Standard Aircraft Characteristics

F-106A

DELTA DART

General Dynamics/Convair

ONE J75-P-17
PRATT & WHITNEY
### POWER PLANT

| Nr & Model | 1 J75-P17 |
| Mfr | Pratt & Whitney |
| Engine Spec Nr | A-2625 |
| Type | Axial |
| Length | 337.8 |
| Diameter | 44.25 |
| Weight (dry) | 5875 lb |
| Tail Pipe | Auto, Two-Position Augmentation | Afterburning |

### ENGINE RATINGS

| S, L, Static LB | 24,500 - 6440/3840 - 5 |
| Max | 16,100 - 6440/3840 - 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 | 90 |
| Dihedral | 90 |
| Sweepback (LE) | 60 |
| Length (including nose boom) | 70.7' |
| Height | 20.3' |
| Tread | 15.5' |

### MISSION AND DESCRIPTION

**Navy Equivalent:** None

**Mfr's Model:** F-106A

**Principal Mission:** 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 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-9S MISSILES are extended below this section for firing and the AIM-12A 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 provide automatic radar searching and tracking, directs the aircraft on 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, redesigned 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 |

### BOMBS

**NONE**

### ROCKETS

<table>
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<tr>
<th>Nr</th>
<th>Type</th>
<th>Location</th>
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<tbody>
<tr>
<td>1</td>
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<td>Fuselage</td>
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<tr>
<td>4</td>
<td>AIM-4F</td>
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<tr>
<td>4</td>
<td>AIM-4G</td>
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<td>2</td>
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<tr>
<td>2</td>
<td>AIM-4G</td>
<td>Fuselage</td>
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</tbody>
</table>

### GUNS

**NONE**

### WEIGHS

| Loading Lb | L. F. |
| Empty | 24,638(A) |
| Basic | 24,315(A) |
| Design | 33,906 | 7.0 |
| Combat | 31,480 | 7.0 |
| Max T.O. | 39,195 | 3.0 |
| Max Landing | 36,114 | 2.0 |

- (A) Actual
- * For basic mission (Pt Intercept)
- † Limited by space
- ‡ Limited by design

### FUEL

<table>
<thead>
<tr>
<th>Location</th>
<th>Nr Tanks</th>
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<td>Total</td>
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</table>

### OIL

| Engine | 1 | 4.5 |
| Specification | | MIL-L-78088 |

### 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

### Conditions

| CONDITIONS |
|------------------|------------------|------------------|------------------|------------------|
|                | BASIC MISSIONS   | MAXIMUM INTERNAL FUEL MISSIONS | EXTERNAL FUEL MISSIONS |
|                | POINT INTERCEPT | AREA INTERCEPT | POINT INTERCEPT | AREA INTERCEPT | FERRY RANGE | AREA INTERCEPT | FERRY RANGE |
|                | POINT INTERCEPT | AREA INTERCEPT | POINT INTERCEPT | AREA INTERCEPT | FERRY RANGE | AREA INTERCEPT | FERRY RANGE |
|                | POINT INTERCEPT | AREA INTERCEPT | POINT INTERCEPT | AREA INTERCEPT | FERRY RANGE | AREA INTERCEPT | FERRY RANGE |

### Take-Off Weight
- (lb) 34,950
- Fuel at 6.5 lb/gal (grade JP-4) 8476
- Military load (missiles) 6 594
- Military load (rockets) 6 829
- Wing loading (lb/sq ft) 49.5
- Minimum speed (power off) 2 150
- Take-off ground run 2 2890
- Take-off to clear 50 ft 2 4650
- Rate of climb at SL 2 44,400
- Time to climb SL to 40,000 ft 2 3.2
- Time to climb SL to 50,000 ft 2 5.2
- Service ceiling (100 ft/min) 52,700
- COMBAT RANGE 2 316
- COMBAT RADIUS 2
- Average cruise speed 516
- Initial cruising altitude 30,100
- Final cruising altitude 42,000
- Total mission time 1.42
- TOTAL MISSION TIME 1
- Intercept altitude 51,800
- COMBAT WEIGHT (lb) 31,480
- Combat altitude 51,800
- Combat speed 588
- Combat climb 500
- Combat ceiling (500 ft/min) 588
- Service ceiling (100 ft/min) 51,800
- Maximum rate of climb at SL 45,400
- Maximum speed at 35,000 ft 1153
- Basic speed at 30,000 ft 133
- LANDING WEIGHT (lb) 27,121
- Ground roll at SL 4110
- Ground roll (auxiliary brake) 2710
- Total from 50 ft 5300
- Total from 50 ft (auxiliary brake) 4200

### Notes
- 1 Maximum thrust
- 2 Military thrust
- 3 Detailed description of RANGE
- 4 Four AIM-4F or 4G missiles
- 5 With 454 gallons external fuel
- 6 Consider weight reduction due to fuel used
- 7 Onset of heavy buffet
- 8 Four AIM-7A or 20 missiles
- 9 One AIM-2A
- 10 Design speed limit (M = 2.0)
- 11 Includes time for take-off and acceleration to climb speed
- 12 Includes time for service ceiling
- 13 14.5 ft (flat diameter drag)
- 14 Performance is based on powers shown on page 6.

### Performance Basis
- (a) Data source: Flight Test Service aircraft
- (b) Performance is based on powers shown on page 6.

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**UNCLASSIFIED**

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NOTES

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.

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:

REVISION BASIS:
Data reorganized. Rocket block corrected to reflect new designations.

(1 Oct 61)