Standard Aircraft Characteristics

F-108A
LONGE RANGE INTERCEPTOR
North American

TWO J93-GE-1
GENERAL ELECTRIC

1 OCT 58
5th Ed Addendum Nr 9
POWER PLANT
Nr & Model ........ (2) J33-GE-1
Mfr. ............... General Electric
Engine Spec Nr ........ E-734
Type ................ Turbo Jet
Length ............... 233, 8'
Max Diameter ........ *36, 0'
Weight (dry) ........ 44875 lb
Jet Nozzle .......... Convergent-Divergent
Augmentation ...... Afterburner
*With thrust reverser

ENGINE RATINGS
S. L. S. LB RPM MIN
Max: 24,800 - 6650 - Cont
Mil: 16,900 - 6650 - Cont
Nor: 15,900 - 6650 - Cont

DIMENSIONS
Wing ............... 56.1'
Span ................ 0.0'
Incidence (root)... 0.0'
(Tip) ................ 0.0'
Dihedral ............ 0.0'
Sweepback (25% chord) .... 58.0'
Length ............ 89.0'
Height ............ 22.4'
Tread .............. 11.0'

BOMBS
None

MISSION AND DESCRIPTION
Navy Equivalent: None
Mfr's Model: NA-257

The principal mission of this two-man long range interceptor is the interception and destruction of hostile aircraft in flight during day or night and in all types of weather.

All fuel is carried internally in a pressurized fuel system with nitrogen purging.

The airplane features variable geometry inlet ducts, a canard, elevons, speed brakes, reverse thrust for icy runway conditions, and nose wheel steering.

The cockpit is provided with air conditioning, liquid oxygen, pressurization, encapsulated seats, and an automatic flight control system.

The fire control system provides primary and auxiliary navigation, target search and detection, and missile guidance in all weather, all altitude operation against heavy enemy countermeasures, operating under SAGE or lesser ground control environment.

Development

Date of contract (letter contract) ....................... Jun 57
Mock-up ............................................. (est) Jan 59
First flight ...................................... (est) Mar 61

WEIGHTS
Loading Lb L. F.
Empty .............. 49,786(E)
Basic .............. 50,160(E)
Design ................ 73,436 ........ 5.33
Combat ............ 975,145, ........ 5.33
Max T. O. .......... 101,800 ......... 3.00
Max Lng: ↑ 96,285

(E) Estimated
* For Basic Mission
† Limited by structure

FUEL
Location Nr, Tanks Gal
Wing ............... 2 ........ 2884
Fuselage ........... 5 ........... 4316
Total .................. 7200
Grade ..................... JP-6
Specification .......... MIL-F-25656

OIL
Fuselage ........... 2, (tot) 10,2
Specification .......... MIL-L-9046

ELECTRONICS
UHF Command
UHF Emergency
HF Command (voice plus digital)
Intercom
EBOFICON
Marker Beacon
Localizer
Glide Slope
UHF Data Link (receiver)
TACAN
Identification Air-to-Air
Identification Air-by-Ground

MISSILES
Nr Type Location
2 GAR-9 Fuselage

ROCKETS
None

NOTE
For detailed characteristics and performance of GAR-9 refer to Missle Section.

GUNS
None

1 OCT 58
SECRET
F-108A

5th Ed Addendum Nr 9 Oct 1 5 1958
570E - 1984

SECRET
## Loading and Performance—Typical Mission

### Conditions

<table>
<thead>
<tr>
<th></th>
<th>Intercepter Missions</th>
<th>Alternate</th>
<th>Ferry Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic</td>
<td>Point</td>
<td>Design</td>
</tr>
<tr>
<td><strong>Take-off Weight</strong></td>
<td>(lb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel at 6,7 lb/gal (grade JP-6)</td>
<td>(lb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payload (missiles)</td>
<td>(lb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wing loading</td>
<td>(psf)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stall speed (power off)</td>
<td>(kn)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take-off ground roll at SL</td>
<td>(ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take-off to clear 50 ft</td>
<td>(ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of climb at SL</td>
<td>(fpm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time: SL to 40,000 ft</td>
<td>(min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time: SL to 50,000 ft</td>
<td>(min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Combust Range

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMBAT RANGE</strong></td>
<td>(n mi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average speed</td>
<td></td>
<td>883</td>
<td></td>
<td>1005</td>
<td></td>
<td></td>
<td>657</td>
<td></td>
</tr>
<tr>
<td>Initial cruising altitude</td>
<td>(ft)</td>
<td>69,200</td>
<td></td>
<td>69,200</td>
<td>73,500</td>
<td>36,152</td>
<td>35,900</td>
<td></td>
</tr>
<tr>
<td>Final cruising altitude</td>
<td>(ft)</td>
<td>76,000</td>
<td></td>
<td>76,000</td>
<td>76,300</td>
<td>76,000</td>
<td>45,900</td>
<td></td>
</tr>
<tr>
<td>Total mission time</td>
<td>(hr)</td>
<td>1.25</td>
<td></td>
<td>1.48</td>
<td></td>
<td>0.705</td>
<td>2.38</td>
<td>4.12</td>
</tr>
</tbody>
</table>

### Total Mission Time

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL MISSION TIME</strong></td>
<td>(hr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interception altitude</td>
<td>(ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>77,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Combat Weight

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMBAT WEIGHT</strong></td>
<td>(lb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75,145</td>
<td>82,485</td>
<td></td>
</tr>
<tr>
<td>Combat altitude</td>
<td>(ft)</td>
<td>78,950</td>
<td></td>
<td>77,000</td>
<td>72,200</td>
<td>74,400</td>
<td>72,900</td>
<td></td>
</tr>
<tr>
<td>Combat speed</td>
<td>(fpm)</td>
<td>1721</td>
<td></td>
<td>1721</td>
<td>1721</td>
<td>1721</td>
<td>1721</td>
<td></td>
</tr>
<tr>
<td>Combat climb</td>
<td>(fpm)</td>
<td>500</td>
<td></td>
<td>500</td>
<td>11,800</td>
<td>12,600</td>
<td>12,200</td>
<td></td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>(ft)</td>
<td>78,950</td>
<td></td>
<td>77,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combat ceiling (1,200 fpm)</td>
<td>(ft)</td>
<td>77,800</td>
<td></td>
<td>78,400</td>
<td>76,650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>(ft)</td>
<td>79,200</td>
<td></td>
<td>77,300</td>
<td>79,700</td>
<td>82,200</td>
<td>80,500</td>
<td></td>
</tr>
<tr>
<td>Max rate of climb at SL</td>
<td>(fpm)</td>
<td>33,400</td>
<td></td>
<td>30,400</td>
<td>34,300</td>
<td>39,300</td>
<td>35,900</td>
<td></td>
</tr>
<tr>
<td>Max speed at optimum altitude</td>
<td>(kn)</td>
<td>1721/77,290</td>
<td>1721/73,400</td>
<td>1721/75,800</td>
<td>1721/70,400</td>
<td>1721/66,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic speed at 50,000 ft</td>
<td>(kn)</td>
<td>1526</td>
<td></td>
<td>1526</td>
<td>1526</td>
<td>1526</td>
<td>1526</td>
<td></td>
</tr>
</tbody>
</table>

### Landing Weight

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LANDING WEIGHT</strong></td>
<td>(lb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>59,462</td>
<td>56,970</td>
<td></td>
</tr>
<tr>
<td>Ground roll at SL</td>
<td>(ft)</td>
<td>1980</td>
<td></td>
<td>1979</td>
<td>1820</td>
<td>1790</td>
<td>1820</td>
<td></td>
</tr>
<tr>
<td>Total from 50 ft</td>
<td>(ft)</td>
<td>3175</td>
<td></td>
<td>3060</td>
<td>3100</td>
<td>3050</td>
<td>3100</td>
<td></td>
</tr>
</tbody>
</table>

### Notes

1. Maximum power
2. Military power
3. Detailed descriptions of RADIUS and RANGE missions given on page 6
4. Allows 0.8 min for take-off and acceleration to best climb speed
5. With 40% military thrust reverser

### Performance Basis

- Data source: Estimated data
- Performance is based on powers shown on page 6.
NOTES

FORMULA: AREA INTERCEPT MISSION I

Take-off and accelerate to climb speed with maximum power, climb to 36,152 ft. with military power, accelerate with maximum thrust to 2,16M at 36,152 ft., accelerate and climb with maximum power to 3,0M best cruise altitude, cruise out at 3,0M best cruise altitude, climb at 3,0M to combat ceiling (R/C - 500 FPM) with maximum power, combat allowance for 5 minutes at 50,000 ft. and 2,66M, cruise back at 3,0M best cruise altitude. Fuel allowances for which distance is not credited include 2 minutes sea level static normal power for starting engines and taxiing, 1 minute sea level static maximum power for take-off and acceleration to climb speed, 5 minutes combat with fuel flow based on power required at 50,000 ft. to maintain operational limit speed (2,56M), and a reserve of 10 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

FORMULA: ALTERNATE LOITER MISSION V

Take-off and accelerate to climb speed with maximum power, climb to 36,152 ft. with military power, cruise out at 3,0M at 36,152 ft., to a point 250 N.MI. from base, loiter for 60 minutes at 94M at 36,152 ft., accelerate with maximum power to 3,0M, accelerate and climb with maximum power to 3,0M best cruise altitude, cruise out at 3,0M best cruise altitude, combat for 10 minutes at 3,0M, cruise back to 3,0M best cruise altitude, decelerate and descend with idle thrust to best loiter altitude and speed. Fuel allowances for which distance is not credited include 3 minutes sea level static maximum power for starting engines and taxiing, 1 minute sea level static maximum power for take-off and acceleration, 10 minutes combat with fuel flow based power setting required to maintain 3,0M level flight at 70,000 ft., a reserve of 10 minutes loiter at altitudes and speeds for maximum endurance, a reserve of 10 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

FORMULA: POINT-INTERCEPT MISSION II

Take-off and accelerate to climb speed with maximum power, accelerate and climb with maximum power to 3,0M combat ceiling (R/C - 500 FPM), combat allowance for 5 minutes at 50,000 ft. and 2,66M, loiter at 35,000 ft. at speeds for maximum endurance for maximum time. Reserve is the fuel required to loiter for 20 minutes at sea level at speeds for maximum endurance. Total mission time does not include time required to start engines, warm up and taxi, or reserve.

FORMULA: ALTERNATE DESIGN MISSION III

Take-off and accelerate to climb speed with maximum power, climb to 36,152 ft. with military power, accelerate and climb with maximum power to 3,0M best cruise altitude, cruise out at 3,0M best cruise altitude, combat for 5 minutes at 3,0M, cruise back at 3,0M best cruise altitude, decelerate and descend with idle thrust to best loiter altitude and speed. Fuel allowances for which distance is not credited include 2 minutes sea level static normal power for starting engines and taxiing, 1 minute sea level static maximum power for take-off and acceleration to climb speed, 5 minutes combat with fuel flow based on power setting required to maintain 3,0M level flight at 70,000 ft., a reserve of 10 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

FORMULA: ALTERNATE DASH MISSION IV

Take-off and accelerate to climb speed with maximum power, accelerate and climb with maximum power to 3,0M best cruise altitude, cruise out at 3,0M best cruise altitude, combat for 10 minutes at 3,0M, cruise back at 3,0M best cruise altitude, decelerate and descend with idle thrust to best loiter altitude and speed. Fuel allowances for which distance is not credited include 2 minutes sea level static normal power for starting engines and taxiing, 1 minute sea level static maximum power for take-off and acceleration, 10 minutes combat with fuel flow based on power setting required to maintain level flight at 3,0M 1,2g ceiling, a reserve of 10 minutes loiter at altitudes and speeds for maximum endurance, a reserve of 10 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel load.

GENERAL DATA:

(a) Engine ratings shown on page 3 are guaranteed values. Installed values used in the performance calculations are as follows:

<table>
<thead>
<tr>
<th>(2) J33-GE-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.L. STATIC</td>
</tr>
<tr>
<td>Max:</td>
</tr>
<tr>
<td>Mil:</td>
</tr>
<tr>
<td>Nor:</td>
</tr>
</tbody>
</table>

PERFORMANCE BASIS:

REVISION BASIS:
To reflect configuration changes. (1 AUG 58)