Standard Aircraft Characteristics

RB-45C
TORNADO
North American

TWO J47-GE-7 OR -13
AND
TWO J47-GE-9 OR -15
GENERAL ELECTRIC

UNCLASSIFIED
POWER PLANT

No. & Model: (2)J47-GE-7 or -13 and (2)J47-GE-9 or -15
Mfr. General Electric
Engine Spec No. E-581 & E-582
Type Axial
Length 144" Diameter 39"
Weight (dry) 2525 lb
Tail Pipe Fixed Area Augmentation Water/Air

A TO
No. & Model (3)DS4000/T-34
Mfr. Picatinny Arsenal
Engine Spec No. NA
Weight (loaded) 1610 lb ea

ENGINE RATINGS

S. L. S. LB - RPM - MIN
Max: (wet) 6600 7950 5
(wet) 5820 7950 5
Miles 5200 7950 30
(1000 6500 30
Nor. 4320 7370 Cont
(4)250 7370 Cont
* -13 and -15 engines
** -7 and -9 engines

ATO
Thrust (lb ea) 4000
Duration (sec) 30

DIMENSIONS

Wing Span 89.0'
Span with tip tanks 96.0'
Incidence (root) 3.5°
Dihedral 1.0°
Sweepback (LE) 30°30'
Length 75.9'
Height 25.2'
Tread 22.4'

BOMBS

No. Class (lb)
25 M-122 Photo Flash

CAMERAS

No. Type Lens
3 Tri-Metrogon Station 6" Vertical Station
1 K-17C 36"
1 K-37 12"
1 T-11 6"
1 S-7A Stereo 7"
Forward Oblique Station
1 K-22 24" or 12"
Split Vertical Station
2 K-37 12"
2 K-38 24"

GUNS

No. Size Rds ea Loc
1 M-7 50 cal 400 Tail, tur

WEIGHTS

Loading Lb L. F.
Empty 49,984 (A)
Basic 50,687 (A)
Design 82,600 3.0
Combat 97,200
Max T. O. 1,110,721
Max Load 1,110,721

(A) Actual
* For Basic Mission
† Limited by space
‡ Limited by T. O. weight

FUEL

Location No. Tanks Gal
Wg* 8 3132
Fuel 1 355
Bomb Bay, fwd 1 1200
Bomb Bay, aft 1 1196
Wg, drop 2 2250
Total 8133
Grade JP-4
Specification MIL-F-5624A

OIL

Nacelles 4 (tot) 37
Grade 1005
Specification MIL-L-6081A

* Self-Sealing WATER/ALCOHOL

ELECTRONICS

VHF Command AN/ARC-3
Radio Compass AN/ARN-6
Interphone AN/AIC-2A
Loran AN/APQ-24
Glide Path AN/APN-9
Marker Beacon AN/APX-6
Bomb Nav, Radar AN/APQ-6
Radar AN/APN-9
Radar AN/APQ-2B or -12
* AF 48-34 and subsequent
Note: Plans are under consideration for the installation of AN/APS-54 & E-6 Chaff system
### Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC MISSION</th>
<th>DESIGN MISSION</th>
<th>DAY RECONN MISSION</th>
<th>FERRY RANGE MISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAKE-OFF WEIGHT</strong></td>
<td>(lb)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fuel at 6.5 lb/gal (grade JP-4)</td>
<td>107,582</td>
<td>91,243</td>
<td>110,721</td>
<td>110,680</td>
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<tr>
<td>Payload (Cameras)</td>
<td>(lb)</td>
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<tr>
<td></td>
<td>45,064</td>
<td>30,439</td>
<td>52,865</td>
<td>52,865</td>
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<tr>
<td>Payload (Flash Bombs)</td>
<td>(lb)</td>
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<td></td>
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<tr>
<td></td>
<td>4700</td>
<td>4700</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Wing loading</td>
<td>(lb/ft²)</td>
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<tr>
<td></td>
<td>92.55</td>
<td>78.71</td>
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<tr>
<td>Stall speed (power off)</td>
<td>(kn)</td>
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<td></td>
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<tr>
<td></td>
<td>121</td>
<td>111</td>
<td>123</td>
<td>123</td>
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<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6100</td>
<td>4100</td>
<td>6570</td>
<td>6570</td>
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<tr>
<td>Take-off ground run with ATO</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>4350</td>
<td>2950</td>
<td>4600</td>
<td>4600</td>
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<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
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<td></td>
<td>8070</td>
<td>5760</td>
<td>8580</td>
<td>8580</td>
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<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2700</td>
<td>3690</td>
<td>2590</td>
<td>2590</td>
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<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33,500</td>
<td>37,200</td>
<td>32,300</td>
<td>32,300</td>
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<tr>
<td>COMBAT RANGE</td>
<td>(n. mi)</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>916</td>
<td>616</td>
<td>1107</td>
<td>940</td>
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<tr>
<td>Average cruise speed</td>
<td>(kn)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>404</td>
<td>407</td>
<td>406</td>
<td>401</td>
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<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25,250</td>
<td>31,600</td>
<td>25,300</td>
<td>25,400</td>
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<tr>
<td>Target speed</td>
<td>(kn)</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>421</td>
<td>418</td>
<td>420</td>
<td>420</td>
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<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39,500</td>
<td>39,800</td>
<td>30,400</td>
<td>39,700</td>
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<tr>
<td>Total mission time</td>
<td>(hr)</td>
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<td></td>
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<td></td>
<td>4.6</td>
<td>5.1</td>
<td>5.5</td>
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#### COMBAT WEIGHT

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<thead>
<tr>
<th><strong>COMBAT WEIGHT</strong></th>
<th>(lb)</th>
<th>73,200</th>
<th>67,289</th>
<th>77,022</th>
<th>77,500</th>
<th>58,129</th>
<th>58,129</th>
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<tbody>
<tr>
<td>Combat speed</td>
<td>(kn)</td>
<td>442</td>
<td>438</td>
<td>440</td>
<td>472</td>
<td>425</td>
<td>425</td>
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<tr>
<td>Combat climb</td>
<td>(fpm)</td>
<td>1090</td>
<td>1070</td>
<td>850</td>
<td>1070</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Service ceiling (500 fpm)</td>
<td>(ft)</td>
<td>37,900</td>
<td>39,750</td>
<td>36,600</td>
<td>36,400</td>
<td>42,900</td>
<td>42,800</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>41,500</td>
<td>43,300</td>
<td>40,250</td>
<td>40,100</td>
<td>46,400</td>
<td>46,200</td>
</tr>
<tr>
<td>Max rate of climb at SL</td>
<td>(fpm)</td>
<td>4400</td>
<td>4340</td>
<td>3840</td>
<td>4340</td>
<td>5450</td>
<td>5450</td>
</tr>
<tr>
<td>Basic speed at 35,000 ft</td>
<td>(kn/ft)</td>
<td>405/4000</td>
<td>405/4100</td>
<td>404/3900</td>
<td>404/3900</td>
<td>405/4200</td>
<td>481/1500</td>
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</table>

#### LANDING WEIGHT

<table>
<thead>
<tr>
<th><strong>LANDING WEIGHT</strong></th>
<th>(lb)</th>
<th>58,407</th>
<th>57,646</th>
<th>58,591</th>
<th>57,325</th>
<th>58,129</th>
<th>58,129</th>
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</thead>
<tbody>
<tr>
<td>Ground roll at SL</td>
<td>(ft)</td>
<td>2180</td>
<td>2140</td>
<td>2190</td>
<td>2130</td>
<td>2190</td>
<td>2190</td>
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</tbody>
</table>

**NOTES**

1. Max power  
2. Normal power  
3. Detailed descriptions of Radius and Range missions are given on page 6  
4. Includes weight of ATO (3220 lb)  
5. With 2-4000 lb ATO units  
6. Values quoted are for T.O. weight less ATO  
7. Structural limit

**Performance Basis:**

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

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*RB-45C*  
*UNCLASSIFIED*  
*18 FEB 54*
NOTES

FORMULA: RADIUS MISSIONS I & II

Take-off and climb on course to cruise ceiling at maximum power. Cruise out at long range speeds increasing altitude with decreasing airplane weight, external and bomb bay tanks (if carried) are dropped when empty, to a point 15 minutes from target. Run into target at normal power, drop flash bombs, conduct 2 minutes evasive action and 8 minutes escape from target at normal power. Climb to cruise ceiling is conducted during the evasive and escape operation. Cruise back to base at long range speeds increasing altitude with decreasing airplane weight. Range free allowances include 3 minutes normal power fuel consumption for starting engines and take-off, 2 minutes normal power fuel consumption at combat altitude for evasive action and 30 minutes of maximum endurance fuel consumption at sea level plus 5% of initial fuel load for landing reserve.

FORMULA: RADIUS MISSION III

Same as Mission I, except no flash bombs are carried for the daylight high altitude reconnaissance mission.

FORMULA: RADIUS MISSION IV

Take-off and climb on course to cruise ceiling at maximum power. Cruise out at long range speeds increasing altitude with decreasing airplane weight, external and bomb bay tanks are dropped when empty. Descend to sea level 50 nautical miles from target, run into target at maximum permissible speeds, photograph and run out from target 50 nautical miles. Climb on course at maximum power to cruise ceiling. Cruise back to base at long range speeds, increasing altitude with decreasing airplane weight. Range free allowances include 5 minutes normal power fuel consumption for starting engines and take-off and 20 minutes maximum endurance fuel consumption at sea level plus 5% fuel load for landing reserve.

FORMULA: RADIUS MISSION V

Take-off and climb on course at maximum power to cruise ceiling. Cruise out at long range speeds increasing altitude with decreasing airplane weight until all usable fuel is consumed; external and bomb bay tanks dropped when empty. Range free allowances include 3 minutes normal power fuel consumption for starting engines and take-off and 30 minutes of maximum endurance fuel consumption at sea level plus 5% of initial fuel load for landing reserve.

FORMULA: RANGE MISSION VI

Same as Mission V, except all tanks are carried the entire distance.

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>S. L. Static</th>
<th>LB</th>
<th>RPM</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
<td>5000</td>
<td>7950</td>
<td>30</td>
</tr>
<tr>
<td>Nor</td>
<td>4300</td>
<td>7370</td>
<td></td>
</tr>
</tbody>
</table>

(b) Water injection installation may be carried in lieu of 2-400 lb ATO units. Weight of this droppable water installation is 3648 lb. Sea level static rating for this wet take-off power is 5700 lb.

(c) For detailed planning refer to Technical Order AN01-60GFB-1 and other applicable technical orders.

PERFORMANCE REFERENCE:


REVISION BASIS: To conform with MIL-C-5011A Ground Rules.