



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: GENx-1B70/75/P2 BYPASS RATIO (-): 8.8
UNIQUE ID NUMBER: 01P17GE209 PRESSURE RATIO π_{∞} (-): 44.5
COMBUSTOR: TAPS
ENGINE TYPE: TF RATED OUTPUT F_{∞} (kN): 321.6

REGULATORY DATA

| CHARACTERISTIC VALUES: | LTO_{mass}/F_{∞} (mg/kN) | LTO_{num}/F_{∞} (particles/kN) | NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$) |
|--|------------------------------------|--|---|
| LTO/F_{∞} AND MAX $nvPM_{mass}$ | 8.2 | 8.51E+13 | 161 |
| AS % OF CAEP/10 LIMIT | - | - | 4.1 |
| AS % OF CAEP/11 LIMIT (InP) | 2.4 | 2.0 | |
| AS % OF CAEP/11 LIMIT (NT) | 3.8 | 3.1 | |

MEASURED DATA

| MODE | POWER SETTING (% F_{∞}) | 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 | 2.507 | 1.8 | 7.68E+10 | |
| CLIMB OUT | 85 | 2.2 | 2.050 | 1.7 | 7.83E+10 | |
| APPROACH | 30 | 4.0 | 0.645 | 3.6 | 8.75E+13 | |
| IDLE | 7 | 26.0 | 0.201 | 2.3 | 1.95E+13 | |
| LTO TOTAL (kg, mg, number of particles) | | | 844 | 1904 | 1.97E+16 | - |
| NUMBER OF ENGINES | | | | 1 | 1 | 1 |
| NUMBER OF TESTS | | | | 3 | 3 | 3 |
| AVERAGE LTO/F_{∞} VALUES (mg/kN, particles/kN) | | | | 5.9 | 6.12E+13 | - |
| MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$) | | | | 6.9 | 1.91E+14 | 125 |

* 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_{∞}) | CORRECTED EMISSIONS INDICES | |
|-----------|---------------------------------------|-----------------------------|----------------------------------|
| | | EI_{mass_SL} (mg/kg) | EI_{num_SL} (particles/kg) |
| TAKE-OFF | 100 | 2.4 | 1.06E+11 |
| CLIMB OUT | 85 | 2.2 | 1.08E+11 |
| APPROACH | 30 | 5.0 | 4.67E+14 |
| IDLE | 7 | 2.8 | 6.39E+13 |

AMBIENT CONDITIONS

| | From | To | FUEL | |
|--------------------------------|--------|--------|-------------------------------|-------|
| BAROMETER (kPa) | 97.4 | 98.2 | HEAT OF COMBUSTION (MJ/kg) | 43.15 |
| TEMPERATURE (K) | 289.9 | 297.9 | HYDROGEN CONTENT (%mass) | 13.79 |
| HUMIDITY (kg water/kg dry air) | 0.0079 | 0.0127 | AROMATICS CONTENT (%vol) | 17.7 |
| | | | NAPHTHALENE CONTENT (%vol) | 0.38 |
| | | | SULPHUR CONTENT (ppm by mass) | 12 |

MANUFACTURER: General Electric Company
TEST ORGANIZATION: General Electric Company
TEST LOCATION: PTO, Ohio
TEST DATES: 05/09/2019-06/09/2019

REMARKS

1. GE Aviation Report R2018AE129/Rev. 0
2. Engine S/N 598-426
3. EI_{mass_SL} calculated from average EI_{mass} and KSL_{mass}
4. EI_{num_SL} calculated from average EI_{num} and KSL_{num}

** DATA SUPERSEDED **

SEE FOLLOWING UID FOR REVISED DATA:

07P27GE234