



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-A2 BYPASS RATIO: 9.3
UNIQUE ID NUMBER: 12RR061 PRESSURE RATIO (π_{00}): 41.3
ENGINE TYPE: TF 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	12.0	58.4	6.5
AS % OF ORIGINAL LIMIT	0.3 %	10.2 %	47.7 %	37.5 %
AS % OF CAEP/2 LIMIT (NOx)			59.6 %	
AS % OF CAEP/4 LIMIT (NOx)			65.2 %	
AS % OF CAEP/6 LIMIT (NOx)			71.7 %	
AS % OF CAEP/8 LIMIT (NOx)			80.4 %	

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_{00})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	2.284	0	0.51	46.11	3.5
CLIMB OUT	85	2.2	1.882	0	0.45	35.48	4.2
APPROACH	30	4.0	0.624	0	0.77	13.11	3.6
IDLE	7	26.0	0.245	0.04	8.4	5.48	0.5
LTO TOTAL FUEL (kg) or EMISSIONS (g)			876	17	3481	17288	-
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	11.2	55.62	5.98
SIGMA (D_p/F_{00} in g/kN, or SN)				0.05	2.93	0.86	2.26
RANGE (D_p/F_{00} in g/kN, or SN)				0 - 0.11	7.69 - 14.49	54.78 - 56.48	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 C1 engines
- DNS183412
- 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)