



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: SPEY Mk511 BYPASS RATIO: 0.64  
UNIQUE ID NUMBER: 1RR016 PRESSURE RATIO ( $\pi_{oo}$ ): 18.7  
ENGINE TYPE: MTF RATED OUTPUT ( $F_{oo}$ ) (kN): 50.7

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{oo}$ (g/kN) or SN	19.5	146.9	80.3	25.7
AS % OF ORIGINAL LIMIT	99.6 %	124.5 %	103.7 %	90.1 %
AS % OF CAEP/2 LIMIT (NOx)			129.6 %	
AS % OF CAEP/4 LIMIT (NOx)			140.9 %	
AS % OF CAEP/6 LIMIT (NOx)			146.9 %	
AS % OF CAEP/8 LIMIT (NOx)			162.8 %	

### 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 (% $F_{oo}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	0.891	0.09	0.12	22.7	21.92
CLIMB OUT	85	2.2	0.726	0.12	0.63	17.3	20.79
APPROACH	30	4.0	0.278	0.18	2.65	7.2	12.94
IDLE	7	26.0	0.127	3.69	31.77	3.6	6.94
LTO TOTAL FUEL (kg) or EMISSIONS (g)			398	758	6536	3701	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				3	3	3	3
AVERAGE $D_p/F_{oo}$ (g/kN) or AVERAGE SN (MAX)				15	128.9	73	21.9
SIGMA ( $D_p/F_{oo}$ in g/kN, or SN)				1.9	8.3	4.8	3.1
RANGE ( $D_p/F_{oo}$ in g/kN, or SN)				12.9-16.8	119.5-135.3	67.8-77.2	19.9-25.4

### ACCESSORY LOADS

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

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	99-102
TEMPERATURE (K)	285 - 289
ABS HUMIDITY (kg/kg)	0.006-0.009

### FUEL

SPEC	DERD 2494
H/C	1.91
AROM (%)	20

MANUFACTURER: Rolls Royce Ltd  
TEST ORGANIZATION: Rolls Royce Ltd  
TEST LOCATION: Derby  
TEST DATES: FROM Sep 84 TO Aug 85

### REMARKS

1. Data from RR report CRR10149.
2. Transply IIH combustors.

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

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