



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-H3
UNIQUE ID NUMBER: 19RR089
COMBUSTOR: Phase5 Tiled
ENGINE TYPE: TF

BYPASS RATIO: 9.3
PRESSURE RATIO (π_{00}): 40.1
RATED THRUST (F_{00}) (kN): 287.1

REGULATORY DATA ** DATA SUPERSEDED ** SEE FOLLOWING UID FOR REVISED DATA: 01P19RR110

| CHARACTERISTIC VALUE: | HC | CO | NO _x | SMOKE NUMBER |
|--|-----|------|-----------------|--------------|
| D _p /F ₀₀ (g/kN) or SN | 0.0 | 11.3 | 53.0 | 16.4 |
| AS % OF ORIGINAL LIMIT | 0.0 | 9.5 | 44.1 | 92.4 |
| AS % OF CAEP/2 LIMIT (NO _x) | | | 55.1 | |
| AS % OF CAEP/4 LIMIT (NO _x) | | | 60.8 | |
| AS % OF CAEP/6 LIMIT (NO _x) | | | 67.0 | |
| AS % OF CAEP/8 LIMIT (NO _x) | | | 75.4 | |

DATA STATUS

- PRE-REGULATION
x CERTIFICATION
- 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 (DATE: -)
- OUT OF SERVICE (DATE: -)

MEASURED DATA

| MODE | POWER SETTING (%F ₀₀) | TIME (minutes) | FUEL FLOW (kg/s) | HC | CO | NO _x | SMOKE NUMBER |
|--|-----------------------------------|----------------|------------------|------|------------|-----------------|--------------|
| TAKE-OFF | 100 | 0.7 | 2.068 | 0.00 | 0.45 | 40.67 | 11.5 |
| CLIMB OUT | 85 | 2.2 | 1.706 | 0.00 | 0.43 | 32.04 | 14.1 |
| APPROACH | 30 | 4.0 | 0.579 | 0.00 | 0.89 | 12.94 | 6.9 |
| IDLE | 7 | 26.0 | 0.229 | 0.00 | 7.78 | 5.64 | 2.1 |
| LTO TOTAL FUEL (kg) or EMISSIONS (g) | | | 808 | 0 | 3040 | 14562 | - |
| NUMBER OF ENGINES | | | | 5 | 5 | 5 | 6 |
| NUMBER OF TESTS | | | | 11 | 11 | 11 | 8 |
| AVERAGE D _p /F ₀₀ (g/kN) or AVERAGE SN (MAX) | | | | 0.0 | 10.6 | 50.7 | 15.3 |
| SIGMA (D _p /F ₀₀ in g/kN, or SN) | | | | 0.0 | 2.5 | 0.7 | 1.7 |
| RANGE (D _p /F ₀₀ in g/kN, or SN) | | | | 0.0 | 6.99-13.31 | 49.94-51.38 | 12.1-16.8 |

ACCESSORY LOADS

POWER EXTRACTION 0 (kW)
STAGE BLEED 0 (% CORE FLOW)

AT - POWER SETTINGS
AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

| | |
|----------------------|-----------------|
| BAROMETER (kPa) | 98.9-102.1 |
| TEMPERATURE (K) | 275-304.6 |
| ABS HUMIDITY (kg/kg) | 0.00308-0.01935 |

FUEL

| | |
|----------|------|
| SPEC | |
| H/C | 1.91 |
| AROM (%) | 17.2 |

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce
TEST LOCATION: Derby
TEST DATES: 24/09/2009-30/11/2017

NO_x REGULATION PARAGRAPH

| | |
|---|-------------------|
| | 2.3.2 c) (CAEP/4) |
| | 2.3.2 d) (CAEP/6) |
| x | 2.3.2 e) (CAEP/8) |

REMARKS

1. Data from Certification Report EDNS01000615769
2. Certification in accordance with Part III, Chapter 2, of Amendment 8 of ICAO Annex 16 Vol. II.
3. NO_x levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

Compliance with Fuel Venting requirements:

x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)