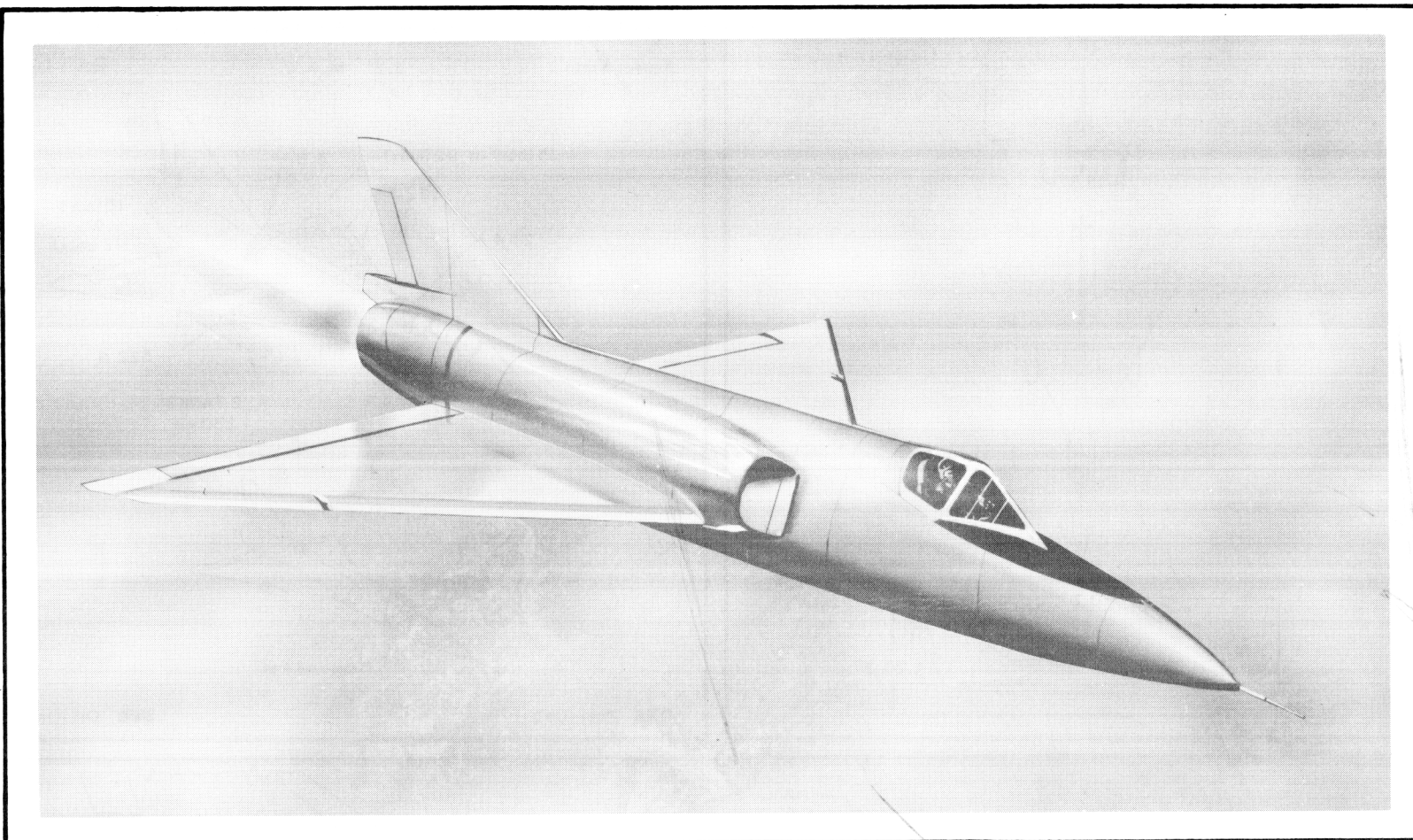


unclassified
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A-1
F-106A/char
SERVICE



W. M. White 3/10/97

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

Standard Aircraft Characteristics

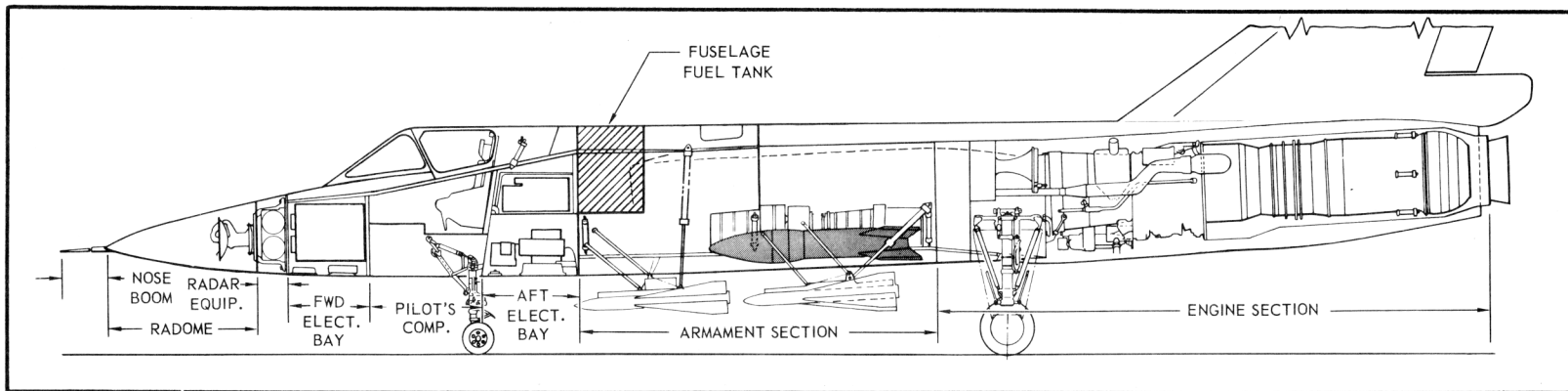
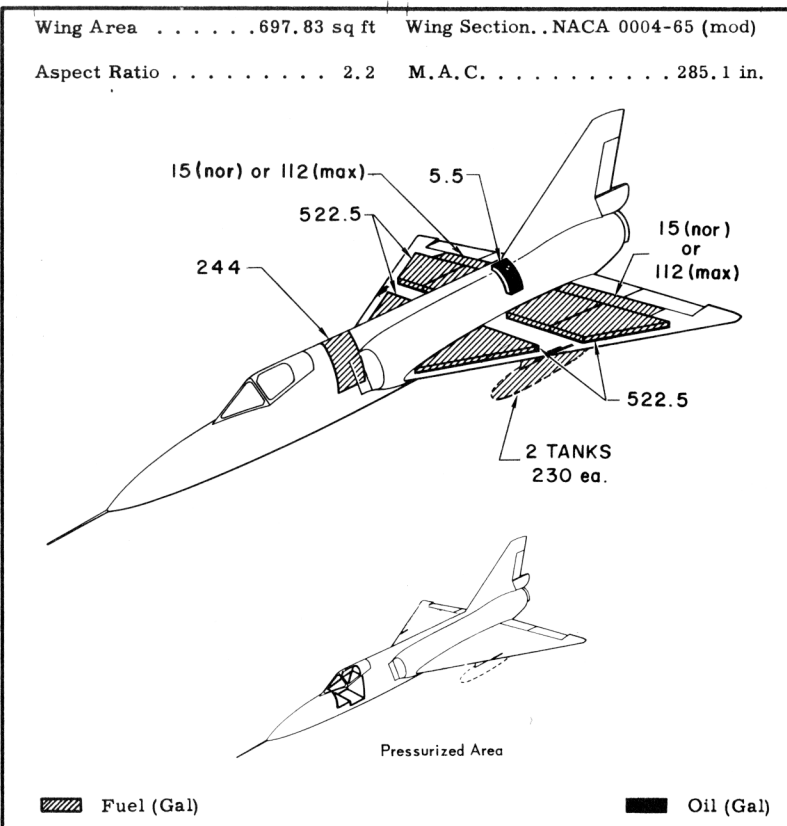
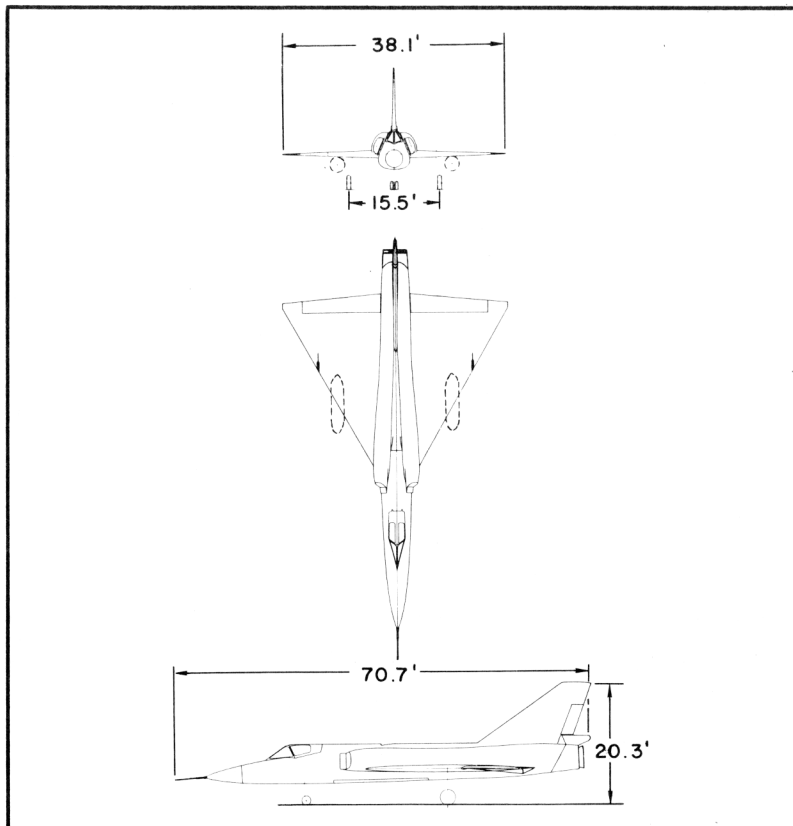
BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

F-106 A
DELTA DART
Convair

ONE J75-P-17
PRATT & WHITNEY

~~CONFIDENTIAL~~

57WC-4984



POWER PLANT

Nr & Model (1) J75-P17
Mfr Pratt & Whitney
Engine Spec Nr A-2625
Type Axial
Length 237.6
Diameter 44.25
Weight (dry) 5875 lb
Tail Pipe . . . Auto, Two-Position
Augmentation Afterburning

ENGINE RATINGS

S. L. Static LB - † RPM - MIN
Max: *24, 500 - 7100/8900 - 5
Mil: 16, 100 - 6950/8870 - 30
Nor: 14, 300 - 6550/8700 - Cont

* With afterburner operating

† First figure represents the RPM of low pressure spool while the second is that of the high pressure spool.

DIMENSIONS

Wing
Span 38.1'
Incidence 0°
Dihedral 0°
Sweepback (LE) 60°
Length (including nose boom) 70.7'
Height 20.3'
Tread 15.5'

Mission and Description

Navy Equivalent: None Mfr's Model: 8-24

The principal mission of the F-106A is the interception and destruction of attacking enemy aircraft and airborne missiles, having all weather and day or night characteristics.

This airplane incorporates a delta wing with a cambered leading edge extending from wing root to wing tip and swept tail surface. Control surfaces are power operated.

Power brakes are provided with auxiliary braking by a 14.5 foot drag parachute.

A five litre liquid oxygen system shall be provided and installed in accordance with specification MIL-1-9475.

The fuel system is pressurized, air is bled from the engine compressor section and is used to pressurize the fuel tanks to reduce fuel evaporation and to provide for fuel transfer, and to provide for CG control in flight.

The pilot's section is pressurized and provisions are made for ejection of the pilot.

The armament is located in a bay in the bottom of the fuselage. The GAR MISSILES are extended below this section for firing and the MB-1 rocket is ejected from the bay by an explosive charge. Firing of the armament is either manual or automatic. The components of the MA-1 Aircraft and Weapons Control System provides automatic radar searching and tracking, directs the aircraft on a lead-collision attack and automatically fires the armament.

External fuel tanks, of a non-combat type are used to increase the range of subsonic flight.

Development

Similar to the F-102A except for the J75 engine in lieu of the J57, re-designed tail, addition of fuselage fuel tanks, armament changes, and completely new electronic system.

Previously designated F-102B.

First Flight (Prototype) Dec 56

First Acceptance Oct 58

Production completed Dec 60

B O M B S

NONE

G U N S

NONE

R O C K E T S

Nr Type Location
1 . . . MB-1 (A-T-A) . . . Fuselage
PLUS
4 GAR-3A Fuselage
OR
4 GAR-4A Fuselage
OR
2 GAR-3A Fuselage
2 GAR-4A Fuselage

WEIGHTS

Loading Lb L. F.
Empty . . . 23, 646(E)
Basic . . . 23, 895(E)
Design . . . 29, 776 7.0
Combat . . *31, 050 7.0
Max T.O. † 38, 729 3.0
Max Land ‡ 35, 327 2.0

(E) Estimated

* For basic mission (Pt Intercept)

† Limited by space

‡ Limited by design

F U E L

Location Nr Tanks Gal
Fuselage 1 244
Wg. Internal . . 4 1045
Transfer 2 224
Transfer Lines 17
External Tanks . 2 460
Total 1990
Grade JP-4
Specification . . MIL-F-5624B(1)

OIL

Engine 1 . . . (tot)5.5
Specification . . . MIL-L-7808B

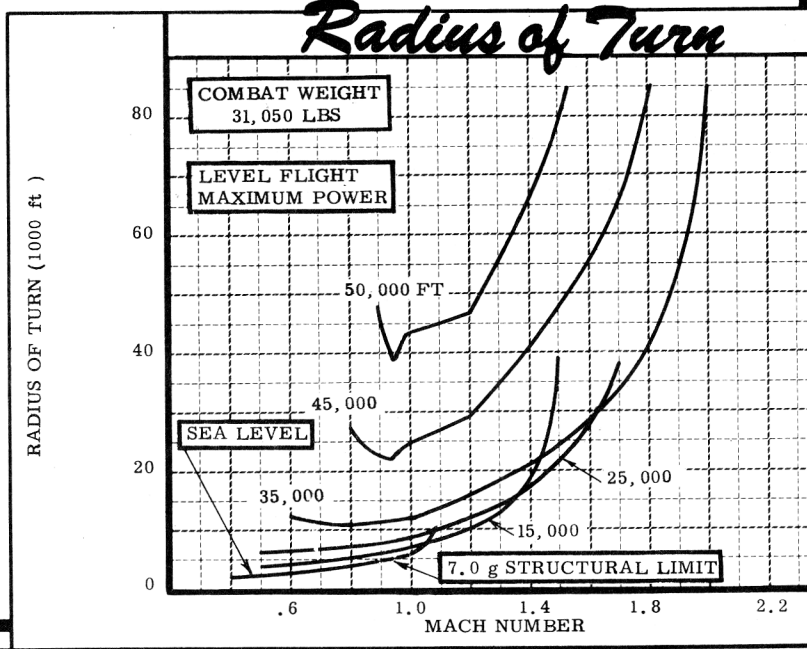
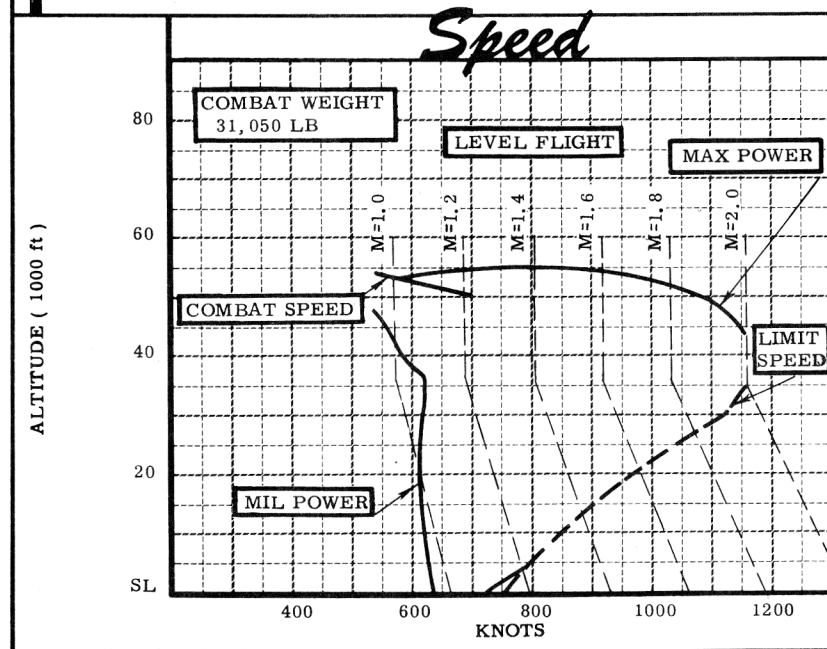
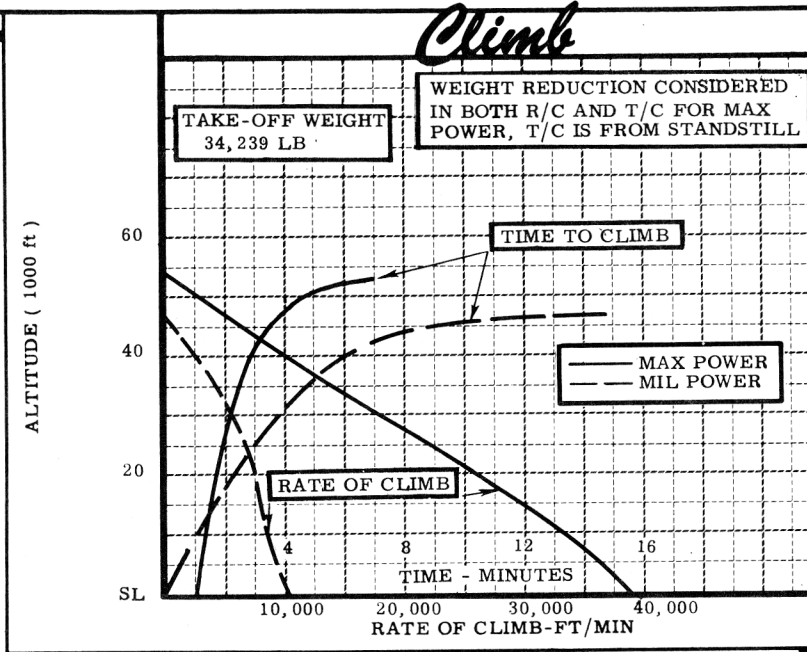
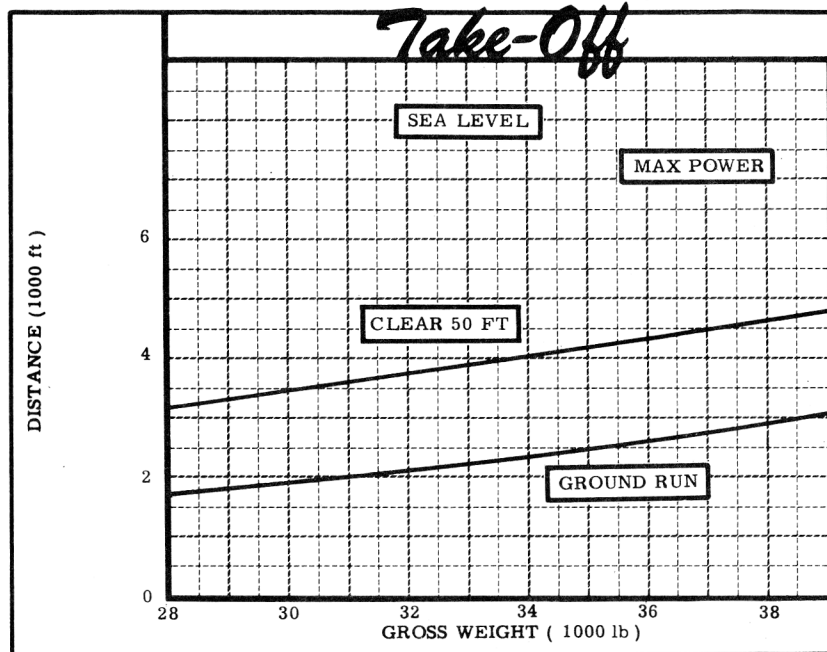
ELECTRONICS

Interceptor System, Aircraft and Weapons Control, Type MA-1 (Hughes Aircraft Corp.)
For detailed breakdown of MA-1 components, reference Convair Report ZM-8-452.

Loading and Performance - Typical Mission

C O N D I T I O N S	BASIC MISSION		MAXIMUM INTERNAL FUEL MISSION			EXTERNAL FUEL MISSION	
	PT. INTERCEPT	AREA INTERCEPT	PT. INTERCEPT	AREA INTERCEPT	FERRY RANGE	AREA INTERCEPT	FERRY RANGE
	I	II	III	IV	V	VI	VII
TAKE-OFF WEIGHT (lb)	34,239	34,239	35,500	35,500	34,121	38,729	37,350
Fuel at 6.5 lb/gal. (grade JP-4) (lb)	8684	8684	9945	9945	9945	12,805 (4)	12,805 (4)
Military load (missiles) (5) (lb)	540	540	540	540	—	540	—
Military load (rockets) (6) (lb)	816	816	816	816	—	816	—
Wing loading (lb/sq ft)	49.3	49.3	51.1	51.1	49.1	55.7	53.7
Minimum speed (power-off) (9) (kn)	144	144	144	144	140	151	145
Take-off ground run (1) (ft)	2500	2500	2600	2600	2300	3050	2750
Take-off to clear 50 ft (1) (ft)	4200	4200	4250	4250	3900	4800	4400
Rate of climb at SL (ft/min)	38,500 (1)(8)	10,300 (2)(8)	37,100 (1)(8)	9900 (2)(8)	10,480 (2)	7850 (2)(8)	8300 (2)
Time to climb SL to 40,000 ft (8) (min)	2.9 (1)(7)	6.2 (2)	3.0 (1)(7)	6.6 (2)	6.0 (2)	9.3 (2)	8.5 (2)
Time to climb SL to 50,000 ft (8) (min)	4.7 (1)(7)	14.4 (2)(11)	5.1 (1)(7)	14.8 (2)(11)	14.3 (2)(11)	16.8 (2)(11)	16.6 (2)(11)
Service ceiling (100 ft/min) (ft)	54,100 (1)(8)	46,700 (2)(8)	53,600 (1)(8)	45,900 (2)(8)	46,700 (2)	43,500 (2)(8)	44,200 (2)
COMBAT RANGE (3) (n mi)	—	—	—	—	1362	—	1843
COMBAT RADIUS (3) (n mi)	—	362	—	477	—	705	—
Average cruise speed (kn)	—	530	—	530	530	530	530
Initial cruising altitude (ft)	—	39,800	—	39,200	40,100	37,800	38,700
Final cruising altitude (ft)	—	42,300	—	42,200	42,900	42,200	42,800
Total mission time (hr)	—	1.4	—	1.9	2.6	2.7	3.5
TOTAL MISSION TIME (7) (hr)	1.5	—	2.0	—	—	—	—
Intercept Altitude (ft)	53,100	—	52,600	—	—	—	—
COMBAT WEIGHT (lb)	31,050	29,970	32,250	30,575	25,700	31,780	25,850
Combat altitude (ft)	53,100	53,900	52,600	53,600	42,900	52,800	42,800
Combat speed (1) (kn)	575	575	575	575	—	575	—
Combat climb (1) (ft/min)	500	500	500	500	10,400	500	10,300
Combat ceiling (500 ft/min) (1) (ft)	53,100	53,900	52,600	53,600	56,400	52,800	56,400
Service ceiling (100 ft/min) (2) (ft)	53,800 (1)	47,800	53,300 (1)	47,400	50,500	46,700	50,400
Maximum rate of climb at SL (1) (ft/min)	40,950	42,200	39,000	41,600	49,200	40,000	48,900
Maximum speed at 35,000 ft (1) (10) (kn)	1153	1153	1153	1153	1153	1153	1153
Basic speed at 50,000 ft (1) (kn)	1084	1085	1076	1088	1095	1082	1095
LANDING WEIGHT (lb)	26,624	27,058	26,624	27,121	25,700	27,264	25,850
Ground roll at SL (ft)	3250	3300	3250	3300	3050	3300	3050
Ground roll (auxiliary brake) (12) (ft)	2350	2350	2350	2350	2200	2350	2200
Total from 50 ft (ft)	5300	5350	5300	5350	5000	5350	5000
Total from 50 ft (auxiliary brake) (12) (ft)	4400	4400	4400	4400	4150	4450	4150

<p>N O T E S</p>	<p>① Maximum power ② Military power ③ Detailed description of RADIUS and RANGE missions are given on page 6 ④ With 440 gallons external fuel</p>	<p>⑤ Four GAR-3A or -4A missiles fuel used ⑥ One MB-1 Rocket ⑦ Includes time for take-off and acceleration to climb speed ⑧ Considers weight reduction due to</p>	<p>⑨ Speed at $\alpha = 20^\circ$ ⑩ Design speed limit (M=2.0) ⑪ Time to service ceiling ⑫ 14.5 ft (flat diameter) drag</p>	<p>chute plus speed brakes PERFORMANCE BASIS: (a) Data source: Estimated (b) Performance is based on powers shown on page 3.</p>
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~~CONFIDENTIAL~~**N O T E S**FORMULA: POINT INTERCEPT MISSIONS I AND III

Take-off and accelerate to best climb speed with maximum power. Climb to subsonic combat ceiling with maximum power. Combat 5 minutes at subsonic combat ceiling with maximum power. Loiter at 35,000 ft. at speed for maximum endurance. Fuel allowances include 2 minutes operation at normal rated power at sea level for starting engine and taxi, plus one minute at maximum power for take-off, 5 minutes combat at combat ceiling with maximum power (based on constant weight, maximum power acceleration for 5 minutes at 50,000 ft.) and a reserve of 20 minutes loiter at sea level at speed for maximum endurance.

FORMULA: AREA INTERCEPT MISSIONS II, IV AND VI

Take-off and accelerate to best climb speed with maximum power. Climb to cruise altitude with military power. Cruise out at speed for maximum range at cruise altitude. Climb to subsonic combat ceiling with maximum power. Combat 5 minutes at subsonic combat ceiling with maximum power. Cruise back at speed for maximum range at cruise altitude. Range free allowances include 2 minutes operation at normal rated power at sea level for starting engines and taxi, plus one minute at maximum power for take-off, 5 minutes combat at combat ceiling with maximum power (based on constant weight, maximum power acceleration for 5 minutes at 50,000 ft.), and a reserve of 20 minutes loiter at sea level at speed for maximum endurance plus 5% of initial fuel. On Mission VI external tanks are dropped when empty during cruise out.

FORMULA: RANGE MISSIONS V AND VII

Take-off and accelerate to best climb speed with maximum power. Climb to cruise altitude with military power. Cruise at speed for maximum range to remote base. Range free allowances include 5 minutes operation at normal rated power at sea level for starting engine and taxi plus one minute at maximum power for take-off, and a reserve of 20 minutes loiter at sea level at speed for maximum endurance plus 5% of initial fuel. On Mission VII tanks are dropped when empty.

GENERAL DATA:

The provisions for carrying two 230-gallon external fuel tanks are made solely to increase the subsonic range capabilities of the airplane. The design limit speed of the installation is $M = 0.95$ and the tanks must be jettisoned prior to combat.

PERFORMANCE BASIS:

Convair Report, ZA-8-511, "Substantiating Data for F-106A Std Aircraft Characteristics Charts", dated 1 Oct 58.

REVISION BASIS:

Data reCOORDINATED

(1 OCT 58)

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