



## ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-H  
UNIQUE ID NUMBER: 11RR054  
COMBUSTOR: Phase5 Tiled  
ENGINE TYPE: TF

BYPASS RATIO: 9.6  
PRESSURE RATIO ( $\pi_{00}$ ): 38.3  
RATED THRUST ( $F_{00}$ ) (kN): 286.7

REGULATORY DATA \*\* DATA SUPERSEDED \*\* SEE FOLLOWING UID FOR REVISED DATA: 12RR060

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>00</sub> (g/kN) or SN	0.1	14.4	52.9	5.8
AS % OF ORIGINAL LIMIT	0.6	12.2	45.3	32.4
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			56.7	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			63.2	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			69.9	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			79.2	

## 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 (DATE: - )

## MEASURED DATA

MODE	POWER SETTING (%F <sub>00</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
TAKE-OFF	100	0.7	2.070	0.00	0.49	40.89	3.7
CLIMB OUT	85	2.2	1.710	0.00	0.43	31.75	4.4
APPROACH	30	4.0	0.583	0.00	0.88	12.72	2.6
IDLE	7	26.0	0.226	0.08	10.11	5.14	0.6
LTO TOTAL FUEL (kg) or EMISSIONS (g)			73	29	3826	14312	-
NUMBER OF ENGINES				3	3	3	3
NUMBER OF TESTS				5	5	5	5
AVERAGE D <sub>p</sub> /F <sub>00</sub> (g/kN) or AVERAGE SN (MAX)				0.1	13.3	49.9	5.2
SIGMA (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				0.1	3.6	0.9	2.0
RANGE (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				0-0.2	8.5-16.7	49-51	3-8.2

## ACCESSORY LOADS

POWER EXTRACTION 0 (kW)  
STAGE BLEED 0 (% CORE FLOW)

AT - POWER SETTINGS  
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 plc  
TEST ORGANIZATION: Rolls-Royce  
TEST LOCATION: Derby  
TEST DATES: 24/09/2009-09/06/2011

NO<sub>x</sub> REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
x	2.3.2 d) (CAEP/6)
	2.3.2 e) (CAEP/8)

## REMARKS

1. Representative of Package B engines

Compliance with Fuel Venting requirements:

- ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)