



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-D BYPASS RATIO: 9.32
 UNIQUE ID NUMBER: 11RR051 PRESSURE RATIO (π_{oo}): 43.78
 ENGINE TYPE: TF RATED OUTPUT (F_{oo}) (kN): 334.7

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.1	10.5	66.3	5.8
AS % OF ORIGINAL LIMIT	0.3 %	8.9 %	52.0 %	33.8 %
AS % OF CAEP/2 LIMIT (NOx)			64.9 %	
AS % OF CAEP/4 LIMIT (NOx)			70.1 %	
AS % OF CAEP/6 LIMIT (NOx)			76.6 %	
AS % OF CAEP/8 LIMIT (NOx)			85.3 %	

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)
 - OUT OF PRODUCTION
 - OUT OF SERVICE

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	2.508	0	0.51	53.54	3
CLIMB OUT	85	2.2	2.048	0	0.48	40.33	3.8
APPROACH	30	4.0	0.668	0	0.68	13.86	3.1
IDLE	7	26.0	0.246	0.04	7.66	5.66	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			75	14	3238	20942	-
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)				0.04	9.67	62.58	5.2
SIGMA (D_p/F_{oo} in g/kN, or SN)				0.037	2.8	0.98	1.99
RANGE (D_p/F_{oo} in g/kN, or SN)				0 - 0.1	5.8 - 12.2	61.5 - 63.8	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)