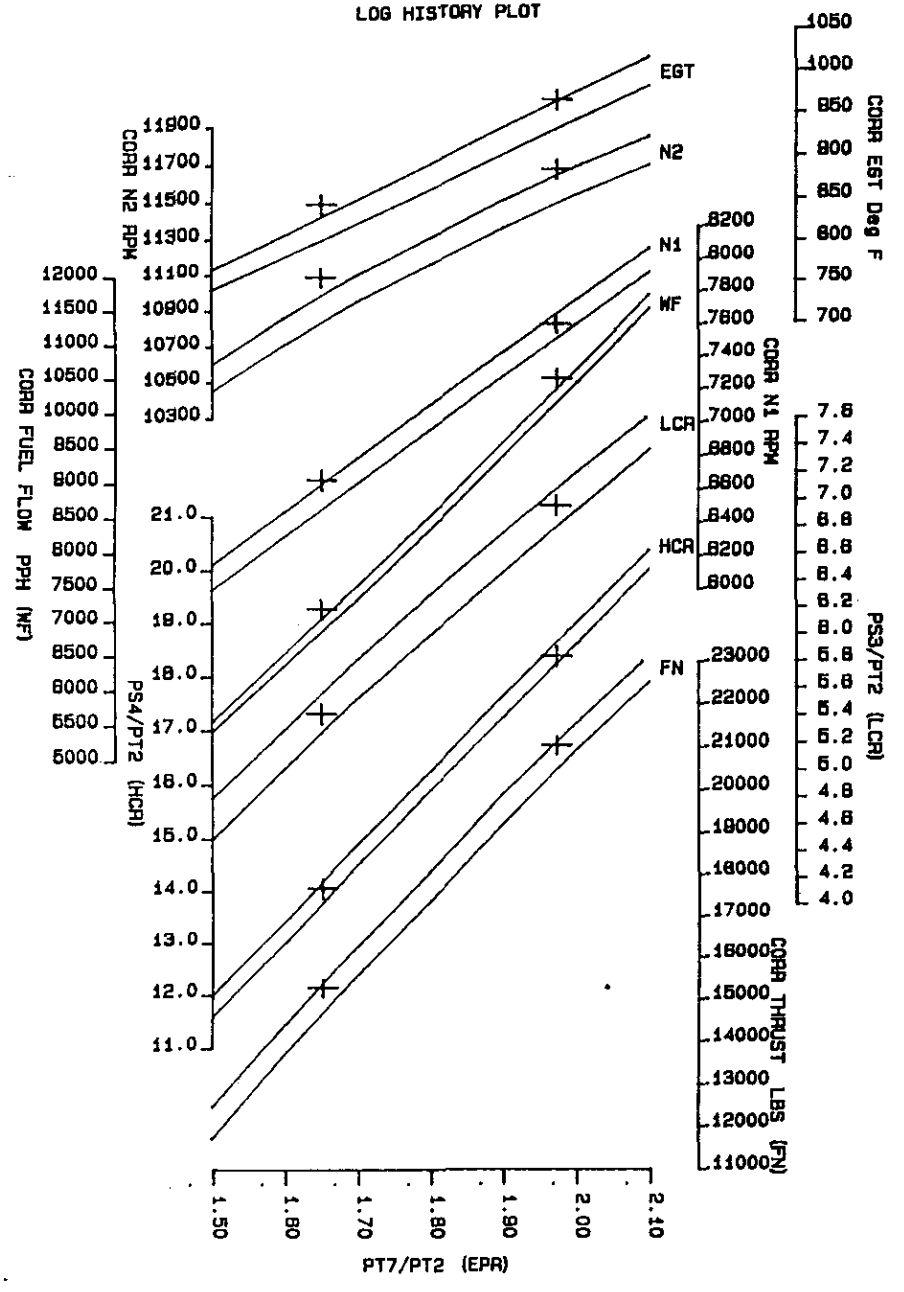
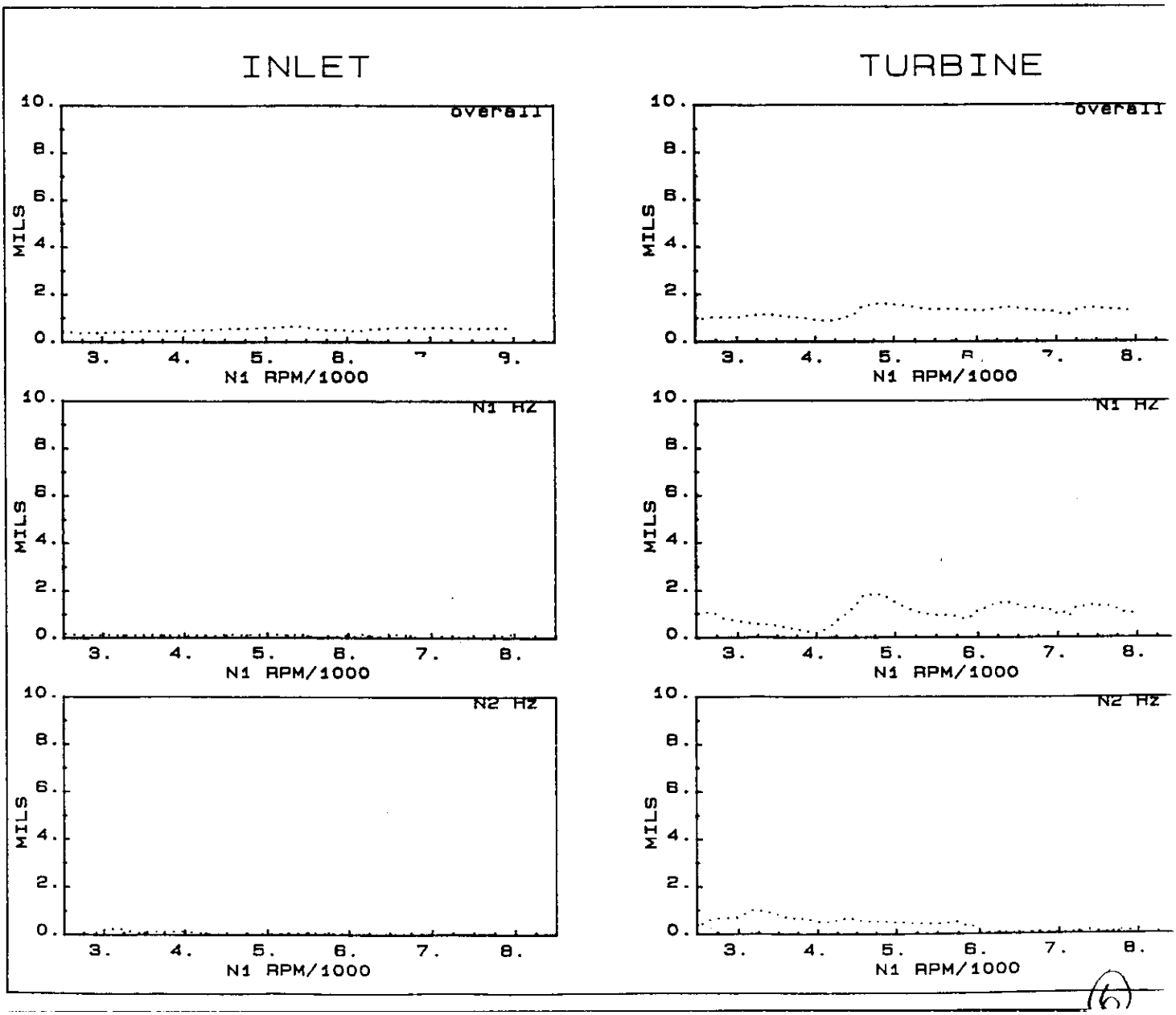
DELTA AIR LINES
JT8D-219 MD-88
LOG HISTORY PLOT



S/N: 728884 CELL# 1 TEST DATE: 951230.


INLET
TURBINE
overall
N1 HZ
N2 HZ
MILS
N1 RPM/1000
0.
2.
4.
6.
8.
10.
3.
4.
5.
6.
7.
8.
9.

(d) Engines which plot below band should be checked for N1 indicating system problems and proper size exhaust nozzle. If N1 indicating system is not cause of low N1 speed, but all other engine operating limits are met, engine is acceptable.

R (29) EGT shall be within recommended guidelines as specified in Figure 511. Available EGT margin at Normal Takeoff rating
R may be determined by calculating corrected EGT from data point observed EGT and TAMB as shown in notes on Figure 511 and computing difference relative to curve in Figure 511 at constant EPR.

R (30) Oil pressure and oil temperature shall not exceed limits as specified in Figure 501A.

R (31) Ratio of PCP/PS4 shall not exceed limits of Figure 512.

R (32) Breather pressure shall not exceed limit given in paragraph 2.H.(2).

R (33) Vibration shall not exceed limits given in Figure 510A.

NOTE: If the engine vibration is above the limits, the operator can trim balance the engine on the aircraft to decrease vibration levels. However, trim balance only those engines on which the fan is replaced. See paragraph 7.

Overall Vibration Levels

Pickup Location	Single Amplitude	Double Amplitude
INLET SECTION	0.0015 In. (0.038 mm) (1.5 mils)	0.003 In. (0.076 mm) (3.0 mils)
REAR SECTION	0.0015 In. (0.038 mm) (1.5 mils)	0.003 In. (0.076 mm) (3.0 mils)

NOTE: The limits in Figure 510A are valid only when vibration pickups are mounted at locations specified and only when the low frequency filter (40 CPS) is selected in the vibration monitoring circuit.

Acceptance Limits Vibration Amplitudes
Figure 510A

*** END OF DOCUMENT ***

(7)