



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: LEAP-1A29  
UNIQUE ID NUMBER: 20CM092  
ENGINE TYPE: TF

BYPASS RATIO: 10.7  
PRESSURE RATIO ( $\pi_{00}$ ): 35.5  
RATED OUTPUT ( $F_{00}$ ) (kN): 130.3

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{00}$ (g/kN) or SN	0.4	27.6	45.6	1.8
AS % OF ORIGINAL LIMIT	2.2 %	23.4 %	41.1 %	8.3 %
AS % OF CAEP/2 LIMIT (NOx)			51.3 %	
AS % OF CAEP/4 LIMIT (NOx)			58.4 %	
AS % OF CAEP/6 LIMIT (NOx)			65.1 %	
AS % OF CAEP/8 LIMIT (NOx)			74.5 %	

### DATA STATUS

- PRE-REGULATION  
x CERTIFICATION  
- REVISED (SEE REMARKS)

### TEST ENGINE STATUS

x 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  
- OUT OF SERVICE

### MEASURED DATA

MODE	POWER SETTING (% $F_{00}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	0.946	0.04	0.27	49.48	1.105
CLIMB OUT	85	2.2	0.777	0.02	0.23	21.03	1.17
APPROACH	30	4.0	0.261	0.04	2.21	9.27	1.31
IDLE	7	26.0	0.094	0.25	20.3	4.72	1.25
LTO TOTAL FUEL (kg) or EMISSIONS (g)			352	43	3150	5396	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				4	4	4	4
AVERAGE $D_p/F_{00}$ (g/kN) or AVERAGE SN (MAX)				0.33	24.26	41.44	1.56
SIGMA ( $D_p/F_{00}$ in g/kN, or SN)				0.04	1.21	1.85	0.15
RANGE ( $D_p/F_{00}$ in g/kN, or SN)				0.28 to 0.32	22.82 to 25.46	39.23 to 43.27	1.47 to 1.82

### ACCESSORY LOADS

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

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	97.8 to 98.8
TEMPERATURE (K)	274.6 to 279.8
ABS HUMIDITY (kg/kg)	.0020 to .0032

### FUEL

SPEC	JET A
H/C	1.9
AROM (%)	16.5

MANUFACTURER: GE Aviation  
TEST ORGANIZATION: GE Aviation  
TEST LOCATION: PTO, Ohio, USA  
TEST DATES: FROM 21 Nov 16 TO 02 Dec 16

### REMARKS

1. Ref. Report CRL-2201\_2/Rev. 1
2. Engine S/N 600-104, 600-105
3. SN for each LTO mode is average of max SN for test points around that power setting
4. AVERAGE SN (MAX) is average of maximum SN measured from all points on each run
5. Certification in accordance with Part III, Chapter 2, of Amendment 8 of ICAO Annex 16 Vol. II.
6. NOx levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

If REVISED, this data supersedes databank UID  
Compliance with fuel venting requirements:

x ('x' if complies, PR if pre-regulation)