# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW307A
UNIQUE ID NUMBER: 8PW091
ENGINE TYPE: MTF

BYPASS RATIO: 4.2
PRESSURE RATIO ($\pi_{oo}$): 20.21
RATED OUTPUT ($F_{oo}$) (kN): 28.49

REGULATORY DATA

| CHARACTERISTIC VALUE: | HC | CO | NOx | SMOKE NUMBER |
|---|---|---|---|---|
| $D_p/F_{oo}$ (g/kN) or SN | 8.2 | 90.3 | 42.9 | 2.1 |
| AS % OF ORIGINAL LIMIT | 41.8 % | 76.5 % | 53.3 % | 6.3 % |
| AS % OF CAEP/2 LIMIT (NOx) | | | 66.7 % | |
| AS % OF CAEP/4 LIMIT (NOx) | | | 67.1 % | |
| AS % OF CAEP/6 LIMIT (NOx) | | | 67.3 % | |
| AS % OF CAEP/8 LIMIT (NOx) | | | 71.0 % | |

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)

- \- OUT OF PRODUCTION
- \- OUT OF SERVICE

MEASURED DATA

| MODE | POWER SETTING ($\%F_{oo}$) | TIME minutes | FUEL FLOW kg/s | EMISSIONS INDICES (g/kg) HC | CO | NOx | SMOKE NUMBER |
|---|---|---|---|---|---|---|---|
| TAKE-OFF | 100 | 0.7 | 0.329 | 0 | 0.23 | 17.54 | 0.36 |
| CLIMB OUT | 85 | 2.2 | 0.274 | 0 | 0.23 | 15.31 | 0.41 |
| APPROACH | 30 | 4.0 | 0.102 | 0 | 2.46 | 8.39 | 0 |
| IDLE | 7 | 26.0 | 0.045 | 2.89 | 33.07 | 2.2 | 1.91 |
| LTO TOTAL FUEL (kg) or EMISSIONS (g) | | | 144 | 202 | 2378 | 1155 | - |
| NUMBER OF ENGINES | | | | 3 | 3 | 3 | 3 |
| NUMBER OF TESTS | | | | 3 | 3 | 3 | 3 |
| AVERAGE $D_p/F_{oo}$ (g/kN) or AVERAGE SN (MAX) | | | | 7.07 | 83.5 | 40.5 | 1.91 |
| SIGMA ($D_p/F_{oo}$ in g/kN, or SN) | | | | 0.68 | 1.6 | 0.65 | 0.35 |
| RANGE ($D_p/F_{oo}$ in g/kN, or SN) | | | | 6.4 - 8.0 | 81.8 - 85.7 | 39.7 - 41.3 | 1.5 - 2.4 |

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

| | |
|---|---|
| BAROMETER (kPa) | 99.28 - 100.94 |
| TEMPERATURE (K) | 265 - 280 |
| ABS HUMIDITY (kg/kg) | 0.0017 - 0.0065 |

FUEL

| | |
|---|---|
| SPEC | Jet A-1 |
| H/C | 1.86 - 1.89 |
| AROM (%) | 17.4 - 22.5 |

MANUFACTURER: Pratt & Whitney Canada Inc.
TEST ORGANIZATION: PW307 Development Engineering
TEST LOCATION: Mississauga, Ontario, Canada
TEST DATES: FROM 28 Dec 04 TO 27 Feb 05

REMARKS

1. P&WC ER 5606
2. Engines tested: E9812/12, CH0010/01, CH0011/01
3. Post Type-Certification combustor
4. All engines entering revenue service incorporate this combustor design standard
5. Defined by P&WC Engineering Change D5054

If REVISED, this data supersedes databank UID
Compliance with fuel venting requirements: x ('x' if complies, PR if pre-regulation)