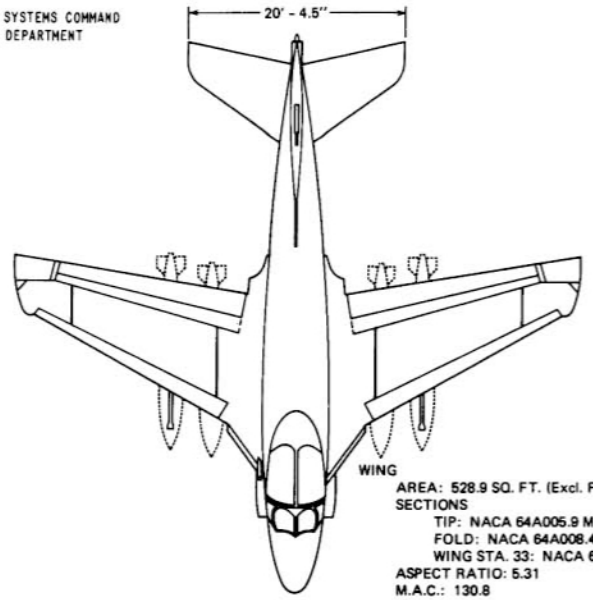
STANDARD AIRCRAFT CHARACTERISTICS

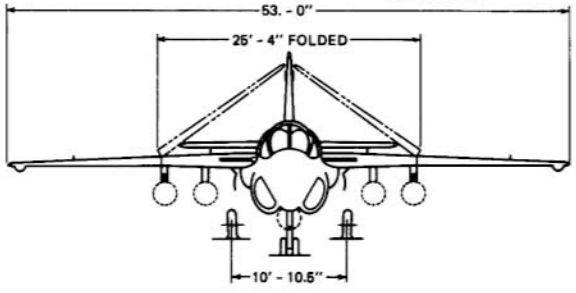
A-6E INTRUDER

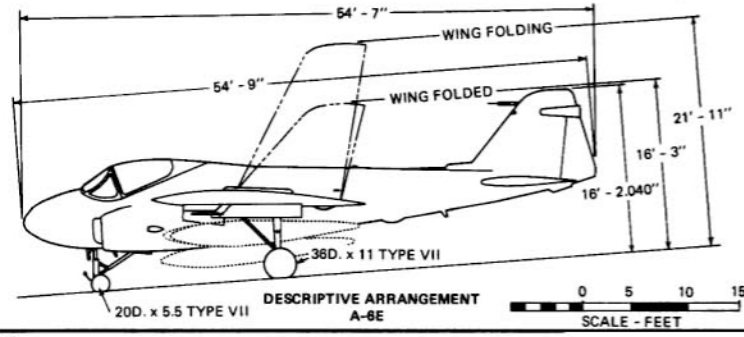
GRUMMAN

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT



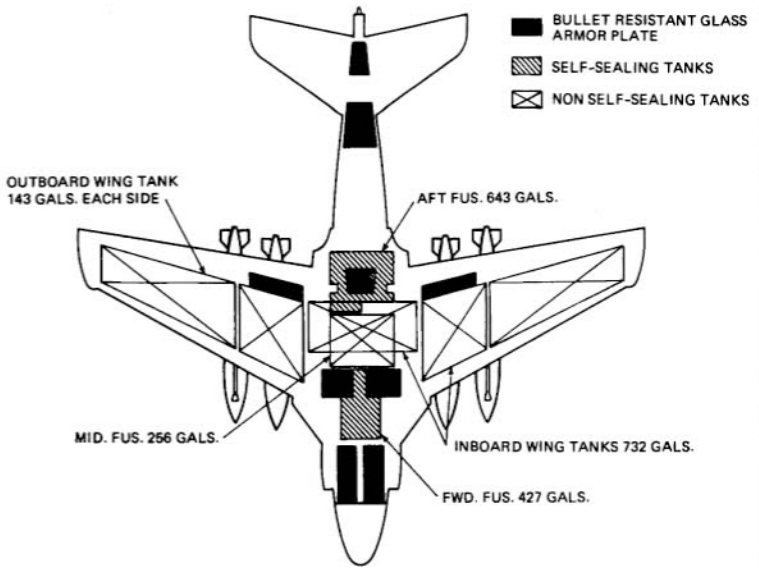
WING
AREA: 528.9 SQ. FT. (Excl. Fillets)
SECTIONS
TIP: NACA 64A005.9 MOD.
FOLD: NACA 64A008.4 MOD.
WING STA. 33: NACA 64A009 MOD.
ASPECT RATIO: 5.31
M.A.C.: 130.8

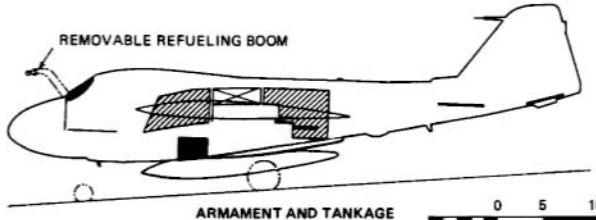




DESCRIPTIVE ARRANGEMENT
A-6E

0 5 10 15
SCALE - FEET





ARMAMENT AND TANKAGE
A-6E

0 5 10 15
SCALE - FEET

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-66)

POWER PLANT

Number and Model	(2) J52-P-8A/B
Manufacturer	Pratt & Whitney
Engine Specification No.	N-1844B
Type	Twin-Spool Axial-Flow
Augmentation	None
Length	117 in.
Ejector Diameter	20.44 in.
Diameter of Nacelle Base	21.00 in.
Nacelle Base Area (Each)	0.127 sq. ft.
Dry Weight	2118 lb

RATINGS

Static Sea Level Ratings and Specific Fuel Consumption

	THRUST	RPM	SFC
Take-Off	9300	12,060	.86
Military	9300	12,060	.86
Normal	8200	11,660	.81
Idle	510 (Max.)	6,950	1.90

ELECTRONICS

ATTACK NAVIGATION INSTRUMENTS

MA-1 Compass System	
Air Data Computer	CP 1005/A
Computer Set, Ballistics	AN/ASQ-133
Search Radar	AN/APQ-148
Track Radar	AN/APQ-112
Doppler Radar	AN/APN-153
Inertial Platform	AN/ASN-31
Radar Altimeter	AN/APN-141(V)
Integrated Display System	AN/AVA-1
AFCS	AN/ASW-16
Video Recorder	AN/USH-17(V)

COMMUNICATIONS

CNI Package (AN/ASQ-57)	
UHF Rec. Transmitter	RT542A/ASQ-57
UHF Aux. Receiver	AM2310/ASQ-57
UHF ADF Antenna	AS-909/ARA-48
IFF	KY-533A/ASQ-57
TACAN	
Rec. Transmitter	RT-541/ASQ-57
Pulse Decoder	KY-309/ASQ-57
ICS	AN/AIC-14
Ground Control Bombing	AN/ARW-67

COUNTERMEASURES

Repeater Jammer	AN/ALQ-41
Repeater Jammer	AN/ALQ-100
Chaff Dispenser	AN/ALE-29
Warning Receiver	AN/APR-25
Warning Receiver	AN/APR-27

* Provisions only

MISSION AND DESCRIPTION

The A-6E is a medium-size, all-weather, low-altitude, two-place attack aircraft capable of high subsonic performance and broad mission versatility including tanker capability. It incorporates improved weapon system components such as a new radar, weapons release system and computer, all within the parent A-6A aircraft contours.

At light gross weights the A-6E can operate from short unprepared fields, in close support of ground troops, while at higher gross weights, it can operate from C11-1 catapults on long-range, special-weapon strikes against heavily-defended fixed targets.

An integrated attack-navigation and central digital computer system is provided to find, track and destroy small moving targets and large fixed targets in all weather conditions. Pilot displays provide contact analogue, terrain clearance, attack and horizontal situation information in integrated form. Five store stations are provided, inboard of the wing-fold joint.

Irreversible hydraulic flight controls are provided. Longitudinal control is effected by an all-movable stabilizer. Lateral control is provided by flaperons, while a conventional rudder is used for directional control.

High lift devices are slotted flaps and leading edge slats. Anti-skid brakes on main wheels are provided. Nose wheel tow catapulting is used. Speed brakes are located on each wing tip. Side-by-side zero/zero ejection seats are provided for the pilot and bombardier/navigator.

Power wing-folding is provided. The engines may be removed and serviced by removal of fuselage fairing panels.

DEVELOPMENT

First Flight (A-6A)	April 1960
Service Use (A-6E)	August 1971

DIMENSIONS

Wing	
Area	528.9 sq. ft.
Span	53 ft. 0 in.
MAC	130.8 in.
Sweepback (1/4 chord)	25°
Length (Maximum)	54 ft. 9 in.
Height (Normal Static Position)	16 ft. 2.040 in.
Tread	10 ft. 10.5 in.

WEIGHTS

LOADINGS	LBS	L.F.
Empty	25,980	
Basic Hi-Lo-Lo-Hi	27,519	
Design	36,526	6.5/5.8*
Combat Hi-Lo-Lo-Hi	45,543	
Max. Takeoff		
Field	60,400	
Catapult	58,600	
Max. Landing		
Field	33,637	
Arrested	36,000	

All weights are based on SD 534-5 Detail Specification.
* Wing tip brakes extended

FUEL AND OIL

NO. TANKS	GAL	LB	LOCATION
3	1326	9,016	Fuselage
5	1018	6,923	Wings
5 (300-Gal.)	1477	10,045	Drop Tanks
Fuel Grade			JP-5
Fuel Spec. (Applicable)			MIL-F-5624C-1

OIL

Capacity	3.9 Gal./Engine	7.8 Gal.
Spec. (Applicable)	MIL-L-23699	

ORDNANCE

Maximum Bomb Capacity:	18,000 lb.
Bombs:	MK 81, MK 82, MK 83, MK 84 MK-36, MK-40 Snakeye I MK-77 Mod-1 Firebomb
Special Weapons:	MK 28 Ex Mod-1, MK-43, MK-57
Rocket Packs:	Aero 6A, 7D; LAU 3A/A, 10/A, 32 A/A, 61/A, 69/A
Missiles:	AGM-45A (Shrike), AIM-9D (Sidewinder)
Mines:	MK-25, -36, -50, -52, -53, -55, -56

In addition the following may be carried: CBU-1A/A, -9A/A Aircraft Dispenser & Bomblets, CBU-24, -29, -49 & MK-20 Rockeye II Cluster Bombs, A/A 37B-5 Triple Ejection Rack, A/A 37B-6 Multiple Ejection Rack, Aero 5A-1 Launcher, A/A-37B-3 Practice Multiple Bomb Rack with MK-76 or MK-106 Practice Bombs, MK-24, -45, -58 Flares.

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-66)

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION			① HI-HI-HI (4) Pylons Removed	③ HI-LO-LO-HI (1) MK-43 (4) 300 Gal. Tanks	⑤ CLOSE SUPPORT (28) MK-81 Snakeye I*	⑦ LO-LO-LO (18) MK-36 Snakeye I* (2) 300 Gal. Tanks	⑨ FERRY RANGE (5) 300 Gal. Tanks
TAKE-OFF WEIGHT		lb.	42,866	54,393	52,749	58,807	54,543
Fuel internal/external (JP-5)		lb./lb.	15,939/0	15,939/8036	15,939/0	15,939/4018	15,939/10,045
Payload		lb.	0	2060	8260	10296	0
Wing loading		lb./sq. ft.	81.0	102.8	99.7	111.2	103.1
Stall speed—power-off		kn.	107	124	122	129	124
Take-off run at S.L.— calm	Maximum effort	ft.	1800	3990	3590	5130	4010
Take-off run at S.L.— 25 kn. wind	Maximum effort	ft.	1260	3020	2700	3940	3050
Take-off to clear 50 ft.— calm	Maximum effort	ft.	2630	4770	4380	5900	4800
Max. speed/altitude	(A)	kn./ft.	568/SL	523/SL	484/5000	474/SL	531/SL
Rate of climb at S.L.	(A)	fpm.	8600	5280	4570	3860	5300
Time: S.L. to 20,000 ft.	(A)	min.	2.7	5.1	6.1	7.6	4.9
Time: S.L. to 30,000 ft.	(A)	min.	4.6	9.9	13.4	19.3	9.4
Service ceiling (100 fpm)	(A)	ft.	44,600	37,700	34,300	30,700	37,700
Combat range	(B)	n.mi.	2016	2407	979	1353	2866
Average cruising speed:	cr. dist/cr. time	kn.	419	413	398	410	415
Cruising altitude(s)		ft.	37,700 - 44,600	31,300 - 44,000	30,800 - 42,700	27,500 - 43,200	32,900 - 44,900
Combat radius/mission time	(B)	n.mi./hr.	970/4.10	773/4.57	321/2.61	392/3.04	2531/6.16
Average cruising speed		kn.	484	339	403	266	410
A-6E Buddy Tanker (C)	receiver radius/mission time	n.mi./hr.	1482/7.38	1252/7.07	758/5.06	592/4.76	3334/8.37
	refueling distance/fuel transferred	n.mi./lb.	758/7557	625/9678	562/10,743	309/10081	625/9487
KC-130F Tanker (C)	receiver radius/mission time	n.mi./hr.	1600/7.97	1585/8.75	777/5.16	—	4001/10.11
	refueling distance/fuel transferred	n.mi./lb.	991/9083	1201/15355	576/10,996	—	1357/16488

COMBAT LOADING CONDITION		② (4) PYLONS REMOVED	④ TANKS OFF STORE RETAINED	⑥ STORES RETAINED	⑧ TANKS OFF STORES RETAINED	⑩ TANKS OFF
COMBAT WEIGHT	lb.	36,490	45,525	46,373	50,408	43,493
Engine power		Military	Military	Military	Military	Military
Fuel	lb.	9563	15,939	9563	11,974	15,939
Combat speed/combat altitude	kn./ft.	490/41,200	552/SL	483/5000	502/SL	491/36,200
Rate of climb/combat altitude	fpm/ft.	3100/41,200	7150/SL	4800/5000	5250/SL	1950/36,200
Combat ceiling (500 fpm)	ft.	46,200	40,700	35,000	35,100	42,400
Rate of climb at S.L.	fpm.	10,150	7100	5400	5220	7990
Max. speed at S.L.	kn.	567	552	480	502	562
Max. speed/altitude	kn./ft.	567/SL	552/SL	490/15,000	506/10,000	562/SL
LANDING WEIGHT (stores off)	lb.	28,694	29,783	30,457	30,220	29,958
Fuel	lb.	1767	2229	1907	2068	2409
Stall speed—power-off/approach power	kn./kn.	88/82	89/83	90/84	90/84	90/84
Landing distance-ground roll/over 50 ft. obst.	ft./ft.	1500/2100	1558/2164	1590/2205	1580/2190	1570/2180

NOTES

PERFORMANCE BASIS: NATC and contractor flight tests and estimated installed J52-P-8A engine performance.

SPOTTING: A total of 63 airplanes can be accommodated in the safe parking area on the flight and hangar decks of a CVA-19 class angled deck carrier.

Bombs loaded on M.E.R.

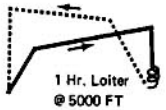
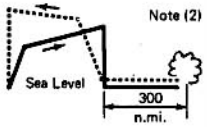
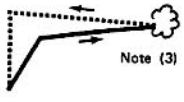
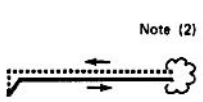
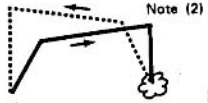
(A) Military Rated Thrust

(B) All missions are based on reserves using 5% of total initial fuel plus fuel for 20 minutes maximum endurance at sea level.

(C) Inflight refueling rendevous point was selected as that point in the mission where the receiver aircraft has sufficient fuel, plus standard reserve, to return to base if inflight refueling is not accomplished.

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-65)

MISSION SUMMARY — ALTERNATE LOADINGS

	External Store Loading	T.O.G.W	CLOSE SUPPORT 		HI-LO-LO-HI 		HI-HI-HI 		LO-LO-LO 		HI-LO-HI 	
			COMBAT RADIUS n.mi	MISSION TIME hr.	COMBAT RADIUS n.mi.	MISSION TIME hr.	COMBAT RADIUS n.mi.	MISSION TIME hr.	COMBAT RADIUS n.mi.	MISSION TIME hr.	COMBAT RADIUS n.mi.	MISSION TIME hr.
(11)	(28) MK-82 G.P. Bombs*	60,169	266	2.34	—	—	522	2.69	280	2.21	439	2.28
(12)	(8) MK-83 G.P. Bombs** (1) 300 Gal. Tank	53,963	507	3.47	—	—	758	3.77	367	2.85	668	3.34
(13)	(12) MK-20 Rockeye II* (3) 300 Gal. Tanks	56,161	689	4.37	536	3.78	954	4.74	463	3.58	851	4.24
(14)	(5) MK-84 G.P. Bombs	53,483	476	3.28	—	—	758	3.72	350	2.76	647	3.18
(15)	(4) MK-84 G.P. Bombs (1) 300 Gal. Tank	53,693	609	3.91	420	2.86	887	4.34	409	3.09	778	3.81
(16)	(3) MK-84 G.P. Bombs (2) 300 Gal. Tanks	53,908	760	4.65	550	3.45	1024	5.02	467	3.50	909	4.45
(17)	(6) MK-83 G.P. Bombs** (3) 300 Gal. Tanks	56,223	764	4.71	590	3.71	1025	5.06	490	3.70	919	4.55
(18)	(18) MK-82 G.P. Bombs* (2) 300 Gal. Tanks	58,591	556	3.72	403	2.81	809	4.03	404	3.10	724	3.74
(19)	(28) MK-36 Snakeye I*	60,505	224	2.18	—	—	468	2.51	264	2.13	399	2.15

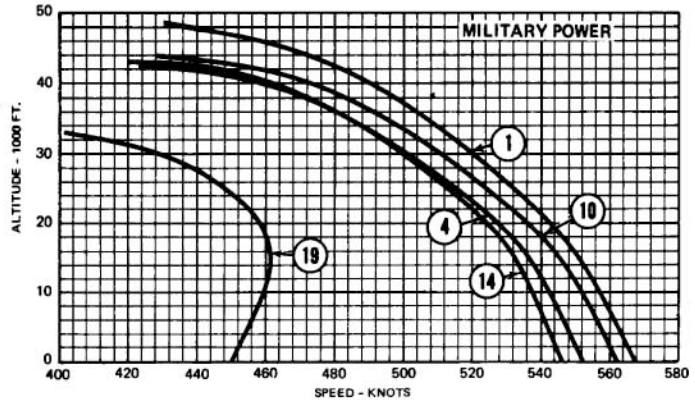
NOTES

*Bombs Loaded on M.E.R.
**Bombs Loaded on T.E.R.

1. All missions are based on reserves using 5% of total initial fuel plus fuel for 20 minutes maximum endurance at sea level.
2. Mission includes 5 minute military power combat at sea level with stores on.
3. Mission includes 5 minute military power combat at best cruise altitude with stores on.

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-65)

SPEED



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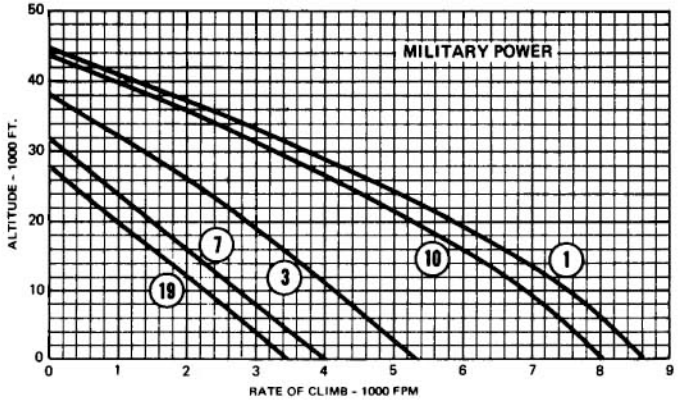
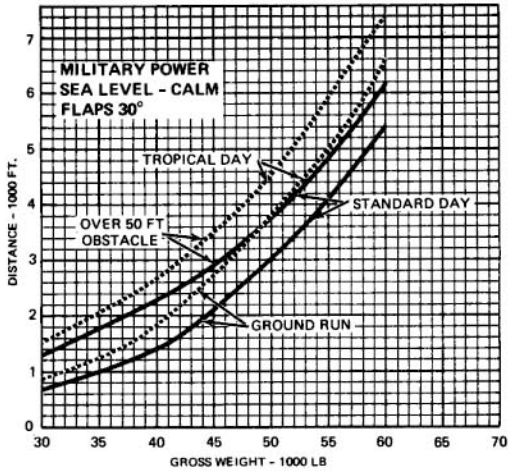


TAKE-OFF



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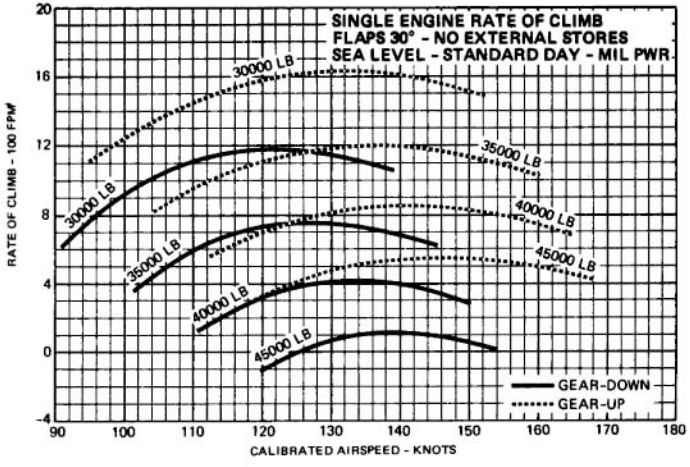
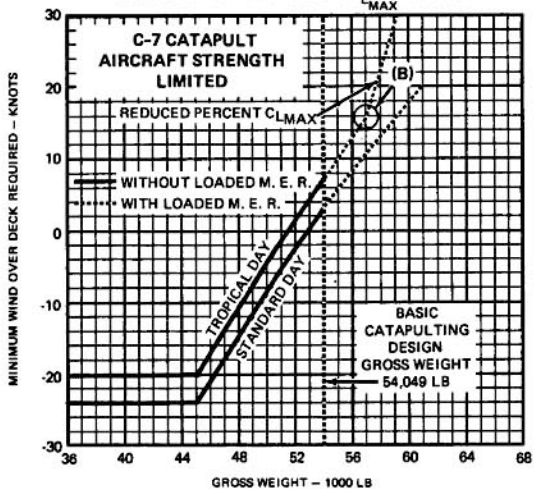


STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-65)

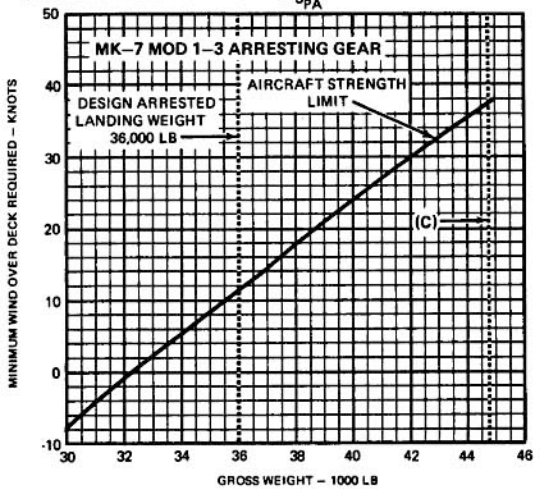
MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING VS. GROSS WEIGHT

BASED ON TAKEOFF ATTITUDE OF .8 $C_{L_{MAX}}$ POWER OFF



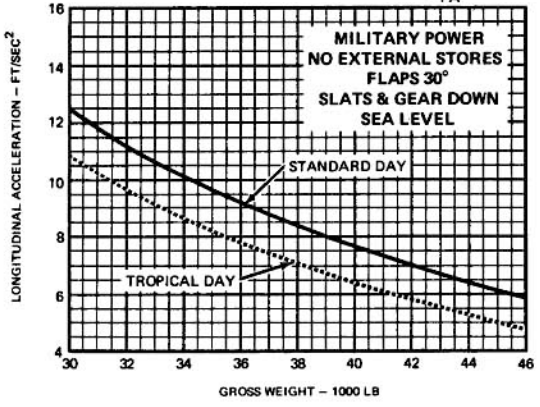
MINIMUM WIND OVER DECK REQUIRED FOR ARRESTING VS. GROSS WEIGHT

BASED ON APPROACH SPEED OF 1.3 ($V_{S_{PA}}$) POWER APPROACH STALL SPEED



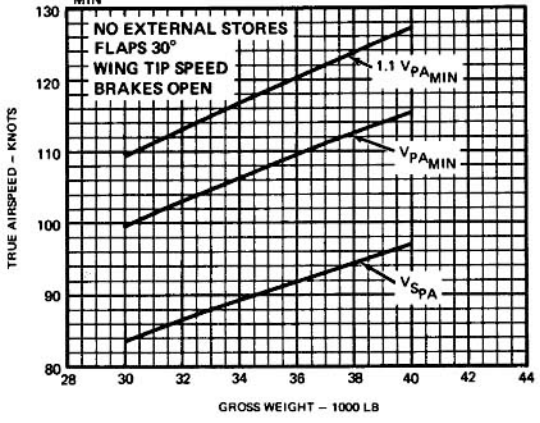
WAVE-OFF ACCELERATION

LONGITUDINAL ACCELERATION AT 1.15 $V_{S_{PA}}$



MINIMUM CARRIER APPROACH SPEEDS

$V_{PA_{MIN}}$ BASED ON 5 SECONDS TIME TO CLIMB 50 FEET AT SEA LEVEL



NOTES

(A) These curves should be used for planning purposes only. Actual catapulting and arresting gear operation should be in accordance with applicable Aircraft Technical Orders, and Catapult and Arresting Gear Bulletins.

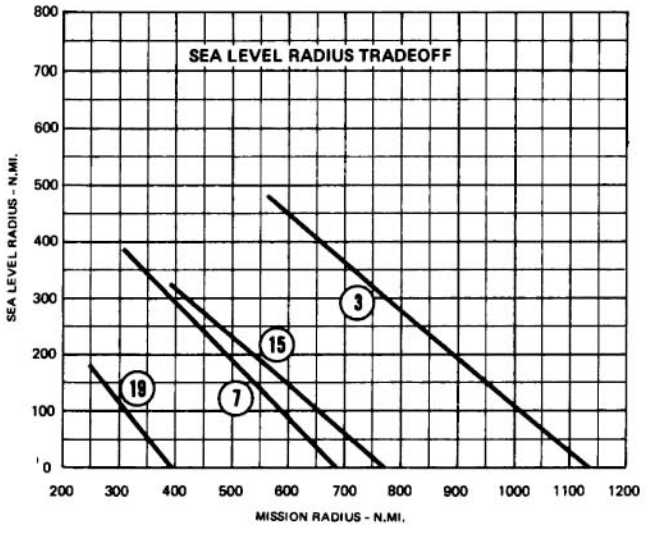
(B) Maximum weight for tropical day at .8 $C_{L_{MAX}}$. Above this weight, percent $C_{L_{MAX}}$ is reduced to maintain constant 2.1 ft/sec² longitudinal acceleration.

(C) Maximum weight, 44,800 LB, for tropical day longitudinal acceleration of 5.0 ft/sec² at 1.15 V_{SPA} (speed brakes retracted).

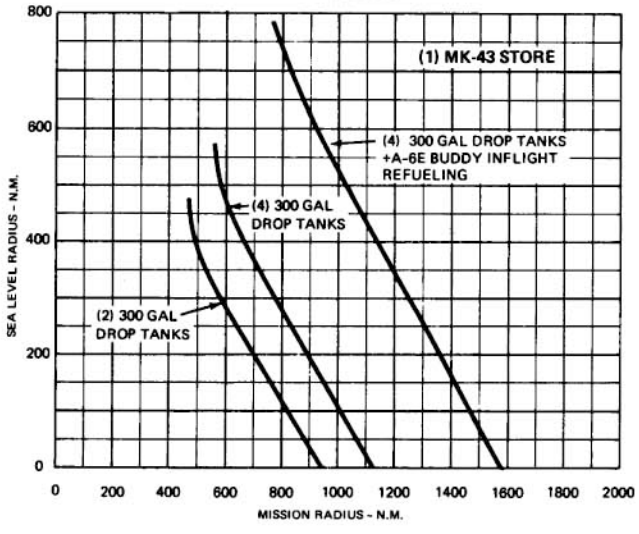
(D) Flap deflection, for catapulting δ_F=30°, for arresting δ_F=30° (wing tip speed brakes extended).

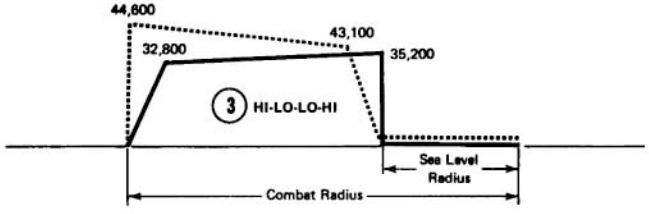
STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4H (Rev. 7-65)

HI-LO-LO-HI

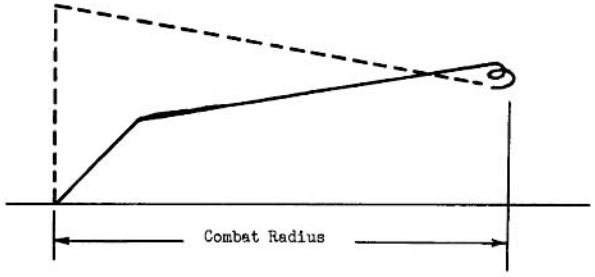


HI-LO-LO-HI



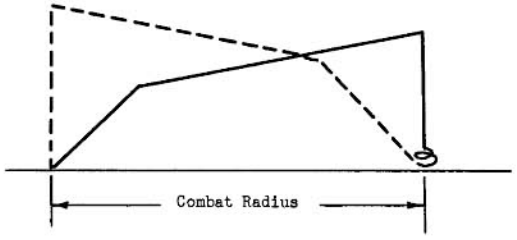


- Warm-up, taxi, takeoff: 5 minutes with normal rated power (static) at sea level.
- Climb on course with military power to best cruise altitude.
- Cruise-out at speed for maximum range at best cruise altitude (drop external fuel tanks when empty).
- Descent to sea level: no time, fuel or distance gained.
- Cruise-out at sea level to target at speed for maximum range.
- Military power operation with stores on for 5 minutes at target, no distance gained.
- Drop stores on target.
- Cruise-back at sea level from target at speed for maximum range.
- Climb on course with military power to best cruise altitude.
- Cruise-back at speed for maximum range at best cruise altitude.
- Fuel allowance for reserve is 5% of initial fuel plus fuel required for 20 minutes at speed for maximum endurance at sea level, (both engines operating).



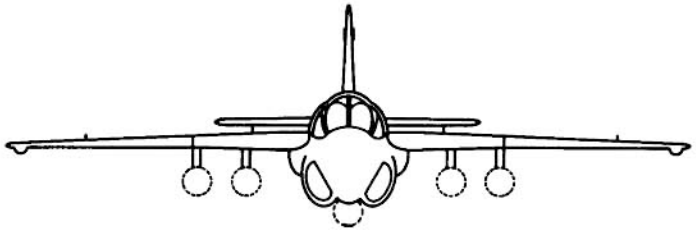
HI-HI-HI

- Warm-up, taxi, and take-off: 5 minutes with normal rated power (static) at sea level.
- Climb on course with military power to optimum cruise altitude.
- Cruise-out at speed for maximum range at optimum cruise altitude.
- Combat for 5 minutes at military-rated power at optimum cruise altitude; stores on and no distance gained. Drop stores after combat.
- Cruise-back at speed for maximum range at optimum altitude.
- Reserve: 5% initial fuel plus 20 minutes at maximum endurance at sea level.



HI-LO-HI

- Warm-up, taxi and take-off: 5 minutes with normal rated power (static) at sea level.
- Climb on course with military power to optimum cruise altitude.
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty).
- Descend to sea level (no fuel used, no distance gained).
- Combat for 5 minutes at military-rated power; stores on and no distance gained. Drop stores after combat.
- Climb on course with military power to optimum cruise altitude.
- Cruise-back at speed for maximum range at optimum cruise altitude.
- Reserve: 5% initial fuel plus 20 minutes at maximum endurance at sea level.



	OUTBOARD	INBOARD	CENTERLINE	INBOARD	OUTBOARD
BOMBS	(6) 250 lb (G.P. or Retard) (6) 500 lb (G.P. or Retard) (4) 800 lb Demo (3) 1000 lb G.P. (2) 1000 lb Retard (1) 2000 lb G.P.	(5) 250 lb (G.P. or Retard) (5) 500 lb (G.P. or Retard) (4) 800 lb Demo (3) 1000 lb G.P. (2) 1000 lb Retard (1) 2000 lb G.P.	(6) 250 lb (G.P. or Retard) (6) 500 lb (G.P. or Retard) (4) 800 lb Demo (3) 1000 lb G.P. (2) 1000 lb Retard (1) 2000 lb G.P.	(5) 250 lb (G.P. or Retard) (5) 500 lb (G.P. or Retard) (4) 800 lb Demo (3) 1000 lb G.P. (2) 1000 lb Retard (1) 2000 lb G.P.	(6) 250 lb (G.P. or Retard) (6) 500 lb (G.P. or Retard) (4) 800 lb Demo (3) 1000 lb G.P. (2) 1000 lb Retard (1) 2000 lb G.P.
CLUSTER BOMBS	(6) MK 20 Rockeye II (1) CBU-1A/A, -9A/A (3) CBU-24, -29, -49	(5) MK 20 Rockeye II – (2) CBU-24, -29, -49	(6) MK 20 Rockeye II – (3) CBU-24, -29, -49	(5) MK 20 Rockeye II – (2) CBU-24, -29, -49	(6) MK 20 Rockeye II (1) CBU-1A/A, -9A/A (3) CBU-24, -29, -49
INCENDIARY BOMBS	(1) MK 77 Mod 1	(1) MK 77 Mod 1	(1) MK 77 Mod 1	(1) MK 77 Mod 1	(1) MK 77 Mod 1
SPECIAL WEAPONS	– – –	(1) MK 28/MK 104 (1) MK 43 (1) MK 57/BDU-11E	(1) MK 28/MK 104 (1) MK 43 (1) MK 57/BDU-11E	(1) MK 28/MK 104 (1) MK 43 (1) MK 57/BDU-11E	– – –
MISSILES OR ROCKETS	(1) Sidewinder 1A, 1C (2) AGM-45A Shrike (3) Aero 7D, LAU 3A/A (3) Aero 6A, LAU 32A/A (3) LAU-10/A, -61/A, -69/A	(1) Sidewinder 1A, 1C (2) AGM-45A Shrike (2) Aero 7D, LAU 3A/A (2) Aero 6A, LAU 32A/A (2) LAU-10/A, -61/A, -69/A	– – – – –	(1) Sidewinder 1A, 1C (2) AGM-45A Shrike (2) Aero 7D, LAU 3A/A (2) Aero 6A, LAU 32A/A (2) LAU-10/A, -61/A, -69/A	(1) Sidewinder 1A, 1C (2) AGM-45A Shrike (3) Aero 7D, LAU 3A/A (3) Aero 6A, LAU 32A/A (3) LAU-10/A, -61/A, -69/A
FUEL TANKS	(1) 300 Gal	(1) 300 Gal	(1) 300 Gal (1) D704 AR Tank	(1) 300 Gal	(1) 300 Gal
MINES	(1) MK-25, -36, -50, -52 (1) MK-53, -55, -56	(1) MK-25, -36, -50, -52 (1) MK-53, -55, -56	(1) MK-25, -36, -50, -52 (1) MK-53, -55, -56	(1) MK-25, -36, -50, -52 (1) MK-53, -55, -56	(1) MK-25, -36, -50, -52 (1) MK-53, -55, -56
PRACTICE BOMBS	(6) MK 76, MK 106	(6) MK 76, MK 106	(6) MK 76, MK 106	(6) MK 76, MK 106	(6) MK 76, MK 106
PYROTECHNICS	(6) MK 24, MK 45, MK 58	(6) MK 24, MK 45, MK 58	(6) MK 24, MK 45, MK 58	(6) MK 24, MK 45, MK 58	(6) MK 24, MK 45, MK 58
RACKS	(1) A/A 37B-3 PMBR (1) A/A 37B-5 TER (1) A/A 37B-6 MER (1) ADU-315 Dual Adapter (2) Aero 5A-1 Launcher	(1) A/A 37B-3 PMBR (1) A/A 37B-5 TER (1) A/A 37B-6 MER (1) ADU-315 Dual Adapter (2) Aero 5A-1 Launcher	(1) A/A 37B-3 PMBR (1) A/A 37B-5 TER (1) A/A 37B-6 MER – –	(1) A/A 37B-3 PMBR (1) A/A 37B-5 TER (1) A/A 37B-6 MER (1) ADU-316 Dual Adapter (2) Aero 5A-1 Launcher	(1) A/A 37B-3 PMBR (1) A/A 37B-5 TER (1) A/A 37B-6 MER (1) ADU-316 Dual Adapter (2) Aero 5A-1 Launcher

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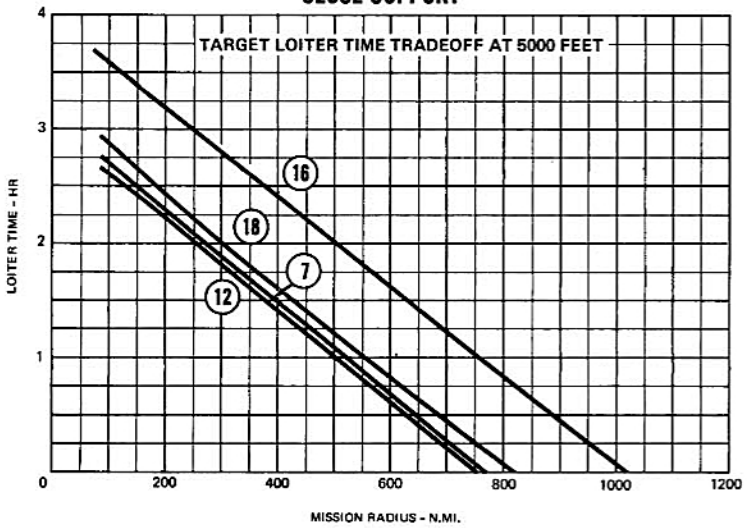
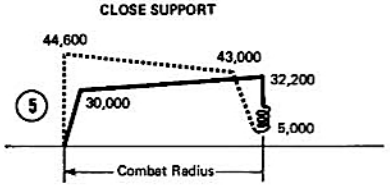
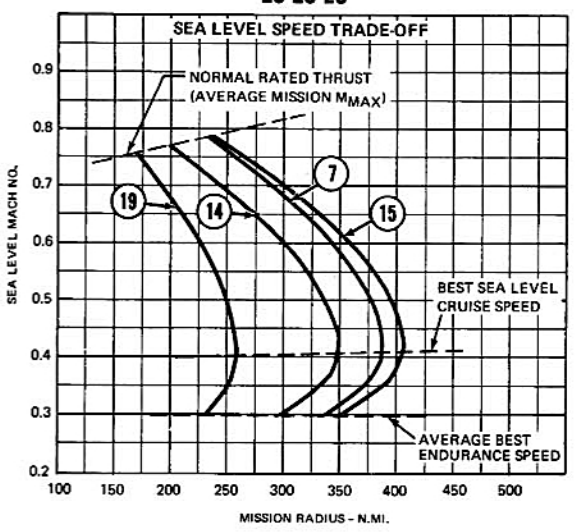
CLOSE SUPPORT

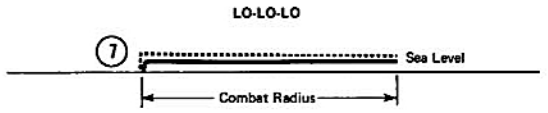




- Warm-up, taxi, takeoff; 5 minutes with normal rated power (static) at sea level.
- Climb on course with military power to best cruise altitude.
- Cruise-out at speed for maximum range at best cruise altitude. (Drop external fuel tanks when empty.)
- Descend to 5,000 feet altitude; no time, fuel or distance gained.
- Loiter at 5,000 feet at speed for maximum endurance.
- Drop stores on target.
- Climb on course with military power to best cruise altitude.
- Cruise-back at speed for maximum range at best cruise altitude.
- Fuel allowance for reserve is 5% of initial fuel plus fuel required for 20 minutes at speed for maximum endurance at sea level, (both engines operating).

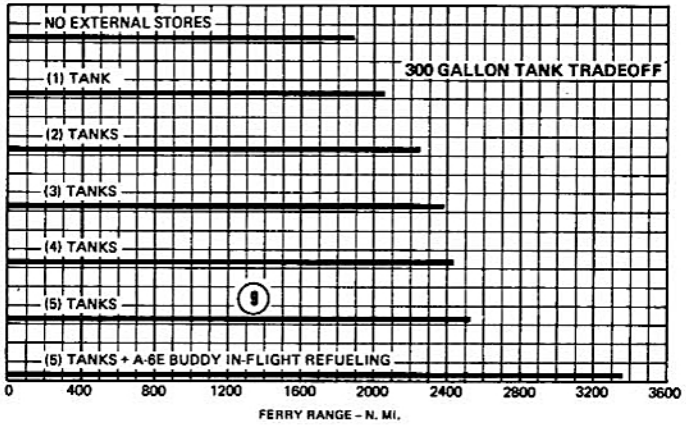
LO-LO-LO

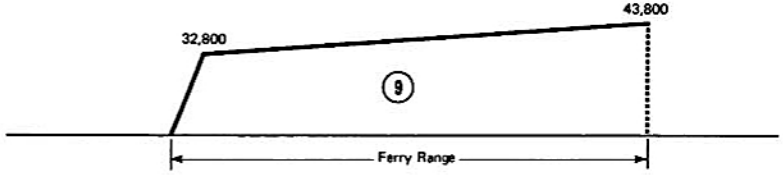




- Warm-up, taxi, takeoff: 5 minutes with normal rated power (static) at sea level.
- Cruise-out at speed for maximum range at sea level (drop external fuel tanks when empty).
- Military power operation with stores on for 5 minutes at target; no distance gained.
- Drop stores on target.
- Cruise-back at speed for maximum range at sea level.
- Fuel allowance for reserve is 5% of initial fuel plus fuel required for 20 minutes at speed for maximum endurance at sea level, (both engines operating).

FERRY RANGE





- Warm-up, taxi, takeoff; 5 minutes with normal rated power (static) at sea level.
- Climb on course with military power to best cruise altitude.
- Cruise-out at speed for maximum range at best cruise altitude (Retain external fuel tanks when empty).
- Fuel allowance for reserve is 5% of initial fuel plus fuel required for 20 minutes at speed for maximum endurance at sea level (both engines operating).

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4A (Rev. 7-65)