



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-E BYPASS RATIO: 9.74
 UNIQUE ID NUMBER: 12RR058 PRESSURE RATIO (π_{oo}): 36.19
 ENGINE TYPE: (TF) RATED OUTPUT (F_{oo}) (kN): 268

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.1	16.1	47.7	6.5
AS % OF ORIGINAL LIMIT	0.7 %	13.7 %	42.5 %	36.0 %
AS % OF CAEP/2 LIMIT (NOx)			53.1 %	
AS % OF CAEP/4 LIMIT (NOx)			60.1 %	
AS % OF CAEP/6 LIMIT (NOx)			66.9 %	
AS % OF CAEP/8 LIMIT (NOx)			76.3 %	

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 x 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	1.907	0	0.46	36.29	4.2
CLIMB OUT	85	2.2	1.579	0	0.42	28.62	5.2
APPROACH	30	4.0	0.549	0	0.99	12.16	3.1
IDLE	7	26.0	0.217	0.1	11.2	5	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			758	34	4041	12165	-
NUMBER OF ENGINES				4	4	4	4
NUMBER OF TESTS				8	8	8	8
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				0.13	15.08	45.39	5.98
SIGMA (D_p/F_{oo} in g/kN, or SN)				0.11	3.64	0.64	2.26
RANGE (D_p/F_{oo} in g/kN, or SN)				0 - 0.25	10.79 - 19.28	44.82 - 46.14	3 - 8.3

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 - 293.2
ABS HUMIDITY (kg/kg)	0.00432 - 0.00968

FUEL

SPEC	-
H/C	1.9
AROM (%)	17.4

MANUFACTURER: Rolls-Royce
 TEST ORGANIZATION: Rolls-Royce
 TEST LOCATION: Derby
 TEST DATES: FROM 24 Sep 09 TO 03 Aug 12

REMARKS

1. Representative of Package B engines
2. DNS170301
3. Certification in accordance with Part III, Chapter 2, of Amendment 7 of ICAO Annex 16 Vol. II.
4. NOx levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

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