POWER PLANT

NO. & MODEL .......... (1) J75-P-8
MFR. ................. Pratt & Whitney
TYPE ................. Axial Flow
LENGTH .............. 233 inches
DIAMETER ........... 50.4 inches
AUGMENTATION ........ Afterburner
SPECIFICATION NO. .... P & W N-2322
26 April, 1957

MISSION AND DESCRIPTION

The FBU-3 is a high performance, single place, all-weather fighter designed to perform the combat air patrol mission or the general purpose fighter mission, with or without inflight refueling. The general layout of the airplane is the same as that of the FBU-1. The high two-position wing incorporates a flap-blowing boundary layer control system in conjunction with full span double leading edge-droop. Directional stability is provided by the use of the FBU-1 vertical tail platform in conjunction with two-position ventral fin which fold for takeoff and landing. The FBU-3 can carry Sidewinder air-to-air missiles in addition to its basic armament of the three Sparrow III air-to-air missiles. A cruise and maneuvering autopilot with control stick steering is incorporated to maintain high pilot efficiency. The FBU-3 is powered by a Pratt and Whitney J75-P-8 turbo-jet engine with afterburner.

WEIGHTS

LOADINGS LBS. L. F.
TAKE-OFF ............ 37,701
COMBAT ................ 30,576
LANDING ................ 20,156
EMPTY .................. 21,860

FUEL AND OIL

NO. TANKS GAL. LOCATION
3 .................. 617 . . Fuselage, Bladder, Main System
7 .................. 746 . . Fuselage, Bladder, Transfer System
1 .................. 673 . . Wing, Internal, Transfer System

FUEL CAPACITY (Total) .... 2,036 Gal.
FUEL GRADE ............. JP-5
FUEL SPEC. ............. MIL-F-5624C

OIL

OIL CAPACITY .......... 4.5 Gal.
OIL SPEC. ............... MIL-L-7808D-1

DIMENSIONS

WING
AREA ................. 450 sq ft
SPAN ................ 39 ft 11.4 in.
M. A. C. ............. 153.43 in.
SWEETBACK (1/4 Chord) .... 42°
LENGTH .............. 58 ft 8.884 in.
HEIGHT ................ 16 ft 4.5 in.
TREAD .................. 10 ft 4 in.

ELECTRONICS

INTEGRATED ELECTRONIC CENTRAL . AN/ASQ-19
AERODATA COMPUTER .... AXC-530
ARMAMENT CONTROL SYSTEM .. AERO X18
RADAR ALTIMETER ....... AN/APN-22
COMPASS SYSTEM .......... MA-1
GYRO HORIZON SYSTEM . . . . . .
FLIGHT STABILIZATION SYSTEM WITH AUTOPILOT

RATINGS

Static Thrust at S. L. Ibs
MIL + A. B. .............. 36,000
MILITARY ................ 16,600
NORMAL .................. 14,900

ORDNANCE

NO. DESCRIPTION LOCATION
3 SPARROW III SEMI-SUBMERGED MISSELS IN FUSELAGE
2 SIDEWINDER PYLON MOUNTED MISSILES ON FUSELAGE
# PERFORMANCE SUMMARY

## TAKE-OFF LOADING CONDITION

<table>
<thead>
<tr>
<th></th>
<th>UNITS</th>
<th>1) BASIC AIRPLANE 3 Sparrow III's</th>
<th>2) BASIC plus 2 Sidewinders</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>lb.</td>
<td>37,701</td>
<td>38,250</td>
</tr>
<tr>
<td>Fuel IPS</td>
<td>lb.</td>
<td>13,864</td>
<td>13,864</td>
</tr>
<tr>
<td>Payload</td>
<td>lb.</td>
<td>1,140</td>
<td>1,460</td>
</tr>
<tr>
<td>Wing loading</td>
<td>lb./sq.ft.</td>
<td>83.8</td>
<td></td>
</tr>
<tr>
<td>Stall speed/power off - BLC on</td>
<td>kn.</td>
<td>194</td>
<td></td>
</tr>
<tr>
<td>Take-off run at S.L. - calm (2)</td>
<td>ft.</td>
<td>5,880</td>
<td></td>
</tr>
<tr>
<td>Take-off to clear 50 ft. - calm (2)</td>
<td>ft.</td>
<td>5,660</td>
<td></td>
</tr>
<tr>
<td>Wind required for catapulting</td>
<td>kn.</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Rate of climb at S.L. (4)</td>
<td>fpm.</td>
<td>9,020</td>
<td></td>
</tr>
<tr>
<td>Time: S.L. to 20,000 ft. (3)</td>
<td>min.</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Time: S.L. to 30,000 ft. (3)</td>
<td>min.</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td>Service ceiling (100 fpm.) (2)</td>
<td>ft.</td>
<td>41,800</td>
<td></td>
</tr>
<tr>
<td>Combat range</td>
<td>n.mi.</td>
<td>1,765</td>
<td>1,652</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>kn.</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Cruising altitude(s)</td>
<td>ft.</td>
<td>40,700</td>
<td>40,700</td>
</tr>
<tr>
<td>Combat radius/Mission time - G.P. FTR</td>
<td>n.mi./hr.</td>
<td>536.7/2.57</td>
<td>539.2/4.48</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>kn.</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>C.A.P. ploter at 35,000 ft. / Mission Time</td>
<td>hr./hr.</td>
<td>1.32/2.65</td>
<td>1.45/2.55</td>
</tr>
<tr>
<td>IFR - radius/Mission Time</td>
<td>n.mi./hr.</td>
<td>1,157/7.07</td>
<td>1,107/4.82</td>
</tr>
</tbody>
</table>

## COMBAT LOADING CONDITION

<table>
<thead>
<tr>
<th></th>
<th>lb.</th>
<th></th>
<th>Military</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine power</td>
<td>6,721</td>
<td>Maximum</td>
<td>Military</td>
</tr>
<tr>
<td>Combat speed/combat altitude</td>
<td>kn./f.</td>
<td>1,265/60,000</td>
<td>555/40,000</td>
</tr>
<tr>
<td>Rate of climb/combat altitude</td>
<td>fpm./ft.</td>
<td>15,500/60,000</td>
<td>2,400/10,000</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm.)</td>
<td>ft.</td>
<td>25,800</td>
<td>45,200</td>
</tr>
<tr>
<td>Rate of climb at S.L.</td>
<td>fpm.</td>
<td>39,200</td>
<td>11,300</td>
</tr>
<tr>
<td>Max. speed at S.L.</td>
<td>kn.</td>
<td>630</td>
<td>630</td>
</tr>
<tr>
<td>Max. speed at/altitude</td>
<td>kn./f.</td>
<td>1,265/35,000</td>
<td>630/S.L.</td>
</tr>
</tbody>
</table>

## LANDING WEIGHT

<table>
<thead>
<tr>
<th></th>
<th>lb.</th>
<th>26,158</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>2,230</td>
<td></td>
</tr>
<tr>
<td>Stall speed with approach power</td>
<td>kn.</td>
<td>108.8</td>
</tr>
<tr>
<td>Wind required for arresting</td>
<td>kn.</td>
<td>11</td>
</tr>
<tr>
<td>Landing distance</td>
<td>ft.</td>
<td>5,500</td>
</tr>
</tbody>
</table>

## NOTES

1. WING LOADING BASED ON WING AREA = 450 SQ. FT.
2. MILITARY THRUST.
3. MILITARY THRUST - TIMES TO CLimb CONSIDER WEIGHT REDUCTION FOR FUEL USED.
4. COMBAT AT 40,000 FT.
GENERAL PURPOSE AND ESCORT FIGHTER

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
CLIMB: On course to cruise altitude with military rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
COMBAT FUEL ALLOWANCE: At 40,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between Vmax with maximum thrust and Vmax with military thrust plus 15 minutes at Vmax with military thrust. CRUISE-BACK: At altitudes and speeds for maximum range.
RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

COMBAT AIR PATROL

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
CLIMB: On course to cruise altitude with military rated thrust.
CRUISE: To a point 150 nautical miles from base at altitudes and speeds for maximum range.
LOITER: On station at speed for maximum endurance at 35,000 ft.
COMBAT FUEL ALLOWANCE: At 40,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between Vmax with maximum thrust and Vmax with military thrust plus 15 minutes at Vmax with military thrust.
CRUISE-BACK: 150 nautical miles to base at altitudes and speeds for maximum range.
RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

GENERAL PURPOSE FIGHTER WITH INFLIGHT REFUELING

(A3D-2 TANKER)

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
CLIMB: On course to cruise altitude with military rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
DESCEND to 35,000 ft. REFUELING ALTITUDE: No fuel used, no distance gained.
ALLOWANCE FOR RENDEZVOUS, HOOK-UP, AND FLIGHT CONTINGENCIES: 15 minutes at maximum endurance airspeeds. (Assume no fuel used, no distance gained during transfer of fuel.)
REFUEL POINT: Limited to return of aircraft to base with normal reserve if contact for refueling is not made.
CLIMB: On course to cruise altitude with military rated thrust.
CRUISE: Continue cruise-out at altitudes and speeds for maximum range.
The remainder of the problem is the same as the General Purpose Fighter Problem.