Standard Aircraft Characteristics

F-94A
SHOOTING STAR
Lockheed

BY AUTHORITY OF
COMMANDING GENERAL
AIR MATERIEL COMMAND
U.S. AIR FORCE

ONE J33-A-33
ALLISON

21 NOV 1949

RESTRICTED
Mission and Description

The Primary Mission of the F-94A is the interception and destruction of hostile aircraft during inclement weather.

This aircraft is a two-seater, basically resembling the T-33A (TF-80C) model and is designed to search out and destroy aircraft after having been radio-directed to the vicinity of enemy planes by radar ground control. The radar operator located in the rear cockpit handles the E-1 Fire Control System consisting of AN/APG-33 Radar and A-1C Gun Sight.

This aircraft incorporates a laminar flow wing section, aileron hydraulic boost mechanism, hydraulically operated dive recovery flaps and has provisions for two jettisonable 1000 pound thrust ATO units.

Crew cabin utilizes automatic heating, cooling and pressurization systems, “G” suit provisions, and wind shield de-icing and defogging during warm-up and taxi.

Development

First Flight: .......... (Prototype F-94A) 16 April 1949
First Acceptance: ................. December 1949
First Service Use: ................. April 1950
## Loading and Performance - Typical Mission

<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC</th>
<th>INTERCEPTOR</th>
<th>STRAFE</th>
<th>ATTACK</th>
<th>FERRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT (lb)</td>
<td>15,330</td>
<td>15,330</td>
<td>15,330</td>
<td>14,919</td>
<td>15,330</td>
</tr>
<tr>
<td>Military load (lbs)</td>
<td>4212</td>
<td>4212</td>
<td>4212</td>
<td>2097</td>
<td>4212</td>
</tr>
<tr>
<td>Wing loading (lb/sq ft)</td>
<td>64.5</td>
<td>64.5</td>
<td>64.5</td>
<td>62.8</td>
<td>64.5</td>
</tr>
<tr>
<td>Stall speed (mph)</td>
<td>106</td>
<td>106</td>
<td>106</td>
<td>104</td>
<td>106</td>
</tr>
<tr>
<td>Take-off ground run at SL (ft)</td>
<td>2650/1875</td>
<td>2650/1875</td>
<td>2650/1875</td>
<td>2490/1750</td>
<td>2650/1875</td>
</tr>
<tr>
<td>Rate of climb at SL (fpm)</td>
<td>4250</td>
<td>75</td>
<td>4250</td>
<td>4400</td>
<td>4250</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft (min)</td>
<td>5.1</td>
<td>5.1</td>
<td>5.1</td>
<td>4.9</td>
<td>5.1</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>42,000</td>
<td>47,000</td>
<td>42,000</td>
<td>42,500</td>
<td>42,000</td>
</tr>
<tr>
<td>AVG CRUISING SPEED (kn)</td>
<td>596</td>
<td>596</td>
<td>596</td>
<td>596</td>
<td>596</td>
</tr>
<tr>
<td>Cruising altitude (ft)</td>
<td>40-45,000</td>
<td>40-45,000</td>
<td>40-45,000</td>
<td>40-45,000</td>
<td>40-45,000</td>
</tr>
<tr>
<td>Total mission time (hr)</td>
<td>2.52</td>
<td>2.05</td>
<td>2.52</td>
<td>1.21</td>
<td>2.52</td>
</tr>
<tr>
<td>COMBAT RADIUS (n.mi)</td>
<td>514</td>
<td>314</td>
<td>260</td>
<td>220</td>
<td>48</td>
</tr>
<tr>
<td>Avg cruising speed (kn)</td>
<td>368</td>
<td>368</td>
<td>368</td>
<td>368</td>
<td>368</td>
</tr>
<tr>
<td>Cruising altitude (ft)</td>
<td>40-44,400</td>
<td>44,500</td>
<td>40-45,000</td>
<td>344</td>
<td>—</td>
</tr>
<tr>
<td>Total mission time (hr)</td>
<td>2.07</td>
<td>1.75</td>
<td>1.37</td>
<td>.45</td>
<td>—</td>
</tr>
</tbody>
</table>

### COMBAT WEIGHT
- lb: 12,919, 12,919, 12,919, 12,050, 11,274
- ft: 35,000, 42,000, S.L., S.L., 44,700
- kn: 474, 468, 526, 526, 468
- fpm: 3400, 2200, 9250, 9850, 2000
- ft: 48,500, 48,500, 48,500, 48,300, 50,000
- ft: 49,750, 49,750, 49,750, 50,500, 51,250
- fpm: 9250, 9250, 9250, 9850, 10,700
- ft: 526, 526, 526, 526, 526
- lb: 11,274, 11,274, 11,274, 11,060, 11,274
- ft: 2460, 2460, 2460, 2420, 2460
- ft: 3630, 3630, 3630, 3570, 3630

### NOTES
1. Maximum power
2. Military power
3. Maximum power plus ATO
4. Take-off and landing distances are obtainable at sea level using normal technique. For airport planning add 25% to distances shown.
5. Detailed descriptions of the RADIUS & RANGE missions are given on page 6.
6. Range if Radius is shown.

### CONDITIONS:
(a) Performance Basis: Preliminary estimated data.
(b) In computing Radius and Range, specific fuel consumptions have been increased 5% to allow for variations of fuel flow in service aircraft.
(c) Performance is based on powers shown on page 6.
NOTES

FORMULA: RADIUS MISSION I

Take-off (max power), climb on course to 40,000 ft. at military power, cruise* on tip tank fuel at long range speed with a gradual climb to objective, drop tanks, combat 20 minutes using 5 minutes at max power and 15 minutes at military power, cruise* back to base in gradual climb arriving over base at 44,400 ft. Range free allowances include 5 minutes at normal power at sea level for starting engine and take-off, fuel for 20 minutes combat, plus 10% of initial fuel for reserve.

FORMULA: RANGE MISSION I, III, IV and V

Take-off (max power), climb on course to 40,000 ft. at military power, cruise* at long range speed until 90% of initial fuel has been consumed, dropping external tanks when empty. Range free allowances include 5 minutes at normal power at sea level for starting engine and take-off, plus 10% of initial fuel for combat, evasive action and landing reserve.

FORMULA: RADIUS MISSION II

Take-off (max power), climb on course to 40,000 ft. with maximum power, cruise* on tip tank fuel until empty, drop tanks, cruise* to objective at long range speed, combat 20 minutes using 5 minutes max power and 15 minutes military power, cruise* back to base at long range speed. Range free allowances include 5 minutes normal power at sea level for starting engine and take-off, fuel for 20 minutes combat, plus 10% of initial fuel for reserve.

FORMULA: RANGE MISSION II

Same as outbound leg of Radius Mission II continued until 90% of initial fuel has been used. Range free allowances include 5 minutes at normal power at sea level for starting engine and take-off, plus 10% of initial fuel for combat, evasive action and landing reserve.

FORMULA: RADIUS MISSION III

Take-off (max power), climb on course to 40,000 ft. at military power, cruise* on tip tank fuel at long range speed to objective, descend to sea level (no distance credit), drop tanks, combat 5 minutes at military power, climb on course to 44,000 ft. at military power, cruise back to base at long range speed. Range free allowances include 5 minutes at normal power at sea level for starting engine and take-off, fuel for 5 minutes combat at sea level, plus 10% of initial fuel for reserve.

FORMULA: RADIUS MISSION IV

Take-off (max power), climb on course at military power until over objective, descend to sea level (no distance credit), drop bombs, combat 5 minutes at military power, climb at military power until over base. Range free allowances include 5 minutes at normal power for starting engine and take-off, 5 minutes combat fuel, plus 10% of initial fuel for reserve.

*CRUISING OPERATION:
Cruising operations are performed at constant true air speed (390 knots) and at the highest altitude at which a rate of climb of 300 ft. per minute may be obtained with normal power at the instantaneous weight.

GENERAL DATA:
(a) Engine ratings shown on page 3 are engine manufacturer's guaranteed ratings. Power values used in performance calculations are as follows:

<table>
<thead>
<tr>
<th>J33-A-33</th>
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<tbody>
<tr>
<td></td>
<td>S. L. Static</td>
<td>RPM</td>
</tr>
<tr>
<td>Max:**</td>
<td>5500*</td>
<td>11,750</td>
</tr>
<tr>
<td>Mil:**</td>
<td>4250</td>
<td>11,750</td>
</tr>
<tr>
<td>Nor:**</td>
<td>3600</td>
<td>11,250</td>
</tr>
</tbody>
</table>

*With afterburner operating
**Includes ram efficiency

CAUTION
Performance presented herein shows the estimated capabilities of F-94A using enlarged engine air inlet ducts (subsequent to the 17th airplane). The estimated thrust output of the engine, although based on engine manufacturers data and corrected for duct losses, may not be obtainable in actual flight.