Standard Aircraft Characteristics

F-105 E
THUNDERCHIEF
Republic

ONE J75-P-19W
PRATT & WHITNEY

17 OCT 58

5 th Ed Addendum No 10
**POWER PLANT**
- Nr & Model: (1) J75-P-19W
- Mfr: Pratt & Whitney
- Engine Spec Nr: A-2637
- Type: "Tall Spool Axial"
- Length: 258.3"
- Diameter: .43, 0th
- Weight (dry): 5850 lb
- Augmentation: Water & Afterburner Tail Pipe, 2-Position Convergent plus Republic Ram Air Ejector

**ENGINE RATINGS**
- S.L.S. LB RPM MIN
- T.O: 26,500 - 6850/8800 - 1
- Max: 24,500 - 6400/8930 - 15
- Mill: 16,100 - 6440/8940 - 30
- Nor: 14,300 - 6080/8700 - Cont
- *With Water
- † With afterburner operating
- ‡ Limited by water supply

**DIMENSIONS**
- Wing Span: 34.0'
- Incidence (root): 0°
- Incidence (tip): 0°
- Cathedral: 3°20'
- Sweepback (25° chord): 45°
- Length: 64.3'
- Height: 19.7'
- Tread: 17.3'

**BOMBS**
- Nr Type: Internal External Class (lb)
- 750
- 1000
- Special Stores: (MK-28) 1960

**GUNS**
- Nr Type: M-61 20mm .1000 Fuselage

**ROCKETS**
- Nr Size: 2 Pods(76), 2, 75" FFAR, Outb Pylons
- 2 Pods(76), 2, 75" FFAR, Jnbd Pylons
- 1 Pods(38), 2, 75" FFAR, Ctr Pylon

**WEIGHTS**
- Loading: 27,746 (C)
- Basic: 28,465 (C)
- Design: 34,768 .8, 67 (7.0)
- Combat: 35,821
- Max T.O.: 51,229 .2, 0
- Max Land: 42,664 .2, 2
- (C) Calculated
- For basic mission
- Limited by space
- Limited by rate of sink

**FUEL**
- Location Nr Tanks Gal
- Fuselage: 8...1005
- Fus, bomb bay: 1...390
- Fus, drop, ext: 2...900
- Fus, drop, ext: 1...450
- Total: 2745
- Grade: JP-4
- Specification: MIL-F-5624A

**OIL**
- Engine, integral: 8...(tot) 8.0
- Water/Air: MIL-L-7808
- Fus, aft...1... (tot) 36

**ELECTRONICS**
- Comm-Ident-Navig: AN/ASQ-37
- UHF Command: AN/AKC-70
- Direction Finder: AN/AHA-48
- Marker Beacon: AN/ARN-61
- TACAN: AN/ARN-92
- Data Link: *AN/ARR-56
- Transponder: AN/APX-37
- Intercomm: AN/AIC-20
- Chaff Dispenser: *AN/ALE-2
- Radar Warning: AN/APR-54
- Doppler Navigation: AN/APN-105
- Homing Guidance: *AN/ARD-10
- ECM Pods: AN/ALQ-31 (V)
- Fire Control System (mod): MA-8
- Provisions only
## Loading and Performance—Typical Mission

<table>
<thead>
<tr>
<th>CONDITIONS</th>
<th>BASIC MISSION</th>
<th>DESIGN MISSION</th>
<th>GROUND SUPPORT</th>
<th>FERRY RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>(lb)</td>
<td>48,272</td>
<td>48,272</td>
<td>51,229</td>
</tr>
<tr>
<td>Fuel at 6,5 lb/gal (grade JP-4)</td>
<td>(lb)</td>
<td>15,307</td>
<td>15,307</td>
<td>17,843</td>
</tr>
<tr>
<td>Payload (Ammo)</td>
<td>(lb)</td>
<td>565</td>
<td>565</td>
<td>565</td>
</tr>
<tr>
<td>Payload (Bombs)</td>
<td>(lb)</td>
<td>1960</td>
<td>1960</td>
<td>1970</td>
</tr>
<tr>
<td>Wing loading</td>
<td>(lb/sq ft)</td>
<td>125.4</td>
<td>125.4</td>
<td>133.1</td>
</tr>
<tr>
<td>Stall speed (power off)</td>
<td>(kn)</td>
<td>180</td>
<td>180</td>
<td>185</td>
</tr>
<tr>
<td>Take-off ground run at SL</td>
<td>(ft)</td>
<td>4590</td>
<td>4590</td>
<td>5180</td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
<td>6000</td>
<td>6000</td>
<td>6900</td>
</tr>
<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td>4800</td>
<td>4800</td>
<td>4050</td>
</tr>
<tr>
<td>Time: SL to 20,000 ft</td>
<td>(min)</td>
<td>4.3</td>
<td>4.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Time: SL to 30,000 ft</td>
<td>(min)</td>
<td>7.7</td>
<td>7.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>34,000</td>
<td>34,000</td>
<td>31,000</td>
</tr>
<tr>
<td>COMBAT RANGE</td>
<td>(n mi)</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>COMBAT WEIGHT</td>
<td>(lb)</td>
<td>35,821</td>
<td>35,490 (37,451)</td>
<td>38,421 (38,656)</td>
</tr>
<tr>
<td>Combat altitude</td>
<td>(ft)</td>
<td>S.L. (36,800)</td>
<td>S.L. (37,400)</td>
<td>S.L.</td>
</tr>
<tr>
<td>Combat speed</td>
<td>(kn)</td>
<td>714</td>
<td>714 (1087)</td>
<td>714 (706)</td>
</tr>
<tr>
<td>Combat climb</td>
<td>(fpm)</td>
<td>34,100</td>
<td>34,500 (8000)</td>
<td>33,500 (7000)</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>(ft)</td>
<td>48,500</td>
<td>48,500 (47,300)</td>
<td>47,600 (46,000)</td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>41,650</td>
<td>41,800 (40,700)</td>
<td>41,250 (39,750)</td>
</tr>
<tr>
<td>Max rate of climb at SL</td>
<td>(fpm)</td>
<td>34,100</td>
<td>34,500 (32,600)</td>
<td>33,500 (31,850)</td>
</tr>
<tr>
<td>Max speed at 35,000 ft</td>
<td>(kn)</td>
<td>1128</td>
<td>1120 (1123)</td>
<td>1127 (995)</td>
</tr>
<tr>
<td>Basic speed at S.L. ft</td>
<td>(kn/ft)</td>
<td>714</td>
<td>714 (714)</td>
<td>714 (690)</td>
</tr>
<tr>
<td>LANDING WEIGHT</td>
<td>(lb)</td>
<td>31,189</td>
<td>30,611</td>
<td>30,763</td>
</tr>
<tr>
<td>Ground roll at SL</td>
<td>(ft)</td>
<td>4400</td>
<td>4320</td>
<td>4340</td>
</tr>
<tr>
<td>Ground roll (auxiliary brake)</td>
<td>(ft)</td>
<td>2550</td>
<td>2510</td>
<td>2520</td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>(ft)</td>
<td>6400</td>
<td>6290</td>
<td>6320</td>
</tr>
<tr>
<td>Total from 50 ft (auxiliary brake)</td>
<td>(ft)</td>
<td>4550</td>
<td>4480</td>
<td>4510</td>
</tr>
</tbody>
</table>

### Notes
1. Take-off power
2. Max power
3. Military power
4. Detailed descriptions of RADIUS and RANGE missions given on page 6
5. (2) 1000 lb bombs (external)
6. (1) MK-28 Store (internal)
7. With 20 ft diameter braking chute
9. Speed at end of 3 min. afterburner run-in to target.
10. Values in parenthesis indicate performance with store or bombs (plus pylons) aboard.
11. Wing tanks with 2437 lb of fuel are dropped prior to combat. Radius in parenthesis is calculated carrying wing tanks in combat. F-105 Type II wing tanks are stressed compatible with external bombs which are carried in combat.
12. Fus centerline fuel tanks and pylon dropped at 26,800 ft during initial climb.

### PERFORMANCE BASIS
(a) Data source: Estimated data
(b) Performance is based on powers shown on page 3
NOTES

FORMULA: RADIUS MISSION I

Take-off with maximum power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at max range speeds, descend to sea level, expend store, combat for 5 minutes at military power, climb on course with military power to initial cruise home altitude, cruise to base at cruise altitude at max range speeds. Range-free allowances include 5 minutes at normal power and 1 minute at maximum power at sea level for starting engine and take-off, 5 minutes combat at sea level with military power, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance plus 5% of usable fuel load.

FORMULA: RADIUS MISSIONS II, III

Take-off with maximum power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at max range speeds, Climb on course with military power to cruise ceiling. At maximum power, fly for 3 minutes inbound to target prior to bomb release, drop external tanks (if any) and dive bomb, leave target at military power high speed for 2 minutes at sea level, climb with military power to initial cruise home altitude, cruise to base at cruise altitude at max range speeds. Range free allowances include 5 minutes at normal power and 1 minute at maximum power at sea level for starting engine and take-off, dive bomb, and a reserve of 15 min. loiter at cruise altitude at speeds for maximum endurance plus fuel to allow for one instrument approach and visual go-around from airplane flare out attitude.

FORMULA: RADIUS MISSION IV

Take-off with maximum power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at max range speeds, descend to sea level and loiter for 10 minutes at speeds for maximum endurance, expend store or bombs, combat for 10 minutes at military power, climb on course with military power to initial cruise home altitude, cruise to base at cruise altitude at max range speeds. Range free allowances include 5 min. at normal power and 1 min. at max. power at sea level for starting engine and take-off, 10 minutes combat at sea level at speeds for maximum endurance, 10 minutes combat at sea level with military power, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance plus 5% of usable fuel load.

FORMULA: RANGE MISSION V

Take-off with maximum power, climb on course with military power to initial cruise altitude, cruise at cruise altitude at max range speeds to remote base. Range-free allowances include 5 minutes at normal power plus 1 minute at maximum power for starting engine and take-off, and a reserve of 20 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

GENERAL NOTES:

(a) Tanks and pylons are carried on all missions and dropped when empty unless otherwise specified.

(b) Cruise is performed in level flight increasing altitude by 5000 ft. increments when cruise ceiling permits and when cruise conditions are accordingly improved. All cruising climbs are at military power.

REVISION BASIS:

Initial Issue
RESTRICTED DATA
ATOMIC ENERGY ACT 1954