Standard Aircraft Characteristics

B-47E II

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

SIX J47-GE-25,25A
GENERAL ELECTRIC

Aug 62 [AFG 2, Vol-1, Addn 30]
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**POWER PLANT**

Nr & Model .... (6)47-GE-25, 25A
Mfr .... General Electric
Engine Spec Nr .... E-597A
Type .... Axial Flow
Length .... 144"
Diameter .... 39.3"
Weight (dry) .... 2707 lb
Tail Pipe .... Fixed Area
Augmentation .... Water/Air Vapors
ATO
Nr & Model (M-10) .... (3)1551S1000
Mfr .... Phillips Petroleum
Weight (loaded) .... 183.4 lb ea
or
Nr & Model (M-10) .... (19)155S1000
Mfr .... Aerojet
Weight (loaded) .... 142 lb ea
*See note (d) page 6

**ENGINE RATINGS**

S, L, Static LB - RPM - MIN
Max: $7200 - 7950 - 5
Min: 5970 - 7650 - 5
Mil: 5670 - 7800 - 30
Nor: 5320 - 7630 - Cont
water flow of 650 lb/min
ATO
Thrust (lb) .... 30,000
Duration (sec) .... 16
or
Thrust (lb) .... 19,000
Duration (sec) .... 15

**DIMENSIONS**

Wing
Span .... 116.6"
Incidence .... 2°54'
Dihedral .... 8°
Sweepback (LE) .... 36°37'
Length .... 107.1'
Height .... 28.6'
Tread (outrigger) .... 44.3'

**MISSION AND DESCRIPTION**

Navy Equivalent: None
Mfr's Model: 450-157-35

The principal mission of the B-47E-II is the destruction by bombs of land or naval material objectives.

The normal crew consists of pilot, co-pilot, and observer. The observer's duties are navigation, bombing, and operating of radar equipment.

Features incorporated to improve crew comfort and efficiency are automatic heating, ventilation, pressurization, NESA glass shielding for the pilot's windscreen, de-frosting of windshield, nose window, and other transparent sections of recirculated cabin air, thermal anti-icing for wings and empennage and hydraulic boost on all control surfaces. Crew ejection seats are provided for in-flight escape. The pilot and co-pilot are ejected upward and the observer downward.

The water/alcohol injection system utilizes a total tank capacity of 700 gallons which is divided into six individual bladder-type tanks, three each located in the inboard sections of the right and left wings. Solid propellant rockets are installed externally for assist take-off with a droppable rack.

A twin-gun turret incorporating a radar computer at the co-pilot's station is installed. A rotatable seat allows the co-pilot to face aft while functioning as the A-5 Fire Control System operator.

Other features are single-point and air refueling, an approach chute to increase drag, drag chute for decreasing landing roll distance and an anti-skid braking device.

**DEVELOPMENT**

Performance and Characteristics shown for the B-47E-II is representative of the Basic B-47E airplane.

Engine change and landing gear modifications that have been made to B-47B-II aircraft closes the gap in the aircraft capability differential between the B-47B-1 and the B-47E-II.

**BOOMS**

See Listings on Page 6, note c

**B O O M S**

GUNS

Nr. Type Size Revs/loc
2 .... M24A1, 20mm, 350, Fus/尾

**CAMERAS**

Vertical Station

Nr. - Type - Lens
1 .... K-30 .... 36°
One of the following may be substituted
1 .... K-37 .... 24°
1 .... K7C .... 24°
1 .... K-23A-24°, 12°, 6°
Camera station is located in the lower aft portion of the fuselage aft of the bomb bay.

**ELECTRONICS**

VHF Command .... AN/ARC-27
Omni-Directional, Receiver .... AN/ARN-14
Bomber-Navi, Radar .... AN/APH-7A
Fire Control System .... A-5 or MD-4
Rendezvous Equip .... AN/APX-69
Interphone .... AN/AIC-10
IFF .... AN/APH-6
Glide Path Receiving .... AN/ARN-14
Radio Compass .... AN/ARN-6
ECM .... AN/ALT-6
Marker Beacon .... AN/ARN-14
Emergency Keyer .... AN/ARA-26
Cabinet Dispenser .... AN/ALB-3A
HF Liaison .... AN/ARC-21
Warning Radar .... AN/APS-54
D/F Group .... AN/ARA-25
Gun Laying Radar .... AN/AGP-32

*See note (f) page 6
### Loading and Performance - Typical Mission

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Basic Mission</th>
<th>Cruise Ceiling</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>(lb) 198,180</td>
<td>(lb) 198,180</td>
<td>(lb) 200,000</td>
</tr>
<tr>
<td>Flight at 6.5 lb/gal (grade JP-4)</td>
<td>(lb) 94,965</td>
<td>(lb) 94,965</td>
<td>(lb) 106,070</td>
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<tr>
<td>Payload (Fuel)</td>
<td>(lb) 10,000</td>
<td>(lb) 10,000</td>
<td>(lb) 134.0</td>
</tr>
<tr>
<td>Payload (Chaff)</td>
<td>(lb) 845</td>
<td>(lb) 845</td>
<td>(lb) 8100</td>
</tr>
<tr>
<td>Wing loading</td>
<td>(lb/sq ft) 132.8</td>
<td>(lb/sq ft) 132.8</td>
<td>(lb/sq ft) 152.9</td>
</tr>
<tr>
<td>Stall speed (power off)</td>
<td>(kn) 132.3</td>
<td>(kn) 132.3</td>
<td>(kn) 152.9</td>
</tr>
<tr>
<td>Take-off ground run at SL</td>
<td>(ft) 7900</td>
<td>(ft) 7000</td>
<td>(ft) 8100</td>
</tr>
<tr>
<td>Take-off ground run with ATO</td>
<td>(ft) 6200</td>
<td>(ft) 6200</td>
<td>(ft) 6400</td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft) 9400</td>
<td>(ft) 9400</td>
<td>(ft) 9600</td>
</tr>
<tr>
<td>Take-off to clear 50 ft with ATO</td>
<td>(ft) 7600</td>
<td>(ft) 7600</td>
<td>(ft) 7800</td>
</tr>
<tr>
<td>Rate of climb at SL</td>
<td>(ft/min) 2430</td>
<td>(ft/min) 2430</td>
<td>(ft/min) 2100</td>
</tr>
<tr>
<td>Rate of climb at SL (one engine out)</td>
<td>(ft/min) 2430</td>
<td>(ft/min) 2430</td>
<td>(ft/min) 1750</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min) 10.5</td>
<td>(min) 10.5</td>
<td>(min) 11.6</td>
</tr>
<tr>
<td>Time: SL to 30,000 ft</td>
<td>(min) 20.7</td>
<td>(min) 20.7</td>
<td>(min) 25.8</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft) 33,100</td>
<td>(ft) 33,100</td>
<td>(ft) 31,400</td>
</tr>
<tr>
<td>Service ceiling (one engine out)</td>
<td>(ft) 30,400</td>
<td>(ft) 30,400</td>
<td>(ft) 28,800</td>
</tr>
<tr>
<td>COMBAT RANGE</td>
<td>(n mi) 4035</td>
<td>(n mi) 4035</td>
<td>(n mi) 4035</td>
</tr>
<tr>
<td>COMBAT RADIUS</td>
<td>(n mi) 1749</td>
<td>(n mi) 1507</td>
<td>(n mi) 1507</td>
</tr>
<tr>
<td>Average cruise speed</td>
<td>(kn) 433</td>
<td>(kn) 467</td>
<td>(kn) 433</td>
</tr>
<tr>
<td>Initial cruising altitude</td>
<td>(ft) 20,000</td>
<td>(ft) 33,350</td>
<td>(ft) 30,100</td>
</tr>
<tr>
<td>Target speed</td>
<td>(kn) 466</td>
<td>(kn) 467</td>
<td>(kn) 467</td>
</tr>
<tr>
<td>Target altitude</td>
<td>(ft) 38,350</td>
<td>(ft) 38,350</td>
<td>(ft) 38,350</td>
</tr>
<tr>
<td>Final cruising altitude</td>
<td>(ft) 43,800</td>
<td>(ft) 47,000</td>
<td>(ft) 43,700</td>
</tr>
<tr>
<td>Total mission time</td>
<td>(hr) 8.1</td>
<td>(hr) 6.6</td>
<td>(hr) 9.4</td>
</tr>
<tr>
<td>COMBAT WEIGHT</td>
<td>(lb) 124,875</td>
<td>(lb) 125,295</td>
<td>(lb) 93,156</td>
</tr>
<tr>
<td>Combat altitude</td>
<td>(ft) 38,350</td>
<td>(ft) 38,500</td>
<td>(ft) 43,700</td>
</tr>
<tr>
<td>Combat speed</td>
<td>(kn) 484</td>
<td>(kn) 484</td>
<td>(kn) 487</td>
</tr>
<tr>
<td>Combat climb</td>
<td>(ft/min) 870</td>
<td>(ft/min) 870</td>
<td>(ft/min) 1050</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>(ft) 40,500</td>
<td>(ft) 40,450</td>
<td>(ft) 46,500</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft) 41,800</td>
<td>(ft) 41,750</td>
<td>(ft) 47,500</td>
</tr>
<tr>
<td>Service ceiling (one engine out)</td>
<td>(ft) 40,000</td>
<td>(ft) 39,950</td>
<td>(ft) 46,100</td>
</tr>
<tr>
<td>Max rate of climb at SL</td>
<td>(ft/min) 4660</td>
<td>(ft/min) 4650</td>
<td>(ft/min) 6150</td>
</tr>
<tr>
<td>Max speed at optimum altitude</td>
<td>(ft/kn) 527/16,300</td>
<td>(ft/kn) 527/16,300</td>
<td>(ft/kn) 528/16,400</td>
</tr>
<tr>
<td>Basic speed at 35,000 ft</td>
<td>(ft) 481</td>
<td>(ft) 481</td>
<td>(ft) 486</td>
</tr>
<tr>
<td>LANDING WEIGHT</td>
<td>(lb) 92,600</td>
<td>(lb) 92,600</td>
<td>(lb) 93,156</td>
</tr>
<tr>
<td>Ground roll at SL</td>
<td>(ft) 4500</td>
<td>(ft) 4500</td>
<td>(ft) 4500</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake)</td>
<td>(ft) 2600</td>
<td>(ft) 2600</td>
<td>(ft) 2600</td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>(ft) 5500</td>
<td>(ft) 5500</td>
<td>(ft) 5500</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake)</td>
<td>(ft) 3600</td>
<td>(ft) 3600</td>
<td>(ft) 3600</td>
</tr>
</tbody>
</table>

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**PERFORMANCE BASIS:**

(a) Data source: Flight Test
(b) Performance is based on powers shown on page 6.

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*Includes 3207 lb ATO and 5300 lb water-alcohol.*
*Brake chute deployed at touch-down.*
*Placard speed.*
*Values quoted are for take-off weight and water-alcohol.*
*No ATO, medium flow water injection.*
*Take-off power.*

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*Detailed descriptions of RADIUS and RANGE missions given on page 6.*
*Normal power.*
*Maximum power.*
*Take-off power.*

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**SERVICE**

**UNCLASSIFIED**

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**B-47E II**

**UNCLASSIFIED**

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NOTES

FORMULA: RADIUS MISSION I

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speeds and altitudes. No external tanks are used for this mission. Climb to cruise ceiling and conduct a 15 minute level-flight bomb run at normal power. Drop bomb load and shaff and conduct 2 minutes evasive action and 8 minutes escape at normal power. Return to base at long range speeds and altitudes. Range-free allowances are fuel for 5 minutes at normal power at sea level for take-off allowances, 2 minutes at normal power at combat altitude for evasive action, and 30 minutes at maximum endurance airspeeds at sea level plus 5% of the initial fuel load for landing reserve.

FORMULA: RADIUS MISSION II

Take-off and climb on course to cruise ceiling at military power. Cruise out at the cruise ceiling at normal power. No external tanks are used for this mission. Conduct a 15 minute level-flight bomb run, drop bomb load and shaff, and conduct 2 minutes evasive action at normal power. Climb back to cruise ceiling at military power and cruise back to base at the cruise ceiling at normal power. Range-free allowances are as stated for Radius Mission I.

FORMULA: RADIUS MISSION III

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speeds and altitudes, dropping external tanks when empty. Land at remote base with only reserve fuel remaining. Range-free allowances are fuel for 5 minutes at normal power at sea level for take-off allowance and fuel for 30 minutes at maximum endurance airspeeds at sea level plus 5% of the initial fuel load for landing reserve.

GENERAL DATA:

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

<table>
<thead>
<tr>
<th>S. L., STATIC</th>
<th>LB</th>
<th>RPM</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. O.</td>
<td>7200</td>
<td>7950</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
<td>5640</td>
<td>7800</td>
<td>30</td>
</tr>
<tr>
<td>Nor</td>
<td>5270</td>
<td>7630</td>
<td>Cont</td>
</tr>
</tbody>
</table>

* Medium flow water injection

(b) For detail planning refer to Technical Order 1B-47E-1 and latest applicable technical orders.

(c) The following loadings reflect the capabilities of the B-47E-II airplane utilizing general purpose bombs:

REVISION BASIS:

To reflect current characteristics and performance data.

B-47E II

SHORT BOMB BAY
Hi-Density Kit

<table>
<thead>
<tr>
<th>No.</th>
<th>. . . Class (lb)</th>
<th>WW II (Box Fin)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Carried</td>
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</table>

INTERIM (Conical Fin)

<table>
<thead>
<tr>
<th>3</th>
<th>2000</th>
<th>4</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1000</td>
<td>4</td>
<td>1000</td>
</tr>
<tr>
<td>13</td>
<td>500 (T-127)</td>
<td>4</td>
<td>500 (T-127)</td>
</tr>
<tr>
<td>16</td>
<td>500 (M-123)</td>
<td>4</td>
<td>500 (M-123)</td>
</tr>
</tbody>
</table>

NEW SERIES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>.750 Chem. Cluster</td>
<td>4</td>
<td>.750 Chem. Cluster</td>
</tr>
</tbody>
</table>

1. The Short Bomb Bay Hi-Density Kits are adaptable on all aircraft.
2. The Short Bomb Bay Lo-Density Kit can be utilized only in airplanes 617 thru 730; airplanes 61 thru 616 have provisions for this kit but must be modified to accept it.
3. The displacement rack & gear must be utilized in carrying (19) 15K11000 bottles or the (30) 16N11000 M-15 ATO manufactured by Phillips Petroleum.
4. When carrying the Basic Mission payload (10, 845 lb), full internal fuel load, and 5300 lb water-alcohol the 200,000 lb maximum gross weight will be reached when the ATO weight is 5027 lb. For greater ATO loads it will be necessary to off-load fuel. This will decrease the radius performance as shown below:

(f) Various combinations of TACAN AN/ARN-21 Rendezvous Eqip. AN/ARN-76 ECM ALT-7, ALT-8 & QRC-49 HF Liaison AN/ARC-21 or AN/ARC-65 IFF APX-6A and APX-76

PERFORMANCE REFERENCE:

SUPPLEMENTAL

The curves below present the radius performance of the B-47E-II airplane utilizing air refueling. The graph on the left presents the fuel transfer requirements while the graph on the right shows the total mission radius as a function of the distance out to end of transfer.

**FORMULA: RENDEZVOUS MISSION**

Take-off and climb on course to optimum cruise altitude at normal power. Cruise out at long range speeds and altitudes. Descend to 10,000 ft (no credit for distance or fuel consumed in descent). Rendezvous at maximum endurance airspeed for 30 minutes. Transfer fuel on course at 600 gpm at a true airspeed of 280 knots. After transfer climb on course to optimum cruise altitude at normal power. Remainder of mission is conducted to Basic Mission rules. External tanks are dropped when empty. Range-free allowance are as for Basic Mission except that landing allowance of 5% and 30 minutes max endurance is based on fuel load immediately after refuel and 5% of initial fuel load plus 30 minutes max endurance fuel flow at refuel altitudes for rendezvous.

**FORMULA: BUDDY MISSION**

Take-off and climb on course to optimum cruise altitude at normal power. Rendezvous for 10 minutes at maximum endurance airspeed; Cruise out with the tanker at long range speeds and altitudes. Descend to 24,000 feet altitude; transfer fuel on course at 600 gpm at a true airspeed of 340 knots. After transfer, climb on course to optimum cruise altitude. Remainder of mission is conducted to Basic Mission rules. External tanks are dropped when empty. Range-free allowances are as for the Basic Mission except that a 10 minute rendezvous is included and landing reserve is fuel for 30 minutes at maximum endurance airspeed at sea level plus 5% of the fuel load at the end of air refueling.

**NOTE:**

(a) Take-off weight is 200,000 lbs.
(b) ATO load is 3207 lbs (19) 15KE1000 bottles
(c) Water-alcohol load is 5300 lbs.
(d) Refueled to capacity (213, 288 lb) with external tanks.
(e) Bomb load is 10,000 lbs, chaff load is 845 lb.