Standard Aircraft Characteristics

RB-36E
Consolidated-Vultee

SIX R-4360-41
PRATT & WHITNEY
AND
FOUR J47-GE-19
GENERAL ELECTRIC

UNCLASSIFIED

14 MAY 54
Mission and Description

Navy Equivalent: None
Mfr's Model: 36

The principal missions of the RB-36E are all-purpose strategic reconnaissance, day and night mapping, charting, and bomb damage assessment.

The normal crew of (22) consists of aircraft commander, pilot, copilot, (2) flight engineers, primary navigator, photo-navigator, radar observer, weather observer-nose gunner, (2) radio operators, (2) photographic technicians, (4) ECM operators, and (5) gunners. The copilot serves as left forward gunner and the second radio operator as right forward gunner.

Crew and camera compartments are pressurized, heated, and provided with an oxygen system for emergency use.

Compartment heating, enclosure and blister defrosting, and propeller, wing and tail anti-icing are accomplished by heated air obtained from heat exchangers installed in the recuperating engine exhaust system.

CO2 fuel purging systems are provided for wing tanks and bomb bay tank.

The airplane has a single-point fueling, manifold type fuel system.

Development

All B-36A's were modified and redesignated RB-36E
First Flight ............................. Jul 50
Final Delivery ........................... Jul 51

BOMBS

No.  Class(lb)
80 T-80 Photo Flash ................. 188

GUNS

No.  Type  Size  Rds ea Location
2  M24A1. 20mm  400  Fus, nose
4  M24A1. 20mm  600  Fus, up, fwd
4  M24A1. 20mm  600  Fus, up, aft
4  M24A1. 20mm  600  Fus, lw, aft
2  M24A1. 20mm  600  Fus, tail

CAMERAS

No.  Type  Lens
1  K-22A, Fed, oblique  12"
3  K-17C, Tri-Metrogon  6"
2  K-36, Split Vertical  24"
2  K-22A, Side oblique  24"
1  K-17C, Vertical  6"
5  K-36, Multiple  30"
5  K-40, Multiple  48"
1  *T-11, Vertical  6"
1  K-37, Vertical  12"
1  K-22A, Vertical, 6"  12"
1  K-17C, Vertical  6", 12"

DIMENSIONS

Wing Span .................. 230, 9'
Incidence (root) ........... 3°
Dihedral .................. 8°
Sweepback (LE) ......... 15°, 5'
Length .................. 162, 1'
Height .................. 46, 0'
Tread .................. 46, 0'
Prop, Grd Clearance ....... 54'

ENGINE RATINGS

BHP - RPM - ALT-MIN
T. O.  *3500 - 2700 - Turbo - 5
Mil:  *3500 - 2700 - Turbo - 30
Nor:  2650 - 2550 - Turbo - Cont
plus
S. L. Static LB - RPM - MIN
Max:  5200 - 7550 - 5
Mil:  5200 - 7500 - 30
Nor:  4730 - 7630 - Cont

WEIGHTS

Loading Lb  L. F.
Empty  164, 238(A)
Basic  169, 166(A)
Design  370, 000  2, 0
Combat  *268, 200
Max T. O.  370, 000  2, 0
Max Land  357, 500

(A) Actual
* For Basic Mission
† Limited by strength

FUEL

Location No. Tanks Gal
Wg, outbd 2 4496
Wg, ctr 2 8146
Wg, inbd 2 9841
Center sec 2 9577
Bomb Bay 1 2006
Total 59, 626
Grade 115/145
Specification . MIL-F-5572
Outboard(Jet) 8 (tot) 52
Wing (Recip) 8 (tot) 1200
Grade (Recip) 1100
Jet 1008
Specification (Recip) MIL-L-6082A
(Jet) MIL-L-6081A
WATER/ALCOHOL
Eng, Nacelle 8 (tot) 54
*Partial Self-Sealing
†Total capacity usable only for special loading when equipment has been removed from aircraft.

ELECTRONICS

UHF Command . AN/ARC-27
 Liaison . AN/ARC-8
 Interphone  USAF Combat
 Navigational Radar . AN/APQ-24
 Loran . AN/APN-9
 Glide Path . AN/ARH-9
 Marker Beacon . RC-193A
 Radio Compass . AN/ARN-7A
 Range Recvr  BC-453
 IFF . AN/APS-6
 Blind Approach . *RC-103D
 Gun Laying Radar . AN/APG-32
 Defensive ECM
*AN/ARN-14 Alternate Set

UNCLASSIFIED
### Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Basic Mission</th>
<th>Max Bomb</th>
<th>High Altitude</th>
<th>High Speed</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take-off Weight</strong></td>
<td>(lb)</td>
<td>370,000</td>
<td>370,000</td>
<td>370,000</td>
<td>370,000</td>
</tr>
<tr>
<td>Payload (6,0 lb/gal (grade 115/145))</td>
<td>(lb)</td>
<td>185,784</td>
<td>170,217</td>
<td>183,784</td>
<td>183,784</td>
</tr>
<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td>4400</td>
<td>4400</td>
<td>4400</td>
<td>4400</td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
<td>5685</td>
<td>5685</td>
<td>5685</td>
<td>5685</td>
</tr>
<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
</tr>
<tr>
<td>Rate of climb at SL (one eng. out)</td>
<td>(fpm)</td>
<td>1025</td>
<td>1025</td>
<td>1025</td>
<td>1025</td>
</tr>
<tr>
<td>Time: SL to 10,000 ft</td>
<td>(min)</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min)</td>
<td>26.8</td>
<td>26.8</td>
<td>26.8</td>
<td>26.8</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>32,200</td>
<td>32,200</td>
<td>32,200</td>
<td>32,200</td>
</tr>
<tr>
<td>Service ceiling (one eng. out)</td>
<td>(ft)</td>
<td>30,350</td>
<td>30,350</td>
<td>30,350</td>
<td>30,350</td>
</tr>
<tr>
<td><strong>Combat Range</strong></td>
<td>(n, mi)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Combat Radius</strong></td>
<td>(n, mi)</td>
<td>3057</td>
<td>2750</td>
<td>2632</td>
<td>1367</td>
</tr>
<tr>
<td>Average cruise speed</td>
<td>(kn)</td>
<td>190</td>
<td>193</td>
<td>219</td>
<td>334</td>
</tr>
<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>5000</td>
<td>5000</td>
<td>25,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Target speed</td>
<td>(kn)</td>
<td>342</td>
<td>340</td>
<td>342</td>
<td>344</td>
</tr>
<tr>
<td>Target altitude</td>
<td>(ft)</td>
<td>39,650</td>
<td>38,850</td>
<td>40,680</td>
<td>37,500</td>
</tr>
<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>25,000</td>
<td>24,900</td>
<td>25,000</td>
<td>39,400</td>
</tr>
<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>31.7</td>
<td>28.0</td>
<td>24.3</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Combat Weight**

- (lb) 258,200
- (ft) 39,850
- (kn) 345
- (fpm) 550
- (ft) 40,000
- (ft) 43,400
- (ft) 40,700
- (ft) 21,400
- (ft) 348/36,500
- (kn) 336
- (kn) 336
- (kn) 337
- (kn) 334
- (kn) 342

**Landing Weight**

- (lb) 194,513
- (ft) 1890
- (ft) 1650
- (ft) 3350
- (ft) 3100

**Performance Basis:**

(a) Data source: Flight test
(b) Performance is based on powers shown on page 7.

**Notes:**

1. Take-off power
2. Max power
3. Normal power
4. Detailed descriptions of Radius and Range missions given on page 7
5. Props reversed.
<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC MISSION</th>
<th>MAX BOMB</th>
<th>HIGH SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT (lb)</td>
<td>357,500</td>
<td>357,500</td>
<td>357,500</td>
</tr>
<tr>
<td>Fuel at 5,0 lb/gal (grade 115/145) (lb)</td>
<td>171,294</td>
<td>157,717</td>
<td>171,294</td>
</tr>
<tr>
<td>Payload (Flash Bombs) (lb)</td>
<td>2410</td>
<td>15,940</td>
<td>2410</td>
</tr>
<tr>
<td>Wing loading (lb/sq ft)</td>
<td>74.9</td>
<td>74.9</td>
<td>74.9</td>
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<tr>
<td>Stall speed (power off) (kn)</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Take-off ground run at SL (ft)</td>
<td>4030</td>
<td>4030</td>
<td>4030</td>
</tr>
<tr>
<td>Take-off to clear 50 ft (ft)</td>
<td>5220</td>
<td>5220</td>
<td>5220</td>
</tr>
<tr>
<td>Rate of climb at SL (fpm)</td>
<td>1045</td>
<td>1045</td>
<td>1045</td>
</tr>
<tr>
<td>Rate of climb at SL (one eng. out) (fpm)</td>
<td>1100</td>
<td>1100</td>
<td>1100</td>
</tr>
<tr>
<td>Time: SL to 10,000 ft (min)</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft (min)</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>34,500</td>
<td>34,500</td>
<td>34,500</td>
</tr>
<tr>
<td>Service ceiling (one eng. out) (ft)</td>
<td>32,000</td>
<td>32,000</td>
<td>32,000</td>
</tr>
<tr>
<td>COMBAT RADIUS (n, mi.)</td>
<td>2500</td>
<td>2574</td>
<td>1272</td>
</tr>
<tr>
<td>Average cruise speed (kn)</td>
<td>184</td>
<td>188</td>
<td>338</td>
</tr>
<tr>
<td>Initial cruising altitude (ft)</td>
<td>5000</td>
<td>5000</td>
<td>33,000</td>
</tr>
<tr>
<td>Target speed (kn)</td>
<td>342</td>
<td>335</td>
<td>332</td>
</tr>
<tr>
<td>Target altitude (ft)</td>
<td>40,100</td>
<td>39,000</td>
<td>38,500</td>
</tr>
<tr>
<td>Final cruising altitude (ft)</td>
<td>25,000</td>
<td>25,000</td>
<td>39,500</td>
</tr>
<tr>
<td>Total mission time (hr)</td>
<td>29.9</td>
<td>26.9</td>
<td>8.0</td>
</tr>
<tr>
<td>COMBAT WEIGHT (lb)</td>
<td>254,200</td>
<td>247,750</td>
<td>261,056</td>
</tr>
<tr>
<td>Combat altitude (ft)</td>
<td>40,100</td>
<td>39,000</td>
<td>38,500</td>
</tr>
<tr>
<td>Combat speed (kn)</td>
<td>345</td>
<td>350</td>
<td>345</td>
</tr>
<tr>
<td>Combat climb (fpm)</td>
<td>540</td>
<td>710</td>
<td>600</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm) (ft)</td>
<td>40,200</td>
<td>40,900</td>
<td>39,800</td>
</tr>
<tr>
<td>Service ceiling (100 fpm) (ft)</td>
<td>43,800</td>
<td>44,000</td>
<td>43,200</td>
</tr>
<tr>
<td>Service ceiling (one eng. out) (ft)</td>
<td>40,900</td>
<td>41,300</td>
<td>40,500</td>
</tr>
<tr>
<td>Max rate of climb at SL (fpm)</td>
<td>2190</td>
<td>2260</td>
<td>2100</td>
</tr>
<tr>
<td>Max speed at optimum altitude (kn/ft)</td>
<td>349/36,100</td>
<td>351/36,600</td>
<td>346/35,800</td>
</tr>
<tr>
<td>Basic speed at 25,000 ft (kn)</td>
<td>335</td>
<td>336</td>
<td>334</td>
</tr>
<tr>
<td>LANDING WEIGHT (lb)</td>
<td>193,655</td>
<td>193,914</td>
<td>193,655</td>
</tr>
<tr>
<td>Ground roll at SL (ft)</td>
<td>1910</td>
<td>1920</td>
<td>1910</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake) (ft)</td>
<td>1660</td>
<td>1680</td>
<td>1660</td>
</tr>
<tr>
<td>Total from 50 ft (ft)</td>
<td>3370</td>
<td>3390</td>
<td>3370</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake) (ft)</td>
<td>3120</td>
<td>3140</td>
<td>3120</td>
</tr>
</tbody>
</table>

**NOTES**
1. Take-off power
2. Max power
3. Normal power
4. Detailed descriptions of Radius and Range missions given on page 7
5. Props reversed
6. Data source: Flight test
7. Performance is based on powers shown on page 7.
NOTES

FORMULA: RADIUS MISSION I, II, VI & VII

Warm-up, take-off and climb on course to 5000 feet at normal power; cruise out at long range speeds to point of cruise-climb operation. Begin climb to combat altitude, using long range climb powers, to arrive at cruise ceiling 500 nautical miles from target. Cruise at long range speeds at combat altitude, using best engine (reciprocating-jet) combinations; 15 minutes from target, conduct 10 engine normal power photo-run, drop flash bombs and conduct 2 minutes evasive action and 8 minutes escape from target at normal power. After leaving target area, cruise back to base at long range speeds, using best engine combinations, until 500 nautical miles from target. Descend to optimum cruise altitude and cruise-climb back to base. Range free allowances include 10 minutes normal power fuel consumption for reciprocating engines and 5 minutes normal power fuel consumption for jet engines for starting and take-off, 2 minutes normal power fuel consumption at combat altitude for evasive action, 30 minutes of fuel consumption for long range speeds at sea level (reciprocating engines only) plus 5% of initial fuel load for landing and endurance reserves.

FORMULA: RADIUS MISSION III

Warm-up, take-off and climb on course to 25,000 feet using long range climb powers; cruise out at long range speeds, using best engine combinations (reciprocating-jet) to point of climb. Climb, using long range climb powers, to combat altitude so as to arrive at this altitude 500 nautical miles from target. Conduct mission within 500 nautical mile zone the same as for Radius Missions I and II. Descend to 25,000 feet and cruise back to base at long range speeds, using best engine combinations. Range free allowances are the same as for Radius Missions I and II.

FORMULA: RADIUS MISSIONS IV & VIII

Entire mission is flown at normal power. Warm-up, take-off and climb on course to cruise altitude. Cruise-climb, begin climb to target altitude so as to arrive at this altitude 500 nautical miles from target, cruise in to target, drop flash bombs and conduct 2 minutes evasive action, climb to best altitude for normal power cruise. Cruise-climb to base. Range free allowances are the same as for Radius Missions I & II.

FORMULA: FERRY RANGE MISSION V

Warm-up, take-off and climb on course to 5000 feet at normal power; cruise climb at long range speeds until all but reserve fuel is consumed. Range free allowances are the same as for Radius Missions I and II, except no fuel allowed for evasive action.

GENERAL DATA:

(a) All ceilings and rate of climb data are instantaneous values.

(b) Total fuel capacity is usable only for special loadings with equipment removed from the aircraft.

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

<table>
<thead>
<tr>
<th>(6) R-4360-41</th>
<th>(4) J47-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHP - RPM - MIN</td>
<td></td>
</tr>
<tr>
<td>T.O.</td>
<td>5350 - 2700 - 5</td>
</tr>
<tr>
<td></td>
<td>3250 - 2700 - 5</td>
</tr>
<tr>
<td>Mil</td>
<td>5350 - 2700 - #30</td>
</tr>
<tr>
<td></td>
<td>3250 - 2700 - 30</td>
</tr>
<tr>
<td>Nor</td>
<td>2650 - 2550 - Cont</td>
</tr>
<tr>
<td></td>
<td>4700 - 7630 - Cont</td>
</tr>
</tbody>
</table>

Wet

(d) For detailed planning refer to Technical Order AN-01-SEUD-1 and other applicable Technical Orders.

(e) Take-off at 370,000 lb gross weight is authorized only on airplanes on which landing gear are modified in accordance with T.O. 1B-36-815 (ECP-1800B) and T.O. 1B-36-889 (ECP-1800L).

PERFORMANCE REFERENCE:

FZA-36-242, FZA-36-368, AN-01-SEUD-1 and applicable T.O.'s.

REVISION BASIS: To reflect latest data.