

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-65)

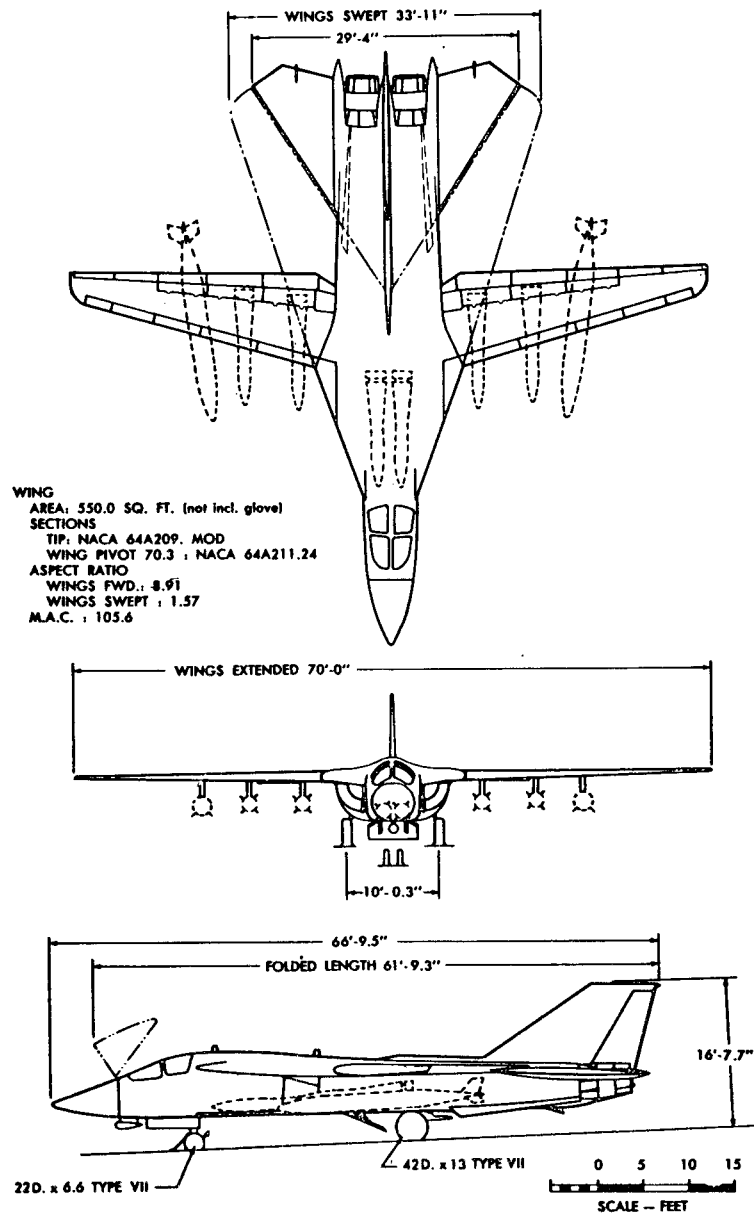


STANDARD AIRCRAFT CHARACTERISTICS

F-111B

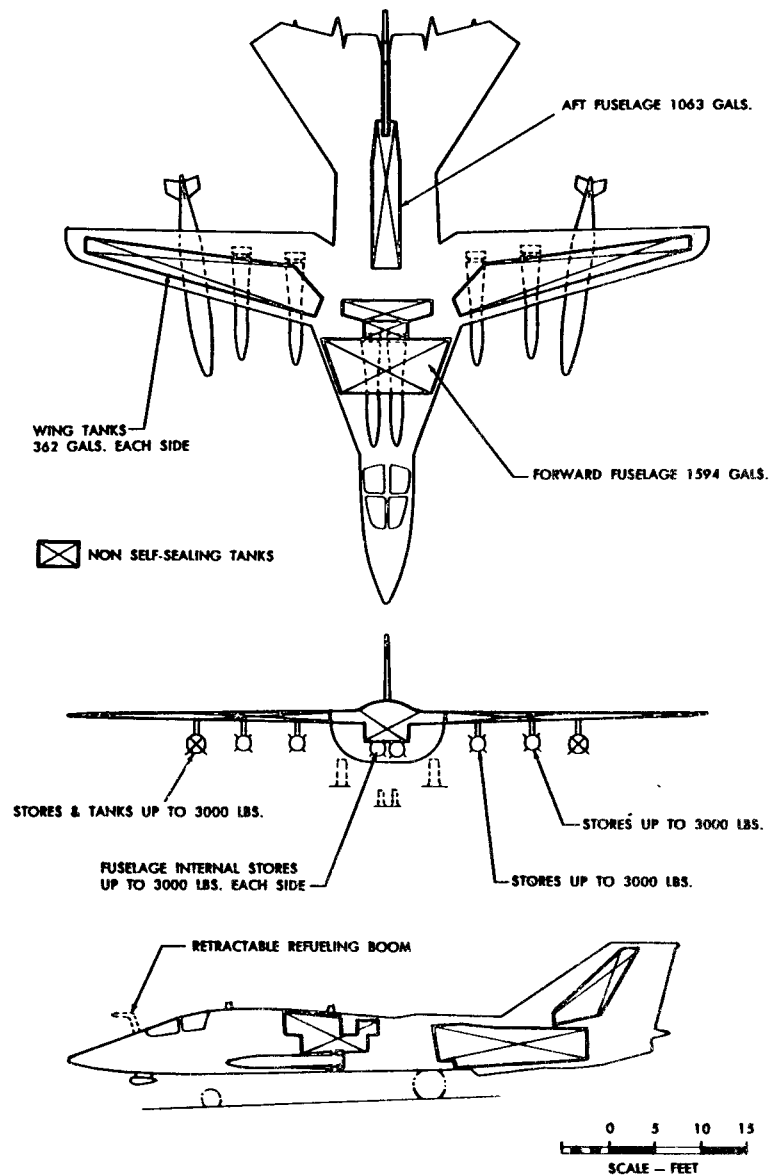
GENERAL DYNAMICS

BUREAU OF NAVAL WEAPONS
NAVY DEPARTMENT



F-111B
DESCRIPTIVE ARRANGEMENT

BUREAU OF NAVAL WEAPONS
NAVY DEPARTMENT



F-111B
ARMAMENT AND TANKAGE

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100-4B (Rev. 7-65)

| POWER PLANT | | MISSION AND DESCRIPTION | | WEIGHTS | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|--|-----|--|---------------|--------------|---------------|----------|--------------|----------|------|--------------------------------|------|------------------|---|------|--------------|---|----------|-------------|--|--|-----------|---|--------------------|
| No. and Model (2) TF 30-P-1A Manufacturer Pratt & Whitney Specification P&W A-1795 12/5/64 Type Turbo Fan Augmentation Modulated A/B Length with A/B (Operating Temp) 251.20 in Diameter (Operating Temp) 48.06 in Dry Weight 3880 lb | | The F-111B is a two-place, twin engine fighter whose primary mission is the destruction of enemy aircraft. The aircraft has the additional capability of carrying conventional and special weapons for attack missions. The basic armament consists of 4 air-to-air PHOENIX missiles pylon mounted under the wings and 2 PHOENIX missiles in the weapons bay. Two 450 gal. external fuel tanks may be carried on the outboard wing stations. The F-111B features a variable sweep wing, 4 pivoting wing pylons which may be utilized at all sweep positions and 2 fixed pylons useable for the swept forward configuration. The high lift system is composed of full span double slotted flaps and slats with a rotating section in the leading edge of the wing glove. Lateral control is accomplished by spoilers and differential horizontal tail deflection. The aircraft uses an escape capsule containing the entire cockpit rather than ejection seats. F-111B features antiskid brakes. The F-111B is basically similar to the Air Force F-111A being concurrently developed. Many components are common to both designs. | | LOADING Empty 46000* Basic 47519 Flight Design 60700 6.5 Combat 68365 Max. Take-Off Field 77724 Catapult 77724 Max. Landing Field 64000 Arrest 62000 | | | | | | | | | | | | | | | | | | | | | |
| RATINGS Static Thrust at Sea Level <table><tr><td>Lb.</td><td>RPM</td></tr><tr><td>Maximum (A/B)</td><td>18,500 14,200</td></tr><tr><td>Military</td><td>10,750 14,200</td></tr><tr><td>Normal</td><td>8,500 13,450</td></tr></table> | | Lb. | RPM | Maximum (A/B) | 18,500 14,200 | Military | 10,750 14,200 | Normal | 8,500 13,450 | | | *Projected Fleet Configuration | | | | | | | | | | | | | |
| Lb. | RPM | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum (A/B) | 18,500 14,200 | | | | | | | | | | | | | | | | | | | | | | | | |
| Military | 10,750 14,200 | | | | | | | | | | | | | | | | | | | | | | | | |
| Normal | 8,500 13,450 | | | | | | | | | | | | | | | | | | | | | | | | |
| ORDNANCE Missiles: Phoenix Sidewinder IC-IR Shrike Rocket Launchers: LAU-3A/A LAU-10/A LAU-32A/A Gun Pod: MK-4 Nuclear Weapons: MK-43 MK-57 TX-61 Conventional Bombs: (For Multiple Carriage on MER/TER 7 Racks) MK-81, MK-82, MK-83 MK-84 (Single Carriage Only) MK-81 Snakeye I, MK-82 Snakeye I 220# AN/FRAG (Banded) 260# AN/FRAG (Banded) 250# ANGP (Banded) MK-77 MOD 2 Firebomb MK-79 Firebomb MK-24 Flare CBU-1, CBU-2, CBU-3 Sadeye, Rockeye II, Fireye Briteye, Bigeye, Weteye Fuel Tanks: 450 Gallon Miscellaneous: MX-900 Chaff Dispenser MK-12 Smoke Tank ALQ-76- ECM Pod AUX Power Unit (RCPP-10) AQM-37A Target Supersonic Aerial Tow Target | | DEVELOPMENT First Flight F-111A December 1964 First Flight F-111B (modified F-111A)..... May 1965 First Flight Aircraft Representing Production F-111B (Estimated)..... May 1966 First Service Use (estimated)..... July 1970 | | FUEL AND OIL <table><tr><td>No. of Tanks</td><td>Gallons</td><td>Location</td></tr><tr><td>2</td><td>363 each</td><td>Wing</td></tr><tr><td>1</td><td>1594</td><td>Forward Fuselage</td></tr><tr><td>1</td><td>1063</td><td>Aft Fuselage</td></tr><tr><td>2</td><td>450 each</td><td>Fixed Pylon</td></tr><tr><td></td><td></td><td>Ext. Drop</td></tr></table> Grade JP-4 or JP-5 Specification MIL-F-5624 OIL <table><tr><td>2</td><td>4 each (3 useable)</td></tr></table> Specification MIL-L-7808 & MIL-L-23699 | | No. of Tanks | Gallons | Location | 2 | 363 each | Wing | 1 | 1594 | Forward Fuselage | 1 | 1063 | Aft Fuselage | 2 | 450 each | Fixed Pylon | | | Ext. Drop | 2 | 4 each (3 useable) |
| No. of Tanks | Gallons | Location | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 363 each | Wing | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1594 | Forward Fuselage | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1063 | Aft Fuselage | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 450 each | Fixed Pylon | | | | | | | | | | | | | | | | | | | | | | | |
| | | Ext. Drop | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 4 each (3 useable) | | | | | | | | | | | | | | | | | | | | | | | | |
| | | DIMENSIONS Wing Area 550 Sq. Ft. Most Forward Sweep (ldg. edge) 16 deg. Span 70 ft. M.A.C. 8 Ft. 10 in. Incidence 1 deg. Dihedral 1 deg. Airfoil Section Sta 134 NACA 64A211.24 Most Aft Sweep (ldg. edge) 72.5 deg. Span 33 Ft. 11 in. Length 66 Ft 9.5 in. Height 16 Ft 7.7 in. Wheelbase 24 Ft 3 in. Tread 10 Ft 0.4 in. | | ELECTRONICS UHF TRANSCIVER AN/ARC-51B AUXILIARY UHF AN/ARR-69 HF TRANSCIVER AN/ARC-104 INTERCOM AN/AIC-18 DATA LINK AN/ASW-21A DATA LINK TRANSCIVER AN/ARC-88A UHF ADF AN/ARA-50 RADIO SET (TACAN) AN/ARN-52 RADAR ALTIMETER AN/APN-167 INERTIAL NAVIGATION SYSTEM LN-14 IFF AN/APX-46 PHOENIX MISSILE SYSTEM AN/AWG-9 SHRIKE COMPUTER CP-741/A ELECTRIC BOMB FUZING AWW-2 ARMAMENT MONITOR AND CONTROL (AMAC).... A/A24B-4 | | | | | | | | | | | | | | | | | | | | | |

PERFORMANCE SUMMARY

| TAKE-OFF LOADING CONDITION | | (1) FIGHTER 6 Phoenix | (3) FIGHTER 2 Phoenix | (5) FERRY 2 450 Gal. Tanks | |
|---|-------------|--------------------------|--------------------------|-------------------------------|--|
| TAKE-OFF WEIGHT | lb. | 77566 | 72421 | 77302 | |
| Fuel internal/external (JP-5) | lb./lb. | 23003/-- | 23003/-- | 23003/6210 | |
| Payload | lb. | 6620 | 2207 | -- | |
| Wing loading | lb./sq. ft. | 141.0 | 131.8 | 140.5 | |
| Stall speed—power-off | kn. | 114.3 | 110.3 | 114.0 | |
| Take-off to clear 50 ft at S.L. - calm (A) | ft. | 6000 | 5100 | 5950 | |
| Take-off to clear 50 ft at S.L. - calm (B) | ft. | 3070 | 2700 | 3050 | |
| Wind Over Deck Required for Launch (C) | kn. | +10.6 | +2.5 | +10.0 | |
| Max. speed/altitude (A) | kn./ft. | 568/S.L. | 622/S.L. | (D) 480/12000 | |
| Rate of climb at S.L. (A)/(B) | fpm. | 4360/17900 | 5505/23200 | 4720/-- | |
| Time: S.L. to 20,000 ft. (A)/(B) | min. | 7.1/1.2 | 5.1/0.9 | 6.3/-- | |
| Time: S.L. to 30,000 ft. (B) | min. | 13.9/2.2 | 11.0/1.7 | 13.8/-- | |
| Service ceiling (100 fpm) (A) | ft. | 32100 | 37600 | 34200 | |
| Combat range | n.mi. | 1830 | 2330 | (F) 2760 | |
| Average cruising speed | kn. | 416 | 428 | 423 | |
| Cruising altitude(s) | ft. | 27000 to 39100 | 33200 to 40300 | 29300 to 38600 | |
| Combat radius/mission time | n.mi./hr. | 475/2.40 | 845/4.02 | -- | |
| Average cruising speed | kn. | 420 | 428 | -- | |
| CAP loiter time/mission time (G) | hr. | (H) 1.52/2.37 | (I) 3.25/4.02 | -- | |
| Average loiter speed (J) | kn. | 365 | 367 | -- | |
| COMBAT LOADING CONDITION | | (2) 6 Phoenix | (4) 2 Phoenix | (6) 2 450 Gal. Tanks | |
| COMBAT WEIGHT | lb. | 68365 | 63220 | 65617 | |
| Engine power/ Wing sweep | | Maximum/Optimum | Maximum/Optimum | Military/26° | |
| Fuel | lb. | 13800 | 13800 | 17528 | |
| Combat speed/combat altitude | kn./ft. | (K) 1150/30000 | (K) 1150/30000 | (D) 448/30000 | |
| Rate of climb at combat altitude (L)/(M) | fpm. | 7485/6212 | 9065/25100 | 1035/-- | |
| Combat ceiling (500 fpm) (L)/(M) | ft. | -/ 44900 | -/ 52600 | 36100/-- | |
| Rate of climb at S.L. | fpm. | 21300 | 27200 | 5740 | |
| Max. speed at S.L. (A)/(B) | kn. | 575/678 | (K) 625/793 | (D) 400/400 | |
| Max. speed/altitude | kn./ft. | (K) 1260/40000 | (K) 1260/40000 | (D) 480/12000 | |
| Acceleration time, V _{cruise} to V _{combat} | min. | 10.2 | 4.0 | -- | |
| LANDING WEIGHT (External Stores retained) | lb. | 56980 | 51613 | 50637 | |
| Fuel | lb. | 2417 | 2195 | 2548 | |
| Stall speed—power-off/approach power | kn./kn. | (N) 100.3/99.6 | (N) 95.5/94.8 | (P) 96.6/95.8 | |
| Landing distance-ground roll/over 50 ft. obst. | ft./ft. | 2268/2983 | 2092/2807 | 2125/2840 | |

NOTES

DATA BASIS: Calculations Based on BUWIPS Estimated Performance As of 1 March 1965

Fuel Consumption Based on Engine Manufacturer's Specification Fuel Flows Increased 5%

Weight and Aerodynamic Data Based on Projected Fleet Configuration

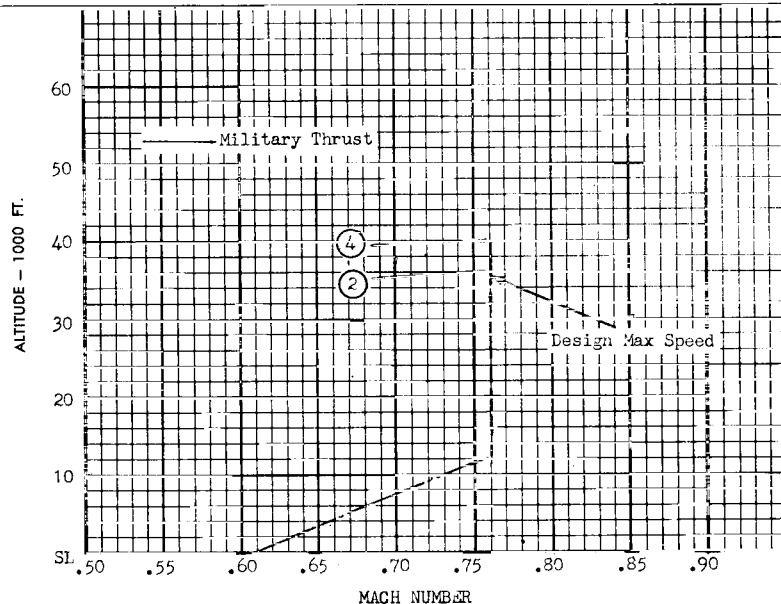
NOTES

Footnotes For Performance Summary

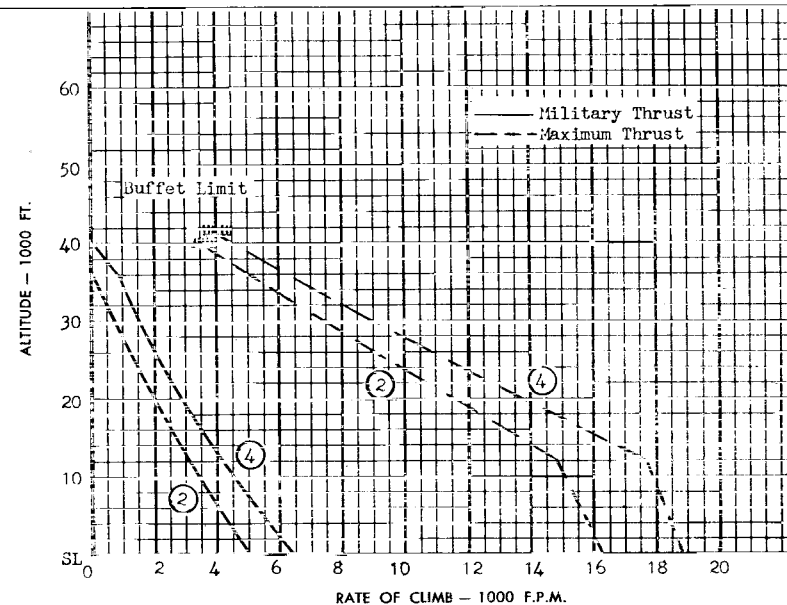
- a
- (A) Military Rated Thrust
 - (B) Maximum Rated Thrust
 - (C) Minimum Catapult Take-Off Speed, C-7 Catapult, 90°F Ambient Temperature
 - (D) Design Maximum Level Flight Speed for 26° Sweep per Contractor's FZM-12-929 Revised 6 Dec 1964 - Not Thrust Limit *
 - (E) 30,000 ft. or Cruise Ceiling, Whichever is Lower for Military Thrust Climbs
 - (F) Tanks Retained, Range is 2997 N.Mi. if Tanks Dropped When Empty
 - (G) Combat Air Patrol Radius 150 N.Mi. CAP Altitude 30,000 ft.
 - (H) 3.79 hrs. If No Combat Fuel Allowance is Made - Mission Time 4.64 hrs.
 - (I) 4.90 hrs. If No Combat Fuel Allowance is Made - Mission Time 5.66 hrs.
 - (J) Speed for Maximum Endurance, Maneuverability Limited to 1.27g by Buffet. Loiter Time Significantly Reduced at Higher Speed
 - (K) Design Maximum Level Flight Speed for 72.5° Sweep per Contractor's FZM-12-929 Revised 6 Dec 1964; Not Thrust Limit
 - (L) Subsonic Climb Speed
 - (M) Supersonic Climb Speed (Design Maximum Speed for 72.5° Sweep)
 - (N) 18° Sweep Required for Stability (21° if Missiles Not Retained) - (5% Static Margin)
 - (P) 21° Sweep Required for Stability - (5% Static Margin)

* Wing sweep limited to 26° when fixed pylon stations are loaded. External fuel tanks may be carried at fixed pylon stations only.

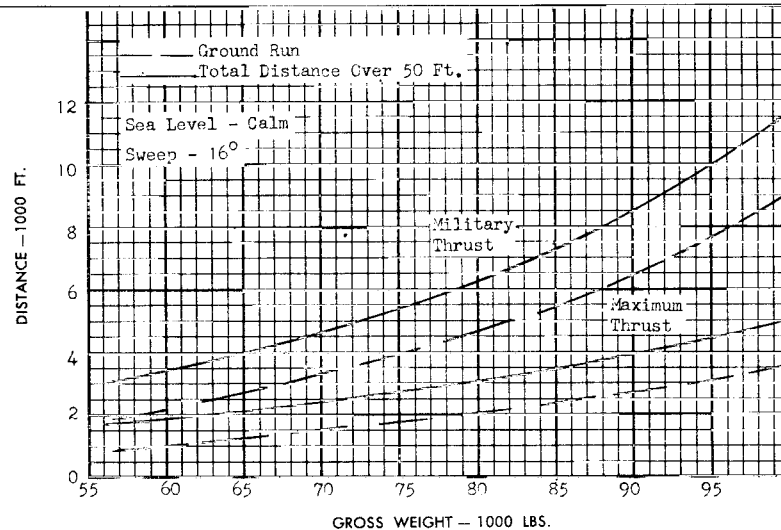
SPEED (SWEEP=26°)



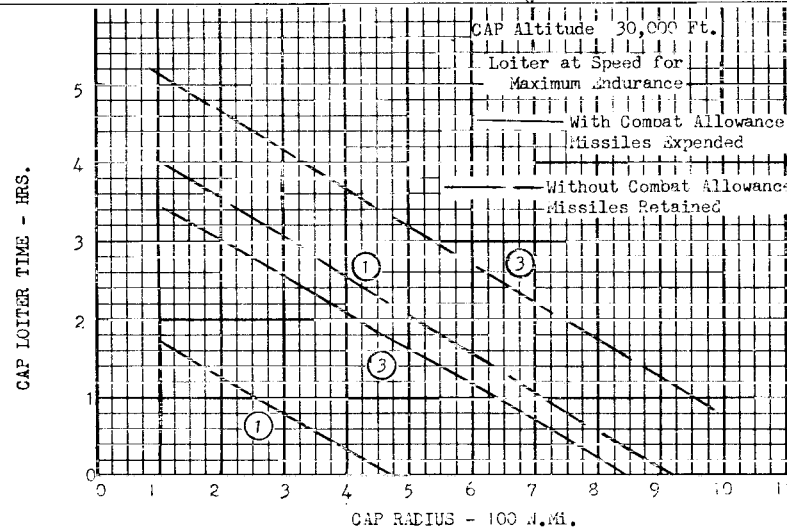
CLIMB (SWEEP=26°)



TAKE-OFF

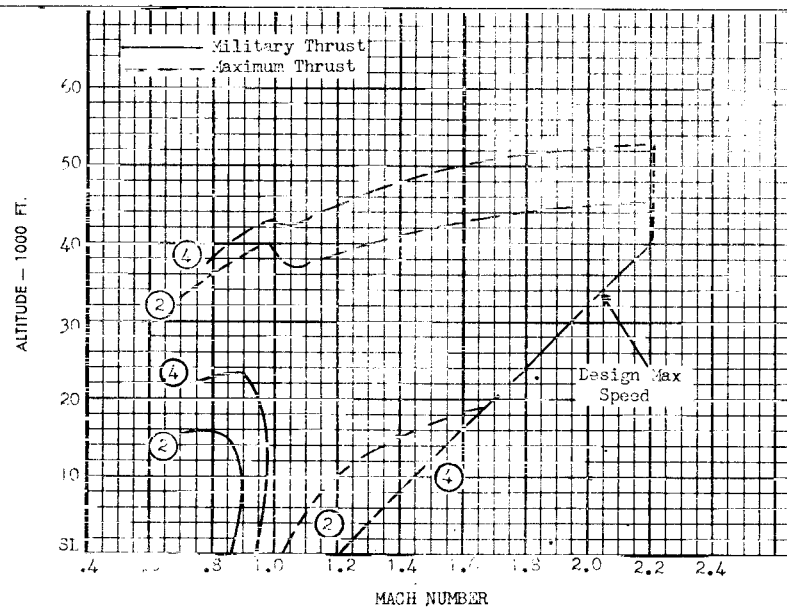


CAP TIME ON STATION

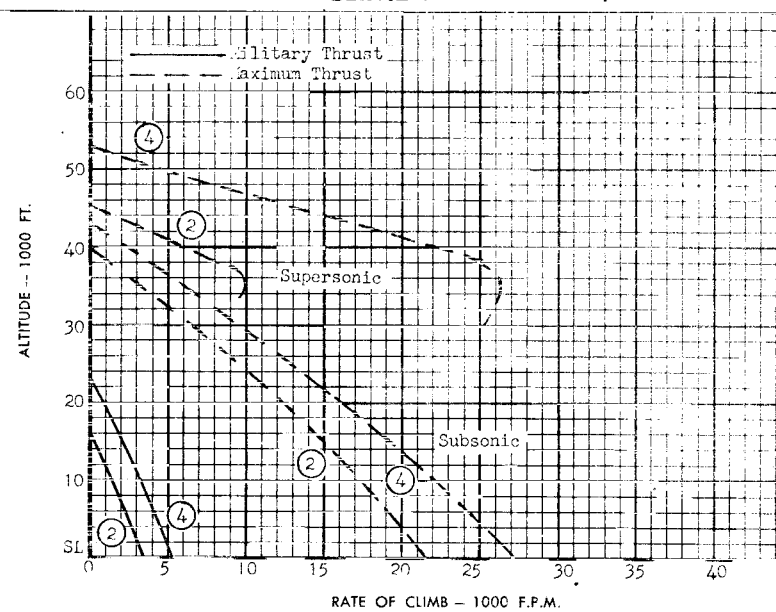


○ LOADING CONDITION COLUMN NUMBER

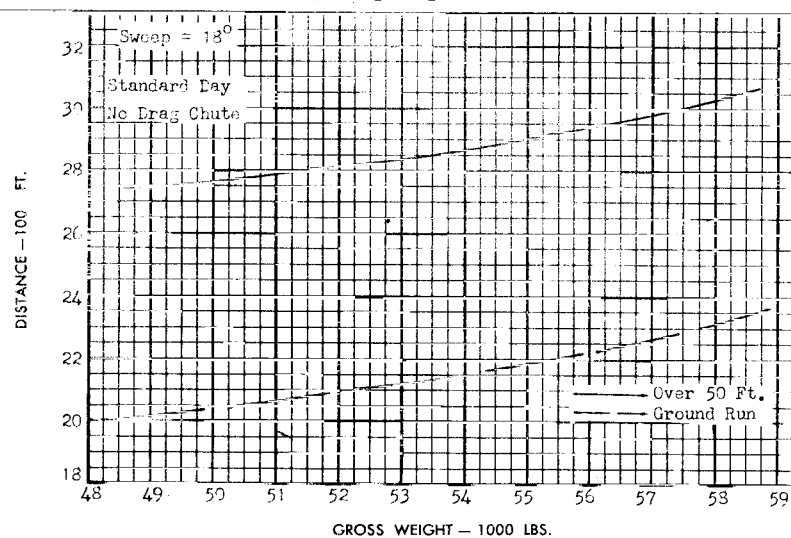
SPEED (SWEEP = 72.5°)



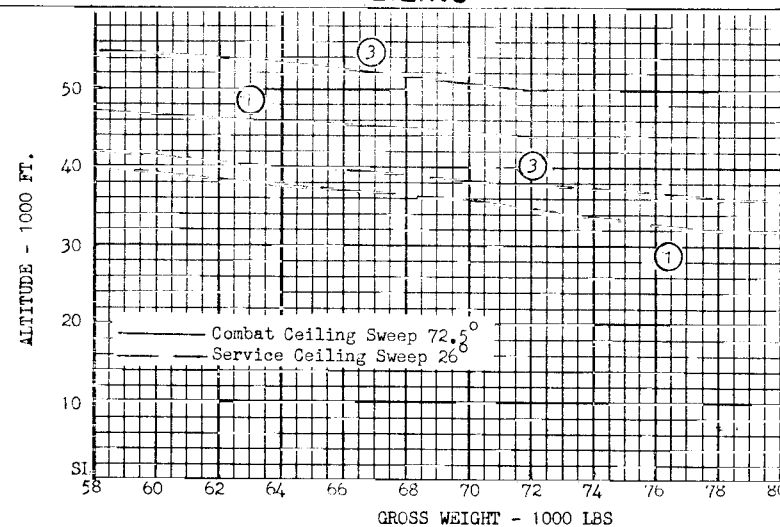
CLIMB (SWEEP = 72.5°)



LANDING



CEILING



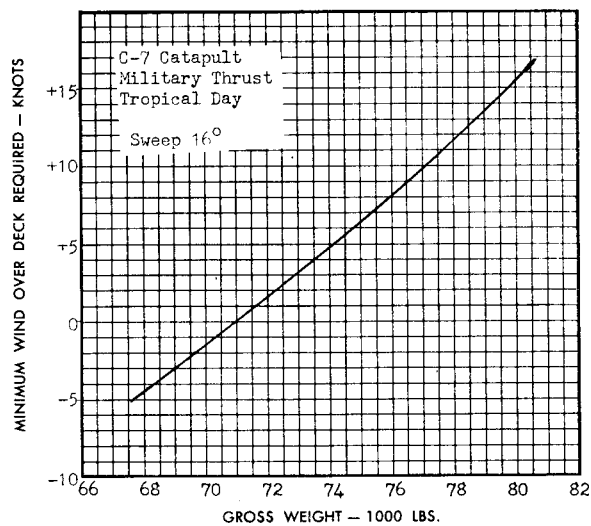
11

STANDARD AIRCRAFT CHARACTERISTICS, NAVPERS FORM 13100-4E (Rev. 7-65)

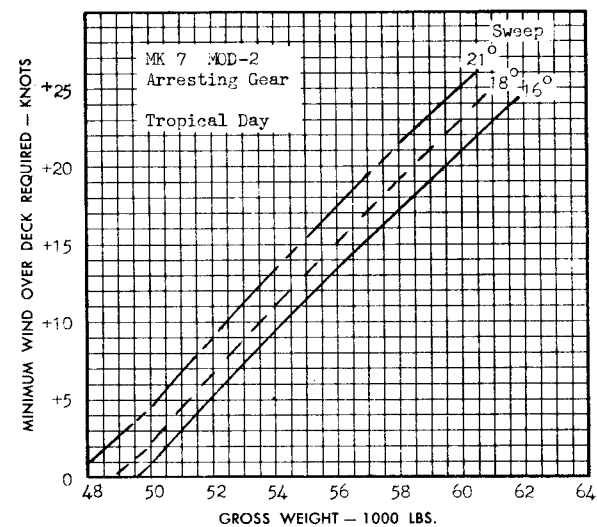
LOADING CONDITION COLUMN NUMBER

CONFIDENTIAL

MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING VS. GROSS WEIGHT



MINIMUM WIND OVER DECK REQUIRED FOR ARRESTING VS. GROSS WEIGHT



NOTES

These Curves Should be Used for Planing Purposes Only. Actual Catapult and Arresting Gear Operation Should be in Accordance with Applicable Aircraft Technical Orders, and Catapult and Arresting Gear Bulletins.

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4H (Rev. 7-65)

CONFIDENTIAL

NOTES

GENERAL PURPOSE FIGHTER - MISSION DEFINITION

- 1) Warm-up, Take-off, Accelerate: 5 min. with normal thrust at sea level
- 2) Climb: On course to cruise altitude with military thrust
- 3) Cruise-Out: At altitude and speeds for maximum range
- 4) Combat Fuel Allowance: Accelerate with maximum thrust at 30,000 ft. from cruise speed to 1.5 MN and remain at this speed and altitude for 2 Min. at maximum power EXPEND MISSILES
- 5) Cruise-Back: At altitudes and speeds for maximum range
- 6) Reserve: 20 Min. at speed for maximum endurance at sea level (2 engines operating) plus 5% of initial fuel load.

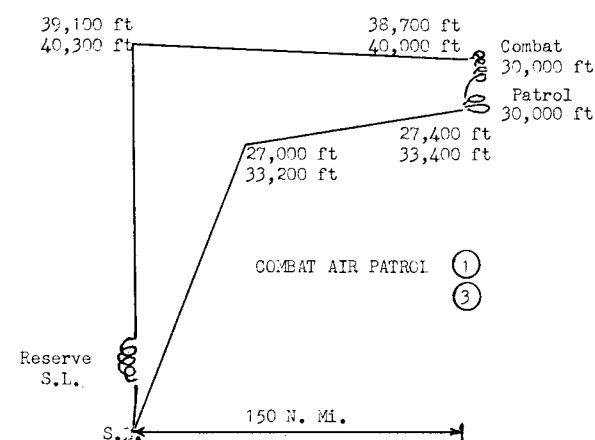
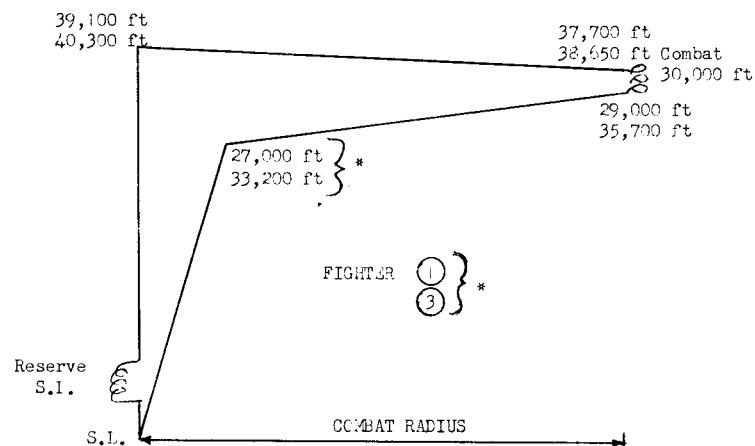
COMBAT AIR PATROL - MISSION DEFINITION

- 1) Warm-Up, Take-Off, Accelerate: Same as G.P. Fighter
- 2) Climb: Same as G. P. Fighter
- 3) Cruise-Out: To a point 150 Naut. miles from base at altitudes and speeds for best range
- 4) Loiter: On station at 30,000 ft at speed for maximum endurance
- 5) Combat Fuel Allowance: Same as G. P. Fighter
- 6) Cruise-Back: 150 Naut. miles to base at altitudes and speeds for best range
- 7) Reserve: Same as G.P. Fighter

COMBAT AIR PATROL - DESIGN MISSION

Same as above except:

- 5) Combat Fuel Allowance: None, Retain Missiles



*Flight altitudes correspond to the take-off loading conditions shown on the Performance Summary page of this chart

[REDACTED]

[REDACTED]