Standard Aircraft Characteristics

**F-100A**

SUPER SABRE

North American

ONE J57-P-7 or -39

PRATT & WHITNEY

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

20 JAN 61

CONFIDENTIAL
Wing Area . . . . . . . . . . . 385.2 sq ft
Wing Section . . . . . . . NACA 64A007
Aspect Ratio . . . . . . . . . . . . 3.86
M, A, C . . . . . . . . . . . . . . . . . 135.98 in.

PRESSURIZED AREA

Fuel (Gal)

Oil (Gal)

F-100A

RADAR
PILOT & ARMAMENT
FUEL & ENGINE

CONFIDENTIAL

20 JAN 61
**POWER PLANT**

No & Model: *(1) J57-P-7 or -39
Mfr: Pratt & Whitney
Engine Spec No.: A-1641E or A-1702
Type: Axial
Length: 249.7 in
Diameter: 39.9 in
Weight (dry): 5076 lb
Tail Pipe: Auto Dual Area Augmentation
Afterburner: *J57-P-39 installed in aircraft 167 & sub.

**ENGINE RATINGS**

S.L.S. LB - RPM - MIN
Max: 14, 800 - 6275/9900 - 5
Mil: 9700 - 6275/9900 - 30
Nor: 8000 - 5875/9550 - Cont
* With afterburner operating
† First figure represents RPM of the low pressure spool while the second is that of the high pressure spool.
Ratings are identical for both (-7) and (-39) engines

**DIMENSIONS**

Wing
Span: 38.8 ft
Incidence (root): 6°
Dihedral: 6°
Sweepback (25% chord): 45°
Length: 47.8 ft
Height: 15.5 ft
Tread: 124 ft

**MISSION AND DESCRIPTION**

Navy Equivalent: None
Mfr's Model: NA-192

The principal mission of the F-100A is the destruction of hostile aircraft in flight.

Special features of this airplane are 45° swept-back wing and tail, hydraulic power operated irreversible controls with artificial feel, all-moving horizontal stabilizer, hydraulic power operated speed brakes, automatic leading edge slats, fuel purging and a 16 foot drag chute.

The cockpit is provided with 5 psi differential pressurization, adequate heating and cooling, jetisonable canopy, ejection seat, anti-G suit provisions and a low pressure oxygen system.

Fire Control System consists of Radar Ranging Equipment, revolver-type guns and an A-4 Gun Sight. A type N-9 Gun Camera is installed.

**DEVELOPMENT**

Contract Approved: Jan 52
First Flight (YF-100A): May 53
First Delivery: Sep 53
Production Completed: Apr 55

**WEIGHTS**

Loading Lb L.F.
Empty: 18,185 (A)
Basic: 18,960 (A)
Design: 23,996
Combat: 25,607
Max T.O.: 28,971
Max in Flt: 28,971
Max Land: 28,971
2,00
6,00
2,00
(A) Actual
† For Basic Mission
‡ Limited by mission

**FUEL**

Location No, Tanks Gal
Fuselage: 5
Wing, drop: 2
Total: 744
Grade: JP-4
Specification: MIL-F-5624A

**OIL**

Fuselage: 1
Specification: MIL-L-7808

**ELECTRONICS**

UHF Command: *AN/ARC-34
IFF: TAN/APX-6A
Radio Compass: AN/ARN-6
Radar Ranging Equip: AN/APG-20
TACAN: AN/ARN-21
IFF: TAN/APX-25
*AN/ARC-27 installed in first 23 aircraft.
† AN/APX-6 installed in first 131 aircraft.
‡ Aircraft changed by T.O., IF-100-755,
## Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Basic Mission</th>
<th>Design Mission</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take-off Weight</strong> (lb)</td>
<td>28,899</td>
<td>28,899</td>
<td>28,899</td>
</tr>
<tr>
<td>Fuel at 6.5 lb/gal (grade JP-4) (lb)</td>
<td>8411</td>
<td>8411</td>
<td>8411</td>
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<tr>
<td>Payload (Ammunition)</td>
<td>770</td>
<td>770</td>
<td>None</td>
</tr>
<tr>
<td>Wing Loading (lb/sq ft)</td>
<td>75.2</td>
<td>75.2</td>
<td>75.2</td>
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<tr>
<td>Stall Speed (power off) (kn)</td>
<td>138</td>
<td>138</td>
<td>138</td>
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<tr>
<td>Take-off ground run at SL (ft)</td>
<td>2970</td>
<td>2970</td>
<td>2970</td>
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<tr>
<td>Take-off to clear 50 ft (ft)</td>
<td>4670</td>
<td>4670</td>
<td>4670</td>
</tr>
<tr>
<td>Rate of climb at SL (fpm)</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft (min)</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Time: SL to 30,000 ft (min)</td>
<td>6.9</td>
<td>6.9</td>
<td>6.9</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>41,100</td>
<td>41,100</td>
<td>41,100</td>
</tr>
<tr>
<td><strong>Combat Range</strong> (n.mi)</td>
<td>1124</td>
<td>1124</td>
<td>1124</td>
</tr>
<tr>
<td><strong>Combat Radius</strong> (n.mi)</td>
<td>311</td>
<td>402</td>
<td>1124</td>
</tr>
<tr>
<td>Average speed (kn)</td>
<td>512</td>
<td>512</td>
<td>514</td>
</tr>
<tr>
<td>Initial cruising altitude (ft)</td>
<td>37,700</td>
<td>37,700</td>
<td>37,700</td>
</tr>
<tr>
<td>Final cruising altitude (ft)</td>
<td>43,600</td>
<td>44,000</td>
<td>43,600</td>
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<tr>
<td>Total mission time (hr)</td>
<td>1.67</td>
<td>2.00</td>
<td>2.31</td>
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<tr>
<td><strong>Combat Weight</strong> (lb)</td>
<td>25,607 (24,996)</td>
<td>24,716</td>
<td>21,328</td>
</tr>
<tr>
<td>Combat altitude (ft)</td>
<td>38,700 (40,400)</td>
<td>35,000</td>
<td>43,600</td>
</tr>
<tr>
<td>Combat speed (kn)</td>
<td>579 (594)</td>
<td>574</td>
<td>599</td>
</tr>
<tr>
<td>Combat climb (fpm)</td>
<td>6200 (6200)</td>
<td>9500</td>
<td>6300</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm) (ft)</td>
<td>48,800 (51,000)</td>
<td>51,200</td>
<td>54,200</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>43,400 (44,900)</td>
<td>45,100</td>
<td>47,500</td>
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<tr>
<td>Max rate of climb at SL (fpm)</td>
<td>19,700 (23,800)</td>
<td>24,000</td>
<td>28,000</td>
</tr>
<tr>
<td>Max speed at opt. alt. (35,000 ft) (kn)</td>
<td>583 (740)</td>
<td>742</td>
<td>759</td>
</tr>
<tr>
<td>Basic speed at 35,000 ft (kn)</td>
<td>583 (740)</td>
<td>742</td>
<td>759</td>
</tr>
<tr>
<td><strong>Landing Weight</strong> (lb)</td>
<td>21,328</td>
<td>20,936</td>
<td>21,328</td>
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<tr>
<td>Ground roll at SL (ft)</td>
<td>3000</td>
<td>3800</td>
<td>3900</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake) (ft)</td>
<td>2370</td>
<td>2320</td>
<td>2370</td>
</tr>
<tr>
<td>Total from 50 ft (ft)</td>
<td>5260</td>
<td>5190</td>
<td>5260</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake) (ft)</td>
<td>3000</td>
<td>3740</td>
<td>3800</td>
</tr>
</tbody>
</table>

### Notes

1. Maximum power
2. Military power
3. Allows for weight reduction during operation and climb
4. Detailed descriptions of RADIUS and RANGE missions given on page 6

### Performance Basis

(a) Data source: Flight Test - Phase IV
(b) Performance is based on powers shown on page 6,

Based on Model Spec. No, NA 51-772.
FORMULA: RADIUS MISSION I

Take-off and accelerate to climb speed, climb on course to cruise ceiling with military power, cruise out at long range speeds at cruise ceiling, combat for 20 minutes, (tanks are dropped 2.7 minutes after combat is initiated), cruise back to base at long range speeds at cruise ceiling. Range free allowances include 3 minutes of normal power at sea level for starting engine and taxi and 1 minute of maximum power for take-off and acceleration, fuel for 15 minutes combat at military power with fuel flow based on 35,000 feet and 5 minutes combat at maximum power with fuel flow based on accelerating at 35,000 ft, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

FORMULA: RADIUS MISSION II

Take-off and accelerate to climb speed, climb on course to cruise ceiling with military power, cruise out at long range speeds at cruise ceiling dropping tanks when empty, combat for 20 minutes at cruise ceiling, cruise back to base at long range speeds at cruise ceiling. Range free allowances include 5 minutes of normal power at sea level for starting engine and taxi and 1 minute of maximum power for take-off and acceleration, fuel for 15 minutes combat at military power and 5 minutes combat at maximum power at maximum speed and a reserve of 10% of initial fuel.

FORMULA: RANGE MISSION III

Take-off and accelerate to climb speed, climb on course to cruise ceiling with military power, cruise out at long range speeds at cruise ceiling dropping tanks when empty, climb to new cruise ceiling with military power and cruise out at long range speeds until only reserve fuel remains. Range free allowances include 5 minutes of normal power at sea level for starting engine and taxi and 1 minute of maximum power for take-off and acceleration, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

GENERAL DATA:

(a) Engine ratings shown on page 3 are guaranteed values, installed values used in performance calculations are as follows:

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>S, L, STATIC</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>J57-P-7</td>
<td>Max: 12,100</td>
<td>6275/9800</td>
</tr>
<tr>
<td></td>
<td>Mil: 7280</td>
<td>6275/9800</td>
</tr>
<tr>
<td></td>
<td>Nor: 6848</td>
<td>5875/9850</td>
</tr>
</tbody>
</table>

* With afterburner operating

(b) For detailed planning refer to Technical Order 1F-100A-1 and other applicable technical orders.

(c) Performance shown are based on the weights for Serial No. 55-467, the final article of the F-100A series produced.

PERFORMANCE BASIS:

Performance data are based on North American Report No. NA-55-1191, dated 1 November 1955, "Performance Calculation Based on Flight Test Results for the F-100A Airplane."

REVISION BASIS:

To reflect additional electronics equipment and armament.