ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-E   BYPASS RATIO: 9.7
UNIQUE ID NUMBER: 11RR052   PRESSURE RATIO (π_{oo}): 37.5
ENGINE TYPE: TF   RATED OUTPUT (F_{oo}) (kN): 279.8

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.1	15.3	51.0	5.8
AS % OF ORIGINAL LIMIT	0.7 %	12.9 %	44.3 %	32.2 %
AS % OF CAEP/2 LIMIT (NOx)			55.4 %	
AS % OF CAEP/4 LIMIT (NOx)			62.1 %	
AS % OF CAEP/6 LIMIT (NOx)			68.9 %	
AS % OF CAEP/8 LIMIT (NOx)			78.2 %	

DATA STATUS

-    PRE-REGULATION
- x   CERTIFICATION
-    REVISED (SEE REMARKS)

TEST ENGINE STATUS

-    NEWLY MANUFACTURED ENGINES
- x   DEDICATED ENGINES TO PRODUCTION STANDARD
-    OTHER (SEE REMARKS)

EMISSIONS STATUS

- x   DATA CORRECTED TO REFERENCE (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
- x   OUT OF PRODUCTION (DATE: -)
-    OUT OF SERVICE

MEASURED DATA

MODE	POWER SETTING ($\%F_{oo}$)	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg) HC	CO	NOx	SMOKE NUMBER
TAKE-OFF	100	0.7	2.007	0	0.47	39.17	3.8
CLIMB OUT	85	2.2	1.659	0	0.43	30.55	4.5
APPROACH	30	4.0	0.570	0	0.92	12.54	2.5
IDLE	7	26.0	0.222	0.09	10.63	5.06	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			73	33	3949	13462	–
NUMBER OF ENGINES				3	3	3	3
NUMBER OF TESTS				5	5	5	5
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				0.12	14.11	48.11	5.2
SIGMA (D_p/F_{oo} in g/kN, or SN)				0.097	3.8	0.83	1.99
RANGE (D_p/F_{oo} in g/kN, or SN)				0 - 0.2	9 - 17.6	47.3 - 49.1	3 - 8.2

ACCESSORY LOADS

POWER EXTRACTION   0   (kW)   AT   -   POWER SETTINGS
STAGE BLEED   0   % CORE FLOW   AT   -   POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9 - 102.1
TEMPERATURE (K)	284.1 - 290.3
ABS HUMIDITY (kg/kg)	0.00432 - 0.00721

FUEL

SPEC	–
H/C	1.89
AROM (%)	16.7

MANUFACTURER: Rolls-Royce
TEST ORGANIZATION: Rolls-Royce
TEST LOCATION: Derby
TEST DATES: FROM 24 Sep 09   TO 09 Jun 11

REMARKS

1. Representative of Package B engines

If REVISED, this data supersedes databank UID
Compliance with fuel venting requirements: -   ('x' if complies, PR if pre-regulation)