



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: GE90-110B1 BYPASS RATIO: 7.3
UNIQUE ID NUMBER: 21GE182 PRESSURE RATIO (π_{oo}): 40.4
ENGINE TYPE: TF RATED OUTPUT (F_{oo}) (kN): 492.6

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	5.4	44.6	67.0	3.5
AS % OF ORIGINAL LIMIT	27.5 %	37.8 %	55.5 %	22.7 %
AS % OF CAEP/2 LIMIT (NOx)			69.4 %	
AS % OF CAEP/4 LIMIT (NOx)			76.4 %	
AS % OF CAEP/6 LIMIT (NOx)			84.1 %	
AS % OF CAEP/8 LIMIT (NOx)			94.6 %	

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)
- OUT OF PRODUCTION
- OUT OF SERVICE

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	4.226	0.03	0.13	45.25	2.96
CLIMB OUT	85	2.2	3.375	0.02	0.14	34.39	2.16
APPROACH	30	4.0	1.029	0.05	2.5	15.53	1.55
IDLE	7	26.0	0.334	3.865	35.72	5.42	1.37
LTO TOTAL FUEL (kg) or EMISSIONS (g)			1391	2043	19317	30010	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				6	6	6	6
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				4.14	39.16	60.91	2.96
SIGMA (D_p/F_{oo} in g/kN, or SN)				0.28	1.39	1.12	1.3
RANGE (D_p/F_{oo} in g/kN, or SN)				3.78 - 4.4	37.37 - 40.70	59.06 - 62.32	0.68 - 3.80

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	97.06 - 98.32
TEMPERATURE (K)	290.7 - 298.7
ABS HUMIDITY (kg/kg)	0.0051 - 0.0094

FUEL

SPEC	Jet A
H/C	1.90 - 1.96
AROM (%)	11.9 - 16.4

MANUFACTURER: GE Aircraft Engines
TEST ORGANIZATION: GE Aviation
TEST LOCATION: PTO, Ohio
TEST DATES: FROM 23 May 03 TO 26 May 16

REMARKS

- Engine S/N 906-107/01 and ESN 901-007/01, GE Report R2019EA459.
- Engine S/N 906-107/01 smoke numbers corrected for fuel aromatics volume, GE Report R2003AE462.
- Smoke Number for each LTO mode is average of max SN for test points around that power setting.
- Average SN (MAX) is the average of the maximum smoke number point from each run.
- Certification in accordance with Part III, Chapter 2, of Amendment 9 of ICAO Annex 16 Vol. II.

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