# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION:    CFM56-7B27/2      BYPASS RATIO:       5  
UNIQUE ID NUMBER:       4CM043           PRESSURE RATIO ($\pi_{oo}$):   28.84  
ENGINE TYPE:           TF              RATED OUTPUT ($F_{oo}$) (kN):  121.44

### REGULATORY DATA

| CHARACTERISTIC VALUE: | HC | CO | NOx | SMOKE NUMBER |
|---|---|---|---|---|
| $D_p/F_{oo}$ (g/kN) or SN | 13.1 | 82.7 | 40.5 | 0.8 |
| AS % OF ORIGINAL LIMIT | 66.7 % | 70.1 % | 41.5 % | 3.7 % |
| AS % OF CAEP/2 LIMIT (NOx) | | | 51.8 % | |
| AS % OF CAEP/4 LIMIT (NOx) | | | 62.2 % | |
| AS % OF CAEP/6 LIMIT (NOx) | | | 70.6 % | |
| AS % OF CAEP/8 LIMIT (NOx) | | | 83.5 % | |

### 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 | 1.265 | 0.05 | 0.54 | 20.81 | 0.8 |
| CLIMB OUT | 85 | 2.2 | 1.033 | 0.06 | 1.97 | 15.59 | 0.7 |
| APPROACH | 30 | 4.0 | 0.351 | 4.21 | 24.28 | 7.53 | 0.7 |
| IDLE | 7 | 26.0 | 0.115 | 5.56 | 38.73 | 4.36 | 0.7 |
| LTO TOTAL FUEL (kg) or EMISSIONS (g) | | | 453 | 1363 | 9291 | 4648 | - |
| 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) | | | | 11.21 | 76.46 | 38.23 | 0.75 |
| SIGMA ($D_p/F_{oo}$ in g/kN, or SN) | | | | - | - | - | - |
| RANGE ($D_p/F_{oo}$ in g/kN, or SN) | | | | 10.1-12.3 | 72.7-80.4 | 37.9-38.8 | 0.3-1.6 |

### ACCESSORY LOADS

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

### ATMOSPHERIC CONDITIONS

| | |
|---|---|
| BAROMETER (kPa) | 97.9-98.0 |
| TEMPERATURE (K) | 292.8-296.7 |
| ABS HUMIDITY (kg/kg) | .00814-.0131 |

### FUEL

| | |
|---|---|
| SPEC | Jet A |
| H/C | 1.93-1.94 |
| AROM (%) | 18.0-19.2 |

MANUFACTURER:          GE  
TEST ORGANIZATION:    CFM56-7B Eval Engineering  
TEST LOCATION:       Peebles Test Operation (PTO) Peebles, OH  
TEST DATES:          FROM  30 Aug 97      TO 12 Sep 97

### REMARKS

1. FAA Certification Report CR-997/2, 14 Nov 97
2. Engine S/N 874-136/01, 874-141/01, 874-146/01

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