Wing Area: 548.0 sq ft
Aspect Ratio: 5.15
Wing Section: NACA 63-A-010
M.A.C.: 130.7"

Pressurized Compartment

745 gal
160.5 gal
640 gal
1450 gal
2x350 gal

Fuel
Water
Oil

XB-51

19 MAY 1950
POWER PLANT

No. & Model .......... (3)J47-GE-13
Mfr .......... General Electric
Engine Spec. No. .......... E581-A
Type .......... Axial Flow
Length .......... 144"
Diameter .......... 37"
Weight (dry) .......... 2525 lb
Augmentation .......... Fluid Injection

ENGINE RATINGS

S.L. Static LB - RPM
Max: *6000 - 7950
Mil: 5200 - 7950
Nor: 4320 - 7370

DIMENSIONS

Wing Span .......... 53.1'
Incidence - Normal Flight Attitude
Root .......... 3°
Tip .......... 1°
Incidence - Take-off & Land Attitude
Root .......... 7°30'
Tip .......... 5°30'
Cathedral .......... 6°
Sweepback (LE) .......... 35°
Length .......... 85.1'
Height .......... 17.3'
Tread .......... 49.4'

WEIGHTS

Loading Lb L.F.
Empty .......... 29,584 (E)
Basic .......... 54,646 (E) 3.56
Design .......... 53,000 3.67
Combat .......... 41,457 3.67
Max T.O.* 62,452 2.0
Max Land 57,067 1.6

(E) Estimated
* For Basic Mission
** Limited by strength
+ Limited to landing without external bombs and water

FUEL

Location No. Tanks Gal
Fuselage .......... 3 2835
Bomb bay .......... 2 700
Self-sealing Total 3535

Grade .............. JP-3
Water/Alohol (gal) ........ 160.5

OIL

Capacity (gal) .......... 16.2

MISSION AND DESCRIPTION

The primary mission of this aircraft is low level attack for destruction by bombs and guns of surface military targets in tactical support of ground and/or naval forces.

The primary mission requires only the pilot to operate this aircraft; however, an additional crew member is required for Shoran bombing.

Both crew members are located in an air conditioned pressurized compartment forward in the fuselage and are afforded positive bailout-ejection seats.

This aircraft features sweepback surfaces having thermal anti-icing, variable wing incidence for take-off and landing, variable tail incidence for trim and dive recovery, full span single slotted flaps, spoiler alleron lateral control, partial span automatic wing leading edge slats and fuselage dive brakes for glide control.

The main landing gear is of the bicycle type located in the fuselage and lateral stability is provided by wing tip gears.

The power plant installation incorporates water-alcohol thrust augmentation for take-off, a variable area tail pipe, automatic tail pipe temperature control, and continuous fuel tank purging.

Armament consists of pilot bombing facilities A-1-B gun-bomb rocket sight with radar ranging, rotary type bomb bay serving dual role of bomb carrier and bomb bay door with provisions to carry rockets, Shoran bombing system, 20mm strafing armament and passive defense consisting of engine flak protection and armor glass windshield.

Photographic facilities include a forward recording strike camera, a vertical high altitude strike and reconnaissance camera, and an aft recording camera for damage assessment of low altitude bombing and strafing.

Development

Design Initiated: 1 February 1947
First flight: 28 October 1949
First acceptance (1st art.): Sep 1951 (est), (2nd art.): Mar 1952 (est)

BOMBS

No. Size Type
1 ........ *4000 .......... L.C.
2 ........ 2000(int) .......... G.P.
3 ........ 2000(ext) .......... G.P.
4 ........ 1600(int) .......... A.P.
5 ........ 1600(ext) .......... A.P.
6 ........ 1000 .......... G.P.
7 ........ 500 .......... G.P.

ROCKETS

No. Size Type Location
8 ....... 5' ....... HVAR Bomb bay

Note:
Rockets can be carried in bomb bay in lieu of internal bombs.

GUNS

No. Cal Rds ea. Location
8 ....... 20mm ....... 160 ....... Nose

ELECTRONICS

VHF Command .......... AN/ARC-3
Radio Compass .......... AN/ARN-6
Localizer .............. RC-103
Glide Path .......... AN/ARN-5B
Marker Beacon .......... AN/ARN-12
Radar Beacon .......... AN/APW-11
Shoran .......... AN/APN-3
RCM .......... AN/APT-16
IFF .......... SCR-695B
Interphone .......... AAF Combat

19 MAY 1950

XB-51
## Loading and Performance-Typical Mission

### Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Basic Mission</th>
<th>Attack Missions</th>
<th>High Altitude Missions</th>
<th>Ferry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td><strong>Take-Off Weight</strong> (lb)</td>
<td>55,923</td>
<td>55,923</td>
<td>54,137</td>
<td>55,923</td>
</tr>
<tr>
<td>Fuel &amp; Oil (gal)</td>
<td>2835/12</td>
<td>2835/12</td>
<td>2835/12</td>
<td>2835/12</td>
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<tr>
<td>Military Load (lb)</td>
<td>4000</td>
<td>4000</td>
<td><strong>1120</strong></td>
<td>4000</td>
</tr>
<tr>
<td>Total Ammunition (rds/cal)</td>
<td>1280/200mm</td>
<td>1280/20mm</td>
<td>1280/20mm</td>
<td>1280/20mm</td>
</tr>
<tr>
<td>Wing Loading (lb/sq ft)</td>
<td>101.7</td>
<td>101.7</td>
<td>96.4</td>
<td>101.7</td>
</tr>
<tr>
<td>Stall Speed (kn)</td>
<td>153</td>
<td>153</td>
<td><strong>159</strong></td>
<td>153</td>
</tr>
<tr>
<td><strong>Take-Off Distance SL</strong></td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Ground Run (no wind) (ft)</td>
<td>4340</td>
<td>4340</td>
<td>4010</td>
<td>4340</td>
</tr>
<tr>
<td>To Clear 50ft Obs (ft)</td>
<td>5590</td>
<td>5190</td>
<td>5190</td>
<td>5590</td>
</tr>
<tr>
<td><strong>CLIMB FROM SL</strong></td>
<td>1044</td>
<td>1044</td>
<td>1044</td>
<td>1044</td>
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<tr>
<td>Rate Of Climb at SL (fpm)</td>
<td>5100</td>
<td>5100</td>
<td>5100</td>
<td>4890</td>
</tr>
<tr>
<td>Time To 10,000 Feet (min)</td>
<td>2.2</td>
<td>2.2</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Time To 20,000 Feet (min)</td>
<td>5.4</td>
<td>5.4</td>
<td>5.3</td>
<td>5.4</td>
</tr>
<tr>
<td>Service Ceiling (100 f.p.m.) (ft)</td>
<td>32,900</td>
<td>32,900</td>
<td>33,700</td>
<td>32,900</td>
</tr>
<tr>
<td><strong>COMBAT RANGE</strong> (kn)</td>
<td>934</td>
<td>934</td>
<td>934</td>
<td>934</td>
</tr>
<tr>
<td><strong>COMBAT RADIUS</strong> (n.mi)</td>
<td>376</td>
<td>376</td>
<td>376</td>
<td>376</td>
</tr>
<tr>
<td><strong>Avg. Cruising Speed</strong> (kn)</td>
<td>463</td>
<td>440</td>
<td>440</td>
<td>466</td>
</tr>
<tr>
<td>Total Mission Time (hr)</td>
<td>1.82</td>
<td>1.68</td>
<td>1.70</td>
<td>2.40</td>
</tr>
<tr>
<td>Cruising Altitude (1000 ft) (ft)</td>
<td>32.8 to 43.2</td>
<td>10.0</td>
<td>10.0</td>
<td>32.9 to 43.2</td>
</tr>
</tbody>
</table>

**COMBAT WEIGHT** (lb) 41,457 41,958 43,118 40,747 40,571 40,289

**SPEED**

- Max Speed (combat alt) (kn) 560 552 552 503 506 519
- Max Speed At S.L. Ft (kn) 560 560 560 560 560 560

**CLIMB**

- Rate Of Climb (combat alt) (fpm) 6980 6270 5080 1360 1600 2350
- Rate Of Climb At SL (fpm) 6980 6900 6650 7130 7160 7190

**CEILING**

- Combat Ceiling (ft) 38,900 38,600 38,100 39,200 39,300 39,400
- Service Ceiling (ft) 40,500 40,300 39,800 40,900 41,000 41,100
- Service Ceiling (NOb) (ft) 39,900 39,700 39,100 40,200 40,300 40,400

**LANDING WEIGHT SL** (lb) 34,267 34,267 35,361 34,267 34,198 34,302 34,962

- Ground Roll (ft) 2355 2355 2425 2355 2350 2380 2460
- From 50' Obst (ft) 3240 3240 3325 3240 3253 3245 3295

### Notes

- Take-off power
- Max power
- Normal power
- Take-off and landing distances are obtainable at sea level using normal technique. For airplon planning, distances should be increased by appropriate factors to determine runway requirements.
- Radius mission if Radius is shown obtainable at sea level using normal technique. For airplon planning, distances should be increased by appropriate factors to determine runway requirements.
- T.O. gross weight T.O. water and fuel for 5 min. at N.R.P.
- 8x95° HVAR rockets

### Conditions:

(a) Performance Basis: Estimated data
(b) In computing Radius and Range, specific fuel consumptions have been increased 5% to allow for variation in fuel flow in service aircraft.
(c) Performance is based on powers shown on page 6.
FORMULA: RADIUS MISSION I

Take-off, climb on course to initial altitude of 32,800 ft at maximum power, cruise out at long range speeds utilizing a cruising climb arriving at 34,500 ft altitude, descend to sea level (no distance credited) and conduct a 6 minute normal power bomb run to target, drop bombs, conduct normal power evasive action for 6 minutes, climb at maximum power to altitude of 40,600 ft, utilize a cruising climb at long range speeds arriving over home base at 43,200 ft altitude. Range free allowances are: 5 minutes normal power fuel consumption for warm-up and take-off, 6 minutes normal power evasive action plus 10% initial fuel load for landing and reserve. All operations conducted with 3 engines operative.

FORMULA: RANGE MISSION I

Take-off, climb on course to initial altitude of 32,800 ft at maximum power, cruise out at long range speeds at a cruising climb arriving at 38,800 ft altitude 6 minutes prior to bomb drop. Descend to sea level (no distance credited) and conduct a 6 minute, normal power bomb run, drop bombs. 10% initial fuel load remains for landing and reserve. All operations conducted with 3 engines operative.

FORMULA: RADIUS MISSION II & III

Take-off, climb on course to 10,000 ft altitude at maximum power, conduct a two engine cruise at constant speed and altitude to point 6 minutes prior to bomb drop, conduct a 6 minute normal power bomb run, drop bombs or fire rockets, conduct normal power evasive action for 6 minutes, return to base at constant speed and altitude using two engine operation. Range free allowances are: 5 minutes normal power evasive action plus 10% initial fuel load for landing and reserve. All operations conducted with 3 engines operative except constant speed cruises (434 knots) to and from target at 10,000 feet.

FORMULA: RADIUS MISSION IV

Take-off, climb on course to initial altitude of 32,800 ft at maximum power, cruise out at long range speeds utilizing a cruising climb arriving at 35,600 ft altitude 6 minutes prior to bomb drop, conduct a 6 minute normal power bomb run to target, drop bombs, conduct 6 minute normal power evasive action, climb at maximum power to 39,250 ft altitude cruise climb at long range speeds so as to arrive over home base at 43,200 ft altitude. Range free allowances are: 5 minutes normal power fuel consumption for warm-up and take-off, 6 minutes normal power evasive action plus 10% initial fuel load for landing and reserve. All operation conducted with 3 engines operative.

FORMULA: RANGE MISSION IV

Take-off, climb on course to initial altitude of 32,800 ft at maximum power, cruise out at long range speeds in a cruising climb arriving at 39,600 ft altitude 6 minutes prior to bomb drop, conduct a 6 minute normal power bomb run, drop bombs. 10% initial fuel load remains for landing and reserve. All operation conducted with 3 engines operative.

FORMULA: RADIUS MISSION V

Take-off, climb on course to initial altitude of 31,700 ft at maximum power, cruise out at long range speeds utilizing a cruising climb arriving at 34,300 ft 6 minutes prior to bomb drop, conduct a 6 minute normal power bomb run to target, drop bombs, conduct 6 minute normal power evasive action, climb at maximum power to 39,400 ft altitude, utilize a cruising climb at long range speeds arriving over home base at 43,300 ft altitude. Range free allowances are: 5 minutes normal power fuel consumption for warm-up and take-off, 6 minutes normal power evasive action plus 10% initial fuel load for landing and reserve. All operations conducted with 3 engines operative.

FORMULA: RANGE MISSION VI

Take-off, climb on course to initial altitude of 27,600 ft at maximum power, cruise out at long range speeds utilizing a cruising climb arriving at 29,700 ft altitude 6 minutes prior to bomb drop, conduct a 6 minute normal power bomb run to target, drop bombs, conduct 6 minute normal power evasive action, climb at maximum power to 40,000 ft altitude, utilize a cruising climb at long range speeds arriving over home base at 43,200 ft altitude. Range free allowances are: 5 minutes normal power fuel consumption for warm-up and take-off, 6 minutes normal power evasive action plus 10% initial fuel load for landing and reserve. All operations conducted with 3 engines operative.

FORMULA: RANGE MISSION VII

Take-off, and climb at maximum power to an initial cruising altitude of 32,800 ft. Remainder of flight is made at long range speeds using cruising climb technique. Range free allowances are 5 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel load as landing and endurance reserve.

GENERAL DATA:

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

<table>
<thead>
<tr>
<th>J47-GE-13</th>
<th>LB</th>
<th>RPM</th>
<th>ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.O.</td>
<td>*6000</td>
<td>7900</td>
<td>S.L.</td>
</tr>
<tr>
<td>Max:</td>
<td>5200</td>
<td>7900</td>
<td>S.L.</td>
</tr>
<tr>
<td>Nor:</td>
<td>4800</td>
<td>7330</td>
<td>S.L.</td>
</tr>
</tbody>
</table>

*Wet