STANDARD AIRCRAFT CHARACTERISTICS

A4D-6 SKYHAWK

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RETURN TO C1-250
ADVANCED DEVELOPMENTS
BY AUTHORITY OF DD-254, 1-12-64

DOUGLAS
UNCLASSIFIED
TECHNICAL DATA CENTER

1 AUGUST 1962
**ORDNANCE**

**FUSELAGE**

- Bombs .............. 6 x MK81 (250 lb) or 6 x MK82 (500 lb) can be carried on Douglas Multiple Bomb Rack.
  - 1-MK81 G.P. (250 lb)
  - 1-MK82 G.P. (500 lb)
  - 1-MK83 G.P. (1000 lb)
  - 1-MK84 G.P. (2000 lb)
- Stores .............. 1-1480 lb MK106
  - 1-2025 lb MK28
  - 1-3500 lb MK91
  - 1-2035 lb MK43
- Spray Tank ........ 1-Aero 14B
- Fire Bomb .......... 1-MK79 (1000 lb) or 1-150 gal Aero 1A fuel tank
- Rockets ............ 1-pkg (7) 2.75" Aero 6A-1
- Drop Tanks .......... 1-150 gal Aero 1A (2 fins) 1-500 gal Aero 1A (no fins)
- Radio .............. 1-NAVYAC unit
- Misc. ............... 1-In-Flight Refueling Store 300 gal
- Missile ............ 1-ASM-N-7 Bullpup

**INBOARD WING**

- Bombs .............. 2-6 x MK81 (250 lb) can be carried on Douglas Multiple Bomb Rack.
  - 2-MK81 G.P. (250 lb)
  - 2-MK82 G.P. (500 lb)
  - 2-MK83 G.P. (1000 lb)
- Drop Tank .......... 2-150 gal. Aero 1A (2 fins) 2-500 gal Aero 1A (2 fins)
- Fire Bomb .......... 2-MK79 or 2-150 gal fuel tanks
- Rockets ............ 2-pkgs (7) 2.75" Aero 6A-1
  - 2-pkgs (19) 2.75" Aero 7D
  - 2-pkgs (4) 5.00" LAU/10A
- Missile ............ 2-ASM-N-7 Bullpup

**OUTBOARD WING**

*Items marked thus can be carried on outboard wing stations.

**DIMENSIONS**

- Span ................. 30.5 ft
- Length .............. 47.4 ft
- Height .............. 15.8 ft
- Max. Tread .......... 10.8 ft
- Wing Area .......... 308 sq ft
- Spacing Factor .... 1.10
  *(compared to A4D-5)*
- *without refueling probe*

**MISSILE AND DESCRIPTION**

The proposed A4D-6 is a single place, carrier based, multi-purpose attack and close support airplane. It is capable of dive, glide, and loft bombing using both convensional bombs and special weapons. The A4D-6 is equipped with 9 external store stations to carry a wide variety of ordnance and external fuel tanks. In-flight refueling (tanker and receiver) capability is provided. Limited all weather navigational aids are standard equipment.

The A4D-6 is an advanced version of the A4D-5 incorporating an enlarged fuselage and wing, installation of the JTF10A-8 turbofan engine, nose wheel steering, nose gear catapult tow, wing tank compartment, increased internal fuel capacity, and increased cockpit-canopy size.

The structure of the A4D-6 is conventional, with an all-metal, semi-monocoque fuselage and a modified delta wing. Landing gear, flaps, spoilers, and speed brakes, as well as slolon, elevator and rudder systems are hydraulically operated. Wing leading edge slats are aerodynamically actuated. An electrically operated, fully adjustable stabilizer is used to trim throughout the normal flight range. Manual control is provided for emergencies. An automatic flight control system is provided.

**WEIGHTS**

- Loadings
  - Empty (E) .......... 11,150
  - Basic ............. 11,313
  - Flight Design .......... 18,199
  - Combat ............ 16,164
  - Max. Design ........... 20,351
  - Overload ............ 27,052
  - Landing Design .......... 17,574
- Carrier ............. 16,600

**FUEL AND OIL**

- Gal. No. Tanks Location
  - 680 .................. 1 Wing
  - 420 .................. 1 Fuselage
- In-Flight Refueling Provisions
  - Fuel Spec ............... MIL-F-6664

**ELECTRONICS**

- Electronics Central AN/ASQ-17B, consisting of:
  - UHF Communications
  - IFF
  - AN/ARA-25
  - Auto. Dead Reckoning
  - TAS Computer
  - Doppler
  - Auto Altitude
  - Auto Pilot
  - LADS
  - Store Arming

**OIL**

- 5.8 gal. mounted on engine
- Oil Spec ............... MIL-L-7808

**POWER PLANT**

- No. and Model ...... (1) JTF10A-8
- Mfr. .......... Pratt & Whitney
- Type ............ Turbofan
- Length ............ 15 ft
- Diameter .......... 39 in.
- Assist Device Two ESS-6500 JATO Units

**RATINGS**

- Military ........... 11,350 lb
- Normal .......... 9,100 lb
- Assist Device
  - JATO (2) ........ 4,500 lb each

1 AUGUST 1962
## PERFORMANCE SUMMARY

<table>
<thead>
<tr>
<th>TAKE-OFF LOADING CONDITION</th>
<th>(1) SEA LEVEL STORE DELIVERY</th>
<th>(2) SEA LEVEL STORE DELIVERY</th>
<th>(5) CLOSE AIR SUPPORT</th>
<th>(7) CLOSE AIR SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-MK 43</td>
<td>21,191 lb.</td>
<td>25.784 lb.</td>
<td>21,533 lb.</td>
<td>26,424 lb.</td>
</tr>
<tr>
<td>2-MK 43</td>
<td>20.55 lb.</td>
<td>20.55 lb.</td>
<td>4000 lb.</td>
<td>6000 lb.</td>
</tr>
<tr>
<td>3-MK 43</td>
<td>66.7 lb. / sq. ft.</td>
<td>66.7 lb. / sq. ft.</td>
<td>69.7 lb.</td>
<td>85.7 lb.</td>
</tr>
<tr>
<td>4-MK 43</td>
<td>120 kn.</td>
<td>135 kn.</td>
<td>138 kn.</td>
<td>138 kn.</td>
</tr>
<tr>
<td>5-MK 43</td>
<td>1830 ft.</td>
<td>2900 ft.</td>
<td>1900 ft.</td>
<td>3180 ft.</td>
</tr>
<tr>
<td>6-MK 43</td>
<td>2900 ft.</td>
<td>4280 ft.</td>
<td>3000 ft.</td>
<td>4600 ft.</td>
</tr>
<tr>
<td>7-MK 43</td>
<td>2170 ft.</td>
<td>3280 ft.</td>
<td>2240 ft.</td>
<td>3660 ft.</td>
</tr>
<tr>
<td>8-MK 43</td>
<td>573 / 88 / 3000 kn. / M/ ft.</td>
<td>545 / 88 / 5000 kn. / M/ ft.</td>
<td>545 / 88 / 5000 kn. / M/ ft.</td>
<td>486 / 77 / 12,500 kn. / M/ ft.</td>
</tr>
<tr>
<td>Rate of climb at S.L.</td>
<td>6300 fpm.</td>
<td>6100 fpm.</td>
<td>7650 fpm.</td>
<td>5300 fpm.</td>
</tr>
<tr>
<td>Time: S.L. to 20,000 ft.</td>
<td>3.1 min.</td>
<td>4.6 min.</td>
<td>3.6 min.</td>
<td>6.0 min.</td>
</tr>
<tr>
<td>Time: S.L. to 30,000 ft.</td>
<td>5.6 min.</td>
<td>10.9 min.</td>
<td>7.8 min.</td>
<td></td>
</tr>
<tr>
<td>Service ceiling (100 fpm)</td>
<td>39,200 ft.</td>
<td>35,400 ft.</td>
<td>37,400 ft.</td>
<td>28,400 ft.</td>
</tr>
<tr>
<td>Combat range</td>
<td>1650 kn.</td>
<td>1650 kn.</td>
<td>2290 kn.</td>
<td>840 kn.</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>429 kn.</td>
<td>427 kn.</td>
<td>423 kn.</td>
<td>409 kn.</td>
</tr>
<tr>
<td>Cruising altitude(s)</td>
<td>34,600 - 41,600 ft.</td>
<td>36,500 - 41,100 ft.</td>
<td>27,300 - 33,100 ft.</td>
<td></td>
</tr>
<tr>
<td>Combat radius/Mission time</td>
<td>590 / 2.7</td>
<td>960 / 4.5</td>
<td>300 / 1.9</td>
<td>430 / 2.6</td>
</tr>
<tr>
<td>Average cruising speed</td>
<td>430 kn.</td>
<td>427 kn.</td>
<td>423 kn.</td>
<td>409 kn.</td>
</tr>
<tr>
<td>IFR - Radius/Mission time</td>
<td>1450 / 6.9</td>
<td>1470 / 7.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFR - Fuel transferred/Distance</td>
<td>470 / 473</td>
<td>470 / 473</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMBAT WEIGHT</td>
<td>16,164 lb.</td>
<td>21,508 lb.</td>
<td>19,561 lb.</td>
<td>23,432 lb.</td>
</tr>
<tr>
<td>Engine power</td>
<td>Military</td>
<td>Military</td>
<td>Military</td>
<td>Military</td>
</tr>
<tr>
<td>Fuel</td>
<td>60% Internal</td>
<td>Full Internal</td>
<td>60% Internal</td>
<td>60% Internal</td>
</tr>
<tr>
<td>Combat speed/combat altitude</td>
<td>594 / 88 / S.L.</td>
<td>563 / 88 / S.L.</td>
<td>550 / 85 / 5000</td>
<td>485 / 74 / 5000</td>
</tr>
<tr>
<td>Rate of climb/combat altitude</td>
<td>11,450 / 8.5 S.L.</td>
<td>8150 / S.L.</td>
<td>7650 / 5000</td>
<td>5550 / 5000</td>
</tr>
<tr>
<td>Combat ceiling (500 fpm)</td>
<td>44,100 ft.</td>
<td>37,600 ft.</td>
<td>38,300 ft.</td>
<td>29,900 ft.</td>
</tr>
<tr>
<td>Rate of climb at 35,000 ft.</td>
<td>3300 fpm.</td>
<td>1300 fpm.</td>
<td>1400 fpm.</td>
<td></td>
</tr>
<tr>
<td>Max. speed at 35,000 ft.</td>
<td>550 / 88 / S.L.</td>
<td>502 / 87 / S.L.</td>
<td>490 / 85</td>
<td></td>
</tr>
<tr>
<td>Max. speed/altitude</td>
<td>584 / 88 / S.L.</td>
<td>566 / 87 / 6000</td>
<td>551 / 86 / 5000</td>
<td>490 / 78 / 13,500</td>
</tr>
<tr>
<td>LANDING WEIGHT</td>
<td>12,644 lb.</td>
<td>12,620 lb.</td>
<td>13,935 lb.</td>
<td>13,813 lb.</td>
</tr>
<tr>
<td>Fuel</td>
<td>208 lb.</td>
<td>1027 lb.</td>
<td>719 lb.</td>
<td>869 lb.</td>
</tr>
<tr>
<td>Stall speed - power-off/Approach</td>
<td>92 / 88</td>
<td>93 / 89</td>
<td>95 / 91</td>
<td>97 / 92</td>
</tr>
<tr>
<td>Dist.-Ground run/over 50 ft.</td>
<td>2000 / 2740</td>
<td>2090 / 2750</td>
<td>2140 / 2850</td>
<td>2210 / 2880</td>
</tr>
</tbody>
</table>

**NOTES**

(A) Fuel required for 300 n.m. radius and 30 min. time on station.

(B) One buddy air fueling — fuel transferred at 30,000 ft. altitude.

(C) All loadings include air fueling probe. Loadings (5), (6), (7), and (8) include guns and 500 rounds of ammunition.

(D) Performance Basis: Contractor and NATC Flight Test Data on the A4D-1, -2, -2N. Fuel consumption based on P&W JTF10A-B preliminary engine data increased 9%.

(E) Operational Spotting: A total of 108 aircraft with air fueling probes can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class angled-deck carrier.
CARRIER SUITABILITY

DECK WIND REQUIRED
FOR CATAPULTING

- C11-1 CATAPULT
- WITH MULTIPLE BOMBS ON WINGS
- ALL CONFIGURATIONS EXCEPT MULTIPLE BOMBS ON WINGS

MINIMUM WIND OVER DECK-KNOTS

TAKING-OFF WEIGHT - 1000 LB.

DECK WIND REQUIRED
FOR LANDING

MINIMUM WIND OVER DECK-KNOTS

LANDING WEIGHT - 1000 LB.

Catapult take-off speeds are derived from a correlation with NATC minimums shown in A4D launching bulletin No. 8-36D.

Below a take-off weight of 26,000 lb on the C11-1 catapult and 22,000 lb on the C7 catapult, the catapult end speed is limited by a maximum peak acceleration of 5.66g. Above these take-off weights the catapult end speed is limited by a maximum tow force of 146,000 lb.

Approach speed based on speeds approved by NATC for A4D-2 & -2N and corresponds to 1.25 VS.L. no wing stores.

Good for all configurations.

Below a landing weight of 16,600 lb the engaging speed is limited by a maximum horizontal load factor of 5.67g. Above this landing weight the engaging speed is limited by a maximum horizontal hook load of 94,220 lb.
NOTES

S.L. STORE DELIVERY COMBAT RADIUS MISSION

START ENGINES, T.O. AND ACCELERATE: Fuel for 5 minutes sea level, normal static thrust.

CLimb-OUT: At maximum rate of climb with military thrust, on course to optimum cruise altitude or cruise ceiling whichever is lower.

Cruise-OUT: At speed for maximum range at optimum cruising altitude or cruise ceiling (Drop tanks when empty).

Descend: To S.L. (no fuel consumed - no distance covered).

Run-In: At S.L. for 50 n.mi. at maximum speed with military thrust. Drop bombs.

Combat: For 5 minutes at sea level maximum speed with military thrust (no distance covered).

Run-Out: At S.L. for 50 n.mi. at maximum speed with military thrust.

Climb-Back: At maximum rate of climb with military thrust, on course to optimum cruise altitude.

Cruise-Back: At speed for maximum range at optimum cruising altitude.

Descend: To S.L. (no fuel consumed - no distance covered).

Reserve and Landing: 5% initial fuel load plus fuel for 20 minutes at sea level at speed for maximum endurance.

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CLOSE AIR SUPPORT COMBAT RADIUS MISSION

START ENGINES, T.O. AND ACCELERATE: Fuel for 5 minutes sea level, normal static thrust.

CLimb-OUT: At maximum rate of climb with military thrust, on course to optimum cruise altitude or cruise ceiling whichever is lower.

Cruise-OUT: At speed for maximum range at optimum cruising altitude or cruise ceiling.

Descend: To 5,000 ft altitude (no fuel consumed - no distance covered).

Hold On Station: For 30 minutes at maximum endurance speed at 5,000 ft altitude then drop bombs.

Climb-Back: At maximum rate of climb with military thrust, on course to optimum cruise altitude.

Cruise-Back: At speed for maximum range at optimum cruising altitude.

Descend: To sea level (no fuel consumed - no distance covered).

Reserve and Landing: 5% initial fuel load plus fuel for 20 minutes at sea level at speed for maximum endurance.