POWER PLANT

No. & Model ...... (4) R-4360-35
Mfr ............... Pratt & Whitney
Spec. No. .......... A-7051-F
Sup(turbo) .......... (1) CH-7-B1
Turbo Mfr .......... General Electric
Red Gear Ratio ...... 0.375
Prop. Mfr ............ Curtiss
Blade Design No.(see page 6, note) Prop. Type ...... CS, FF, Reverse
No. Blades .......... 4
Prop. Dia. .......... 18'-8"
Augmentation ...... Water/Alcohol

ENGINE RATINGS

BHP - RPM - ALT - MIN
T. O: 3500 - 2700 - S. L. - 5
3250 - 2700 - S. L. - 5
Mil: 3500 - 2700 - Turbo - 30
3250 - 2700 - Turbo - 30
Nor: 2650 - 2650 - Turbo - Cont.

DIMENSIONS

Wing Span .......... 141.2'
Incidence .......... 4°
Dihedral .......... 4°29'23"
Sweepback (LE) .... 70°11'
Length ........... 99.0'
Height ............ 32.7'
Height (in folded) .. 20.6'
Tread ............. 28.5'
Prop. Grd. Clearance .. 1.4'

MISSION AND DESCRIPTION

The B-50A is a long range, high altitude, medium bombardment type aircraft whose tactical mission is the destruction by bombs of land and naval materiel objectives.

The normal crew consists of the pilot, co-pilot, engineer, navigator-radar operator-bombardier, bombardier-navigator-radar operator, radio-ECM operator, left side gunner, right side gunner, top gunner, tail gunner and auxiliary crew member.

Cabin heating, ventilation and pressurization are incorporated for increased crew comfort on high altitude, long range missions.

The defensive armament consists of thirteen .50 caliber machine guns housed in five electrically-operated turrets which are remotely controlled from the sighting stations.

DEVELOPMENT

First flight: Jun 1947
First acceptance: Oct 1947
Production completed: Jan 1949

BOOMS

No. Size Type
1 4000(int.) G. P.
2 4000(ext.) G. P.
8 2000 G. P.
12 1600 A. P.
12 1000 G. P.
40 500 G. P.

Max Bomb Load:
Internal 20,000 lb
External 8,000 lb

GUNS

No. Cal. Rds. ea. Location
4 .50 500 Up, fwd
2 .50 500 Lwr, fwd
2 .50 500 Up, aft
2 .50 500 Lwr, aft
2 .50 500 Tur, tail
1 .50 380 Tur, tail

ELECTRONICS

VHF Command ........ AN/ARC-7
Liaison ............. AN/ARC-8
Interphone .......... AN/AIC-2A
Range Recvr .......... EC-453E
Radio Compass ...... AN/ARN-7
Marker Beacon ...... RC-193A
I. F. F. .............. SCR-695B
Localizer .......... RC-103A
Radar Gun Sight ... AN/APG-15B
Auto Bomb ........... AN/ARN-8 & -10A
Glide Path .......... AN/ARN-5A
Loran ............... AN/APN-0 or -9A
Radio Alt. .......... SCR-718C
Radar .............. AN/APQ-23A
Radar ............... AN/APN-68
Radio Set .......... AN/APN-2B
Pulse Doppler ...... AN/APA-52
ECM (See page 6, note 5)

OIL

Capacity (gal) .... 300
Grade ............... S-1120-W-1100

WEIGHTS

Loading Lb L. F.
Empty .......... 81,050(C)
Basic .......... 85,155(A)
Design .......... 120,000 2.67
Combat ........... 121,700
Max T. O. ........ 1168,480
Max Land ........... 160,000
(C) Calculated
(A) Actual
* For Basic Mission
† Limited by space
† Limited by structure
(See page 6, note 5)

FUEL

Location No. Tanks Gal
Wg. outbd* .......... 2 2620
Wgs, inbd* .......... 2 2840
Wg. center*.......... 1 1193
Nac. skate* .......... 2 630
Aft. bomb bay* ....... 1 2193
Wgs, ext. .......... 2 1384
*Self-sealing Total 10,772

Grade ............... 115/145
Water/alcohol(gal) .... 60

24 NOVEMBER 1950
# Loading and Performance—Typical Mission

## Conditions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>(lb)</td>
<td>168,480</td>
<td>200,000</td>
<td>168,480</td>
<td>158,480</td>
<td>V</td>
</tr>
<tr>
<td>Fuel at 6.0 lb/gal (grade 115/145)</td>
<td>(lb)</td>
<td>64,632</td>
<td>74,474</td>
<td>64,632</td>
<td>64,632</td>
<td>V</td>
</tr>
<tr>
<td>Military load (Bombs)</td>
<td>(lb)</td>
<td>10,000</td>
<td>10,000</td>
<td>None</td>
<td>None</td>
<td>V</td>
</tr>
<tr>
<td>Wing loading (lb/sq ft)</td>
<td>(lb/sq ft)</td>
<td>98.2</td>
<td>95.5</td>
<td>92.2</td>
<td>92.2</td>
<td>V</td>
</tr>
<tr>
<td>Stall speed (power off, land. config.)</td>
<td>(kn)</td>
<td>118</td>
<td>116</td>
<td>114</td>
<td>114</td>
<td>V</td>
</tr>
<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td>4775</td>
<td>4450</td>
<td>4100</td>
<td>4775</td>
<td>V</td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
<td>6650</td>
<td>6200</td>
<td>5700</td>
<td>6650</td>
<td>V</td>
</tr>
<tr>
<td>Rate of climb at SL (fpm)</td>
<td>(fpm)</td>
<td>685</td>
<td>740</td>
<td>817</td>
<td>685</td>
<td>V</td>
</tr>
<tr>
<td>Time: SL to 10,000 ft</td>
<td>(min)</td>
<td>16.0</td>
<td>14.0</td>
<td>13.0</td>
<td>16.0</td>
<td>V</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min)</td>
<td>38.0</td>
<td>33.0</td>
<td>30.0</td>
<td>38.0</td>
<td>V</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>26,550</td>
<td>26,250</td>
<td>30,150</td>
<td>26,550</td>
<td>V</td>
</tr>
<tr>
<td>COMBAT RANGE</td>
<td>(n. mi.)</td>
<td>4089</td>
<td>3663</td>
<td>4463</td>
<td>3768</td>
<td>4575</td>
</tr>
<tr>
<td>Average speed</td>
<td>(kn)</td>
<td>204</td>
<td>206</td>
<td>201</td>
<td>231</td>
<td>200</td>
</tr>
<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>20.17</td>
<td>15.51</td>
<td>22.41</td>
<td>16.45</td>
<td>23.07</td>
</tr>
<tr>
<td>COMBAT RADIUS</td>
<td>(n. mi.)</td>
<td>2137</td>
<td>1692</td>
<td>2256</td>
<td>1988</td>
<td></td>
</tr>
<tr>
<td>Average speed</td>
<td>(kn)</td>
<td>223</td>
<td>224</td>
<td>222</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Bombing altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Bomb run speed</td>
<td>(kn)</td>
<td>317</td>
<td>316</td>
<td>322</td>
<td>326</td>
<td></td>
</tr>
<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>19.42</td>
<td>15.36</td>
<td>20.56</td>
<td>16.33</td>
<td></td>
</tr>
</tbody>
</table>

## Combat Weight

| Conditions                              | (lb)          | 121,700                  | 114,269             | 123,070            | 120,314        | 100,311 |
| Combat altitude                         | (ft)          | 23,000                   | 25,000              | 25,000             | 30,000         | 10,000   |
| Combat speed                            | (kn)          | 334                      | 337                 | 333                | 339            | 313      |
| Combat climb                            | (fpm)         | 1665                     | 1870                | 1635               | 1530           | 2815     |
| Combat ceiling (500 fpm)                | (ft)          | 35,800                   | 36,750              | 36,650             | 36,500         | 38,500   |
| Service ceiling (100 fpm)               | (ft)          | 37,100                   | 38,400              | 36,850             | 37,350         | 40,300   |
| Service ceiling (one engine out)        | (ft)          | 31,800                   | 34,200              | 31,100             | 32,100         | 2        |
| Max rate of climb at SL                 | (fpm)         | 2225                     | 2430                | 2190               | 2260           | 2890     |
| Max speed at 30,000 ft                   | (kn)          | 339                      | 343                 | 338                | 339            | 350      |
| LANDING WEIGHT                          | (lb)          | 97,080                   | 95,312              | 97,080             | 97,080         | 100,311  |
| Ground roll at SL                       | (ft)          | 1310                     | 1275                | 1310               | 1310           | 1365     |
| Total from 50 ft                         | (ft)          | 2370                     | 2345                | 2370               | 2370           | 2420     |

## Notes

- T.O. power
- Max power
- Normal power
- Detailed descriptions of RADIUS and RANGE missions are given on page

## Performance Basis

- (a) Data source: Flight test
- (b) Performance is based on powers shown on page 6.
FORMULA: RADIUS MISSIONS I, II & III

Warm-up, take-off, climb on course using normal power to 10,000 feet, cruise at long range speeds at 10,000 feet to point where climb is made to arrive at 25,000 feet 30 minutes prior to target, cruise long range speeds for 15 minutes, conduct 15 minute normal power bomb run, drop bombs when carried, conduct 5 minute normal power evasive action, plus 10 minute normal power run-out from target area, cruise at 25,000 feet back to base. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes normal power evasive action and 5% of initial fuel load for landing and endurance reserve.

FORMULA: RANGE MISSIONS I, II & III

Aircraft is flown to point where 90% of fuel has been used, bombs are then dropped when carried, and aircraft landed. Specifically: warm-up, take-off, climb on course using normal power to 10,000 feet, cruise at long range speeds to point where climb is made to arrive at 25,000 feet 30 minutes prior to point where 90% of fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel load for landing reserve.

FORMULA: RADIUS MISSION IV

Warm-up, take-off, climb on course using normal power to 20,000 feet, cruise at long range speeds at 20,000 feet to point where climb is made to arrive at 30,000 feet 30 minutes prior to target, cruise long range speeds for 15 minutes, conduct 15 minute normal power bomb run, drop bombs, conduct 5 minute normal power evasive action, plus 10 minutes normal power run-out from target, cruise back to base at long range speeds at 30,000 feet. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes normal power evasive action and 5% of initial fuel load for landing and endurance reserve.

FORMULA: RANGE MISSION IV

Same as Range Mission I, II, & III, except initial climb is to 20,000 feet and final climb is to 30,000 ft.

FORMULA: RANGE MISSION V

Aircraft is flown to point where 90% of initial fuel has been used, and aircraft landed. Specifically: warm-up, take-off, climb on course using normal power to 10,000 feet, cruise at long range speeds to point where 90% of fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel load for landing reserve.

GENERAL DATA:

(a) This airplane makes good a flight and take-off limit load factor of 2 at a gross weight of 173,000 lb. although the landing gear and supporting structure does not meet the ground handling requirements of ANC-2a as these requirements were set up subsequent to the design of this airplane. The B-50B specification maximum weight is 164,500 lb. which is the present recommended maximum due to limited side load strength of main and nose gears and supporting structure which might become critical in aborted take-off.

(b) Engine ratings shown on page 3 are guaranteed values. Power values used in performance calculations are as follows:

<table>
<thead>
<tr>
<th>R-4360-35</th>
<th>BHP</th>
<th>RPM</th>
<th>ALT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.O.</td>
<td>3550</td>
<td>2700</td>
<td>S.L.</td>
</tr>
<tr>
<td>Max.</td>
<td>3550</td>
<td>2700</td>
<td>15,000**</td>
</tr>
<tr>
<td></td>
<td>3290</td>
<td>2700</td>
<td>30,500**</td>
</tr>
<tr>
<td>Nor.</td>
<td>2650</td>
<td>2550</td>
<td>30,000**</td>
</tr>
<tr>
<td>*Wet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Level flight critical altitude</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(c) For detailed planning refer to Tech Order AN 01-20ELA-1.

(d) Installation provisions for ECM equipment include the following sets:

<table>
<thead>
<tr>
<th>AN/APT-1</th>
<th>AN/APR-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN/APT-4</td>
<td>AN/ARQ-8</td>
</tr>
</tbody>
</table>

(e) B-50A airplanes equipped with C644S-B116 and B120 propellers utilize 1052-7C4-30 blades. B-50A airplanes equipped with C644S-A44 propellers utilize 1016-4C4-18 blades.
The curve below presents the combat potentialities of the B-50A airplane when operating with the KB-29M tanker airplane. The right side of the curve presents combat radius versus refuel radius (start of refueling operation) while the left side presents transfer fuel requirements and capabilities versus refuel radius. For example, to strike a target 3500 nautical miles from base, these curves are to be used together to present refueling radius data as follows:

The combat radius section indicates 3500 nautical miles may be made good by both refueling techniques, refueling outbound only at 2460 nautical miles or refueling outbound at 640 nautical miles and in-bound at 2110 nautical miles; however, reading from the requirements section, the double refuel requires two tankers, one outbound at 640 nautical miles transferring approximately 16,900 pounds of fuel and in-bound at 2110 nautical miles transferring 22,000 pounds of fuel.

For outbound refuel only, it is noted that the bomber requires a transfer of 44,600 pounds fuel while a single tanker can deliver only 14,000 pounds of fuel at 2460 nautical miles from base, thus 44,600/14,000 = 3.2, so four tankers would be required.

### Formula for Radius Data Shown

Warm-up, take-off, climb on course at normal power to 10,000 feet, cruise at long range speeds (except when refueling) to point where normal rated power climb is made to arrive at 25,000 feet 30 minutes prior to bomb drop, cruise long range speeds 15 minutes followed by 15 minute bomb run at normal power, drop bombs, conduct 5 minute normal power evasive action plus 10 minute normal power escape. When only outbound refuel is used return to base at long range speeds at 25,000 feet; on inbound refuel return at long range speeds at 25,000 feet to point 2110 nautical miles from base, descend to 10,000 feet refuel with 22,000 pound fuel and continue to base at 10,000 feet. Range free allowances include 10 minute normal power fuel consumption for warm-up and take-off plus 5 minutes normal power evasive action and 5% of take-off fuel for landing reserve. All refuel operations allow 1 hour rendezvous per refuel at long range speeds (no distance credit) followed by refuel at 190 (EAS) MPH at 180 gpm on course.

**NOTE:**

1. Loading for refuel mission is the same as Basic Mission.
2. Inbound refuel is assumed to be 22,000 pounds of fuel at 2110 nautical miles from base for all double refuel missions. This assumption gives best radius for receiver-tanker combinations.