



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 970-84  
 UNIQUE ID NUMBER: 8RR046  
 ENGINE TYPE: TF

BYPASS RATIO: 7.5  
 PRESSURE RATIO ( $\pi_{oo}$ ): 38.97  
 RATED OUTPUT ( $F_{oo}$ ) (kN): 334.7

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{oo}$ (g/kN) or SN	0.4	23.6	57.4	6.8
AS % OF ORIGINAL LIMIT	1.9 %	20.0 %	48.7 %	39.6 %
AS % OF CAEP/2 LIMIT (NOx)			60.8 %	
AS % OF CAEP/4 LIMIT (NOx)			67.6 %	
AS % OF CAEP/6 LIMIT (NOx)			74.6 %	
AS % OF CAEP/8 LIMIT (NOx)			84.3 %	

### 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	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
	(%F <sub>oo</sub> )			HC	CO	NOx	
TAKE-OFF	100	0.7	2.600	0	0.4	37.2	4.1
CLIMB OUT	85	2.2	2.200	0	0.2	29.1	4.7
APPROACH	30	4.0	0.700	0	1.4	11.4	2.6
IDLE	7	26.0	0.300	0.2	15.1	5.1	0.7
LTO TOTAL FUEL (kg) or EMISSIONS (g)			980	81	6461	16555	-
NUMBER OF ENGINES				1	1	1	1
NUMBER OF TESTS				3	3	3	3
AVERAGE D <sub>p</sub> /F <sub>oo</sub> (g/kN) or AVERAGE SN (MAX)				0.2	19.3	49.5	5.23
SIGMA (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0.091	0.083	0.772	1.201
RANGE (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0.2 - 0.3	19 - 19.2	49 - 50.5	4.1 - 6.5

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
 STAGE BLEED 0 % CORE FLOW AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.4 - 100.4
TEMPERATURE (K)	291 - 291.6
AHS HUMIDITY (kg/kg)	0.00517 - 0.00578

### FUEL

SPEC	-
H/C	1.9
AROM (%)	18.6

MANUFACTURER: Rolls-Royce  
 TEST ORGANIZATION: Rolls-Royce  
 TEST LOCATION: Derby  
 TEST DATES: FROM 18 Mar 06 TO 18 Mar 06

### REMARKS

1. Data from report DNS 109444
2. Certification in accordance with Part III, Chapter 2, of Amendment 6 of ICAO Annex 16 Vol. II.
3. NOx levels in accordance with Part III, Chapter 2, 2.3.2 d) (CAEP/6)

If REVISED, this data supersedes databank UID  
 Compliance with fuel venting requirements:

- ('x' if complies, PR if pre-regulation)