Standard Aircraft Characteristics

NAVY MODEL
A-3B (CLE)
AIRCRAFT
(TITLE UNCLASSIFIED)

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COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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1 JULY 1967
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NAVAIR 00-110AA3-4

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A

UNCLASSIFIED
STANDARD AIRCRAFT CHARACTERISTICS

A-3B (CLE) SKYWARRIOR

DOUGLAS
POWER PLANT

No. & Model: FJ-7P-10
Mfr.: Pratt & Whitney
Type: Turboprop
Compr.: Dual rotor, axial flow
Length: 136 in.
Diameter: 41 in.
No. & Type Assist.: 12-110454000 JATO
Tail Pipe Nozzle: Constant Exit Area

RATINGS

Sea level static

THrust

LB. N1 N2
Maximum 10500 6100 9900
Military 10500 6100 9900
Normal 9000 5900 9650

N1: Speed low press. compressor
N2: Speed high press. compressor

MISSION AND DESCRIPTION

The primary mission of the AJ-3D-2 airplane is the attack and destruction of enemy ground and surface targets as required for mine-clearing, reconnaissance, and high or low altitude attack missions. The airplane is designed to operate from land bases and from carriers.

The airplane has a conventional swept-wing structure. Two turbo-jet engines are enclosed in under-wing nacelles. Provisions are made for a three-man crew: a pilot, a bomber-assistant pilot, and a gunner-navigator.

The tricycle landing gear, arresting gear, wing-fold and tail-fold mechanisms, single-slotted wing flaps, fuselage speed brakes, and power mechanisms for rudder, elevator, and ailerons are operated by hydraulic power. The horizontal stabilizer is adjustable for trim in flight. Leading edge slats are actuated automatically by aerodynamic loads.

The airplanes of Contract NOA(s) 59-0150 differs from the last 20 AJ-3D-2 aircraft of Contract NOA(s) 55-190 in that four systems of electronic countermeasures have replaced the AN-21B Tail Turret System and the AGW-7 Bomb Director System has replaced the ASR-1 System. The airplanes are the cambered wing leading edge configuration with tanker-receiver capabilities.

DEVELOPMENT

Contract NOA(s) 55-190, 30 airplanes (delivered)

NOA(s) 59-0150, 21 airplanes

First Flight: March 1960

Naval Acceptance: April 1960

Final Fleet Delivery: January 1961 (scheduled)

WEIGHTS

Loading

Lbs. L.F.
Empty (C) 39,620
Basic 40,120
Design 55,942
Combat 62,099
Maximum T.O.

a. Carrier 78,000
b. Field 78,000

Maximum Landing

a. Carrier 49,000
b. Field 56,000

FUEL AND OIL

Gal. No. Tanks Location
3040 2 *Fuselage
1238 2 Wing
748 1 Upper Bomb Bay
5086 Gal. Total usable fuel
1284 1 **Lower Bomb Bay

Fuel Grade: JP-4 or JP-5
Fuel Spec.: MIL-F-5604

*Self-sealing
**Service-Installed Kit (Tanker)

OIL

Gal. No. Tanks Location
11 2 Integral with engines

Oil Specification: MIL-L-7806

ELECTRONICS

VHF Trans-Receiver: AN/ARC-1
TACAN: AN/ARN-21
VOR Homing: AN/ARN-14E
VHF Trans-Receiver: AN/ARC-27A
HF Receiver-Trans: AN/ARC-38
Radio Altimeter: AN/AW-32
IFY Transponder: AN/AWX-69
Interphone: DAC Transistorized
Corder: AN/APE-89
UHF Direction Finder: AN/ARA-25

DSCM: AN/ALQ-19
DSCM: AN/ALQ-32
DSCM: AN/ALQ-35
DSCM: AN/ALQ-38
BOMBER DIRECTOR AN/ASB-7
# PERFORMANCE SUMMARY

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT (A) lb.</td>
<td>75,000</td>
<td>78,000</td>
<td>85,299</td>
<td>75,081</td>
<td>77,292</td>
<td></td>
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<tr>
<td>Fuel (Jp-5) lb.</td>
<td>27,272(b)</td>
<td>31,499(c)</td>
<td>34,584</td>
<td>29,488</td>
<td>31,602</td>
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<tr>
<td>Payload lb.</td>
<td>4100</td>
<td>4100</td>
<td>6300</td>
<td>5900</td>
<td>5900</td>
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<tr>
<td>Wing loading lb./sq. ft.</td>
<td>95.7</td>
<td>106.1</td>
<td>106.2</td>
<td>96.4</td>
<td>96.2</td>
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<tr>
<td>Stall speed - power-off (p)</td>
<td>124</td>
<td>129</td>
<td>133</td>
<td>125</td>
<td>128</td>
<td></td>
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<tr>
<td>Take-off run at S.L. - calm (n) ft.</td>
<td>3690</td>
<td>4440</td>
<td>5300</td>
<td>4390</td>
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<td></td>
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<tr>
<td>Take-off run at S.L. 25 kn/ft(p) ft.</td>
<td>3360</td>
<td>3000</td>
<td>3720</td>
<td>2900</td>
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<td></td>
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<td>Take-off to clear 50 ft. - calm (n) ft.</td>
<td>5190</td>
<td>6130</td>
<td>7160</td>
<td>6000</td>
<td></td>
<td></td>
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<tr>
<td>Max. speed/altitude</td>
<td>556/2900</td>
<td>556/2900</td>
<td>556/2900</td>
<td>556/2900</td>
<td>556/2900</td>
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<tr>
<td>Rate of climb at S.L.</td>
<td>5440</td>
<td>5030</td>
<td>4650</td>
<td>5260</td>
<td>5090</td>
<td></td>
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<tr>
<td>Time: S.L. to 20,000 ft. min.</td>
<td>4.7</td>
<td>5.1</td>
<td>5.6</td>
<td>4.9</td>
<td>5.1</td>
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<tr>
<td>Time: S.L. to 30,000 ft. min.</td>
<td>8.4</td>
<td>9.3</td>
<td>10.3</td>
<td>8.8</td>
<td>9.2</td>
<td></td>
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<tr>
<td>Service ceiling (100 fpm) ft.</td>
<td>43,400</td>
<td>39,400</td>
<td>37,400</td>
<td>39,000</td>
<td>39,200</td>
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<tr>
<td>Combat range n.m.i.</td>
<td>2250</td>
<td>2600</td>
<td>2740</td>
<td>2600</td>
<td>2600</td>
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<tr>
<td>Average cruising speed</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td></td>
</tr>
<tr>
<td>Cruising altitude(ft.)</td>
<td>36,000 - 43,400</td>
<td>34,600 - 43,400</td>
<td>33,400 - 42,000</td>
<td>35,400 - 43,400</td>
<td>34,800 - 42,500</td>
<td></td>
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<tr>
<td>Combat radius/Mission Time hr./n.m.i.</td>
<td>1110/15.5</td>
<td>1510/10.5</td>
<td>1410/6.5</td>
<td>1170/4.5</td>
<td>730/5.5</td>
<td></td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td>436/76</td>
<td></td>
</tr>
<tr>
<td>IPR-Radius/Mission Time n.m.i./hr.</td>
<td>11660/7.9</td>
<td>11700/6.9</td>
<td>11500/6.9</td>
<td>11700/7.9</td>
<td>11700/6.9</td>
<td></td>
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<tr>
<td>IPR-Radius/Distance lb./n.m.i.</td>
<td>11520/2.9</td>
<td>11520/2.9</td>
<td>11520/2.9</td>
<td>11520/2.9</td>
<td>11520/2.9</td>
<td></td>
</tr>
<tr>
<td>COMBAT LOADING CONDITION</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>COMBAT WEIGHT 1b.</td>
<td>69,089</td>
<td>69,400</td>
<td>69,425</td>
<td>63,282</td>
<td>65,493</td>
<td></td>
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<tr>
<td>Engine power</td>
<td>MILITARY</td>
<td>MILITARY</td>
<td>MILITARY</td>
<td>MILITARY</td>
<td>MILITARY</td>
<td></td>
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<tr>
<td>Fuel 1b.</td>
<td>16,597</td>
<td>16,699</td>
<td>17,699</td>
<td>17,699</td>
<td>16,597</td>
<td></td>
</tr>
<tr>
<td>Combat speed/combat altitude kn./ft.</td>
<td>469/41,600</td>
<td>469/41,600</td>
<td>469/41,600</td>
<td>469/41,600</td>
<td>469/41,600</td>
<td></td>
</tr>
<tr>
<td>Combat ceiling (500 fpm) ft.</td>
<td>43,300</td>
<td>41,900</td>
<td>39,900</td>
<td>41,900</td>
<td>41,900</td>
<td></td>
</tr>
<tr>
<td>Rate of climb at S.L.</td>
<td>6510</td>
<td>6100</td>
<td>5710</td>
<td>6350</td>
<td>6100</td>
<td></td>
</tr>
<tr>
<td>Max. speed at S.L.</td>
<td>556/84</td>
<td>556/84</td>
<td>556/84</td>
<td>556/84</td>
<td>556/84</td>
<td></td>
</tr>
<tr>
<td>Max. speed at 30,000 ft. kn./m.</td>
<td>109/88</td>
<td>109/88</td>
<td>109/88</td>
<td>109/88</td>
<td>109/88</td>
<td></td>
</tr>
<tr>
<td>LANDING WEIGHT 1b.</td>
<td>44,502</td>
<td>45,513</td>
<td>45,601</td>
<td>44,600</td>
<td>44,666</td>
<td></td>
</tr>
<tr>
<td>Fuel 1b.</td>
<td>2880</td>
<td>3112</td>
<td>3276</td>
<td>2997</td>
<td>2997</td>
<td></td>
</tr>
<tr>
<td>Stall speed - power-off/appr. powered 1b.</td>
<td>97/96</td>
<td>97/96</td>
<td>97/96</td>
<td>97/96</td>
<td>97/96</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

(A) The limit catapult take-off weight of 73,000 pounds and the limit field take-off weight of 78,000 pounds are consistent with current operating bulletins. Under emergency conditions increased take-off weights may be utilized.

(B) Fuel limited to maintain T.O. weight. With full fuel of 29,496 lbs (T.O. wt. = 75,220 lb), combat radius is 1240 n.m. without refueling.

(C) Fuel limited to maintain T.O. weight. With full fuel of 34,004 lbs (T.O. wt. = 81,085 lbs), combat radius is 1430 n.m.

(D) For Low Alt. Attack mission, combat radius is decreased 125 n.m. and mission time is decreased 0.5 hr.

(E) For Sea Level target approach, total radius is reduced:

(F) For Low Alt. Attack mission, total radius is reduced:

(G) One refueling from ASD-2 tanker. (Tanker T.O. wt. = 73,000 lbs)

(H) One refueling from ASD-2 tanker. (Tanker T.O. wt. = 76,000 lbs)

(I) Without chute. With chute and dist. is decreased approx. 1500Yd.

(J) All loadings include IPR probe.


(L) SPOTTING: 27 A/C can be accommodated in landing spot on flight deck and hangar decks of CVA-19 class angled deck carrier.
CARRIER SUITABILITY

DECK WIND REQUIRED FOR CATAPULTING

DECK WIND REQUIRED FOR LANDING

Catapult take-off is based on NATC recommended minimum end airspeed.

Catapult end speed is limited by catapult capacity.

Approach speed is based on NATC recommended minimums.

Engaging speed limited by airplane strength limit as determined by maximum rate of sink.
### NOTES

<table>
<thead>
<tr>
<th>HIGH ALTITUDE ATTACK COMBAT RADIUS MISSION</th>
<th>LOW ALTITUDE ATTACK COMBAT RADIUS MISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>START ENGINES, T.O. AND ACCELERATE:</strong> Fuel for 5 minutes sea level, normal static thrust.</td>
<td><strong>START ENGINES, T.O. AND ACCELERATE:</strong> Fuel for 5 minutes sea level, normal static thrust.</td>
</tr>
<tr>
<td><strong>CLIMB OUT:</strong> At maximum rate of climb with military thrust, on course to optimum cruising altitude.</td>
<td><strong>CLIMB-OUT:</strong> At maximum rate of climb with military thrust, on course to optimum cruise altitude.</td>
</tr>
<tr>
<td><strong>CRUISE-OUT:</strong> At speed for maximum range at optimum cruising altitude.</td>
<td><strong>CRUISE-OUT:</strong> At speed for maximum range at optimum cruising altitude.</td>
</tr>
<tr>
<td><strong>CLIMB:</strong> At maximum rate of climb with military thrust, on course to combat altitude. (Cruising ceiling, 300 fps rate of climb with normal thrust).</td>
<td><strong>DESCEND:</strong> To sea level (no fuel consumed—no distance covered) Drop bombs.</td>
</tr>
<tr>
<td><strong>BOMB RUN:</strong> Cruise in level flight to target for 15 minutes at maximum-speed with normal thrust at combat altitude.</td>
<td><strong>COMBAT:</strong> At sea level for 5 minutes with military thrust. No distance made good.</td>
</tr>
<tr>
<td><strong>EVIASIVE ACTION:</strong> Drop bombs. Evasive action for 2 minutes at maximum speed with normal thrust at combat altitude. (no distance credit).</td>
<td><strong>CLIMB-BACK:</strong> At maximum rate of climb with military thrust, on course to optimum cruise altitude.</td>
</tr>
<tr>
<td><strong>ESCAPE:</strong> For 8 minutes at maximum speed with normal thrust at combat altitude. (Descent to optimum cruising altitude is accomplished in evasive action and escape periods).</td>
<td><strong>CRUISE-BACK:</strong> At speed for maximum range at optimum cruising altitude.</td>
</tr>
<tr>
<td><strong>CRUISE-BACK:</strong> At speed for maximum range at optimum cruising altitude.</td>
<td><strong>DESCEND:</strong> To sea level (no fuel consumed, no distance covered).</td>
</tr>
<tr>
<td><strong>RESERVE AND LANDING:</strong> 5% initial fuel load plus fuel for 20 minutes at sea level at speed for maximum endurance.</td>
<td><strong>RESERVE AND LANDING:</strong> 5% initial fuel load plus fuel for 20 minutes at sea level at speed for maximum endurance.</td>
</tr>
</tbody>
</table>

**Diagram:**

- **Top Diagram (High Altitude):**
  - Start at 45,300 ft.
  - Climb to 54,800 ft.
  - Cruise at 38,200 ft.
  - Climb-back at 41,200 ft.
  - Combat radius: 1230 n.m.

- **Bottom Diagram (Low Altitude):**
  - Start at 45,300 ft.
  - Climb to 35,400 ft.
  - Cruise at 38,900 ft.
  - Combat radius: 1130 n.m.
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