



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: D-436-148 F2
UNIQUE ID NUMBER: 13ZM004
ENGINE TYPE: TF

BYPASS RATIO: 4.9
PRESSURE RATIO (π_{00}): 20.73
RATED OUTPUT (F_{00}) (kN): 68.72

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{00} (g/kN) or SN	3.6	48.3	39.3	7.4
AS % OF ORIGINAL LIMIT	18.2 %	41.0 %	48.2 %	28.2 %
AS % OF CAEP/2 LIMIT (NOx)			60.3 %	
AS % OF CAEP/4 LIMIT (NOx)			69.7 %	
AS % OF CAEP/6 LIMIT (NOx)			75.3 %	
AS % OF CAEP/8 LIMIT (NOx)			87.0 %	

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
TAKE-OFF	100	0.7	0.581	0.09	0.48	19.76	6.7
CLIMB OUT	85	2.2	0.493	0.05	0.4	16.64	-
APPROACH	30	4.0	0.225	0.08	2.71	7.31	-
IDLE	7	26.0	0.099	1.39	19.56	3.78	-
LTO TOTAL FUEL (kg) or EMISSIONS (g)			274	2194	31217	9862	-
NUMBER OF ENGINES				8	8	8	8
NUMBER OF TESTS				8	8	8	8
AVERAGE D_p/F_{00} (g/kN) or AVERAGE SN (MAX)				3.25	46.08	37.96	6.9
SIGMA (D_p/F_{00} in g/kN, or SN)				-	-	-	-
RANGE (D_p/F_{00} in g/kN, or SN)				1.1-7.2	32.5-68.5	34.1-43.3	6.2-8.2

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	99.02-102.66
TEMPERATURE (K)	266-301
ABS HUMIDITY (kg/kg)	0.00248-0.01624

FUEL

SPEC	RT
H/C	1.92
AROM (%)	13.3-19.7

MANUFACTURER: IVCHENKO PROGRESS ZMBK
TEST ORGANIZATION: IVCHENKO PROGRESS ZMBK
TEST LOCATION: ZAPOROJE
TEST DATES: FROM 27 Dec 91 TO 28 Jul 06

REMARKS

1. NOx levels in accordance with Part III, Chapter 2, 2.3.2 c) (CAEP/4)

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

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