



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: SaM146-1S18 BYPASS RATIO: 4.38  
 UNIQUE ID NUMBER: 11PJ002 PRESSURE RATIO ( $\pi_{00}$ ): 22.8  
 ENGINE TYPE: MTF RATED OUTPUT ( $F_{00}$ ) (kN): 72.67

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{00}$ (g/kN) or SN	2.4	72.0	44.6	14.7
AS % OF ORIGINAL LIMIT	12.4 %	61.0 %	52.1 %	57.1 %
AS % OF CAEP/2 LIMIT (NOx)			65.1 %	
AS % OF CAEP/4 LIMIT (NOx)			76.8 %	
AS % OF CAEP/6 LIMIT (NOx)			82.6 %	
AS % OF CAEP/8 LIMIT (NOx)			95.8 %	

### DATA STATUS

- PRE-REGULATION  
 x CERTIFICATION  
 - REVISED (SEE REMARKS)

### TEST ENGINE STATUS

X 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 (% $F_{00}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
TAKE-OFF	100	0.7	0.841	0.02	0.3	17.36	12.6
CLIMB OUT	85	2.2	0.691	0.04	0.3	14.52	12.1
APPROACH	30	4.0	0.238	0.06	4.67	7.28	0.1
IDLE	7	26.0	0.100	0.82	27.55	3.82	0.1
LTO TOTAL FUEL (kg) or EMISSIONS (g)			339	136	4591	2947	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				5	5	5	5
AVERAGE $D_p/F_{00}$ (g/kN) or AVERAGE SN (MAX)				1.9	63.2	40.6	12.6
SIGMA ( $D_p/F_{00}$ in g/kN, or SN)				-	-	-	-
RANGE ( $D_p/F_{00}$ in g/kN, or SN)				-	-	-	-

### ACCESSORY LOADS

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

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.43 - 101.26
TEMPERATURE (K)	289.2 - 302.5
ABS HUMIDITY (kg/kg)	0.00619 - 0.01331

### FUEL

SPEC	JET-A1
H/C	1.924
AROM (%)	16.7 - 17.5

MANUFACTURER: PowerJet S.A.  
 TEST ORGANIZATION: PowerJet S.A.  
 TEST LOCATION: Test facilities Snecma in Villaroche, France and NPO-Saturn in Rybinsk, Russia  
 TEST DATES: FROM Jul 09 TO May 11

### REMARKS

1. Test engine 146-006/1A and test engine 146-101/3
2. Certification report CR-037 Rev.1 and CR-037 S1
3. Certification in accordance with Part III, Chapter 2, of Amendment 6 of ICAO Annex 16 Vol. II.
4. 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 ('x' if complies, PR if pre-regulation)