



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-M3

UNIQUE ID NUMBER: 19RR093

ENGINE TYPE: TF

BYPASS RATIO: 8.9

PRESSURE RATIO ( $\pi_{oo}$ ): 48.7

RATED OUTPUT ( $F_{oo}$ ) (kN): 358.1

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D <sub>p</sub> /F <sub>oo</sub> (g/kN) or SN	0.0	8.3	74.1	16.4
AS % OF ORIGINAL LIMIT	0.0 %	7.1 %	53.9 %	98.2 %
AS % OF CAEP/2 LIMIT (NOx)			67.4 %	
AS % OF CAEP/4 LIMIT (NOx)			71.0 %	
AS % OF CAEP/6 LIMIT (NOx)			76.9 %	
AS % OF CAEP/8 LIMIT (NOx)			84.6 %	

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 <sub>oo</sub> )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	2.721	0	0.43	59.3	7.6
CLIMB OUT	85	2.2	2.222	0	0.44	44.55	10.2
APPROACH	30	4.0	0.712	0	0.59	14.72	9.4
IDLE	7	26.0	0.260	0	6.13	6.61	1.8
LTO TOTAL FUEL (kg) or EMISSIONS (g)			983	0	2760	25036	-
NUMBER OF ENGINES				3	3	3	6
NUMBER OF TESTS				7	7	7	8
AVERAGE D <sub>p</sub> /F <sub>oo</sub> (g/kN) or AVERAGE SN (MAX)				0	7.71	69.93	15.3
SIGMA (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0	1.37	1.26	1.7
RANGE (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0 - 0	6.25 - 8.96	68.47 - 70.73	12.1 - 16.8

ACCESSORY LOADS

POWER EXTRACTION0(kW)AT-POWER SETTINGS

STAGE BLEED0% CORE FLOWAT-POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9 - 102.1
TEMPERATURE (K)	275.0 - 304.6
ABS HUMIDITY (kg/kg)	0.00308 - 0.01935

FUEL

SPEC	-
H/C	1.91
AROM (%)	17.2

MANUFACTURER:Rolls-Royce

TEST ORGANIZATION:Rolls-Royce

TEST LOCATION:Derby

TEST DATES:FROM 07 Feb 11TO 30 Nov 17

REMARKS

1. Data from Certification Report EDNS01000615769
2. Certification in accordance with Part III, Chapter 2, of Amendment 8 of ICAO Annex 16 Vol. II.
3. 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)