



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW308A BYPASS RATIO (-): 4.1
UNIQUE ID NUMBER: 01P07PW145 PRESSURE RATIO π_{co} (-): 20.4
COMBUSTOR: Annular
ENGINE TYPE: MTF RATED OUTPUT F_{oo} (kN): 30.7

REGULATORY DATA

| CHARACTERISTIC VALUES: | LTO_{mass}/F_{oo} (mg/kN) | LTO_{num}/F_{oo} (particles/kN) | NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$) |
|--|--------------------------------|--------------------------------------|---|
| LTO/ F_{oo} AND MAX nvPM _{mass} | 694.4 | 6.18E+15 | 1291 |
| AS % OF CAEP/10 LIMIT | - | - | 9.5 |
| AS % OF CAEP/11 LIMIT (InP) | 17.5 | 26.6 | |
| AS % OF CAEP/11 LIMIT (NT) | | | |

MEASURED DATA

| MODE | POWER SETTING (% F_{oo}) | TIME minutes | FUEL FLOW kg/s | EMISSIONS INDICES* | | NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$) |
|---|-----------------------------------|-----------------|-------------------|-------------------------------|-------------------------------------|--|
| | | | | EI _{mass} (mg/kg) | EI _{num} (particles/kg) | |
| TAKE-OFF | 100 | 0.7 | 0.360 | 209.6 | 9.24E+14 | |
| CLIMB OUT | 85 | 2.2 | 0.299 | 154.8 | 9.33E+14 | |
| APPROACH | 30 | 4.0 | 0.123 | 48.5 | 4.74E+14 | |
| IDLE | 7 | 26.0 | 0.045 | 66.5 | 1.03E+15 | |
| LTO TOTAL (kg, mg, number of particles) | | | 154 | 15340 | 1.36E+17 | - |
| NUMBER OF ENGINES | | | | 1 | 1 | 1 |
| NUMBER OF TESTS | | | | 3 | 3 | 3 |
| AVERAGE LTO/ F_{oo} VALUES (mg/kN, particles/kN) | | | | 499.5 | 4.44E+15 | - |
| MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$) | | | | 209.6 | 1.03E+15 | 1003 |

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

| MODE | POWER SETTING (% F_{oo}) | CORRECTED EMISSIONS INDICES | |
|-----------|-----------------------------------|----------------------------------|--|
| | | EI _{mass_SL} (mg/kg) | EI _{num_SL} (particles/kg) |
| TAKE-OFF | 100 | 246.4 | 2.15E+15 |
| CLIMB OUT | 85 | 184.8 | 2.39E+15 |
| APPROACH | 30 | 60.5 | 1.43E+15 |
| IDLE | 7 | 87.7 | 3.68E+15 |

AMBIENT CONDITIONS

| | From | To | FUEL | |
|--------------------------------|--------|--------|-------------------------------|-------|
| BAROMETER (kPa) | 99.4 | 100.2 | HEAT OF COMBUSTION (MJ/kg) | 43.27 |
| TEMPERATURE (K) | 296.0 | 300.0 | HYDROGEN CONTENT (%mass) | 13.85 |
| HUMIDITY (kg water/kg dry air) | 0.0063 | 0.0103 | AROMATICS CONTENT (%vol) | 16.0 |
| | | | NAPHTHALENE CONTENT (%vol) | 0.94 |
| | | | SULPHUR CONTENT (ppm by mass) | 435 |

MANUFACTURER: Pratt & Whitney Canada
TEST ORGANIZATION: Pratt & Whitney Canada
TEST LOCATION: Mississauga, Ontario, Canada
TEST DATES: 30/07/2019-01/08/2019

REMARKS

1. Data acquired using procedures and systems prescribed in Annex 16 Volume II, Amd. 9
2. Thermophoretic correction applied as described in Annex 16 Volume II, Amd. 9, Appendix 7, Section 6.2.1
3. Data corrected for fuel hydrogen content according to CAEP11.WP91 App.A
4. Export classification: EIPA NSR, DPA No, US-I 9E991, OUS-I NSR.
5. Data reported in ER 10579 Rev. A