



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW4156  
UNIQUE ID NUMBER: 1PW047  
ENGINE TYPE: TF

BYPASS RATIO: 4.7  
PRESSURE RATIO ( $\pi_{oo}$ ): 29.3  
RATED OUTPUT ( $F_{oo}$ ) (kN): 249.1

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{oo}$ (g/kN) or SN	4.0	37.4	55.8	10.0
AS % OF ORIGINAL LIMIT	20.4 %	31.7 %	56.5 %	54.5 %
AS % OF CAEP/2 LIMIT (NOx)			70.7 %	
AS % OF CAEP/4 LIMIT (NOx)			84.6 %	
AS % OF CAEP/6 LIMIT (NOx)			96.2 %	
AS % OF CAEP/8 LIMIT (NOx)			113.6 %	

### DATA STATUS

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

### TEST ENGINE STATUS

x NEWLY MANUFACTURED ENGINES  
- 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	2.342	0.06	0.44	28.1	7.8
CLIMB OUT	85	2.2	1.930	0.01	0.57	22.9	-
APPROACH	30	4.0	0.658	0.13	2	11.6	-
IDLE	7	26.0	0.208	1.92	21.86	4.8	-
LTO TOTAL FUEL (kg) or EMISSIONS (g)			836	652	7597	11987	-
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)				2.6	30.5	48.1	7.8
SIGMA ( $D_p/F_{oo}$ in g/kN, or SN)				-	-	-	-
RANGE ( $D_p/F_{oo}$ in g/kN, or SN)				-	-	-	-

### ACCESSORY LOADS

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

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.2
TEMPERATURE (K)	299
ABS HUMIDITY (kg/kg)	0.01

### FUEL

SPEC	Jet A
H/C	1.88
AROM (%)	19.7

MANUFACTURER: Pratt & Whitney  
TEST ORGANIZATION: -  
TEST LOCATION: -  
TEST DATES: FROM 17 Aug 87 TO 23 Aug 87

### REMARKS

Data from X698-5 with reduced smoke combustor.

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

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