



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: CF34-10A16/B/C/D BYPASS RATIO (-): 5.6
UNIQUE ID NUMBER: 07P27GE229 PRESSURE RATIO π_{o_0} (-): 24.8
COMBUSTOR: SAC
ENGINE TYPE: TF RATED OUTPUT F_{o_0} (kN): 77.0

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{o_0} (mg/kN)	LTO_{num}/F_{o_0} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/F_{o_0} AND MAX $nvPM_{mass}$	67.2	$2.01\text{E}+15$	1712
AS % OF CAEP/10 LIMIT	-	-	22.5
AS % OF CAEP/11 LIMIT (InP)	2.2	11.2	
AS % OF CAEP/11 LIMIT (NT)	9.3	23.2	

MEASURED DATA

MODE	POWER SETTING (% F_{o_0})	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	0.771	36.4	$3.73\text{E}+14$	
CLIMB OUT	85	2.2	0.638	19.3	$3.05\text{E}+14$	
APPROACH	30	4.0	0.216	1.3	$6.88\text{E}+13$	
IDLE	7	26.0	0.085	6.4	$5.28\text{E}+14$	
LTO TOTAL (kg, mg, number of particles)			302	3719	$1.12\text{E}+17$	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/F_{o_0} VALUES (mg/kN, particles/kN)				48.3	$1.45\text{E}+15$	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				36.4	$5.28\text{E}+14$	1330

* 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_{o_0})	CORRECTED EMISSIONS INDICES	
		EI_{mass_SL} (mg/kg)	EI_{num_SL} (particles/kg)
TAKE-OFF	100	44.8	$1.14\text{E}+15$
CLIMB OUT	85	24.9	$1.09\text{E}+15$
APPROACH	30	2.2	$4.26\text{E}+14$
IDLE	7	12.2	$4.25\text{E}+15$

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	97.6	98.0	HEAT OF COMBUSTION (MJ/kg)	43.20
TEMPERATURE (K)	291.0	301.0	HYDROGEN CONTENT (%mass)	13.91
HUMIDITY (kg water/kg dry air)	0.0079	0.0101	AROMATICS CONTENT (%vol)	19.4
			NAPHTHALENE CONTENT (%vol)	0.30
			SULPHUR CONTENT (ppm by mass)	5

MANUFACTURER: General Electric Company
TEST ORGANIZATION: GE Aviation
TEST LOCATION: PTO, Ohio, USA
TEST DATES: 09/04/2024-15/04/2024

REMARKS

- Engine S/N 623-407/1
- Ref. GE Report R2023AE304/Rev.0