# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION:    CFM56-5C2/P        BYPASS RATIO:         6.8
UNIQUE ID NUMBER:      7CM045           PRESSURE RATIO ($\pi_{oo}$):   28.2
ENGINE TYPE:           MTF             RATED OUTPUT ($F_{oo}$) (kN):  137.61

## REGULATORY DATA

| CHARACTERISTIC VALUE: | HC | CO | NOx | SMOKE NUMBER |
|---|---|---|---|---|
| $D_p/F_{oo}$ (g/kN) or SN | 11.1 | 56.2 | 52.6 | 13.8 |
| AS % OF ORIGINAL LIMIT | 56.6 % | 47.6 % | 54.6 % | 63.6 % |
| AS % OF CAEP/2 LIMIT (NOx) | | | 68.2 % | |
| AS % OF CAEP/4 LIMIT (NOx) | | | 82.1 % | |
| AS % OF CAEP/6 LIMIT (NOx) | | | 93.2 % | |
| AS % OF CAEP/8 LIMIT (NOx) | | | 110.5 % | |

### 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) HC | CO | NOx | SMOKE NUMBER |
|---|---|---|---|---|---|---|---|
| TAKE-OFF | 100 | 0.7 | 1.252 | 0 | 0.8 | 29.7 | 10.7 |
| CLIMB OUT | 85 | 2.2 | 1.035 | 0 | 0.7 | 23.8 | 8.4 |
| APPROACH | 30 | 4.0 | 0.342 | 0 | 2.1 | 9.3 | 1 |
| IDLE | 7 | 26.0 | 0.109 | 5.8 | 35.1 | 3.9 | 1.1 |
| LTO TOTAL FUEL (kg) or EMISSIONS (g) | | | 441 | 986 | 6278 | 6240 | – |
| 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) | | | | 7.2 | 45.7 | 45.4 | 10.7 |
| 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) | 97.77 - 98.11 |
|---|---|
| TEMPERATURE (K) | 286 - 295 |
| ABS HUMIDITY (kg/kg) | 0.0061 - 0.0074 |

## FUEL

| SPEC | Jet A |
|---|---|
| H/C | 1.95 |
| AROM (%) | 17.3 |

MANUFACTURER:          CFM International
TEST ORGANIZATION:   CFM56 Evaluation Engineering
TEST LOCATION:      PTO Site IV-D
TEST DATES:       FROM  04 Jun 91      TO 05 Jun 91

## REMARKS

1. Ref GE Report R91AEB471 and FAA Certification Report CR-897/P, July 2003
2. Engine S/N 740/105.
3. Core engine Smoke Numbers reported

If REVISED, this data supersedes databank UID
Compliance with fuel venting requirements:        0    ('x' if complies, PR if pre-regulation)