



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-A
UNIQUE ID NUMBER: 12RR055
ENGINE TYPE: TF

BYPASS RATIO: 9.5
PRESSURE RATIO (π_{00}): 41.0
RATED OUTPUT (F_{00}) (kN): 310.9

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{00} (g/kN) or SN	0.1	11.7	58.4	6.5
AS % OF ORIGINAL LIMIT	0.3 %	9.9 %	47.8 %	37.5 %
AS % OF CAEP/2 LIMIT (NOx)			59.8 %	
AS % OF CAEP/4 LIMIT (NOx)			65.5 %	
AS % OF CAEP/6 LIMIT (NOx)			72.0 %	
AS % OF CAEP/8 LIMIT (NOx)			80.8 %	

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)
x OUT OF PRODUCTION (DATE: -)
- OUT OF SERVICE

MEASURED DATA

MODE	POWER SETTING (% F_{00})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	2.282	0	0.51	46.42	3.5
CLIMB OUT	85	2.2	1.877	0	0.46	35.57	4.2
APPROACH	30	4.0	0.625	0	0.75	13.2	3.6
IDLE	7	26.0	0.237	0.05	8.45	5.47	0.5
LTO TOTAL FUEL (kg) or EMISSIONS (g)			863	17	3395	17262	-
NUMBER OF ENGINES				4	4	4	4
NUMBER OF TESTS				8	8	8	8
AVERAGE D_p/F_{00} (g/kN) or AVERAGE SN (MAX)				0.05	10.92	55.53	5.98
SIGMA (D_p/F_{00} in g/kN, or SN)				0.05	2.86	0.85	2.26
RANGE (D_p/F_{00} in g/kN, or SN)				0 - 0.1	7.5 - 14.13	54.68 - 56.38	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

- Representative of Package B engines
- DNS170301
- Certification in accordance with Part III, Chapter 2, of Amendment 7 of ICAO Annex 16 Vol. II.
- 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)