# AIRCRAFT ENGINE CHARACTERISTICS SUMMARY

MFG. DESIGNATION
JTF10A-27A, -27B

TURBOFAN

TF30-P-12,-12A

Pratt and Whitney Aircraft East Hartford, Conn. Spec. N-1934-C (Approved) Dated 15 November 1967



#### GENERAL DESCRIPTION

The TF30-P-12 engine is an axial flow gas turbine engine with an annular burner having eight through flow combustion chambers, a nine stage low pressure compressor unit including a three stage fan, and a seven stage high pressure compressor unit. The low pressure compressor unit is connected by a through shaft to the three low pressure turbine wheels and the high pressure compressor unit is connected independently by a hollow shaft to the high pressure turbine wheel. The fan and compressor air inlets are common and both airflows are combined in a common afterburner and are discharged through a single variable area convergent jet nozzle. The engine is equipped with a blow-in-door ejector.

#### AVAILABILITY

Development Contract Awarded . . . . June 1966
Engine Mock-up Inspection . . . . None
Experimental Engine . . . . . June 1967
Mock-up for Aircraft . . . . . . None
Installation Engine . . . . . . March 1968
Preliminary Flight Rating Test . . . . None
150 Hr. Endurance Tests "A" and "B" . . May 1968

#### **PROCUREMENT**

Final Price (CY 1968) \$732,386 (P-12)

# SUTATE

In production

A total of twelve TF30-P-12 engines are to be built. A modified version of the TF30-P-12 is planned for the VF(X)-1 aircraft.

# SPECIFIC FEATURES

Compressor---Axial flow, twin spool

LP Rotor - 9 stages (includes 3 fan stages)

HP Rotor - 7 stages

Maximum Design Pressure Ratio (SLS)---Fan - 2.0:1

Overall - 17.5:1

Bypass Ratio---1.05:1

Maximum Airflow (SLS)---240 lb/sec

Combustion Chamber---8 unit, can-annular, through flow

Turbine---Axial flow, 4 stage

LP Rotor - 3 stages

HP Rotor - 1 stage

Turbine Cooling---High pressure turbine blades and

vanes air cooled

Maximum Allowable Turbine In1et Temperature---2120°F

Exhaust Nozzle---Convergent, variable area, with blow-in-door ejector

Ignition---Two 4 joule exciters, engine driven alternator, two igniters, automatic relight Power Control---Hydromechanical main and A/B fuel

controls Fuel---MIL-T-5624, Grade JP-4 or JP-5  $\,$ 

Oil ---MIL-L-23699 or MIL-L-7808 (below -40°F)

Maximum Oil Consumption---O.2 gal/hr avg.

Accessory Drive Provisions --- Six

Thrust to Weight Ratio---5.03:1 (P-12)

5.07:1 (P-12A)

# SIZE & WEIGHT

Length---241.4 inches
Maximum Diameter---50.7 inches
Maximum Radial Projection---31.0 inches
Dry Weight---4027 lbs. (P-12)
3997 lbs. (P-12A)

# UTILIZATION

F-111B Fighter Aircraft (two P-12 engines) (USN) FB-111 Bomber Aircraft (two P-12A engines) (USAF)

# PERFORMANCE

GUARANTEED RATINGS AT STANDARD SEA LEVEL STATIC CONDITIONS

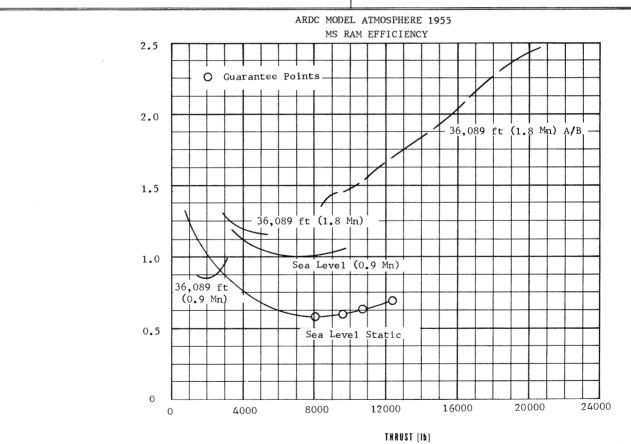
RATING	THRUST (1b)	RPM N2/N1	SFC (lb/hr/lb)	MEAS. GAS (Turb. for)	AIRFLOW (lb/sec)
MAXIMUM (45 min)	20,250	14,550/9,750	3.04	2070	240
INTERMEDIATE (Military) (45 min)	12,290	14,400/10,100	0.692	2070	247
MAXIMUM CONTINUOUS (Normal)	10,750	14,150/9,650	0.634	1830	237
90% MAX. CONTINUOUS	9,675	13,900/9,250	0.605	1785	227
75% MAX. CONTINUOUS	8,060	13,500/8,700	0.577	1640	210
IDLE	740 (Max)	8,500/2,900	980 1b/hr		

# GUARANTEED RATINGS AT STANDARD ALTITUDE CONDITIONS

RATING	ALTITUDE (ft)	FLIGHT MACH NO.	THRUST (1b)	SFC (lb/hr/lb)	MEAS. GAS TEMP. (°F)	AIRFLOW (lb/sec)
MAXIMUM (45 min)	55,000	2.2	7,550	2.94	2070	118
Maximum (45 min)	30,000	1.2	13,250	2.70	2070	163
Intermediate (Mil)(45 min)	36,089	0.7	2,695	0.943	1780	80,7
Cruise	30,000	0.7	2,970	0.876	1650	100.2

# GUARANTEED OPERATING LIMITS

ABSOLUTE ALTITUDE (FEET) 75,000 at 3.18 ram pressure ratio	MAXIMUM STARTING ALTITUDE JP-4 45,000 ft
LIMITING MACH NO. AT SEA LEVEL STD. CONDITIONS 0.90	MAXIMUM STARTING ALTITUDE JP-5 45,000 ft



### NOTES

The TF30-P-12 and -12A are to the same configuration except that the TF30-P-12 is equipped with a filter heater combination and the TF30-P-12A is equipped with a fuel filter only. In addition, an augmented wave-off feature, incorporated in TF30-P-12 engines, is deactivated on TF30-P-12A engines.

SFC (Ib/hr/Ib)

NAVAIR 00-110A-3