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Standard Aircraft Characteristics

NAVY MODEL A-3B (CLE) AIRCRAFT

(TITLE UNCLASSIFIED)

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1 JULY 1967

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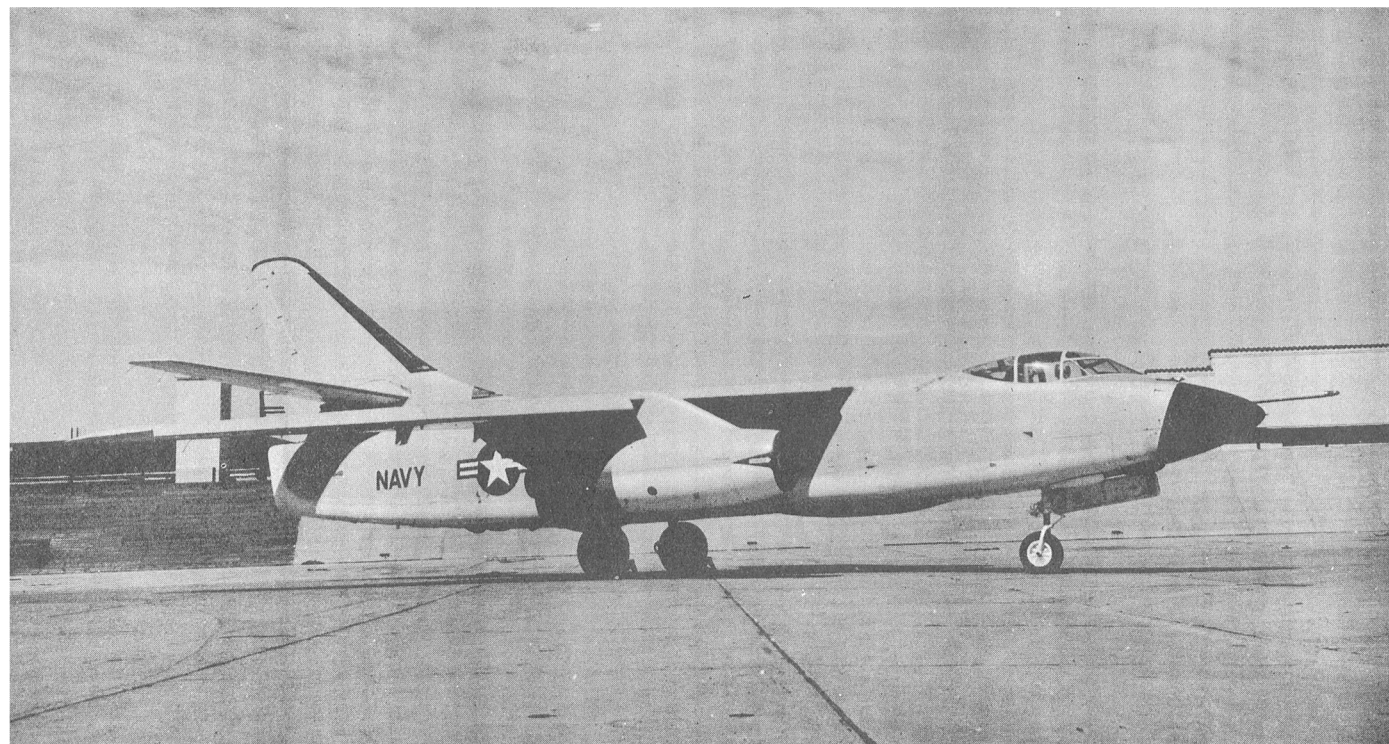
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STANDARD AIRCRAFT CHARACTERISTICS

A-3B (CLE) SKYWARRIOR

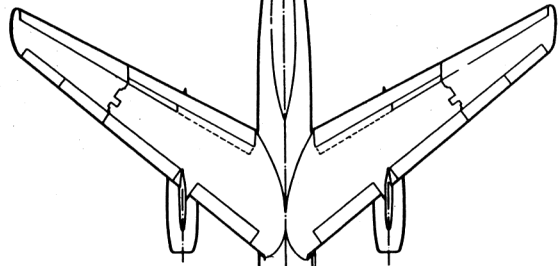
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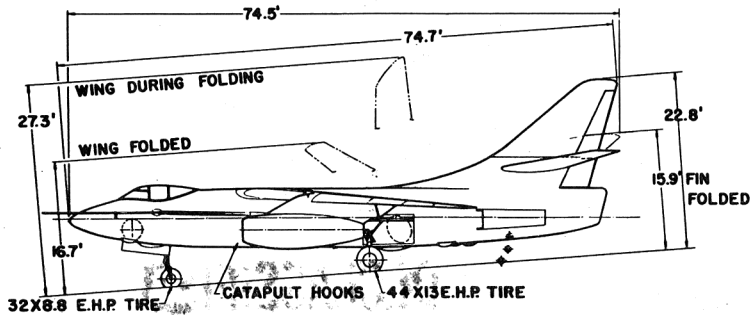
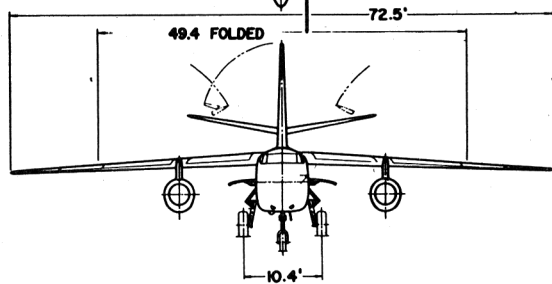
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25.4'

WING AREA - 812 SQ. FT.
 WING SECTION:
 ROOT - NACA - 63-009.95 MOD.
 TIP - NACA - 63-008.25 MOD.
 M.A.C. - 145.2
 A.R. - 6.47



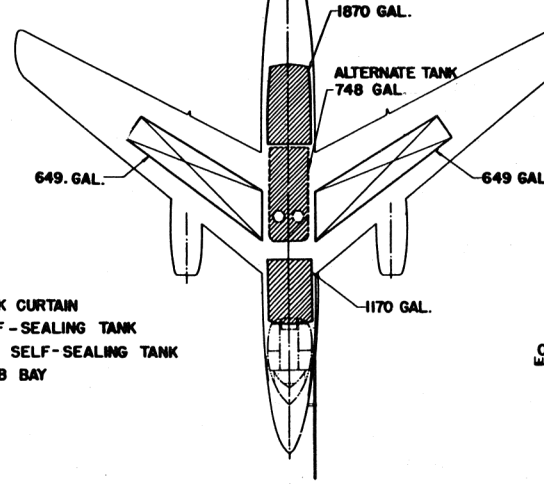
0 5 10 FT.
 SCALE



DESCRIPTIVE ARRANGEMENT

PROTECTION

1 PILOT	10 LBS.
2 ASSIST. PILOT	10 LBS.
3. SELF-SEALING CELLS	672 LBS.
4. ALT. SELF-SEALING CELL	486 LBS.



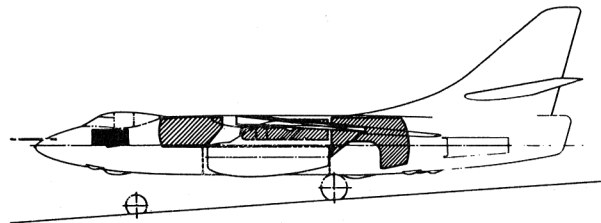
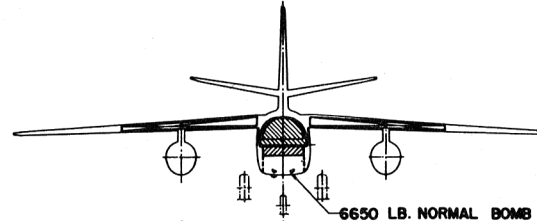
FLAK CURTAIN

SELF-SEALING TANK

NON SELF-SEALING TANK

BOMB BAY

0 5 10 FT.
 SCALE



ARMAMENT & TANKAGE

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SERVICE

POWER PLANT

No. & Model.....(2) J57-P-10
Mfr.....Pratt & Whitney
Eng. Spec.No.....N-1700-A (2-2-55)
Type.....Turbojet
Compr.....Dual rotor, axial flow
Length.....158 in.
Diameter.....41 in.
No. & Type Assist...12-5KS4500 JATO
Tail Pipe Nozzle.... Constant Exit Area

RATINGS

	THRUST		RPM
	LB.	N ₁ * N ₂ **	
Maximum	10500	6150 9900	
Military	10500	6150 9900	
Normal	9000	5900 9650	

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

DIMENSIONS

Wing: Area.....812 sq.ft.*
Span.....72.5 ft.
M.A.C.....145.1 in.*
Sweepback.....35.9°
Length.....74.7 ft.
Height.....22.8 ft.
Tread.....10.4 ft.
*all aerodynamic data are based on the original wing area of 779 sq.ft. and MAC of 140.1 inches.

ORDNANCE

Maximum Bomb Capacity: 12,800 lb
BOMBS
12-500 lb. G.P. 8-1600 lb. A.P.
6-1000 lb. G.P. 4-2000 lb. G.P.
MINES
12-500 lb. Mk. 50 6-1000 lb. Mk. 52
6-1000 lb. Mk. 36 12-374 lb. Mk. 53
2-2000 lb. Mk. 10 2-2000 lb. XA-4A
4-2000 lb. Mk. 25 4-2000 lb. XG-7
Special Stores

MISSION AND DESCRIPTION

The primary mission of the A3D-2 airplane is the attack and destruction of enemy ground and surface targets as required for mine-laying, 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 A3D-2 aircraft of Contract NOa(s) 55-190 in that four systems of electronic counter-measures have replaced the Aero-21B Tail Turret System and the ASB-7 Bomb Director System has replaced the ASB-1 system. The airplanes are the cambered wing leading edge configuration with tanker-receiver capabilities.

DEVELOPMENT

Contract NOa(s) 55-190c, 20 airplanes (delivered)
Contract: NOa(s) 59-0150, 21 airplanes
First Flight: March 1960
Navy Acceptance: April 1960
Final Fleet Delivery: January 1961 (scheduled)

WEIGHTS

Loading	Lbs.	L.F.
Empty (C)	39,620	
Basic	40,120	
Design	55,942	3.4
Combat	62,089	3.06
Maximum T.O.		
a. Carrier	73,000	2.6
b. Field	78,000	2.4
Maximum Landing		
a. Carrier	49,000	
b. Field	56,000	

FUEL AND OIL

Gal.	No. Tanks	Location
3040	2	*Fuselage
1298	2	Wing
748	1	*Upper Bomb Bay Auxiliary
5086 Gal.		Total usable fuel
1224	1	**Lower Bomb Bay Auxiliary
Fuel Grade.....	JP-4 or JP-5	
Fuel Spec.....	MIL-F-5624	

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

OIL

Gal.	No. Tanks	Location
11	2	Integral with engines
Oil Specification..... MIL-L-7808		

ELECTRONICS

VHF Trans-Receiver..... AN/ARC-1
TACAN..... AN/ARN-21
VCR Homing..... AN/ARN-14E
UHF Trans-Receiver..... AN/ARC-27A
HF Receiver-Trans..... AN/ARC-38
Radio Altimeter..... AN/APN-22
IFF Transponder..... AN/APX-6B
Interphone..... DAC Transistorized
Coder..... AN/APA-89
UHF Direction Finder... AN/ARA-25 and AN/ARN-6
DECM..... AN/ALQ-19
DECM..... AN/ALQ-32
DECM..... AN/ALQ-35
DECM..... AN/ALQ-38
BOMB DIRECTOR..... AN/ASB-7

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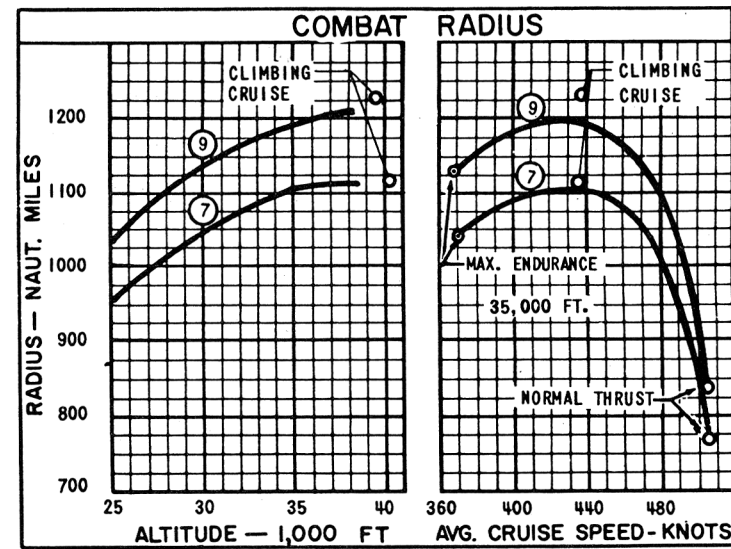
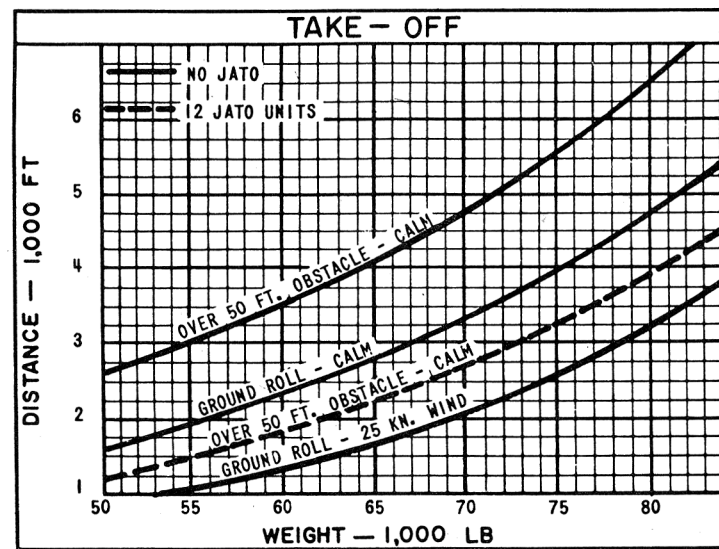
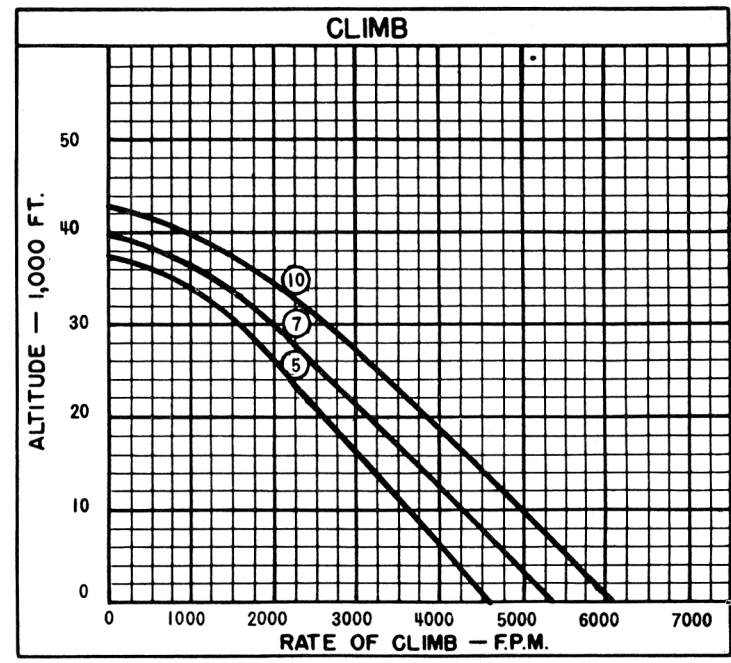
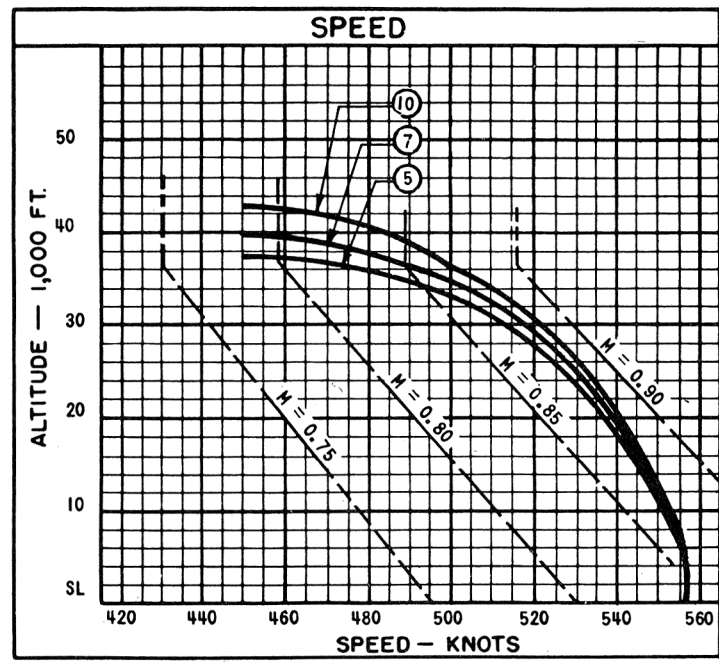
PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		High Alt. Attack-2 2050 lb stores		(5) Full Fuel	(7) Full Fuel	(9) Full Fuel
		(1) Limit Carrier Take-off Weight	(2) Limit Field Take-off Weight Upper BB Tank	High Alt. Attack 2-3150 lb Stores Upper BB Tank	Low Alt. Attack 3-1300 lb Stores	High Alt. Attack 3-2035 lb Stores
TAKE-OFF WEIGHT (A)	lb.	73,000	78,000	83,259	75,081	77,292
Fuel (JP-5)	lb.	27,278(B)	31,499(C)	34,584	29,498	29,498
Payload	lb.	4100	4100	6300	3900	6105
Wing loading	lb./sq.ft.	93.7	100.1	106.9	96.4	99.2
Stall speed - power-off (D)	kn.	124	129	133	126	128
Take-off run at S.L. - calm (D)	ft.	3680	4440	5300	3990	4320
Take-off run at S.L. 25 kn.wind(D)	ft.	2360	3000	3720	2630	2900
Take-off to clear 50 ft. - calm (D)	ft.	5190	6130	7180	5580	6000
Max. speed/altitude	kn./ft.	556/2500	556/2500	556/2500	556/2500	556/2500
Rate of climb at S.L.	fpm	5440	5020	4650	5260	5080
Time: S.L. to 20,000 ft.	min.	4.7	5.1	5.6	4.9	5.1
Time: S.L. to 30,000 ft.	min.	8.4	9.3	10.3	8.8	9.2
Service ceiling (100 fpm)	ft.	40,400	39,100	37,700	39,900	39,300
Combat range	n.mi.	2270	2600	2740	2460	2380
Average cruising speed	kn./M	436/.76	436/.76	436/.76	436/.76	436/.76
Cruising altitude(s)	ft.	36,000 - 43,400	34,600 - 43,000	33,200 - 42,000	35,400 - 43,400	34,800 - 42,500
Combat radius/Mission Time	hr./n.mi.	1150/5.3 (E)	1310/6.0 (E)	1410/6.5	1120/5.3 (F)	1230/5.6
Average cruising speed	kn.	436/.76	436/.76	436/.76	436/.76	436/.76
IFR-Radius/Mission Time	n.mi./hr.	1660/7.9 (E) (G)	1870/8.8 (E) (H)	1900/9.0 (H)	1640/7.9 (H)	1740/8.2 (H)
IFR-Fuel Trans./Distance	lb./n.mi.	11,950/570	13,910/690	12,900/750	11,970/780	12,270/770
COMBAT LOADING CONDITION		(2) 60% Fuel Stores Retained	(4) 60% Fuel Stores Retained	(6) 60% Fuel Stores Retained	(8) 60% Fuel Stores Retained	(10) 60% Fuel Stores Retained
COMBAT WEIGHT	lb.	62,089	65,400	69,425	63,282	65,493
Engine power		MILITARY	MILITARY	MILITARY	MILITARY	MILITARY
Fuel	lb.	16,367	18,899	20,750	17,699	17,699
Combat speed/altitude	kn./ft.	470/42,600	469/41,600	467/40,500	556/S.L.	470/41,500
Rate of climb/altitude	fpm/ft.	400/48,600	395/41,600	380/40,500	6350/S.L.	400/41,500
Combat ceiling (500 fpm)	ft.	42,300	41,200	39,900	41,900	41,200
Rate of climb at S.L.	fpm	6510	6120	5720	6350	6120
Max. speed at S.L.	kn./M	556/.84	556/.84	556/.84	556/.84	556/.84
Max. speed at 35,000 ft.	kn./M	508/.88	506/.88	503/.87	507/.88	506/.88
LANDING WEIGHT	lb.	44,502	45,513	45,651	44,680	44,686
Fuel	lb.	2880	3112	3276	2997	2997
Stall speed - power-off/appr.pwr.	kn/kn	97/95	98/96	98/96	97/95	97/95
Land. Dist. GR. Roll/Over 50ft. (I)	ft./ft.	4550/5260	4640/5350	4650/5360	4560/5270	4560/5270

NOTES

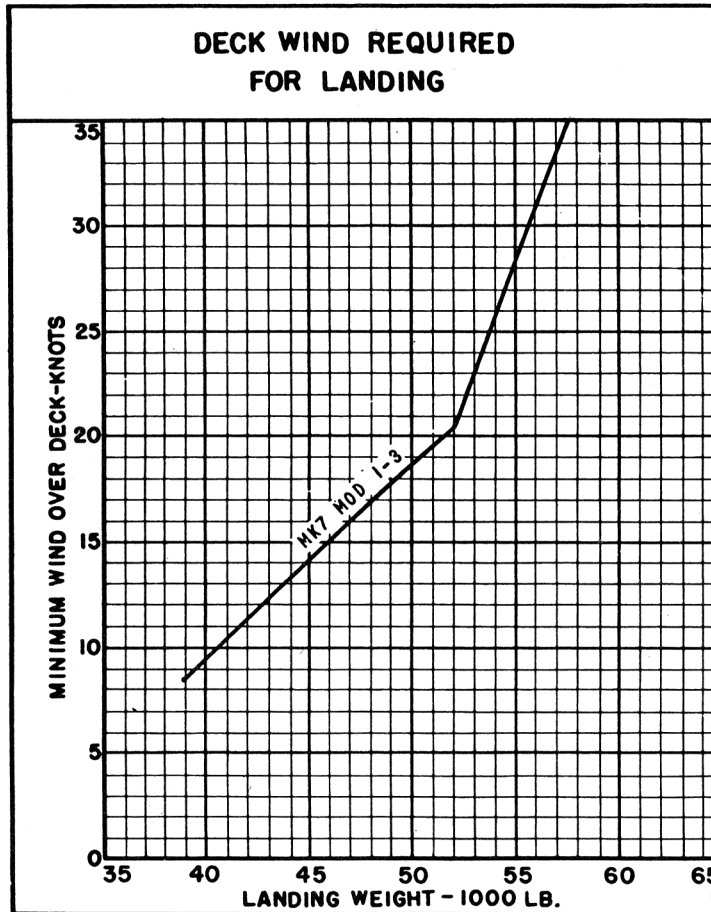
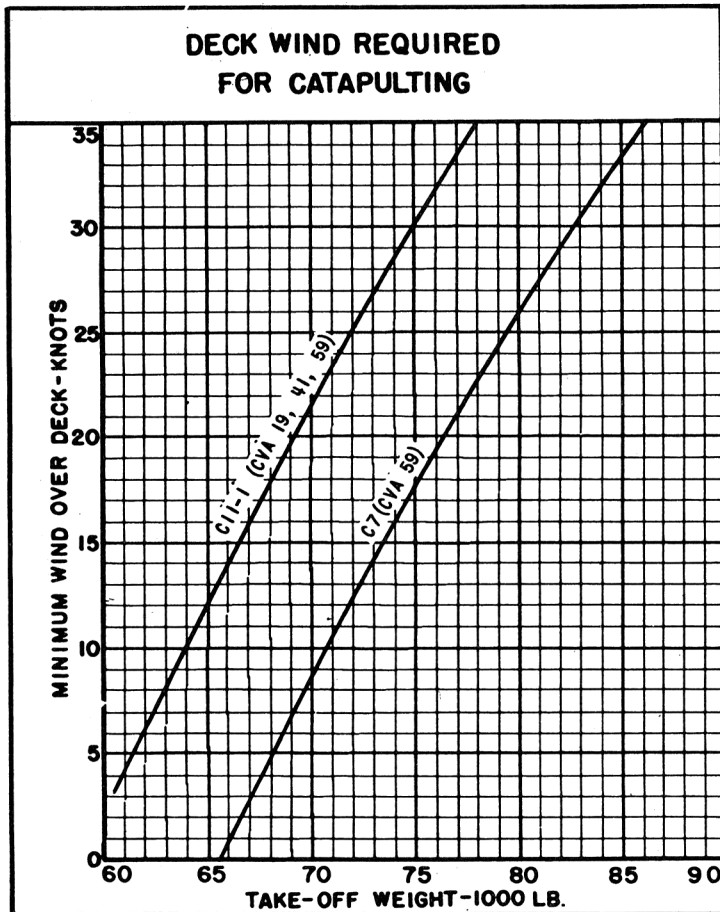
- (A) The limit catapult take-off weight of 73,000 pounds and the limit field take-off weight of 78,000 pounds are consistent with current operating bulletins. Under emergency conditions increased take-off weights may be utilized.
- (B) Fuel limited to maintain T.O. weight. With full fuel of 29,498 lbs (T.O. Wt. = 75,220 lb), combat radius is 1240 n. mi. without refueling.
- (C) Fuel limited to maintain T.O. weight. With full fuel of 34,584 lbs (T.O. Wt. = 81,085 lbs), combat radius is 1430 n. mi. Full flaps.
- (D) For Low Alt. Attack mission, combat radius is decreased 125 n. mi. and mission time is decreased 0.5 hr.
- (E) For Sea Level target approach, total radius is reduced: 65 n. mi. for ea. 100 mi. cruise in at S.L. at maximum range 130 n. mi. for ea. 100 mi. run in at S.L. with military thrust
- (G) One refueling from A3D-2 tanker. (Tanker T.O. Wt. = 73,000 lbs)
- (H) One refueling from A3D-2 tanker. (Tanker T.O. Wt. = 78,000 lbs)
- (I) Without chute. With chute land. dist. is decreased appr. 1850ft.
- (J) All loadings include IFR probe.
- (K) Perf. Basis: NATC & Contr. flt. test of prototype camb. wing A3D-2. Range & radii based on flt. test fuel consumption.
- (L) SPOTTING: 27 A/C can be accommodated in landing spot on flt. and hanger decks of CVA-19 class angled deck carrier.

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○ DENOTES LOADING CONDITION COLUMN NUMBER

CARRIER SUITABILITY



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.

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NOTES

HIGH ALTITUDE ATTACK 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 cruising altitude.

CRUISE-OUT: At speed for maximum range at optimum cruising altitude.

CLIMB: At maximum rate of climb with military thrust, on course to combat altitude. (Cruising ceiling, 300 fpm rate of climb with normal thrust).

BOMB RUN: Cruise in level flight to target for 15 minutes at maximum speed with normal thrust at combat altitude.

EVASIVE ACTION: Drop bombs. Evasive action for 2 minutes at maximum speed with normal thrust at combat altitude. (no distance credit).

ESCAPE: 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).

CRUISE-BACK: At speed for maximum range at optimum cruising altitude.

RESERVE AND LANDING: 5% initial fuel load plus fuel for 20 minutes at sea level at speed for maximum endurance.

LOW ALTITUDE ATTACK 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.

CRUISE-OUT: At speed for maximum range at optimum cruising altitude.

DESCEND: To sea level (no fuel consumed-no distance covered) Drop bombs.

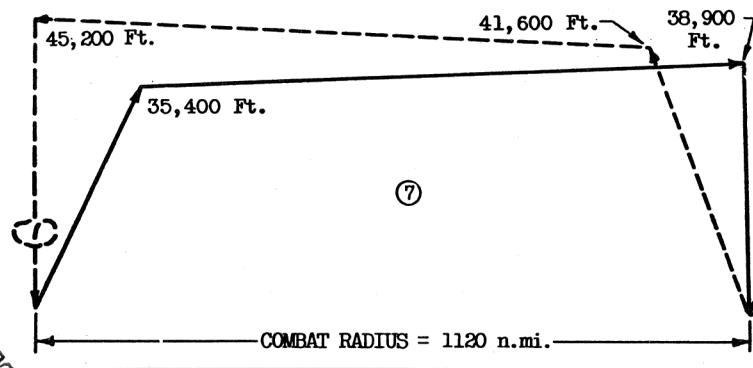
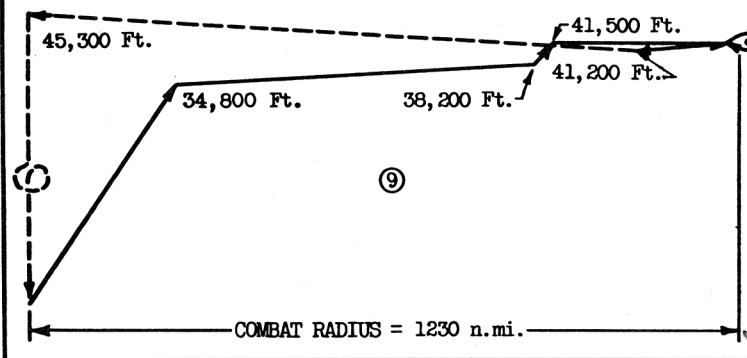
COMBAT: At sea level for 5 minutes with military thrust. No distance made good.

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 distanced 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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