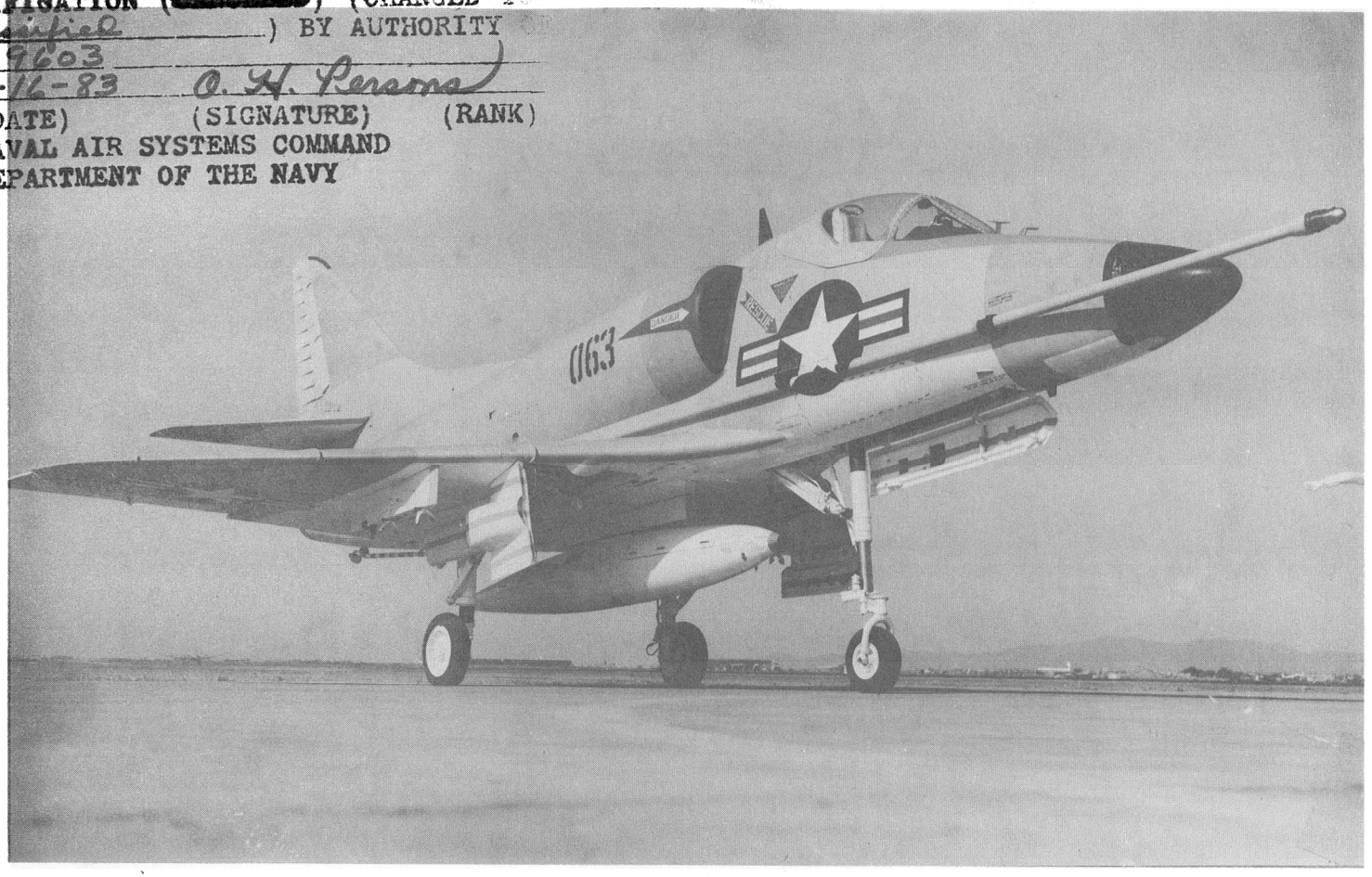
SERVICE

CLASSIFICATION ([redacted]) (CHANGED TO Unclassified) BY AUTHORITY OF AIR-9603 ON 2-16-83 O. H. Persons
(DATE) (SIGNATURE) (RANK)
NAVAL AIR SYSTEMS COMMAND
DEPARTMENT OF THE NAVY



STANDARD AIRCRAFT CHARACTERISTICS

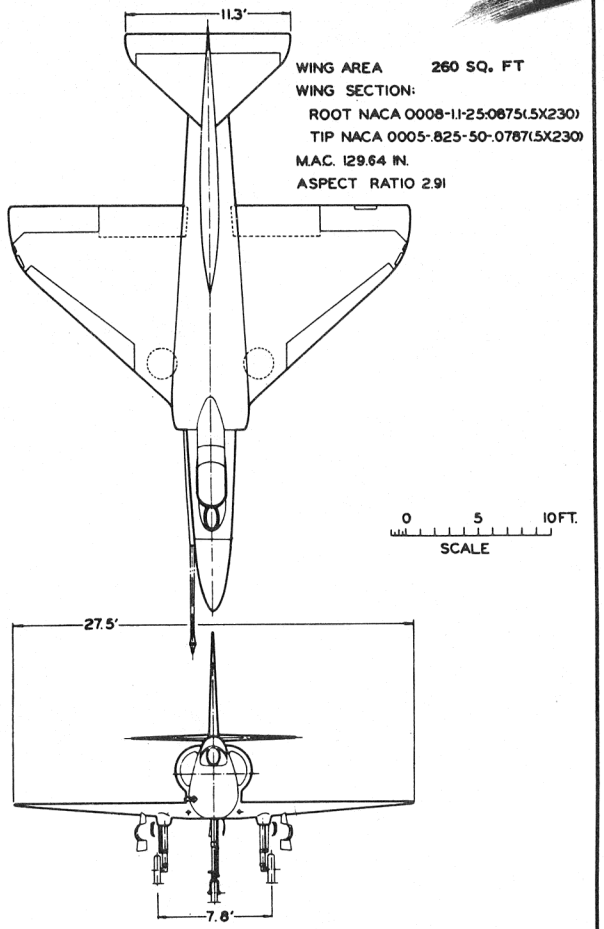
A4D-2N SKYHAWK

DOUGLAS AIRCRAFT COMPANY, INC., EL SEGUNDO DIVISION

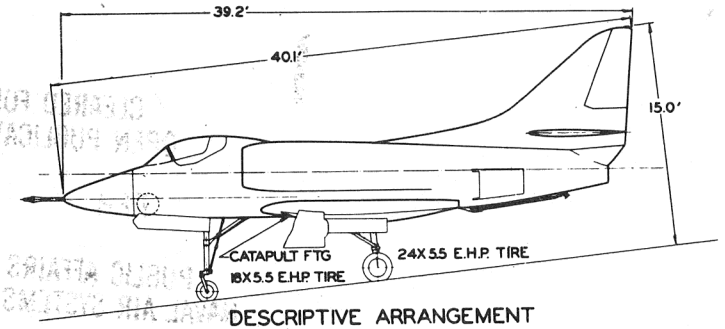
DECLASSIFIED

CLEARED FOR OPEN PUBLICATION
FEB 5 1997
Grace A. Greene
PUBLIC AFFAIRS OFFICE
NAVAL AIR SYSTEMS COMMAND

CONFIDENTIAL



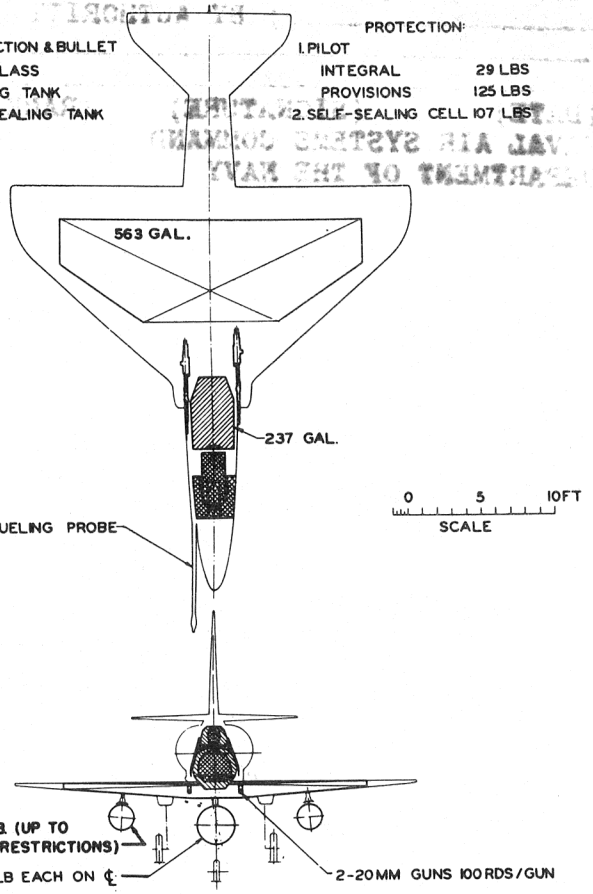
WING AREA 260 SQ. FT
WING SECTION:
ROOT NACA 0008-1.1-25:0875(.5X230)
TIP NACA 0005-.825-50-.0787(.5X230)
M.A.C. 129.64 IN.
ASPECT RATIO 2.91

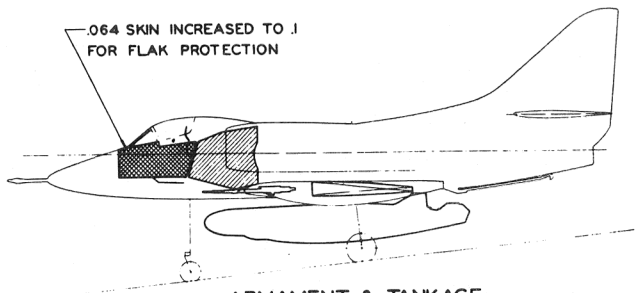


DESCRIPTIVE ARRANGEMENT

FLAK PROTECTION & BULLET RESISTANT GLASS
SELF-SEALING TANK
NON-SELF-SEALING TANK

PROTECTION:
1. PILOT
INTEGRAL 29 LBS
PROVISIONS 125 LBS
2. SELF-SEALING CELL 107 LBS





ARMAMENT & TANKAGE

CONFIDENTIAL

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) SEA LEVEL STORE DELIVERY 1-MK 28	(3) SEA LEVEL STORE DELIVERY 1-MK 28 2-300 GAL TANKS	(5) CLOSE AIR SUPPORT 6-500 LB BOMBS 2-1000 LB BOMBS	(7) CLOSE AIR SUPPORT 12-250 LB BOMBS 1-300 GAL TANK	(9) CLOSE AIR SUPPORT 1-300 GAL TANK 2-ASM-N-7A BULLPUP
TAKE-OFF WEIGHT	lb.	18,026	22,500 (B)	21,237	21,617	19,529
Fuel- Internal/External (JP-5)	lb.	5440/NONE	5440/3959 (B)	5440/NONE	5440/2040	5440/2040
Payload	lb.	2025	2025	5000	3000	1100
Wing loading	lb./sq.ft.	69.3	86.5	81.7	83.1	75.1
Stall speed - power-off	kn.	120	137	133	143	128
Take-off run at S.L. - calm	ft.	2850	5560	4640	5910	3560
Take-off run at S.L. 25 kn. wind	ft.	1920	4060	3280	4370	2460
Take-off to clear 50 ft. - calm	ft.	4380	7940	6740	8230	5350
Max. speed/altitude	kn/M/ft.	561/.86/4000	523/.82/10000	489/.78/15000	482/.77/14000	531/.83/10000
Rate of climb at S.L.	fpm	6600	4400	4400	4400	5400
Time: S.L. to 20,000 ft.	min.	3.9	6.1	6.5	6.3	4.9
Time: S.L. to 30,000 ft.	min.	6.8	9.8	14.6	13.8	9.6
Service ceiling (100 fpm)	ft.	39,500	32,000	31,800	31,300	36,200
Combat range	n.mi.	820	1360	480	830	1110
Average cruising speed	kn.	431	431	408	414	425
Cruising altitude(s)	ft.	34,500-39,000	29,800-38,500	29,800-34,400	29,400-36,700	33,000-40,000
Combat radius/Mission Time	n.mi./hr.	190/0.9	510/2.4	60/1.4	230/2.1	320/2.5
Average cruising speed	kn.	432	431	301	422	429
IFR Radius/Mission Time (A)	n.mi./hr.		840/4.6			
IFR Fuel Transferred/Dist. (A)	lb./n.mi.		3870/388			
COMBAT LOADING CONDITION		(2) STORE RETAINED	(4) TANKS DROPPED STORE RELEASED	(6) BOMBS RELEASED	(8) TANK DROPPED BOMBS RETAINED	(10) TANK DROPPED MISSILES RETAINED
COMBAT WEIGHT	lb.	15,850	16,116	14,061	19,396	17,308
Engine power		Military	Military	Military	Military	Military
Fuel	lb.	60% Internal	Full Internal	60% Internal	Full Internal	Full Internal
Combat speed/combat altitude	kn./ft.	561/.85/SL	559/.85/SL	552/.85/5000	490/.75/5000	543/.84/5000
Rate of climb/combat altitude	fpm/ft.	7650/SL	7450/SL	7500/5000	4550/5000	5650/5000
Combat ceiling (500 fpm)	ft.	41,000	40,600	42,900	33,000	38,100
Rate of climb at 35,000 ft.	fpm	2500	2350	3000	-	1450
Max. speed at 35,000 ft.	kn/m.	514/.89	515/.89	515/.89	-	500/.87
Max. speed/altitude	kn/m/ft.	563/.86/4000	564/.87/5000	553/.86/9000	496/.79/15000	545/.85/9000
LANDING WEIGHT	lb.	11511	11840	11768	12041	11836
Fuel	lb.	950	1165	971	1085	1068
Stall speed - power-off/appr. pwr.	kn/kn.	96/92	98/93	97/93	98/94	98/93
Dist-Ground run/over 50 ft.	ft/ft.	2910/3625	3000/3715	2975/3690	3015/3760	3000/3715

NOTES

(A) One Buddy air fueling - fuel transferred at 30,000 ft. altitude.

(B) Fuel offloaded to maintain maximum allowable take-off weight of 22,500 lb.

(C) All loadings include air refueling probe, guns and ammunition.

(D) Performance Basis: Contractor and NATC Flight Test Data on Models A4D-1, -2, and -2N aircraft.

(E) Operational Spotting: A total of 106 aircraft with refueling probes can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class angled deck carrier.

POWER PLANT

No. & Model (1) J65-W16A
Axial Flow Turbojet without Afterburner
Mfr. - Wright Aeronautical
Spec. No. - WAC Specification N890-B
Length .....113 in.
Diameter ..... 31 in.

RATINGS

MIL.	8300 RPM	7700 lb.
Norm.	8030 RPM	6780 lb.

ORDNANCE

Fuselage:
6-Mk.81 Mod.1
6-Mk.82 Mod.1
1-Mk.83 Mod. 2 or 3
1-Mk.84 Mod.1
1-Mk.57 (500 lb.)
1-Mk.12 (1050 lb.)
1-Mk.105 (1500 lb.)
1-Mk.7 (1660 lb.)
1-Mk.28 (2025 lb.)
1-Mk.91 (3500 lb.)
1-Aero 14B
1-Mk.79 Mod.0 (1000 lb) or 1-150 gal DAC fueltk.
1-pkg.(7)2.75"Aero 6A-1
1-pdg.(19)2.75"Aero 7D
1-pkg.(4)5.00"Aero 10D
1-Aero5Aprac.bomb cont.
1-150 gal. Aero 1A
1-300 gal. Aero 1A
1-NAVPAC unit
1-In-flight Refueling Store-300 Gallon
1-ASM-N-7A Bullpup

Wing:
12-Mk.81 Mod.1
2-Mk.82 Mod.1
2-Mk.83 Mods. 2 or 3
2-1480 lb.
2-150 gal. DAC
2-300 gal. DAC
2-Mk.79Mod.0 or 2-150 gal. Aero 1A
2-pkgs(7)2.75"Aero6A-1
2-pkgs(19) 2.75"Aero 7D
2-pkgs(4)5.00" Aero 10D
2-ASM-N-7A Bullpup

Guns: 2 Fixed 20mm-100 RDS/Gun

MISSION AND DESCRIPTION

The A4D-2N airplane is a lightweight, high performance, carrier-based, jet-powered attack airplane capable of dive, glide and loft bombing, in-flight refueling (tanker or receiver), carrying an air-to-surfacemissile and firing conventional guns and rockets. It can operate from CVS and CVA type carriers. Limited all-weather navigational aids are provided.

The arrangement is conventional with all metal semi-monocoque structure and three-spar low aspect-ratio wing. Landing gear, flaps and speed-brakes are hydraulically operated. An electrically operated, fully adjustable stabilizer is used to trim throughout the normal flight range. The aileron, elevator, and rudder systems are hydraulic-power operated. Manual control is provided for emergencies. An automatic flight control system is provided for pilot relief.

The small size of the airplane precludes the need for folding wings. The aft fuselage is readily removable to permit quick engine change.

DEVELOPMENT

First Flight.....August 1958
First Fleet Delivery..... February 1960

DIMENSIONS

Span	27.5 ft.
Length	39.4 ft.
Height	15.0 ft.
Max. Tread	7.8 ft.
Turn. Rad. (Nose)	20.5 ft.
Wing Area	260 sq. ft.

WEIGHTS

Loadings	Weight	L.F.
Empty	9146	
Basic	10032	
Flight Des.	12504	7.0
Combat	15359	5.7
Max T.O.	22500	3.9
MaxLand.(Arrest)	13000	6.7
(Airfield)	16000	5.5

FUEL AND OIL

Gal.	No.Tanks	Location
563	1	Wing
237	1	Fuselage

In-flight fueling provided.
Fuel Spec ..... MIL-F-5624 or MIL-F-5572

OIL

3.2 gal. mounted on engine
Oil Spec MIL-L-7808
4.0 gal.after ASC-118 incorp.

ELECTRONICS

AN/ASQ-17 Electronic Control Central providing the following:

Function	Equivalent to
UHF Comm.	AN/ARC-27
IFF	AN/APX-6B
SIF	AN/APA-89
UHF ADF	AN/ARA-25

Self Contained Navigation AN/ASN 19A (Dead Reckoning Computor)

TACAN	AN/ARN-21
LABS	AERO. 18
Store Arming	T-249

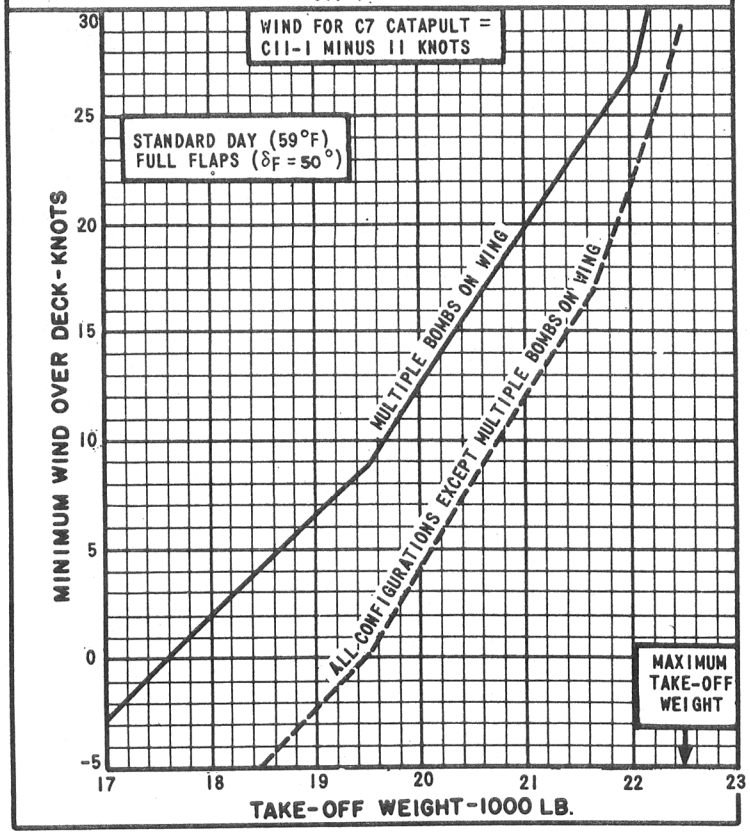
Bullpup (System) ASM-N-7A
External Store (NAVPAC)
Marker-Beacon Rec..... AN/ARN-12
VOR Rec AN/ARN-14

STANDARD AIRCRAFT CHARACTERISTICS. NAVWEPS FORM 13100/4C (2-63)

CARRIER SUITABILITY

DECK WIND REQUIRED FOR CATAPULTING

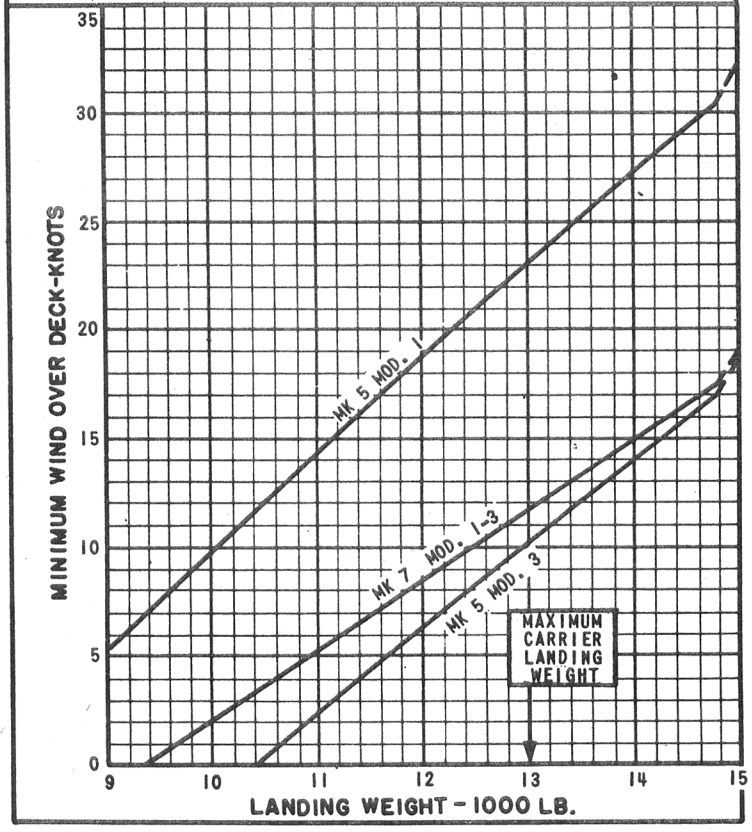
C11-1



Catapult takeoff speeds based on launching bulletin No. 8-36D except where limited by excess thrust.

Below a takeoff weight of 19,500 lb on the C11-1 catapult and 19,300 lb on the C7 catapult, the catapult end speed is limited by a maximum peak acceleration of 5.08g. Above these takeoff weights the catapult end speed is limited by a maximum tow force of 94,400 lb.

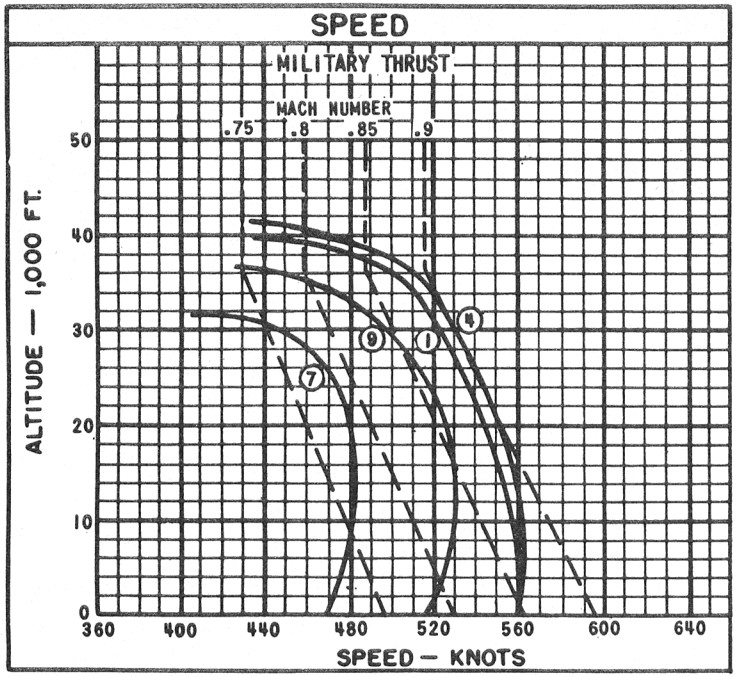
DECK WIND REQUIRED FOR LANDING

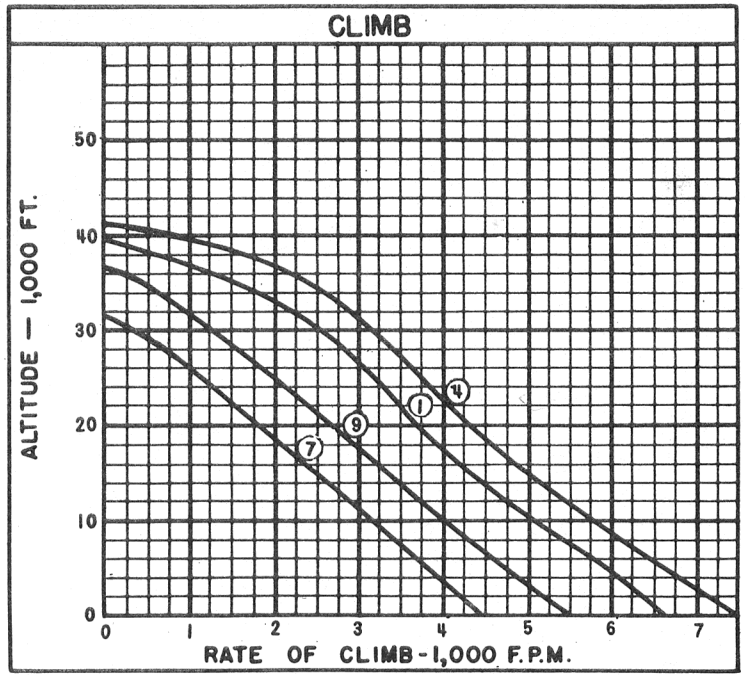


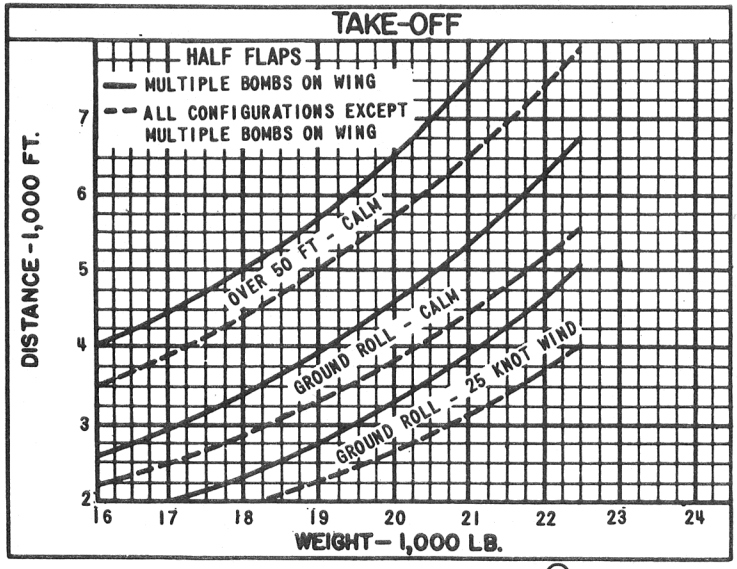
Approach speed based on speeds recommended in the flight handbook as approved by NATC and corresponds to $1.23V_{S.L.}$ without wing stores.

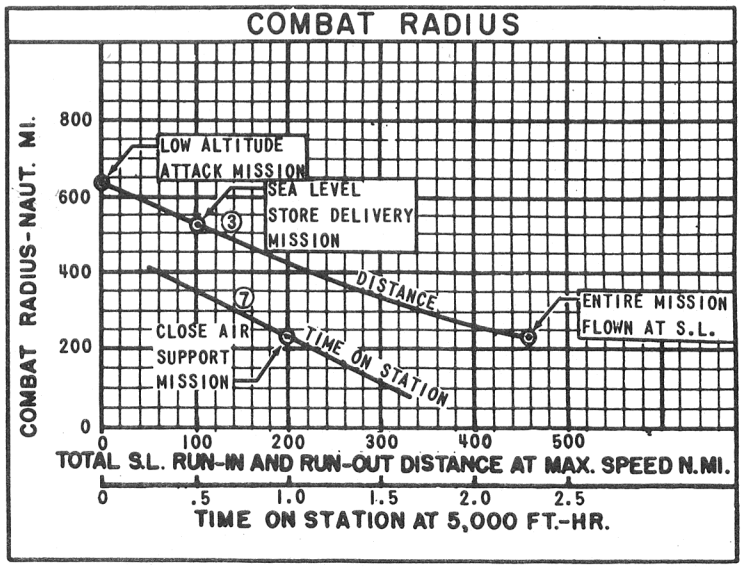
Engaging speed limited by airplane strength based on 76,000 lb horizontal hook load above a weight of 14,786 lb and 5.14g maximum horizontal load factor below a weight of 14,786 lb.

Good for all configurations.









○ DENOTES LOADING CONDITION COLUMN NUMBER

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).

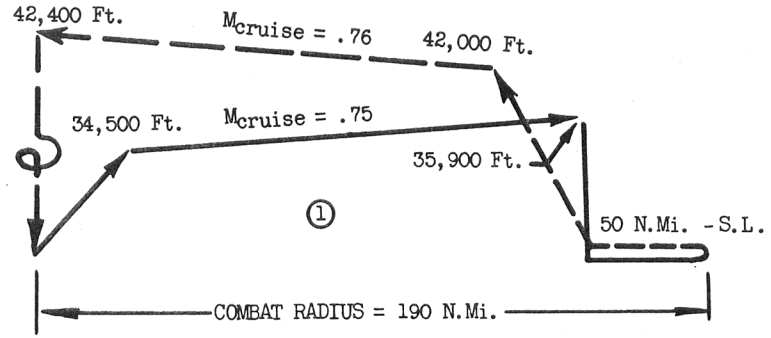
RUN-OUT: At S.L. for 50 n.mi. at maximum speed with military thrust.

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.



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 (Drop tanks when empty).

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

HOLD ON STATION: For one hour 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.

Mission Time: Excludes warmup, take-off & reserve fuel

Cycle Time: Excludes warmup and take-off fuel