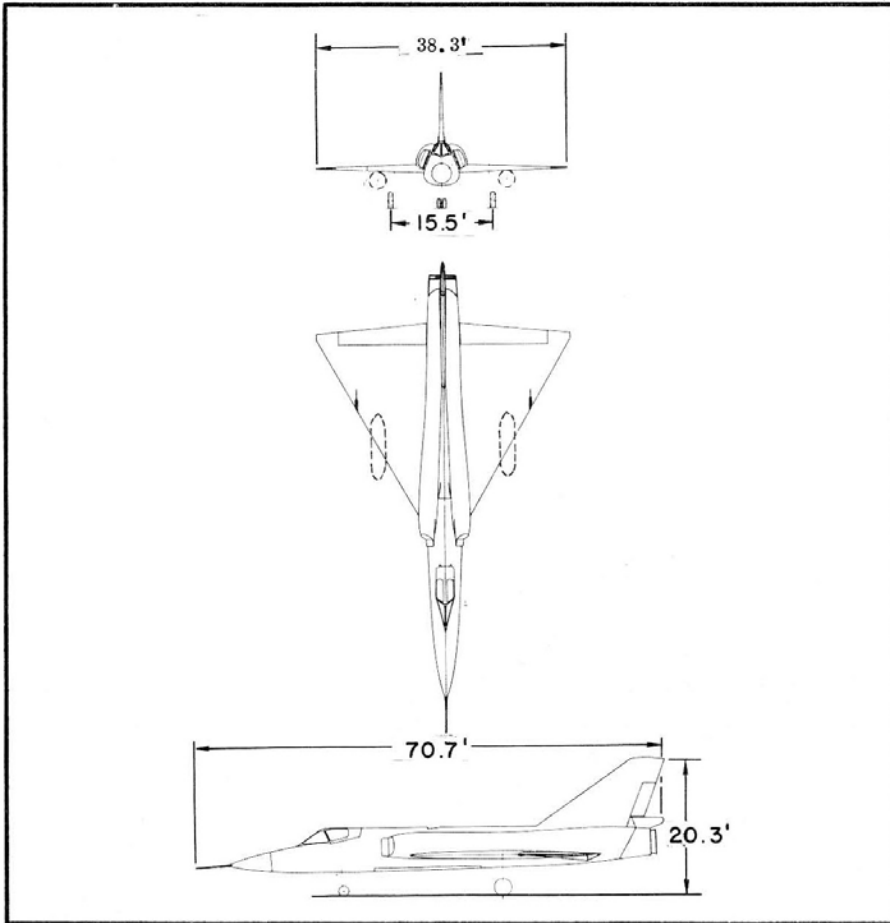


Standard Aircraft Characteristics

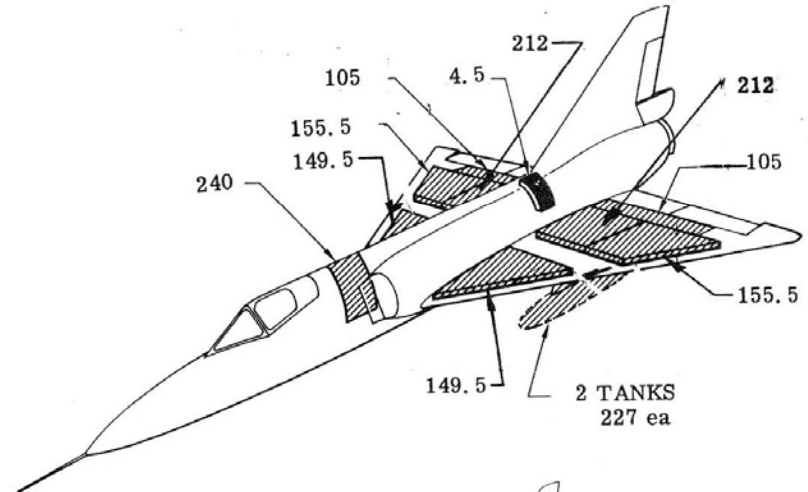
BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

F-106 A
DELTA DART
General Dynamics/Convair

ONE J75-P-17
PRATT & WHITNEY



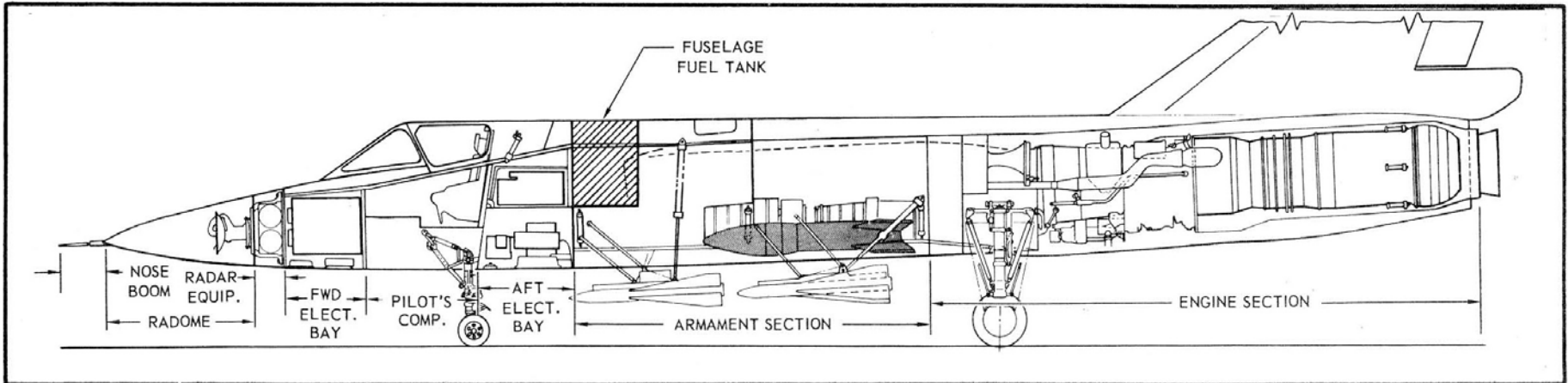
Wing Area 697.83 sq ft Wing Section . . NACA 0004-65 (mod)
 Aspect Ratio 2.2 M.A.C. 285.1 in.



Pressurized Area

Fuel (Gal)

Oil (Gal)



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 - 6440/8940 - 5
 Mil: 16,100 - 6440/8940 - 30
 Nor: 14,300 - 6080/8700 - 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 38.3'
 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 AIM MISSILES are extended below this section for firing and the AIR 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 Status Completed

B O M B S

NONE

G U N S

NONE

R O C K E T S

Nr	Type	Location
1	AIR-2A	Fuselage
	PLUS	
4	AIM-4F	Fuselage
	OR	
4	AIM-4G	Fuselage
	OR	
2	AIM-4F	Fuselage
2	AIM-4G	Fuselage

W E I G H T S

Loading	Lb	L. F.
Empty	24,038(A)	
Basic	24,315(A)	
Design	33,906	7.0
Combat	* 31,480	7.0
Max T.O. †	39,195	3.0
Max Land ‡	36,114	2.0

(A) Actual

* For basic mission (Pt Intercept)

† Limited by space

‡ Limited by design

F U E L

Location	Nr Tanks	Gal
Fuselage	1	240
Wg. Internal	4	1034
Transfer	2	210
Transfer Lines		30
External Tanks	2	454
	Total	1968
Grade		JP-4
Specification		MIL-F-5624B(1)

OIL

Engine	1	(tot) 4.5
Specification		MIL-L-7808B

ELECTRONICS

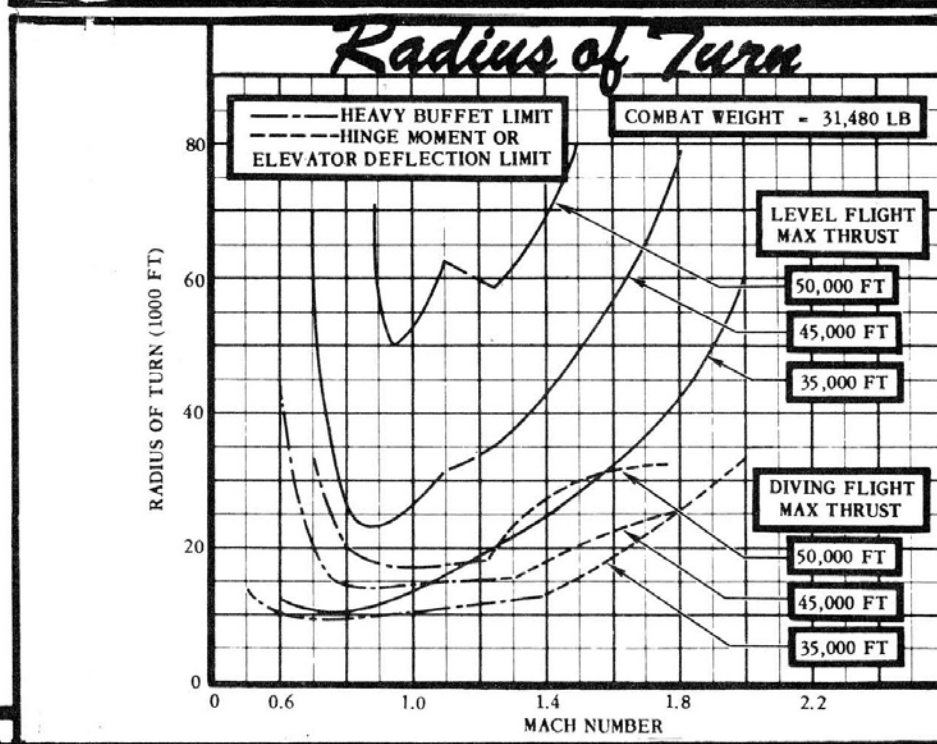
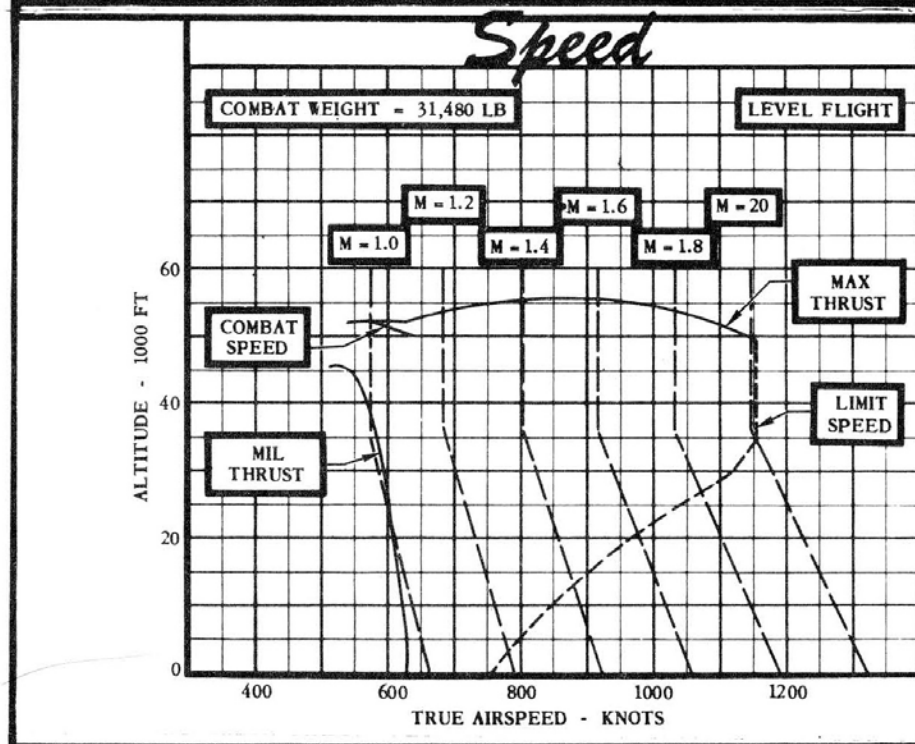
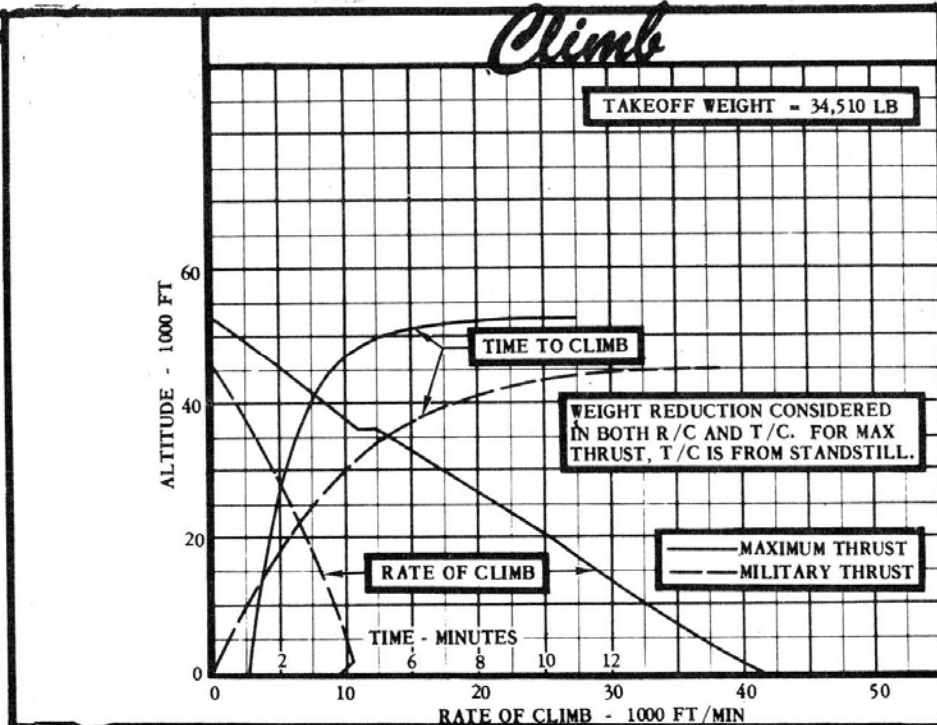
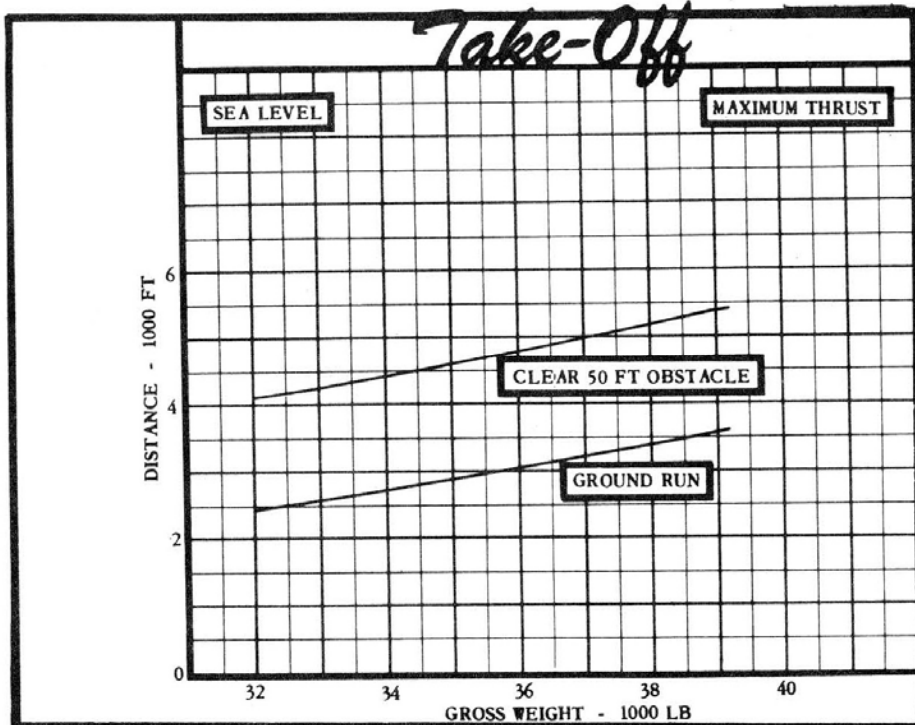
Interceptor System, Aircraft and Weapons Control, Type MA-1 (Hughes Aircraft Corp.)

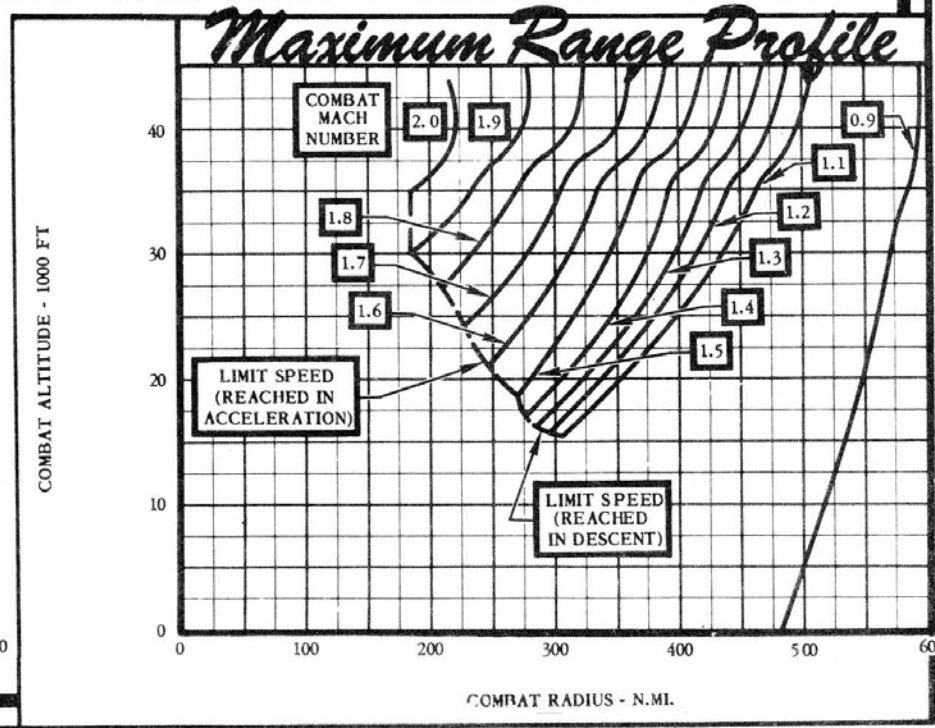
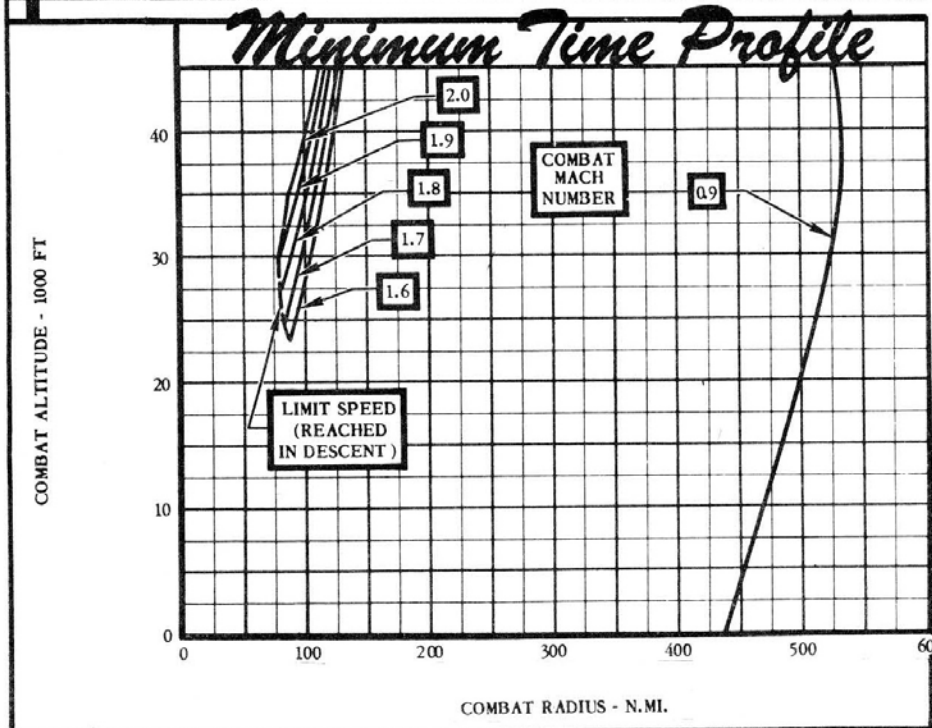
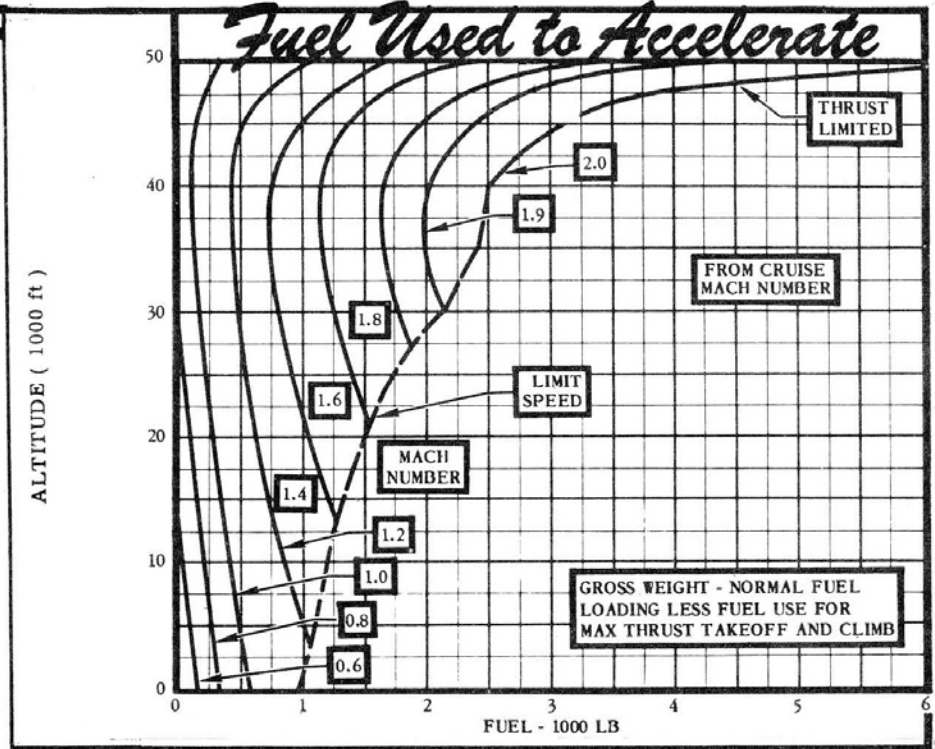
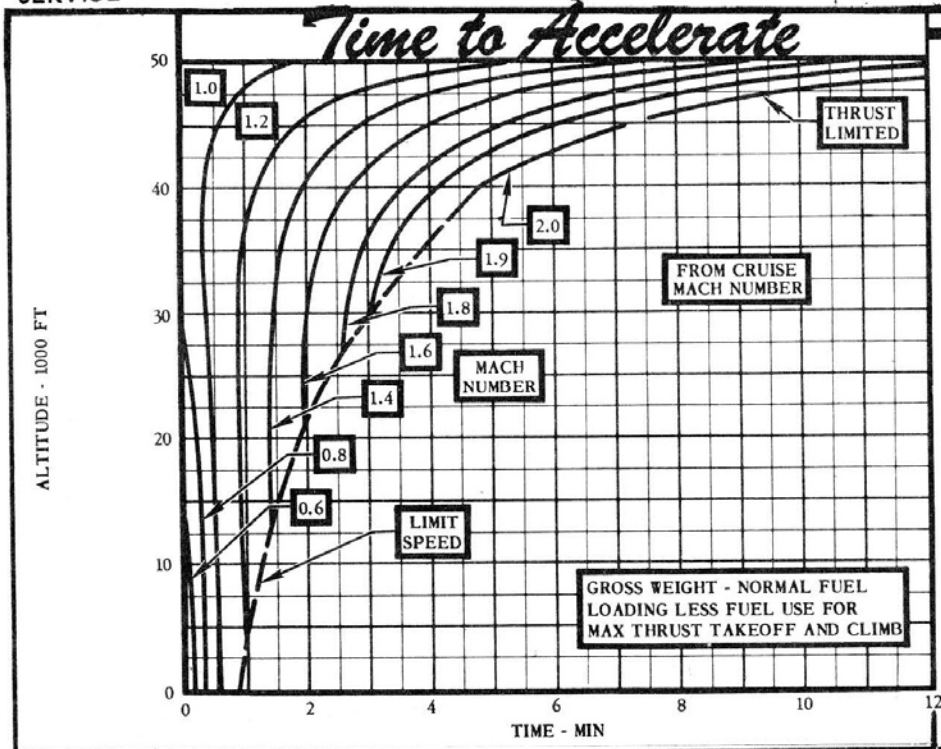
For detailed breakdown of MA-1 components, reference Convair Report ZM-8-452.

Loading and Performance - Typical Mission

C O N D I T I O N S	BASIC MISSIONS		MAXIMUM INTERNAL FUEL MISSIONS			EXTERNAL FUEL MISSIONS	
	POINT INTERCEPT	AREA INTERCEPT	POINT INTERCEPT	AREA INTERCEPT	FERRY RANGE	AREA INTERCEPT	FERRY RANGE
	I	II	III	IV	V	VI	VII
TAKE-OFF WEIGHT (lb)	34,510	34,510	35,875	35,875	34,452	39,195 (4)	37,772 (4)
Fuel at 6.5 lb/gal (grade JP-4) (lb)	8476	8476	9841	9841	9841	12,792 (4)	12,792 (4)
Military load (missiles) (5) (lb)	594	594	594	594	—	594	—
Military load (rockets) (6) (lb)	829	829	829	829	—	829	—
Wing loading (lb/sq ft)	49.5	49.5	51.4	51.4	49.4	56.2	54.1
Minimum speed (power off) (9) (kn)	150	150	150	150	150	150	150
Take-off ground run (1) (ft)	2890	2890	3010	3010	2700	3570	3230
Take-off to clear 50 ft (1) (ft)	4650	4650	4780	4780	4400	5390	5010
Rate of climb at SL (ft/min)	41,400 (18)	9340 (28)	39,800 (18)	8980 (28)	9070 (2)	7170 (28)	7240 (2)
Time to climb SL to 40,000 ft (8) (min)	3.0 (17)	7.2 (2)	3.2 (17)	7.6 (2)	7.0 (2)	10.6 (2)	9.5 (2)
Time to climb SL to 50,000 ft (8) (min)	5.2 (17)	15.5 (211)	5.7 (17)	15.7 (211)	15.4 (211)	17.5 (211)	17.2 (211)
Service ceiling (100 ft/min) (ft)	52,700 (18)	45,200 (28)	51,800 (18)	44,500 (28)	43,900 (2)	42,300 (28)	41,600 (2)
COMBAT RANGE (3) (n mi)	—	—	—	—	1140	—	1571
COMBAT RADIUS (3) (n mi)	—	316	—	426	—	633	—
Average cruise speed (kn)	—	516	—	516	516	516	516
Initial cruising altitude (ft)	—	39,700	—	39,100	40,000	37,600	38,500
Final cruising altitude (ft)	—	42,000	—	42,000	42,700	41,900	42,600
Total mission time (hr)	—	1.42	—	1.73	2.21	2.54	3.05
TOTAL MISSION TIME (7) (hr)	1.43	—	1.92	—	—	—	—
Intercept altitude (ft)	51,800	—	51,000	—	—	—	—
COMBAT WEIGHT (lb)	31,480	30,357	32,800	30,994	26,178	32,282	26,326
Combat altitude (ft)	51,800	52,500	51,000	52,100	42,700	51,300	42,600
Combat speed (1) (kn)	588	588	588	588	—	588	—
Combat climb (1) (ft/min)	500	500	500	500	9750	500	9750
Combat ceiling (500 ft/min) (1) (ft)	51,800	52,500	51,000	52,100	55,100	51,300	55,000
Service ceiling (100 ft/min) (2) (ft)	52,200 (1)	46,000	51,500 (1)	45,700	48,400	45,000	48,300
Maximum rate of climb at SL (1) (ft)	43,800	45,400	42,100	44,500	52,400	42,800	52,100
Maximum speed at 35,000 ft (1)(10) (kn)	1153	1153	1153	1153	1153	1153	1153
Basic speed at 50,000 ft (1) (kn)	1136	1138	1128	1137	1142	1132	1141
LANDING WEIGHT (lb)	27,121	27,557	27,121	27,626	26,178	27,774	26,326
Ground roll at SL (ft)	4110	4170	4100	4150	3670	4160	3690
Ground roll (auxiliary brake) (12) (ft)	2760	2820	2740	2810	2310	2820	2330
Total from 50 ft (ft)	5530	5600	5520	5580	5100	5590	5110
Total from 50 ft (auxiliary brake) (12) (ft)	4200	4260	4170	4240	3740	4260	3770

N O T E S	(1) Maximum thrust	(5) Four AIM-4F or 4G missiles	(9) Onset of heavy buffet	PERFORMANCE BASIS: (a) Data source: Flight Test Service aircraft (b) Performance is based on powers shown on page 3.
	(2) Military thrust	(6) One AIR-2A	(10) Design speed limit (M = 2.0)	
	(3) Detailed description of RADIUS and RANGE missions are given on page 6	(7) Includes time for take-off and acceleration to climb speed	(11) Time to service ceiling	
	(4) With 454 gallons external fuel	(8) Considers weight reduction due to fuel used	(12) 14.5 ft (flat diameter drag chute plus speed brakes)	





N O T E SFORMULA: 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.

FORMULA: MAXIMUM RANGE PROFILE

Climb on the operational schedule with military power to 40,000 ft and 0.90 Mach. Descend or climb to combat altitude. Accelerate to combat Mach number while descending or after subsonic climb at combat altitude. Return climb or descend to 40,000 ft. Climb with military thrust and descend with idle thrust. Return cruise at 40,000 ft and 0.90 Mach. Range free allowances include 345 lb of fuel for max thrust take-off and 405 lb to accelerate to climb speed, 3 minutes at combat altitude and Mach number at military thrust if combat mach number is subsonic and maximum thrust if combat mach number is supersonic and a reserve of 1500 lb of fuel.

FORMULA: MINIMUM TIME PROFILE

Climb on the operational schedule to 35,000 ft with max thrust. Accelerate to combat Mach number at 35,000 ft. Cruise at combat Mach number and 35,000 ft. Climb or descend at combat Mach number to combat altitude. Climb with max thrust and descend at -20° cabin angle with thrust as required. Return climb or descend to 40,000 ft. Climb with military thrust and descend with idle thrust. Return cruise at 40,000 ft and 0.90 Mach. Range free allowances include 345 lb of fuel for max thrust Take-off and 405 lb to accelerate to climb speed, combat allowance of 3 minutes at combat altitude and Mach number at military thrust if combat Mach number is subsonic and max thrust if combat Mach number is supersonic and a reserve of 1500 lb of fuel.

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 $M = 0.95$ but is extended to $M = 1.5$ with tanks empty. The tanks must be jettisoned prior to combat.

PERFORMANCE BASIS:

Convair Report, ZA-8-515, "Substantiating Data for F-106A Std Aircraft Characteristics Charts", dated 1 Sep 61.

REVISION BASIS:

Data reCOORDINATED. Rocket block corrected to reflect new designations.

(1 Oct 61)