ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: RB211-535E4   BYPASS RATIO: 4.1
UNIQUE ID NUMBER: 3RR028   PRESSURE RATIO (π_{oo}):   25.8
COMBUSTOR:
ENGINE TYPE: MTF   RATED THRUST (F_{oo}) (kN):   178.4

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO_X	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.9	27.4	76.0	2.3
AS % OF ORIGINAL LIMIT	4.6	23.2	83.0	11.4
AS % OF CAEP/2 LIMIT (NO_X)			103.7	
AS % OF CAEP/4 LIMIT (NO_X)			126.1	
AS % OF CAEP/6 LIMIT (NO_X)			143.3	
AS % OF CAEP/8 LIMIT (NO_X)			171.9	

DATA STATUS

-     PRE-REGULATION
-     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   (DATE: -   )

MEASURED DATA

MODE	POWER SETTING ($\%F_{oo}$)	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			
				HC	CO	NO_X	SMOKE NUMBER
TAKE-OFF	100	0.7	1.860	0.00	0.77	44.88	1.7
CLIMB OUT	85	2.2	1.510	0.01	0.50	32.06	1.8
APPROACH	30	4.0	0.520	0.04	1.14	6.78	1.0
IDLE	7	26.0	0.180	0.37	13.31	3.46	0.5
LTO TOTAL FUEL (kg) or EMISSIONS (g)			683	111	4040	11714	-
NUMBER OF ENGINES				1	1	1	1
NUMBER OF TESTS				3	3	3	3
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				0.6	22.3	65.6	1.8
SIGMA (D_p/F_{oo} in g/kN, or SN)							
RANGE (D_p/F_{oo} in g/kN, or SN)				0.57-0.66	22-22.6	64.4-66.9	1.5-2.2

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.8
TEMPERATURE (K)	282
ABS HUMIDITY (kg/kg)	0.0037

FUEL

SPEC	AVTUR
H/C	1.9
AROM (%)	18.2

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce plc
TEST LOCATION: SINFIN-Derby
TEST DATES: 01/04/1991

REMARKS

     1. Data from Certification Report DNS21233

Compliance with Fuel Venting requirements: -   *('x' if complies, 'PR' if pre-regulation,*
     '-' if information is not available)