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NAVAIR 00-110AA4-8

GROUP 4 DOCUMENT
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

Standard Aircraft Characteristics

NAVY MODEL
A-4L
AIRCRAFT

(TITLE UNCLASSIFIED)

This publication shall not be carried in aircraft on combat missions or when there is a reasonable chance of its falling into the hands of an unfriendly nation, unless specifically authorized by the "Operational Commander."

PUBLISHED BY DIRECTION OF THE COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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JANUARY 1970

Declassified by NAVAIRSYSCOM LTR 5601: SVW ser 366 of 12 JUN 75

LIST OF CHANGED PAGES ISSUED

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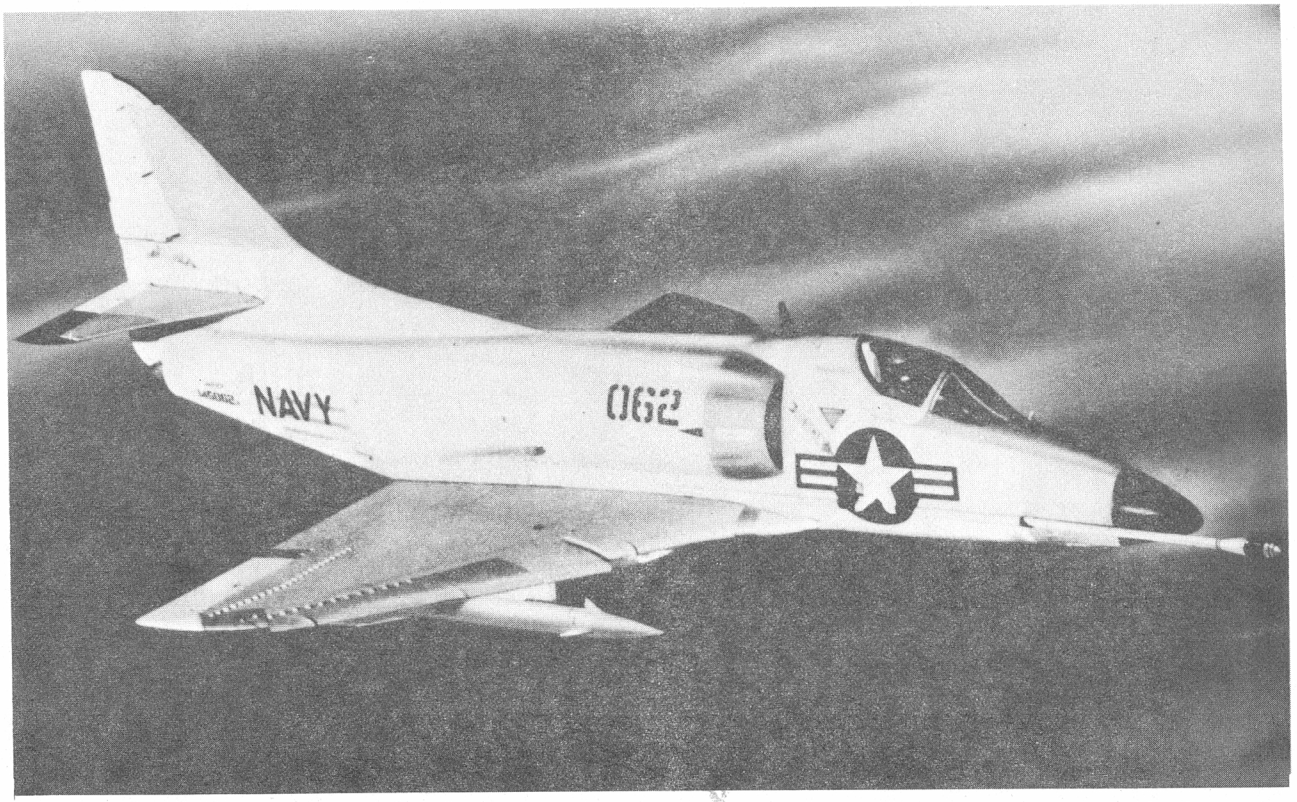
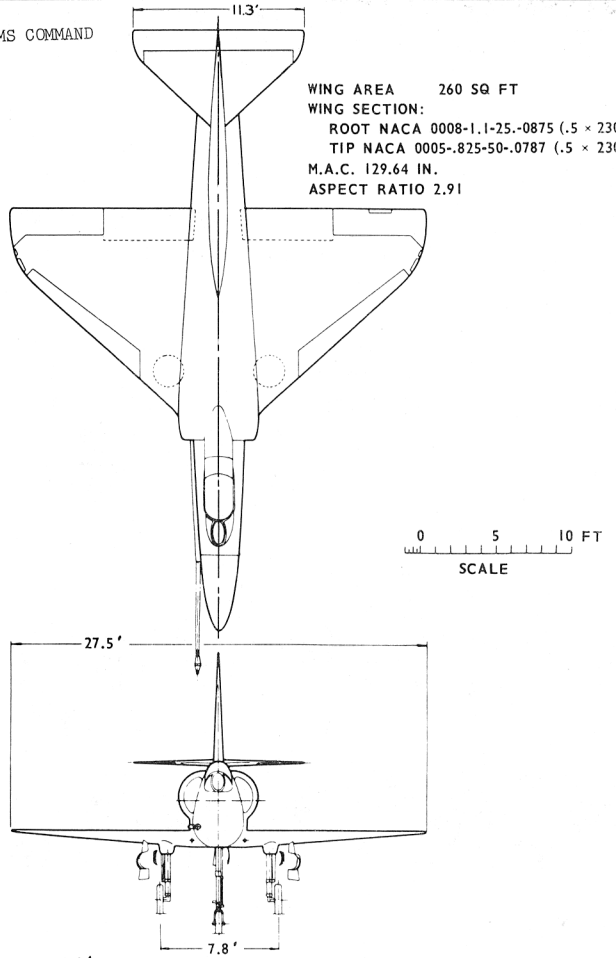
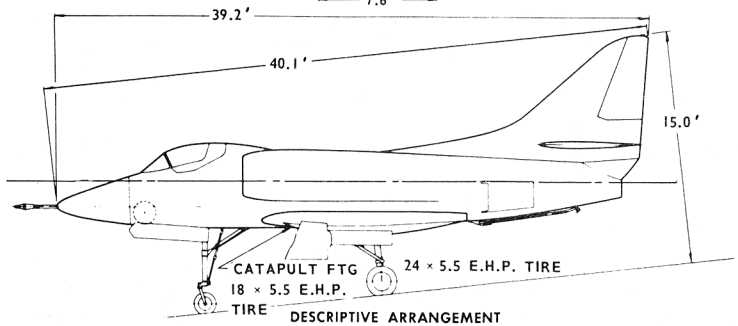


STANDARD AIRCRAFT CHARACTERISTICS
A-4L SKYHAWK
MCDONNELL DOUGLAS

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT



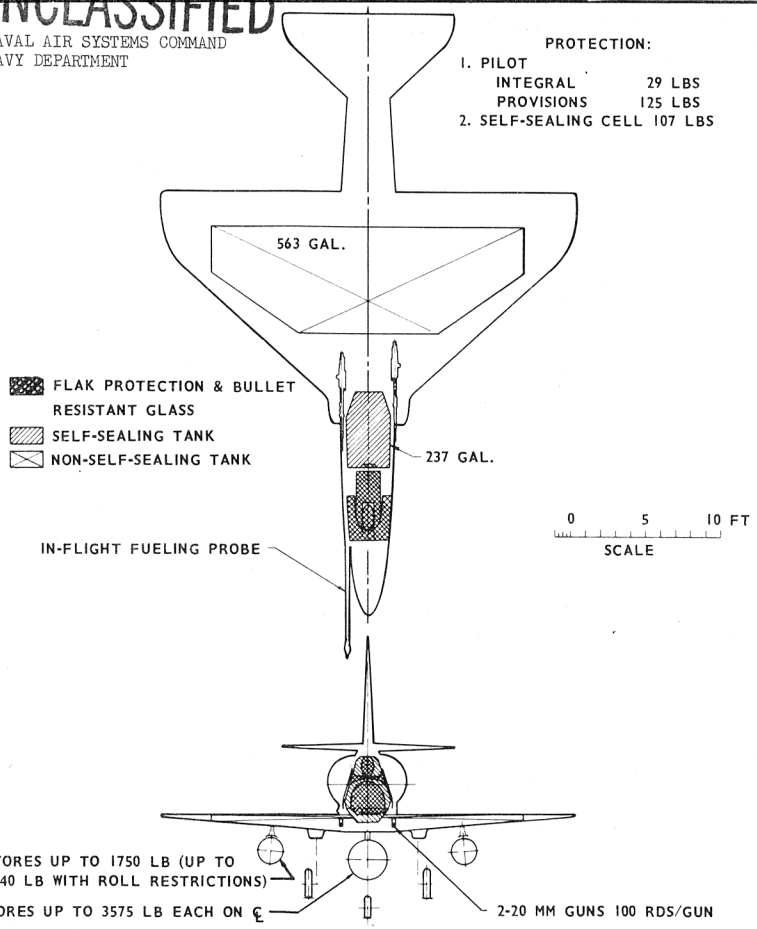
WING AREA 260 SQ FT
WING SECTION:
ROOT NACA 0008-1.1-25.-0875 (.5 × 230)
TIP NACA 0005-.825-50-.0787 (.5 × 230)
M.A.C. 129.64 IN.
ASPECT RATIO 2.91

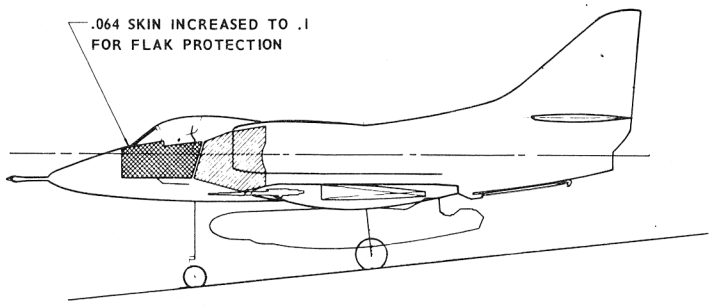


DESCRIPTIVE ARRANGEMENT

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT

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





ARMAMENT AND TANKAGE

POWER PLANT

No. & Model (1) J65-W-20

Axial Flow Turbojet
Without Afterburner

MFR. - Wright Aeronautical
Spec. No. -
Specification 1117A
Length . . . . . 113 in.
Diameter . . . . . 31 in.

RATINGS

MIL.	8600	RPM	8400 lb.
Norm.	8300	RPM	7400 lb.

ELECTRONICS

AN/ASQ-17 Electronic Control
Central providing the following

Function	Equivalent to
UHF Communications	AN/ARC-27
IFF	AN/APX-6B
SIF	AN/APA-89
UHF ADF	AN/ARA-25
Self-contained Navigation (Dead Reckoning Computer) . . .	AN/ASN-19A
TACAN	AN/ARN-21
LABS	AN/AJB-3
Radar	AN/APG-53A
Autopilot	Douglas
Store Arming.	T-249

MISSION AND DESCRIPTION

The A-4L airplane is a lightweight, high performance, carrier-based, jet-powered attack airplane capable of dive, glide and loft bombing, in-flight fueling (tanker or receiver), carrying a variety of conventional and special weapons, 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. A total of 175 airplanes can be accommodated in a landing spot on the flight and hanger decks of a CVA-59 class carrier.

DEVELOPMENT

Contract Approval dates:
Contract NOa(s)57-182, 85 airplanes, dtd. 9-9-57
NOa(s)59-0151, 195 airplanes, dtd. 10-2-58
NOa(s)60-0128, 178 airplanes, dtd. 10-23-59
NOw(s)61-0022, 180 airplanes, dtd. 9-26-60
First flight: August 1958 First fleet delivery: February 1960.

NOTE: Above aircraft delivered with J65-W-16A engines as A-4C's Retrofit with J65-W-20 engines per ECP-872 (AFC 417) and Redesignated A-4L

DIMENSIONS

Span	27.5 ft.
Length	40.1 ft.
Height	15.0 ft.
Max. Tread.	7.8 ft.
Turn. Rad. (nose).	20.5 ft.
Wing Area	260 sq. ft.

WEIGHTS

Loadings	LBS	L.F.
Empty	9,861	- - -
Basic	10,501	- - -
Flight Design	12,504	7.0g
Combat	16,283	5.4g
Max. Take-Off	22,500	3.9g
Max. Landing		
Arrest	14,500	6.0g
Airfield	16,000	5.5g

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
Maximum usable fuel . . . . . 800 gal.

OIL

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

ORDNANCE

No.	Location	Loading
1	Fuselage	Stores up to 3575 lb.
2	Inbd. Wing	Stores up to 2240 lb. with roll restriction

GUNS

2	Lower Wing Outboard of Fuselage	MK-12 20 mm Guns with 100 rds. per Gun

PERFORMANCE SUMMARY

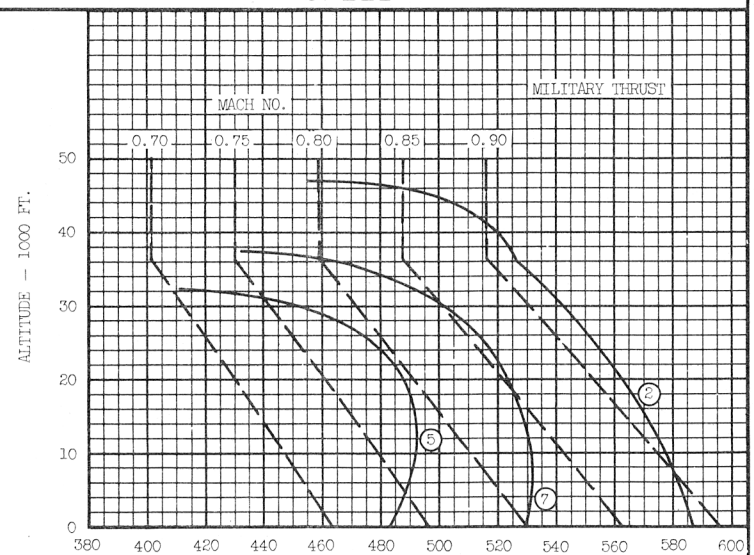
TAKE-OFF LOADING CONDITION			(1) Hi-Hi-Hi Clean Airplane	(3) S.L. Store Delivery 1-MK 28 Store	(5) Close Support 1-300 Gal Tank 12-MK 81 Snakeye	(7) Close Support 2-AGM 12B (Bullpup A) 1-300 Gal Tank	(9) Ferry 3-300 Gal Tanks
TAKE-OFF WEIGHT		lb.	15,831	18,501	22,500	20,036	22,500
Fuel internal/external (JP-5)		lb./ lb.	5440/NONE	5440/NONE	5440/1995 (C)	5440/2040	5440/5494 (C)
Payload		lb.	NONE	2040	3600	1140	NONE
Wing loading		lb./sq. ft.	60.9	71.2	86.5	77.1	86.5
Stall speed—power-off		kn.	113	122	138	129	137
Take-off run at S.L.— calm	(A)	ft.	1900	2600	4150	3150	4150
Take-off run at S.L.— 25 kn. wind	(A)	ft.	1260	1800	3000	2200	3000
Take-off to clear 50 ft.— calm	(A)	ft.	2890	3800	5820	4500	5820
Max. speed/altitude	(A)	kn./ft.	587/S.L.	562/2,500	493/12,500	532/7,000	534/4,000
Rate of climb at S.L.	(A)	fpm.	8850	6950	4550	5950	4950
Time: S.L. to 20,000 ft.	(A)	min.	2.9	3.9	6.5	4.6	5.5
Time: S.L. to 30,000 ft.	(A)	min.	4.7	6.8	---	8.6	---
Service ceiling (100 fpm)	(A)	ft.	43,800	39,700	31,700	37,100	34,500
Combat range (tanks and stores retained)		n.mi.	990	705	690	970	1540 (D)
Average cruising speed		kn.	432	428	414	423	425
Cruising altitude(s)		ft.	37,300 - 42,800	34,000 - 38,200	29,900 - 35,000	32,400 - 38,800	29,800 - 40,100
Combat radius/mission time		n.mi./hr.	460/2.2	115/0.6 (B)	170/1.8	265/2.2	---
Average cruising speed		kn.	432	430	422	427	---

COMBAT LOADING CONDITION		(2) Clean Airplane	(4) Store Retained	(6) Stores Retained Tank Dropped	(8) Missiles Retained Tank Dropped	(10) Tanks Retained
COMBAT WEIGHT	lb.	13,655	16,325	20,362	17,813	17,006
Engine power		MILITARY	MILITARY	MILITARY	MILITARY	MILITARY
Fuel	lb.	3264	3264	5440	5440	5440
Combat speed/combat altitude	kn./ft.	522/38,900	562/S.L.	501/5,000	544/5,000	535/S.L.
Rate of climb/combat altitude	fpm/ft.	3150/38,900	8000/S.L.	4650/5,000	6200/5,000	6450/S.L.
Combat ceiling (500 fpm)	ft.	45,900	41,300	33,600	40,000	39,400
Rate of climb at S.L.	fpm.	10,400	8000	5450	7950	6450
Max. speed at S.L.	kn.	587	562	495	542	535
Max. speed/altitude	kn./ft.	587/S.L.	563/2,500	505/13,000	544/7,000	537/5,000
LANDING WEIGHT	lb.	11,361	12,022	12,453	12,352	12,899
Fuel	lb.	970	1001	1131	1119	1333
Stall speed—power-off/approach power	kn./kn.	96/91	98/94	100/96	100/95	104/99
Landing distance-ground roll/over 50 ft. obst.	ft./ft.	2395/3110	2525/3240	2610/3325	2590/3305	2700/3415

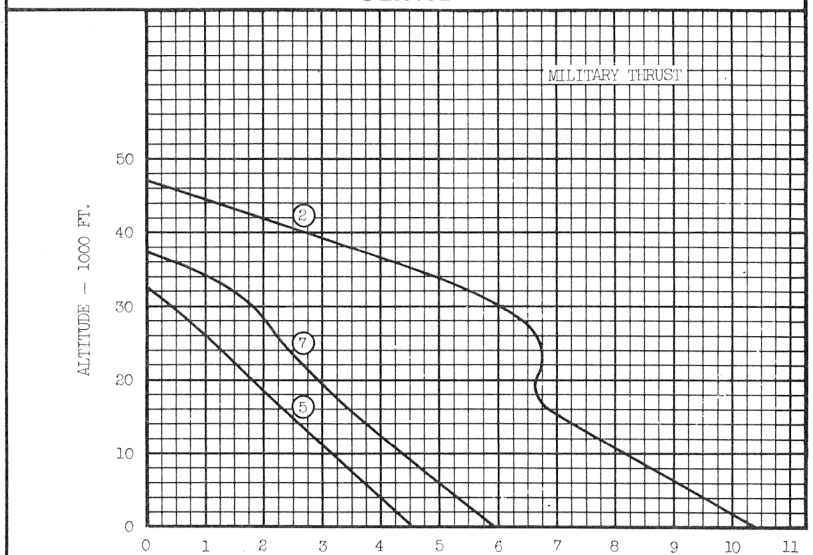
NOTES

(A) Military thrust, takeoff weight, stores and tanks retained.
(B) With 2-300 gallon tanks, the combat radius is 425 n mi.
(C) Fuel off-loaded to maintain maximum allowable takeoff weight of 22,500 pounds.
(D) Ferry range is 1700 n mi if tanks are dropped when empty.
(E) All loadings except clean airplane include guns, ammunition, and pylons on all stations.
(F) Performance Basis: NATC and DAC flight tests of the Models A-4A, A-4B and A-4C; Wright Engine Specification No. 1117A, revised Feb., 1968.

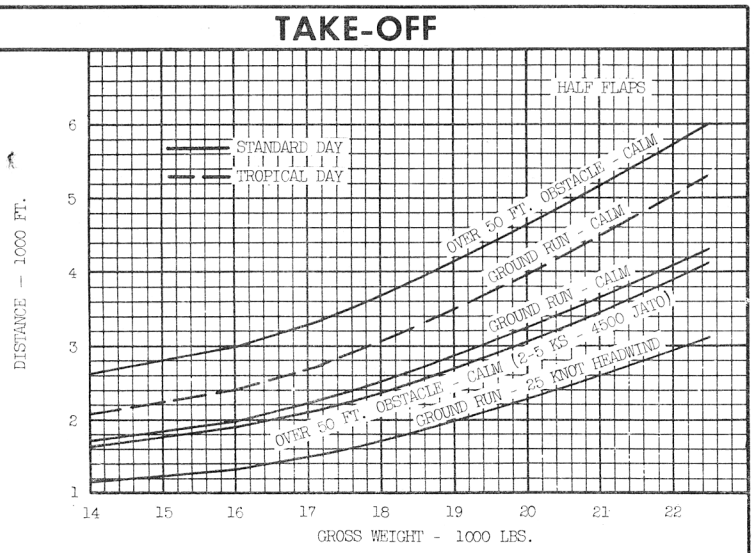
SPEED



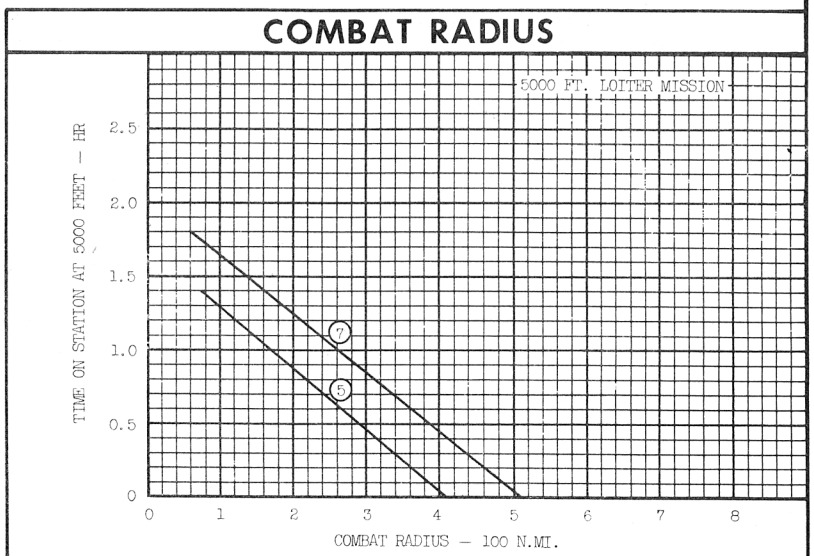
CLIMB



TAKE-OFF

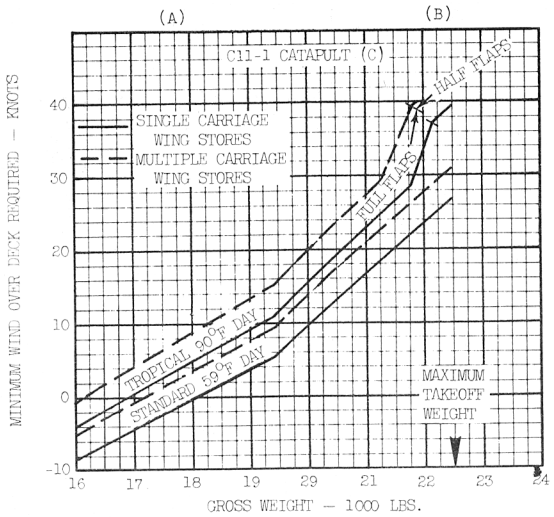


COMBAT RADIUS

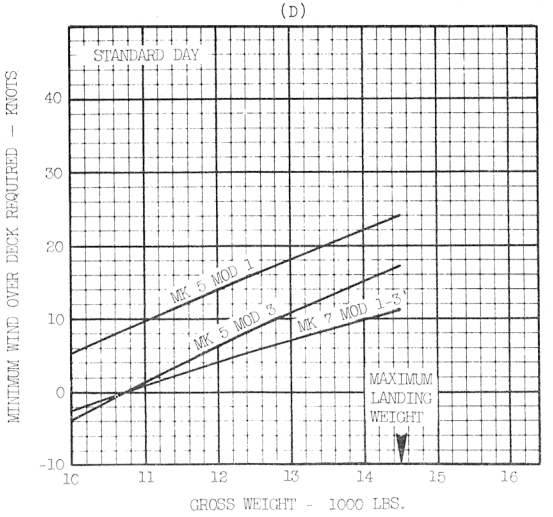


◯ LOADING CONDITION COLUMN NUMBER

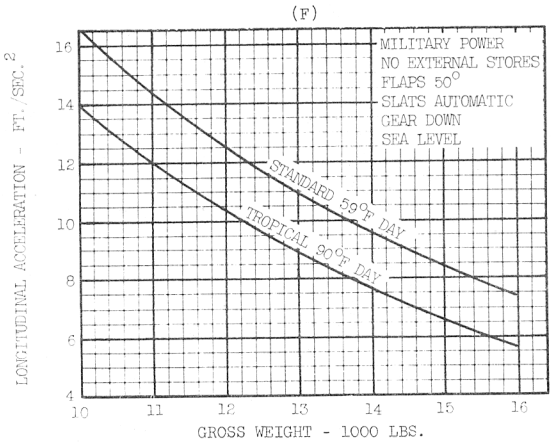
MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING VS. GROSS WEIGHT



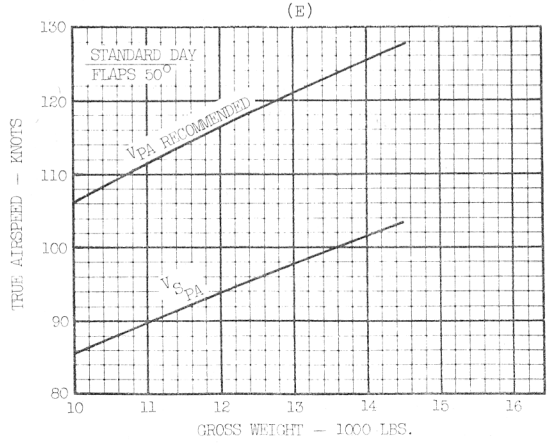
MINIMUM WIND OVER DECK REQUIRED FOR ARRESTING VS. GROSS WEIGHT



WAVE-OFF ACCELERATION



MINIMUM CARRIER APPROACH SPEEDS



NOTES

(A) Catapult takeoff speeds are derived from a correlation of NATC minimums on A-4A, -4B, -4C, -4E, AND -4F.

(B) Catapult end speed is limited by a maximum longitudinal acceleration of 5.08g up to a gross weight of 19,380 lb. on the C11-1 and C-7 catapults, a tow force of 94,400 lb. at higher gross weights.

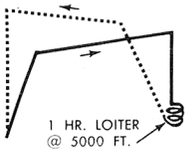
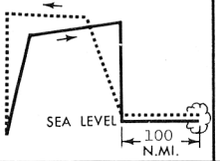
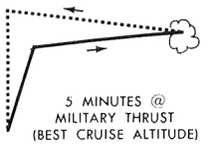
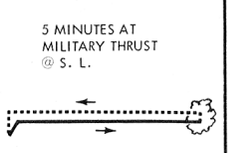
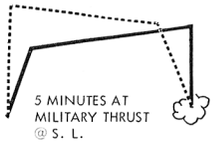
(C) Minimum wind over deck required for C-7 catapult is C11-1 requirement minus 10 knots.

(D) Engaging speed limited by 5.14g maximum horizontal load factor.

(E) Approach speeds based on fleet operational speeds and corresponding to 17½ units on the pilot's angle-of-attack indicator.

(F) Wave-off acceleration based on longitudinal acceleration at fleet operational approach speeds.

MISSION SUMMARY — ALTERNATE LOADINGS

		CLOSE SUPPORT		HI-LO-LO-HI		HI-HI-HI		LO-LO-LO		HI-LO-HI	
											
	EXTERNAL STORE LOADING	T.O.G.W.	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.
3	(1) MK 28	18,501	95 (D)	1.6	155 (D)	1.1	365	1.8	150	1.1	260	1.3
7	(2) AGM 12B (Bullpup A) (1) 300 Gal. Drop Tank	20,036	265	2.2	305	1.7	520	2.5	230	1.6	425	2.1
11	(1) MK 28 (2) 300 Gal. Drop Tanks	22,500 (-478)	385	2.8	440	2.3	650	3.1	300	2.0	555	2.7
12	(6) MK 81 Snakeyes	18,403	80 (D)	1.5	145 (D)	1.1	335	1.7	145	1.1	235	1.2
13	(6) MK 81 Snakeyes (2) 300 Gal. Drop Tanks	22,500 (-380)	355	2.7	410	2.2	605	3.0	290	2.0	520	2.5
14	(6) MK 82 Snakeyes	19,993	60 (D)	1.4	140 (D)	1.0	300	1.5	140	1.0	215	1.1
15	(6) MK 82 Snakeyes (3) 300 Gal. Drop Tanks	22,500 (-1970)	200	2.0	265	1.6	455	2.3	220	1.6	370	1.9
16	(12) MK 81 Snakeyes (6) MK 82 Snakeyes	22,500 (-1411)	-----	------	-----	-----	130	0.8	70	0.6	75 (D)	0.6
17	(2) LAU 3A/A Rocket Packs (1) 300 Gal. Drop Tank	19,499	295	2.4	330	1.8	560	2.7	240	1.7	455	2.2

NOTES

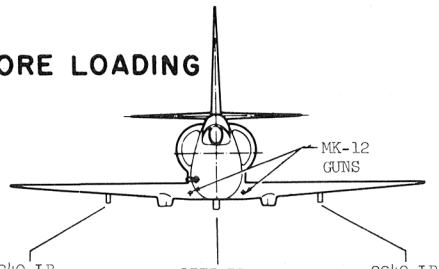
(A) Some loadings will not utilize entire fuel capacity due to takeoff weight limitations (amount of fuel off-loaded shown below takeoff gross weight).

(B) All loadings include guns and ammunition and two wing pylons.

(C) Data basis: NATC and DAC flight tests of the Models A-4A, A-4B and A-4C; Wright Engine Specification No. 1117A, revised Feb., 1968

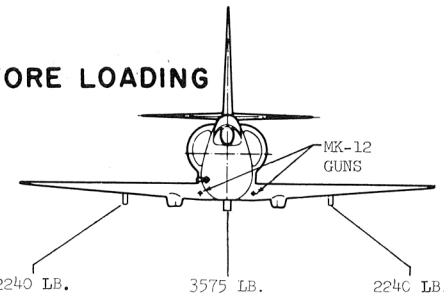
(D) Based on cruise at intermediate altitude instead of optimum cruise altitude to obtain maximum climb plus cruise distance.

STORE LOADING



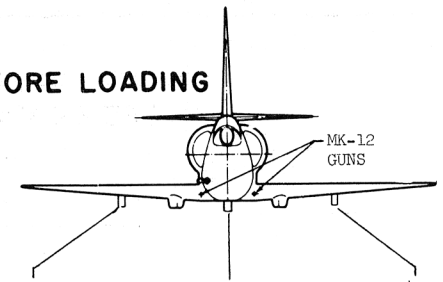
Ordnance			Station No. 3 Left Wing	Station No. 2 Fuselage Centerline	Station No. 1 Right Wing		
Suspension Equipment			1) Aero 20A Rack-Pylon 1) Aero 1A Adapter 1) MK-44 Missile Cluster Adapter (Lazy Dog) 1) Aero 3A Launcher 1) Aero 5A-1 Launcher Adapter 1) Aero 5A Pylon-Launcher 1) A/A 37B-1 MBR 1) A/A 37B-3 PMBR 1) MER 1) TER	1) Aero 7A Rack-Pylon 1) MK-44 Missile Cluster Adapter (Lazy Dog) 1) Aero 5A-1 Launcher Adapter 1) Aero 5A Pylon-Launcher 1) A/A 37B-1 MBR 1) A/A 37B-3 PMBR 1) MER 1) TER	1) Aero 20A Rack-Pylon 1) Aero 1A Adapter 1) MK-44 Missile Cluster Adapter (Lazy Dog) 1) Aero 3A Launcher 1) Aero 5A-1 Launcher Adapter 1) Aero 5A Pylon-Launcher 1) A/A 37B-1 MBR 1) A/A 37B-3 PMBR 1) MER 1) TER		
Bombs			6) MK-81 6) MK-81 Snakeyes 3) MK-82 3) MK-82 Snakeyes 1) MK-83 1) M117 Demolition 5) AN-M81 (260 lb Frag.) 5) AN-M88 (220 lb Frag.) 5) AN-M57A (250 lb GP) 1) AN-M64A1 (500 lb GP) 1) AN-M65A1 (1000 lb GP) 1) AN-M30A1 (100 lb GP) 1) MK-94 Chemical 3) MK-77 Fire Bombs 1) MK-79 Fire Bomb 2) CBU-1A/A 2) CBU-2A/A	6) MK-81 6) MK-81 Snakeyes 6) MK-82 6) MK-82 Snakeyes 3) MK-83 1) MK-84 1) M117 Demolition 6) AN-M81 (260 lb Frag.) 6) AN-M88 (220 lb Frag.) 6) AN-M57A (250 lb GP) 1) AN-M64A1 (500 lb GP) 1) AN-M65A1 (1000 lb GP) 1) AN-M66A2 (2000 lb GP) 1) AN-M30A1 (100 lb GP) 1) MK-94 Chemical 4) MK-77 Fire Bombs 1) MK-79 Fire Bomb	6) MK-81 6) MK-81 Snakeyes 3) MK-82 3) MK-82 Snakeyes 1) MK-83 1) M117 Demolition 5) AN-M81 (260 lb Frag.) 5) AN-M88 (220 lb Frag.) 5) AN-M57A (250 lb GP) 1) AN-M64A1 (500 lb GP) 1) AN-M65A1 (1000 lb GP) 1) AN-M30A1 (100 lb GP) 1) MK-94 Chemical 3) MK-77 Fire Bombs 1) MK-79 Fire Bomb 2) CBU-1A/A 2) CBU-2A/A		

STORE LOADING



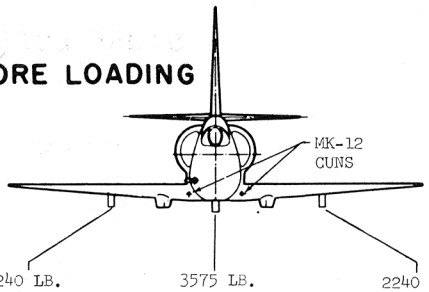
Ordnance			Station No. 3 Left Wing	Station No. 2 Fuselage Centerline	Station No. 1 Right Wing		
Bombs (Continued)			1) Aero 7A (Lazy Dog) 1) MK-44 Cluster Adapter (Lazy Dog)	1) MK-44 Cluster Adapter (Lazy Dog)	1) Aero 7A (Lazy Dog) 1) MK-44 Cluster Adapter (Lazy Dog)		
Guided Missiles			1) AGM-12A, -12B Bullpup A 1) AGM-12C Bullpup B 1) Sidewinder 1A	1) AGM-12A, -12B Bullpup A	1) AGM-12A, -12B Bullpup A 1) AGM-12C Bullpup B 1) Sidewinder 1A		
Rocket Launchers			2) LAU-32A/A 2) LAU-3A/A 2) LAU-10/A	3) LAU-32A/A 3) LAU-3A/A 3) LAU-10/A	2) LAU-32A/A 2) LAU-3A/A 2) LAU-10/A		
Mines			1) MK-36 with MK-27 Parapack 1) MK-36 Drill Mine with MK-4 Drill Kit 1) MK-50 with MK-15 Parapack 1) MK-52 with MK-20 Parapack or MK-35 Parapack	1) MK-25 with MK-26 Parapack or MK-34 Parapack 1) MK-25 Drill Mine with MK-4, -5 Drill Kit 1) MK-36 MK-27 Parapack 1) MK-36 Drill Mine with MK-4 Drill Kit 1) MK-50 with MK-15 Parapack 1) MK-52 with MK-20 Parapack or MK-35 Parapack 1) MK-55 with MK-24 Parapack or MK-36 Parapack 1) MK-56 or 1) MK-56 Drill Mine with MK-28, Mod 1 Parapack	1) MK-36 with MK-27 Parapack 1) MK-36 Drill Mine with MK-4 Drill Kit 1) MK-50 with MK-15 Parapack 1) MK-52 with MK-20 Parapack or MK-35 Parapack		

STORE LOADING



Ordnance			Station No. 3 Left Wing	Station No. 2 Fuselage Centerline	Station No. 1 Right Wing		
Tanks and Pods			1) 150 Gal Ext Tank 1) 300 Gal Ext Tank 1) MK-12 Mod 0 Chemical Tank 1) ALQ-31 ECM Pod 1) ALQ-31A Pod 1) MX-900 Chaff Dispenser 1) IM-119A Film Delivery Container 1) LAU-10/A Leaflet Dispenser 1) GTC-85 Pod-Mounted	1) 150 Gal Ext Tank 1) 300 Gal Ext Tank 1) 400 Gal Ext Tank 1) 300 Gal Buddy Tank 1) Aero 14B Spray Tank 1) ALQ-31 ECM Pod 1) ALQ-31A Pod 1) MX-900 Chaff Dispenser 1) LAU-10/A Leaflet Dispenser 1) NAVPAC 1) GTC-85 Pod-Mounted	1) 150 Gal Ext Tank 1) 300 Gal Ext Tank 1) MK-12 Mod 0 Chemical Tank 1) ALQ-31 ECM Pod 1) ALQ-31A Pod 1) MX-900 Chaff Dispenser 1) IM-119A Film Delivery Container 1) LAU-10/A Leaflet Dispenser 1) GTC-85 Pod-Mounted		
Special Weapons				1) MK-28/MK-104 1) MK-43/BDU-8B /BDU-18 1) MK-57/BDU-12 /BDU-19 1) BDU-11E			
Pyrotechnics			6) MK-5 Mods 7, 10 Parachute flares 6) MK-6 Mods 5, 6 Parachute flares 6) MK-24 Mods 2A, 3 Parachute flares 6) MK-6 Mod 3 Float Light	6) MK-5 Mods 7, 10 Parachute flares 6) MK-6 Mods 5, 6 Parachute flares 6) MK-24 Mods 2A, 3 Parachute Flares 6) MK-6 Mod 3 Float Light	6) MK-5 Mods 7, 10 Parachute flares 6) MK-6 Mods 5, 6 Parachute flares 6) MK-24 Mods 2A, 3 Parachute flares 6) MK-6 Mod 3 Float Light		

STORE LOADING



Ordnance			Station No. 3 Left Wing	Station No. 2 Fuselage Centerline	Station No. 1 Right Wing		
Training Stores			6) MK-86 WSF 6) MK-87 WSF 1) MK-88 WSF 6) MK-76 Mod 4, 5 (With MK-10 Lug) 6) MK-89 6) MK-106 Mod 3 6) MK-76 Mod 5 (With MK-14 Lug) 1) Aero 6A-1, 6A-2 2) Aero 7D 1) FAGU Pipe Organ 1) MK-26 Mod 0 Sidewinder target rocket	6) MK-86 WSF 6) MK-87 WSF 1) MK-88 WSF 6) MK-76, Mod 4, 5 (With MK-10 Lug) 6) MK-89 6) MK-106 Mod 3 6) MK-76 Mod 5 (With MK-14 Lug) 1) Aero 8A PBC (MK-76, MK-89, MK-106) 1) Aero 6A-1, 6A-2 3) Aero 7D 1) FAGU Pipe Organ 1) Aero 6A, or LAU-32 and A/A37B-3 PMBR with MK-76 Mod 5 or MK-106 Mod 3 1) Banner Tow Target	6) MK-86 WSF 6) MK-87 WSF 1) MK-88 WSF 6) MK-76 Mod 4, 5 (With MK-10 Lug) 6) MK-89 6) MK-106 Mod 3 6) MK-76 Mod 5 (With MK-14 Lug) 1) Aero 6A-1, 6A-2 2) Aero 7D 1) FAGU Pipe Organ 1) MK-26 Mod 0 Sidewinder target rocket		

NOTES

HI-HI-HI

Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Combat: 5 Min at MRT (stores on, no distance gained) (drop stores)
Cruise Back: At max range speed at opt alt
Reserve: 5% initial fuel + 20 min at max endurance speed at S.L.

SEA LEVEL STORE DELIVERY

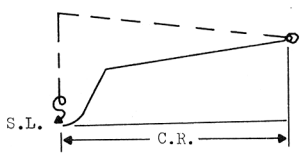
Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Descend: To S.L. when 50 n mi from target (no fuel used no distance gained)
Run In: 50 n mi at V_{max} at MRT
Combat: 5 Min at MRT (stores on, no distance gained) stores dropped after combat
Runout: 50 n mi at V_{max} at MRT at S.L.
Climb: On course to opt cruise alt with Mil power
Cruise Back: At max range speed at opt alt
Reserve: 5% initial fuel + 20 min at max endurance speed at S.L.

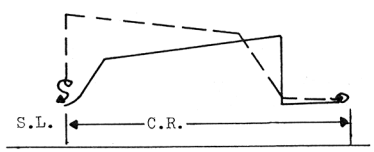
CLOSE AIR SUPPORT

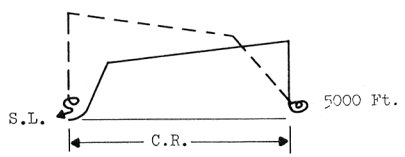
Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Descend: To 5000 Ft. (no fuel used no distance gained)
Loiter: 1 hr at max end speed no distance gained, stores dropped at end of loiter
Climb: On course to opt cruise alt with Mil power
Cruise Back: At max range speed at opt alt
Reserve: 5% initial fuel + 20 min at max end speed at S.L.

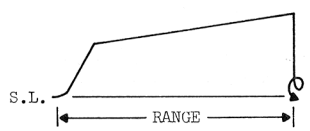
FERRY RANGE

Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Reserve: 5% initial fuel + 20 min at max end speed at S.L.







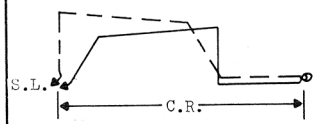


◯ LOADING CONDITION COLUMN NUMBER

NOTES

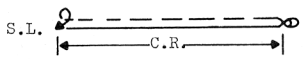
HI-LO-LO-HI

Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Descend: To S.L. when 100/200 n mi from target (no fuel used, no distance gained)
Cruise: At max range speed at S.L. (drop fuel tanks when empty)
Combat: 5 Min. at MRT (stores on, no distance gained)
Drop Stores
Cruise: At max range speed at S.L. to a point 100/200 n mi from target
Climb: On course to opt cruise alt with Mil power
Cruise Back: At max range speed at opt alt
Reserve: 5% initial fuel + 20 min at max end speed at S.L.



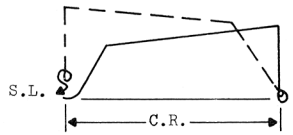
LO-LO-LO

Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Cruise: At max range speed at S.L. (drop fuel tanks when empty)
Combat: 5 Min. at MRT (stores on, no distance gained)
Drop Stores
Cruise: at max range speed at S.L.
Reserve: 5% initial fuel + 20 min at max endurance speed at S.L.



HI-LO-HI

Warm-Up, Taxi, Takeoff: 5 min S.L. NRP
Climb: On course to opt cruise alt with Mil power
Cruise Out: At max range speed at opt cruise alt (drop fuel tanks when empty)
Descend: To S.L. (no fuel used, no distance gained)
Combat: 5 Min. at MRT (stores on, no distance gained)
Drop Stores
Climb: On course to opt cruise alt with Mil power
Cruise Back: At max range speed at opt alt
Reserve: 5% initial fuel + 20 min at max endurance speed at S.L.



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