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NAVAIR 00-110AA3-3

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Standard Aircraft Characteristics

NAVY MODEL A-3B (UNCAMBERED WING) AIRCRAFT

(TITLE UNCLASSIFIED)

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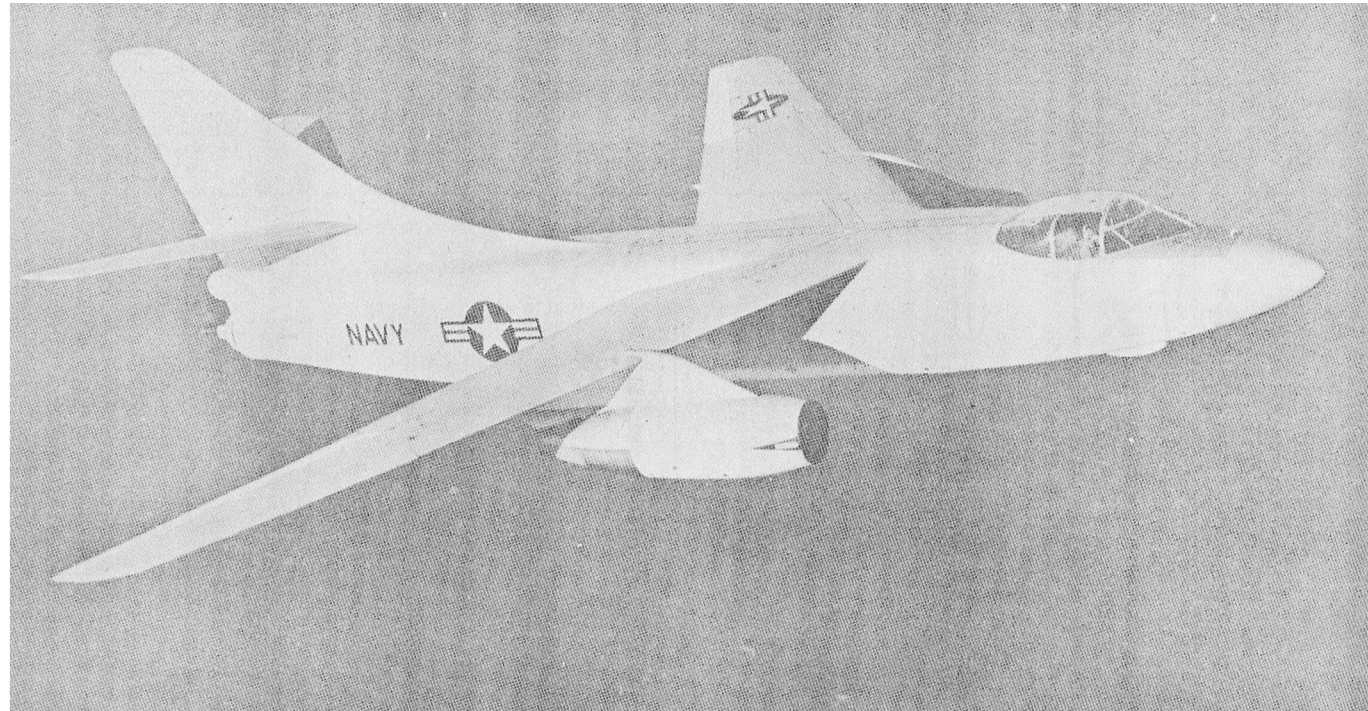
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STANDARD AIRCRAFT CHARACTERISTICS

A-3B SKYWARRIOR

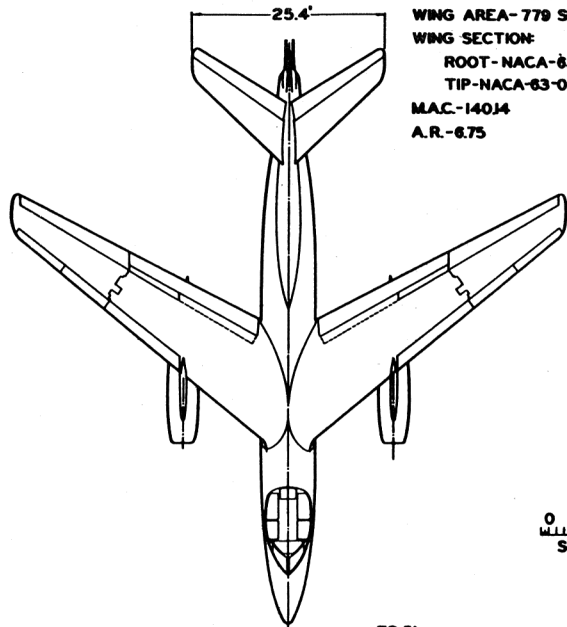
(UNCAMBERED WING)

DOUGLAS

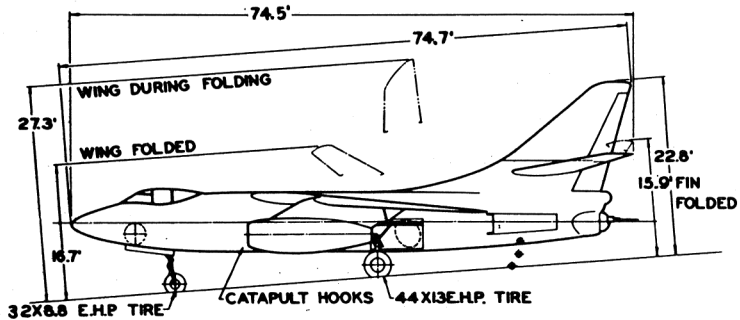
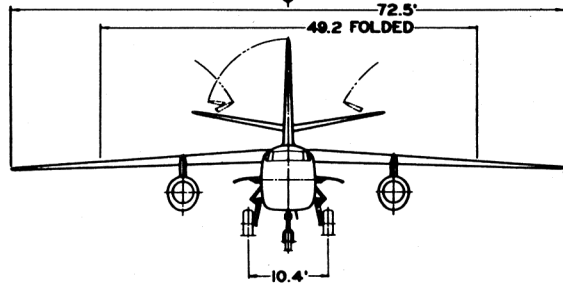
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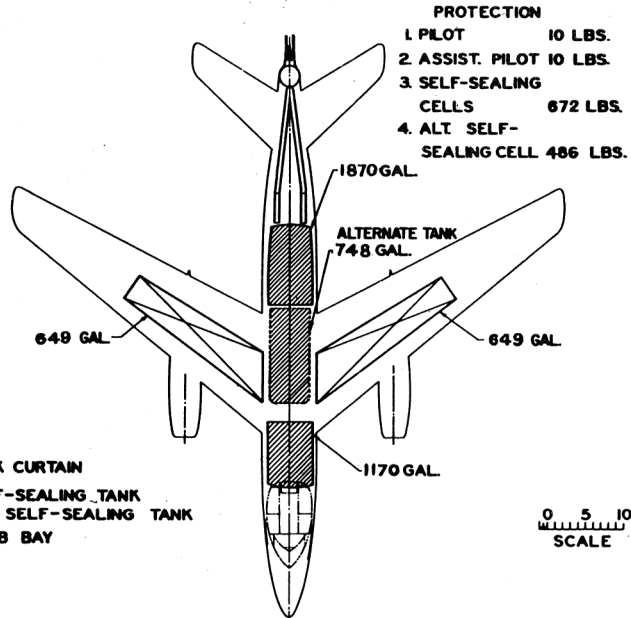
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0 5 10 FT
SCALE

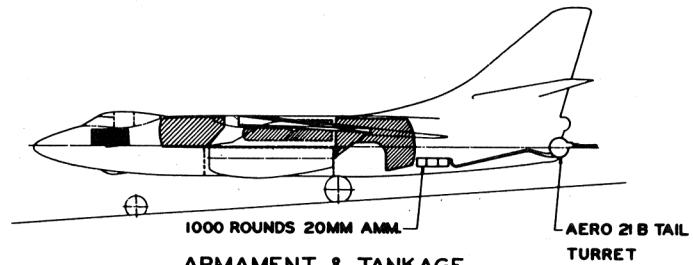
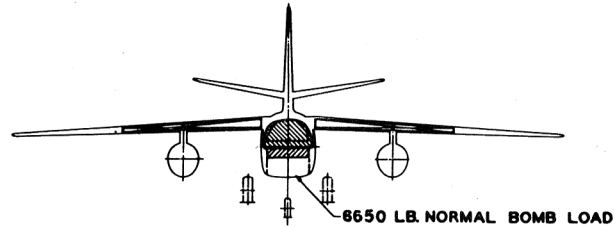


DESCRIPTIVE ARRANGEMENT



■ FLAK CURTAIN
▨ SELF-SEALING TANK
▧ NON SELF-SEALING TANK
□ BOMB BAY

0 5 10 FT
SCALE



ARMAMENT & TANKAGE

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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		
Nozzle Type	Constant Exit Area		
RATINGS			
Sea level static			
	THRUST	REM	
	LB.	N ₁ *	N ₂ **
Maximum	10500	6150	9900
Military	10500	6150	9900
Normal	9000	5900	9650
*N ₁ Speed of low pressure compressor			
**N ₂ Speed of high pressure compressor			

ORDNANCE	
Maximum Bomb Capacity: 12,800 lbs.	
Bombs	12-500 lb. G.P.
	6-1000 lb. G.P.
	8-1600 lb. A.P.
	4-2000 lb. G.P.
Mines	12-500 lb. Mk. 50
	6-1000 lb. Mk. 36
	4-2000 lb. Mk. 25
	2-2000 lb. Mk. 10
	6-1000 lb. Mk. 52-1
	12-374 lb. Mk. 53-0
	4-2000 lb. XG-7
	1-1558 lb. Mk-12
	4-2000 lb. Mk. 39-0
Special Stores	
GUNS/AMM.	
2-20mm(M3)/500 rds. per gun	
Tail Turret System Aero 2LB	
Radar Bomb Director AN/ASB-1A	

MISSION AND DESCRIPTION	
<p>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.</p> <p>The airplane has a conventional swept-wing structure with two turbo-jet engines in under-wing nacelles. Provisions are made for a three-man crew: pilot, bomber-assistant-pilot, and gunner-navigator with provisions for a 4th man.</p> <p>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.</p> <p>Anti-skid braking is provided. The JATO installation accommodates twelve 4500-pound-thrust bottles. In-flight refueling and tanker provisions have been developed for these airplanes and incorporation will be by ASC-28.</p>	
DEVELOPMENT	
<p>Status: Fleet Delivery Complete October 1958</p> <p>Prototype: A3D-1</p> <p>Contracts: NOa(s) 55-190, 123 airplanes</p> <p>First Flight: June 1956</p>	

DIMENSIONS	
Wing:	
Area	779 sq. ft.
Span	72.5 ft.
M.A.C.	140.14 in.
Sweepback	36°
Length	74.7 ft.
Height	22.8 ft.
Tread	10.4 ft.

WEIGHTS		
Loading	Lbs.	L. F.
Empty	37,077 (A)	
Basic	37,545	
Design	55,942	3.4
Combat	61,377	3.10
Maximum T.O.		
(Land)	78,000	2.44
Maximum T.O.		
(Cat.)	73,000	2.60
Max. Landing		
(Land)	56,000	
Max. Landing		
(Carrier)	49,000	

FUEL AND OIL		
Gal.	No. Tanks	Location
3040	2	*Fuselage
1298	2	Wing
748	1	* Bomb Bay (Aux.)
Fuel grade	JP-4 or JP-5	
Fuel spec.	MIL-F-5624	
*Self-sealing		
**(Incorporation by ASC-78)		
OIL		
Gal.	No. Tanks	Location
11	2	Integral with engines
Oil spec.	MIL-L-7808	

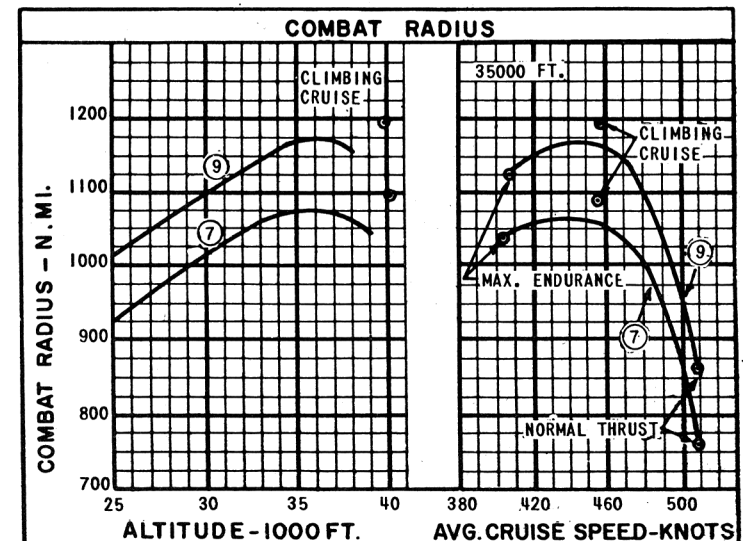
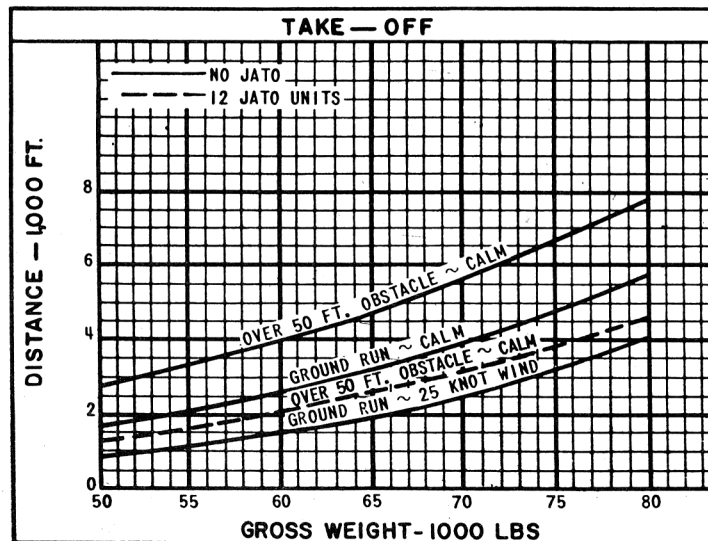
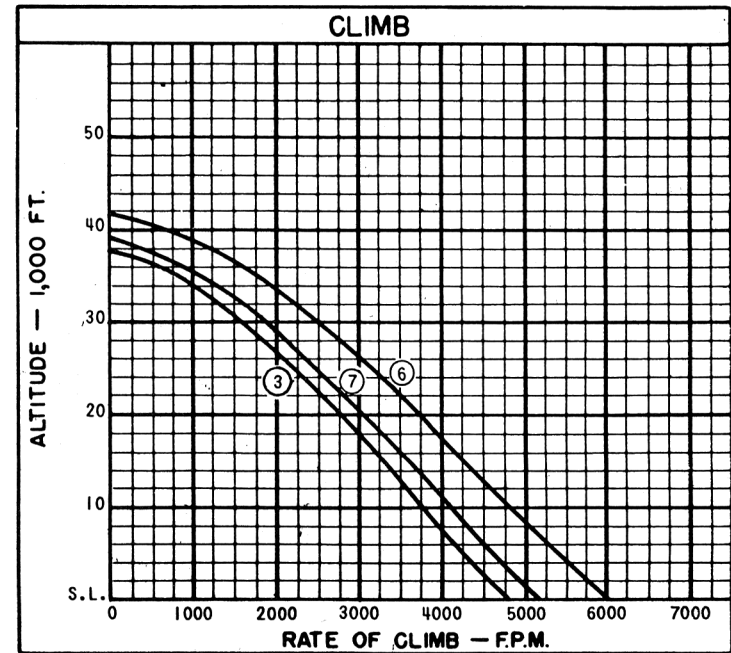
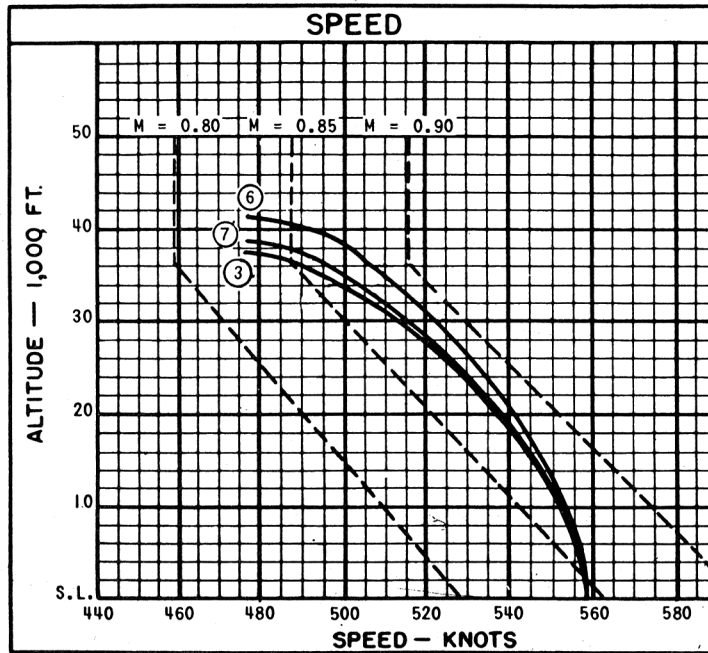
ELECTRONICS	
TACAN	AN/ARN-21*
VOR Homing	AN/ARN-14E
VHF Trans-Receiver	AN/ARC-27A
HF Trans-Recr.	AN/ARC-38*
Radio Altimeter	AN/APN-22
IFF Transponder	AN/APX-6B
Interphone	AN/AIC-4A
Coder	AN/APA-89
UHF Direction	
Finder	AN/ARA-25
*Last 20A/C Prior A/C by S/C	

PERFORMANCE SUMMARY						
TAKE-OFF LOADING CONDITION		High Alt. Attack 2-2050 lb. Stores (1) Limit Carrier Take-off Weight	(2) Limit Field Take-off Weight Upper BB Tank	(5) Full Fuel High Alt. Attack 1-6650 lb Store	(7) Full Fuel Low Alt. Attack 3-1300 lb Stores	(9) Full Fuel High Altitude Attack 3-2035 lb Stores
TAKE-OFF WEIGHT (A)	lb.	73,000	78,000	75,668	73,302	75,513
Fuel (JP-5)	lb.	29,057 (E)	33,278 (C)	29,498	29,498	29,498
Payload	lb.	4100	4100	6650	3900	6105
Wing loading	lb./sq.ft.	93.7	100.1	97.1	94.1	98.9
Stall speed - power-off (D)	kn.	132	137	135	132	134
Take-off run at S.L. - calm (D)	ft.	4460	5340	4920	4500	4890
Take-off run at S.L. 25 kn.wind (D)	ft.	2940	3690	3310	2970	3280
Take-off to clear 50 ft. - calm (D)	ft.	6270	7340	6800	6310	6770
Max. speed/altitude	kn./ft.	558/SL	558/SL	558/SL	558/SL	558/SL
Rate of climb at S.L.	fpm	5100	4700	4900	5060	4900
Time: S.L. to 20,000 ft.	min.	4.9	5.3	5.1	4.9	5.1
Time: S.L. to 30,000 ft.	min.	8.7	9.8	9.2	8.8	9.2
Service ceiling (100 fpm)	ft.	39,100	37,700	38,300	39,000	38,400
Combat range	n.mi.	2360	2640	2300	2400	2310
Average cruising speed	kn./M	459/.80	459/.80	459/.80	459/.80	459/.80
Cruising altitude(s)	ft.	25,400-43,400	34,000-43,300	34,600-42,400	35,200-43,400	34,600-42,400
Combat radius/Mission Time	n.mi./hr.	1200/5.2 (F)	1350/5.9 (E)	1200/5.2	1090/4.9 (F)	1200/5.2
Average cruising speed	kn./M	459/.80	459/.80	459/.80	459/.80	459/.80
IFR-Radius/Mission Time	n.mi./hr.	1650/7.5 (E) (G)	1870/8.4 (E) (H)	1710/7.7 (H)	1610/7.4 (H)	1700/7.7 (H)
IFR-Fuel Trans/Distance	lb./n.mi.	11,100/620	13,600/710	12,520/760	12,300/770	12,510/760
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.	61,377	64,689	63,869	61,503	63,714
Engine power		MILITARY	MILITARY	MILITARY	MILITARY	MILITARY
Fuel	lb.	17,434	19,967	17,699	17,699	17,699
Combat speed/combat altitude	kn./ft.	485/41,500	485/40,600	485/40,800	559/SL	485/40,900
Rate of climb/combat altitude	fpm/ft.	490/41,500	450/40,600	470/40,800	6250/SL	470/40,900
Combat ceiling (500 fpm)	ft.	41,500	40,300	40,600	41,400	40,700
Rate of climb at S.L.	fpm	6250	5850	5950	6250	5950
Max. speed at S.L.	kn./M	559/.84	559/.84	559/.84	559/.84	559/.84
Max. speed at 35,000 ft.	kn./M	512/.89	509/.88	510/.88	511/.89	510/.88
LANDING WEIGHT	lb.	42,916	43,921	42,607	42,998	43,004
Fuel	lb.	3073	3299	3087	3094	3094
Stall speed - power-off/Aprr Pwr	kn./kn.	100/99	102/100	100/99	101/99	101/99
Land. Dist. Gr. Run/Over 50 ft. (I)	ft./ft.	4930/5640	5000/5710	4900/5610	4940/5650	4940/5650

- (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 limit take-off weight of 73,000 pounds. With full (29,498 lb.) fuel (T.O.Wt.=73,441 lbs), radius is 1220 n.mi. without refueling.
- (C) Fuel limited to maintain limit take-off weight of 78,000 lb. With full (34,584 lb) fuel (T.O. Wt. = 79,306 lb), radius is 1400 n. mi. without refueling.
- (D) Full flaps
- (E) For Low Alt. Attack mission, combat radius is decreased by

- NOTES 125 n.mi. and mission time is decreased by 0.5 hr.
- (F) For Sea Level target approach, total radius is reduced:
60 n.mi. for ea. 100 mi. cruise in at S.L. maximum range
120 n.mi. for ea. 100 mi. run in at S.L. with military thrust
- (G) One refuel from A3D-2 (CW) tanker-T.O.Wt.=73,000 lb.
- (H) One refuel from A3D-2 (CW) tanker-T.O.Wt.=78,000 lb.
- (I) Without chute. With chute, land.dist. is decreased appr. 2200 ft.
- (J) All loadings include IFR probe.
- (K) Perf. Basis: NATC & Contr. flt. test of Model A3D-2. Range & radii based on flt. test fuel consumptions.
- (L) Spotting: 27 A/C can be accommodated in landing spot on flt. and hangar decks of CVA-19 class angled deck carrier.

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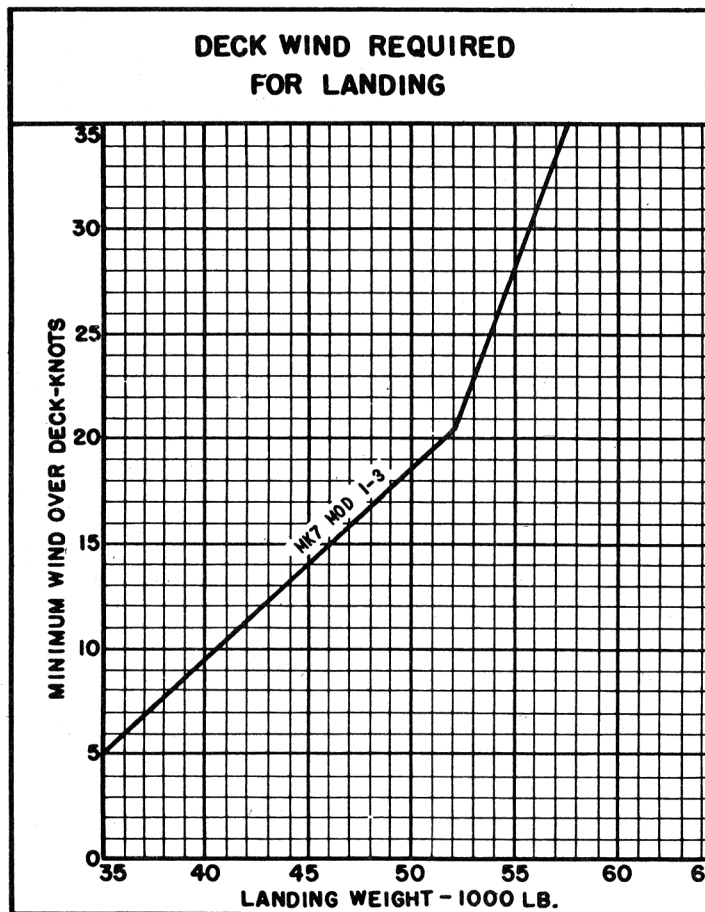
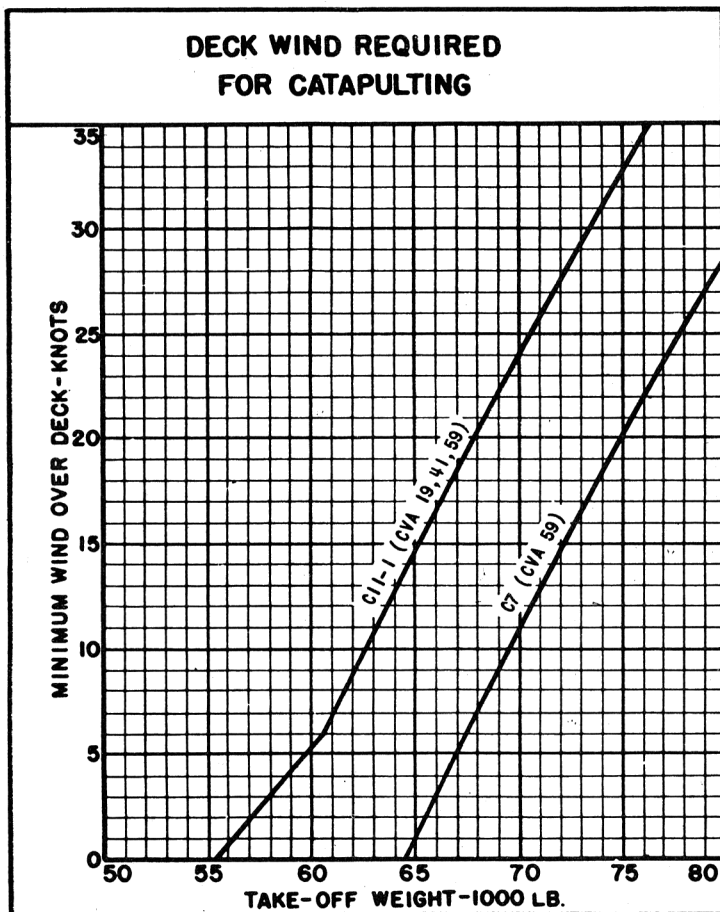


○ DENOTES LOADING CONDITION COLUMN NUMBER

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CARRIER SUITABILITY



Catapult take-off speed is based on Launching Bulletin No. 6-49.

Approach speed is based on NATC recommended minimums.

Catapult end speed limited by aircraft strength below 60,700 lbs. on C11 Catapult and below 64,200 lbs. on the C7 Catapult. Above these weights catapult end speed is limited by catapult capacity.

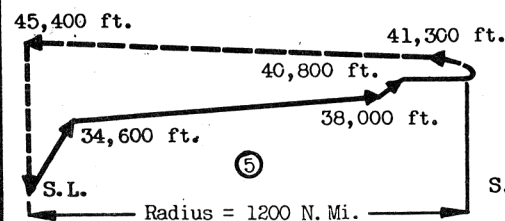
Engaging speed limited by Airplane strength limit as determined by maximum rate of sink

NOTES

HIGH ALTITUDE ATTACK

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.
CLIMB: On course to optimum cruise altitude with maximum rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
CLIMB: At maximum rate of climb with maximum rated thrust on course to cruise ceiling.
BOMB RUN: Cruise in level flight 15 minutes at normal rated thrust at combat altitude.
DROP BOMBS
EVASIVE ACTION: 2 minutes at maximum speed with normal rated thrust at combat altitude (no distance gained).
ESCAPE: 8 minutes at maximum speed with normal rated thrust (climb to optimum cruising altitude is accomplished in evasive action and escape periods).
CRUISE-BACK: At altitudes and speeds for maximum range.
RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

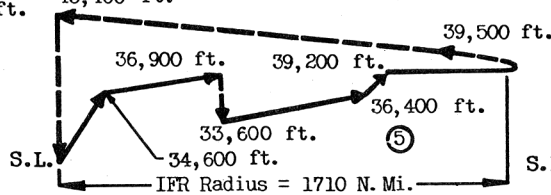
Combat Radius = Climb + Cruise-Out + Climb + Bomb Run + Escape + Cruise-Back
 Mission Time = Time Required For Climb + Cruise-Out + Climb + Bomb Run + Evasive Action + Escape + Cruise-Back



HIGH ALTITUDE ATTACK WITH IN-FLIGHT REFUELING LOW ALTITUDE ATTACK

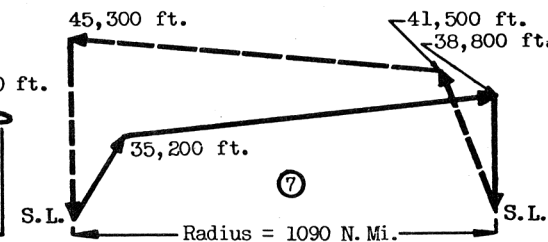
WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.
CLIMB: On course to optimum cruise altitude with maximum rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
REFUEL: 15 minutes at 35,000 feet at speed for maximum endurance. Refuel to full internal fuel.
CRUISE-OUT: At altitudes and speeds for maximum range.
CLIMB: At maximum rate of climb with maximum rated thrust on course to cruise ceiling.
BOMB RUN: Cruise in level flight 15 minutes at normal rated thrust at combat altitude.
DROP BOMBS
EVASIVE ACTION: 2 minutes at maximum speed with normal rated thrust at combat altitude (no distance gained).
ESCAPE: 8 minutes at maximum speed with normal rated thrust (climb to optimum cruising altitude is accomplished in evasive action and escape periods).
CRUISE-BACK: At altitudes and speeds for maximum range.
RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

Combat Radius = Climb + Cruise-Out + Climb + Bomb Run + Escape + Cruise-Back
 Mission Time = Time Required for Climb + Cruise-Out + Refueling + Cruise-Out + Climb + Bomb Run + Evasive Action + Escape + Cruise-Back



WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.
CLIMB: On course to optimum cruise altitude with maximum rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
DESCEND TO SEA LEVEL: No fuel consumed. No distance credit.
DROP BOMBS
COMBAT: 5 minutes at maximum rated power at sea level (no distance gained).
CLIMB: On course to optimum cruise altitude with maximum rated thrust
CRUISE-BACK: At altitudes and speeds for maximum range.
RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

Combat Radius = Climb + Cruise-Out + Climb + Cruise-Back
 Mission Time = Time Required For Climb + Cruise-Out + Combat + Climb + Cruise-Back



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