

STANDARD AIRCRAFT CHARACTERISTICS

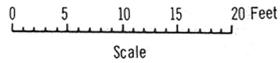
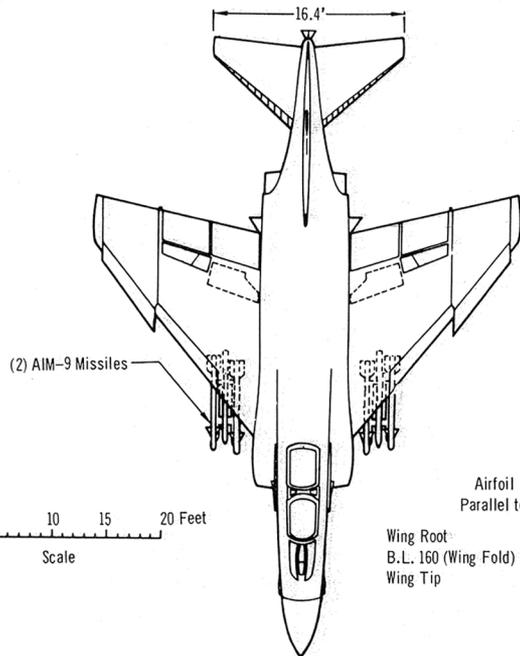
F-4S PHANTOM II

MCDONNELL

STANDARD AIRCRAFT CHARACTERISTICS, NAVY/EPF FORM 13100/4A (REV. 7-65)

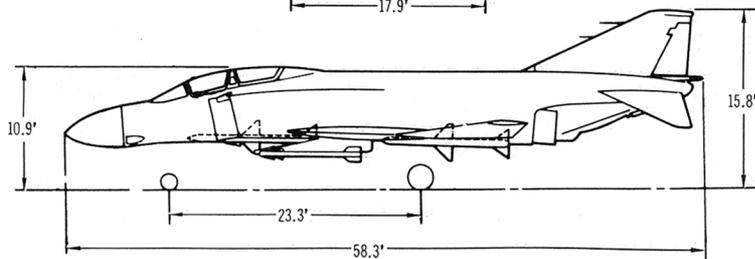
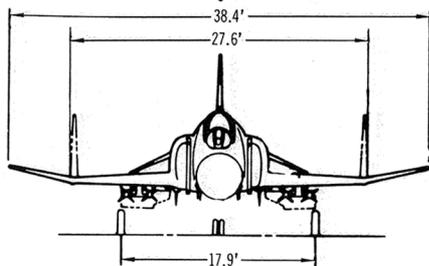
NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT

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NAVY DEPARTMENT

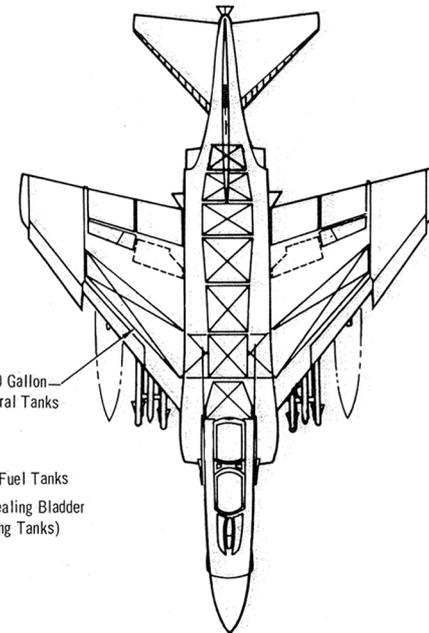


Airfoil Designation
Parallel to Center Line

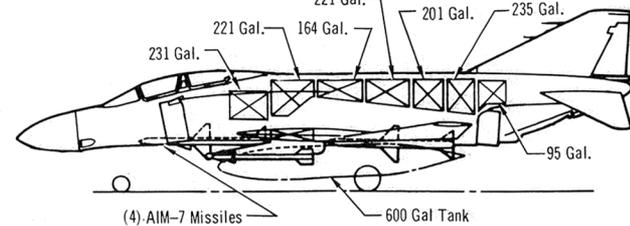
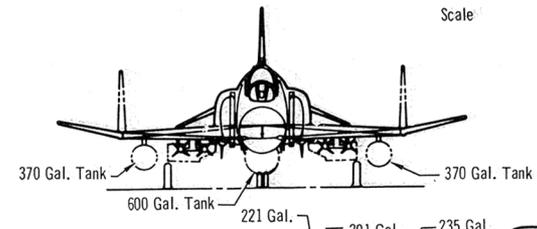
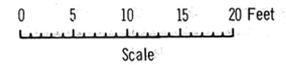
Wing Root: NACA 0006.4-64 (MOD)
B.L. 160 (Wing Fold) NACA 0004-64 (MOD)
Wing Tip: NACA 0003-64 (MOD)



DESCRIPTIVE ARRANGEMENT



Internal Fuel Tanks
Non-Self-Sealing Bladder
(Except Wing Tanks)



ARMAMENT AND TANKAGE

PERFORMANCE SUMMARY [J]

TAKEOFF LOADING CONDITION		①	③	⑤	⑦	⑨	⑪	⑬
		Fighter (4) AIM-7	Fighter (4) AIM-7 (1) 600 Gal. Tank (I)	Fighter (4) AIM-7 + (4) AIM-9 + (1) 600 Gal. Tank (I)	Area Intercept (4) AIM-7 + (1) 600 Gal. Tank (I)	Deck Launched Intercept (4) AIM-7 + (1) 600 Gal. Tank (I)	Ferry (2) 370 Gal. Tanks + (1) 600 Gal. Tank	HI-LO-HI Attack (8) MK-82 S.E. + (2) 370 Gal. Tanks (I)
Take-off Weight	Lb.	48,074	52,509	53,945	52,509	52,509	55,691	56,000
Fuel Internal/External (JP-5, 6.8 Lb./Gal.)	Lb.	13,587/-	13,587/4,080	13,587/4,080	13,587/4,080	13,587/4,080	12,941/9,112 M	13,587/3,711 N
Payload Missiles/Bombs	Lb.	1,820/-	1,820/-	2,608/-	1,820/-	1,820/-	-/-	-/4,560
Wing Loading	Lb./Sq.Ft.	90.7	99.1	101.8	99.1	99.1	105.1	105.7
Stall Speed - (Approach Power)	Kn.	128	134	136	134	134	138	138
Takeoff Run at S.L. - Calm	A/B Ft.	3,680/2,150	4,525/2,610	4,830/2,775	4,525/2,610	4,525/2,610	5,230/2,980	5,300/3,020
Takeoff Run at S.L. - 25 Kt. Wind	A/B Ft.	2,980/1,630	3,720/2,020	3,980/2,160	3,720/2,020	3,720/2,020	4,340/2,360	4,400/2,400
Takeoff to Clear 50 Ft. - Calm	A/B Ft.	5,020/3,300	6,000/3,860	6,340/4,050	6,000/3,860	6,000/3,860	6,775/4,310	6,850/4,350
Maximum Speed/Altitude	A Kn./Ft.	587/25,000	579/25,000	569/25,000	579/25,000	579/25,000	573/25,000	559/20,000
Rate of Climb at S.L.	A fpm	10,700	9,200	8,400	9,700 L	28,500 B, L	8,300	7,150
Time: S.L. to 20,000 Ft.	A/B L Min.	2.68/0.78	3.07/0.85	3.60/0.92	4.07/1.85 K	-/1.85 K	3.53/0.96	4.68/1.16
Time: S.L. to 30,000 Ft.	A/B L Min.	4.65/1.38	5.63/1.52	6.88/1.67	6.63/2.52 K	-/2.52 K	6.80/1.67	10.3/2.11
Service Ceiling (100 fpm)	A Ft.	39,650	37,200	35,650	38,200 L	47,700 B, L	35,350	31,300
Combat Range	Na.Mi.	871	1,100	994	-	-	1,490/1,347 C	790
Average Cruising Speed	Kn.	485	485	484	-	-	485/483	472
Cruising Altitude Initial	Ft.	35,677	35,063	34,956	-	-	34,300/34,300	31,100
Cruising Altitude Final	Ft.	38,175	38,075	37,791	-	-	41,800/41,350	37,750
Combat radius	Na.Mi.	279	437	416	391	149	-	322
Mission Time	D Hr.	1.18	1.83	1.75	1.59	0.52	-	1.45
Average Cruising Speed	Kn.	487	487	486	485	485	-	479
C.A.P. Loiter Time	E Hr.	0.65	1.28	1.05	-	-	-	-
Mission Time	D Hr.	1.32	1.96	1.75	-	-	-	-

COMBAT LOADING CONDITION		②	④	⑥	⑧	⑩	⑫	⑭
		(4) AIM-7	(4) AIM-7	(4) AIM-7 + (4) AIM-9	(4) AIM-7	(4) AIM-7	Tanks Dropped	(2) TER at B.L. 81.50 + (1) MER at C
Combat Weight	Lb.	42,640	45,139	46,575	45,139	45,139	45,659	43,906
Engine Thrust		MAXIMUM	MILITARY	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	MILITARY
Fuel	F Lb.	8,153	10,600	10,600	10,600	10,600	12,941	10,379
Combat Speed / Combat Altitude	Kn. / Ft.	830/10,000	612/10,000	757/10,000	821/50,000	1,111/36,089	1,111/41,800	600/S.L.
Rate of Climb at Combat Altitude	G/H fpm	-/29,200	-/10,013	-/25,400	80/60	9,930/9,050	6,340/5,300	-/10,810
Combat Ceiling (500 fpm)	G/H Ft.	50,500/50,500	-/39,780	45,800/48,420	49,450/49,400	49,450/49,400	49,850/49,400	-/38,680
Rate of Climb at S.L.	fpm	35,200	11,480	30,800	33,250	33,250	33,700	10,810
Maximum Speed at S.L.	Kn.	705	616	678	705	705	713	600
Maximum Speed	Kn.	1,113	589	1,022	1,111	1,111	1,124	576
Altitude	Ft.	36,089	25,000	36,089	36,089	36,089	36,089	25,000
Landing Weight	Lb.	36,921	37,178	38,713	37,178	37,178	35,495	36,179
Fuel	Lb.	2,434	2,640	2,739	2,640	2,640	2,777	2,653
Stall Speed-Power-Off	Kn.	122	122	124	122	122	119	120
Stall Speed-Approach Power	Kn.	113	113	116	113	113	111	112
Landing Distance-Ground Roll	Ft.	2,975	2,990	3,100	2,990	2,990	2,875	2,920
Over 50 Ft. Height	Ft.	4,820	4,890	5,000	4,890	4,890	4,780	4,825

Notes:

- | | | | |
|--|---|--|---|
| A. Military thrust | E. C.A.P. radius = 150 nm | I. External fuel tanks dropped when they become empty | L. Includes weight reduction due to ground operation and fuel consumed during climb |
| B. Maximum thrust | F. 60% of takeoff fuel or full internal fuel, whichever is less | J. No 5% service tolerance on fuel flow rate | M. No fuel in tank no. 7 to maintain CG limits |
| C. Ferry range with tanks dropped/retained | G. Supersonic climb speed schedule | K. Includes time increment due to ground operation and acceleration to climb speed | N. External fuel off-loaded. Weight limitation |
| D. Mission time excludes warm-up, takeoff and reserve time | H. Subsonic climb speed schedule | | |

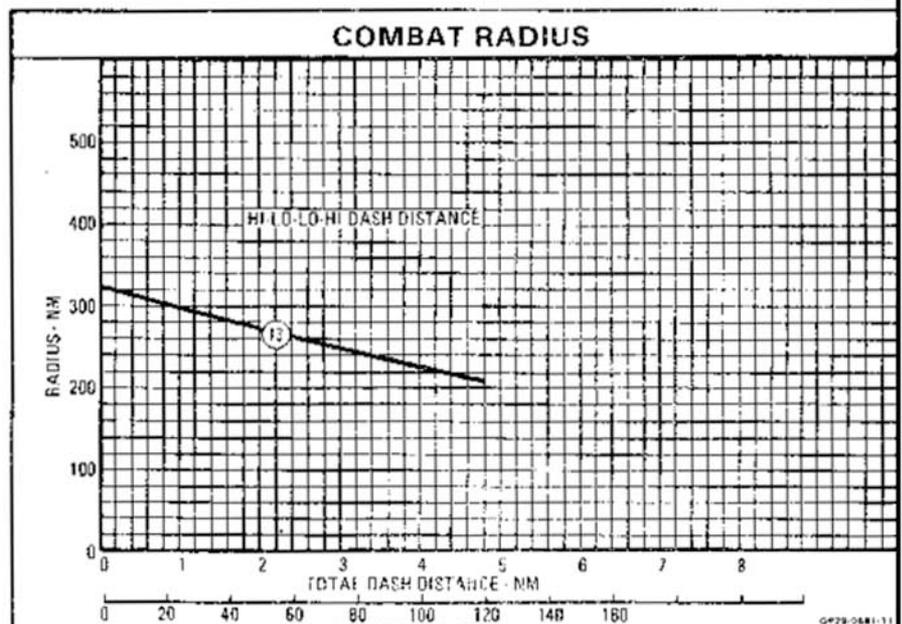
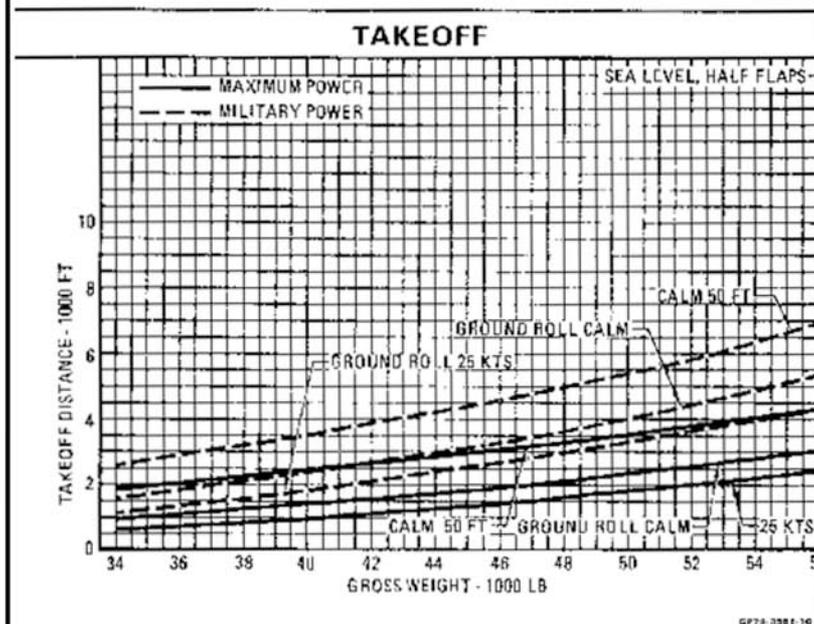
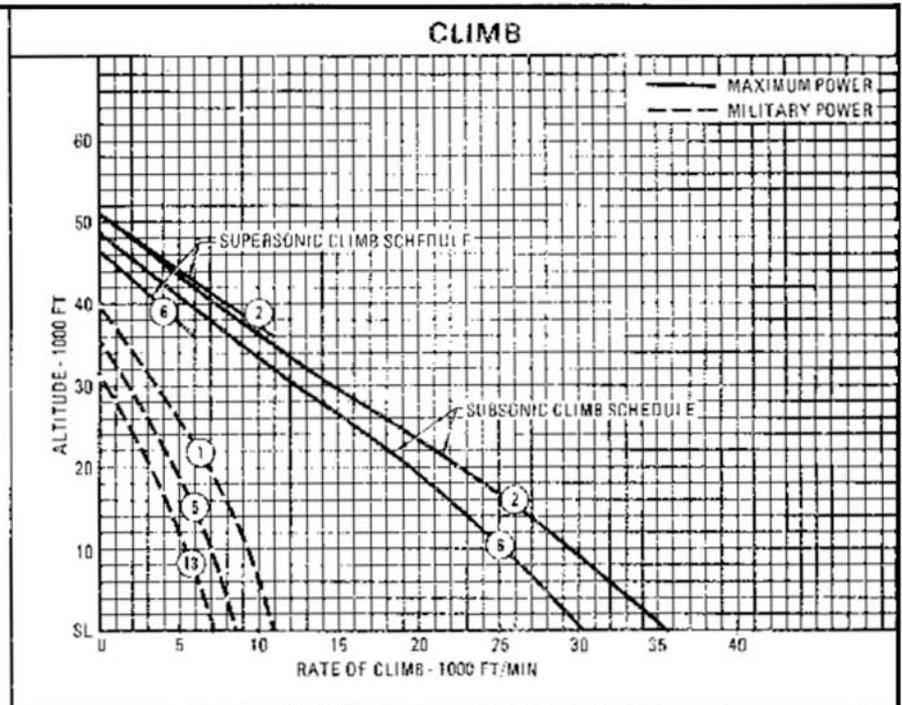
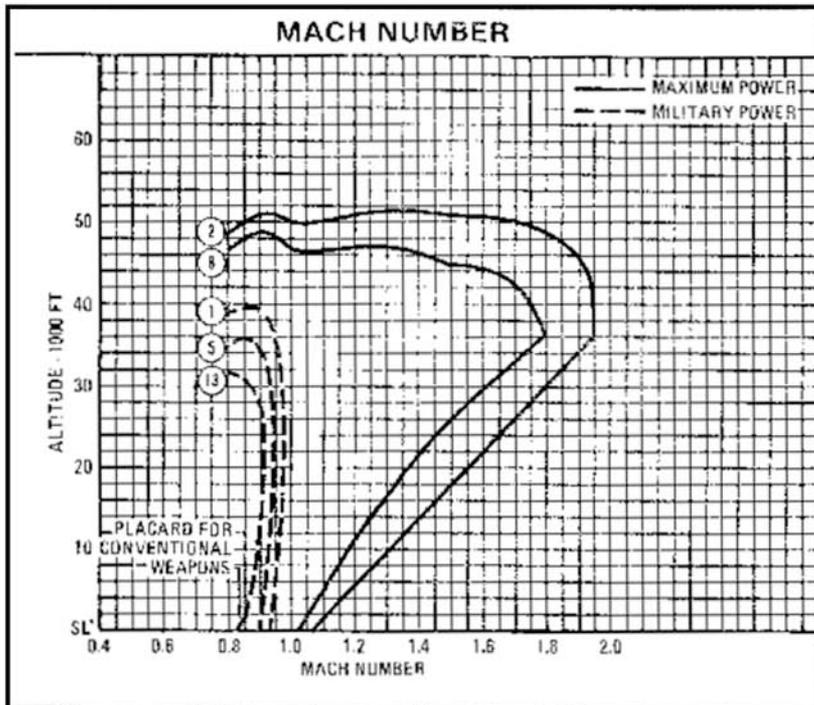
MISSION SUMMARY-ALTERNATE LOADINGS (A)

		CLOSE SUPPORT		HI-LO-LO-HI		HI-HI-HI		LO-LO-LO		HI-LO-HI	
		COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)
EXTERNAL STORE LOADING	T.O.G.W. LB.	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)	COMBAT RADIUS NA. MI.	MISSION TIME HOUR (B)
13 (8) MK-82 SE + (2) 370 GAL. TANKS (C) (F)	56,000	150	1.64	226	1.27	419	1.85	202	1.4	322	1.45
15 (6) MK-82 SE + (2) 370 GAL. TANKS (C) (D)	54,997	220	1.91	289	1.5	500	2.16	231	1.55	392	1.71
16 (6) MK-82 SE + (4) AIM-7 + (2) 370 GAL. TANKS (C) (E) (F)	56,000	161	1.67	236	1.28	437	1.9	208	1.39	335	1.48
17 (24) MK-81 SE + (4) AIM-7 (D) (E) (G)	56,000	—	—	—	—	197	0.96	103	0.77	124	0.64
18 (5) MK-83 SE + (2) 370 GAL. TANKS (C) (F)	56,000	154	1.65	228	1.26	429	1.87	203	1.39	327	1.45
19 (8) MK-83 + (4) AIM-7 (D) (E) (G)	56,000	11 (H)	1.06	105 (H)	0.76	227	1.04	110	0.8	138	0.67
20 (2) MK-82 SE+ (2) 370 GAL. TANKS + (1) 600 GAL. TANK (C) (D) (F)	56,000	323	2.35	385	1.9	596	2.56	281	1.87	487	2.11
21 (6) MK-82 SE + (4) AIM-7 + (4) AIM-9 + (1) 600 GAL. TANK (C) (E) (I)	56,000	90 (J)	1.44	173 (J)	1.08	342	1.53	170	1.18	250	1.14

NOTES:

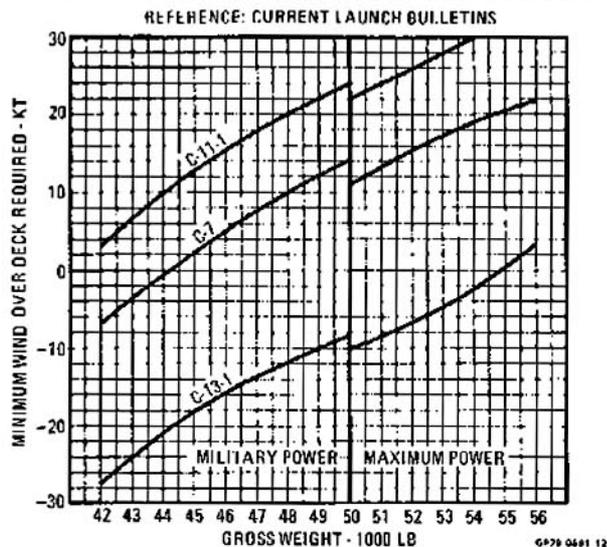
- A. NO 5% SERVICE TOLERANCE ON FUEL FLOW RATES.
- B. TIME EXCLUDES WARM-UP, TAKEOFF AND LANDING TIMES.
- C. EXTERNAL FUEL TANKS DROPPED WHEN THEY BECOME EMPTY.
- D. NO FUEL IN TANK NO. 7 TO REMAIN WITHIN C.G. LIMITS
- E. MISSILES RETAINED

- F. EXTERNAL WING TANK FUEL OFF-LOADED TO REMAIN WITHIN WEIGHT LIMITATION.
- G. INTERNAL FUEL OFF-LOADED TO REMAIN WITHIN WEIGHT LIMITATION.
- H. CRUISE ALTITUDE - 5,000 FT.
- I. CENTERLINE TANK FUEL OFF-LOADED TO REMAIN WITHIN WEIGHT LIMITATION.
- J. CRUISE ALTITUDE - 20,000 FT.

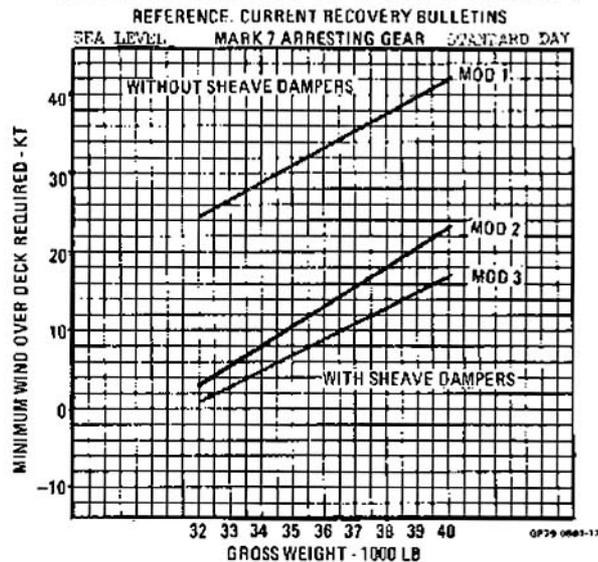


LOADING CONDITION COLUMN NUMBER

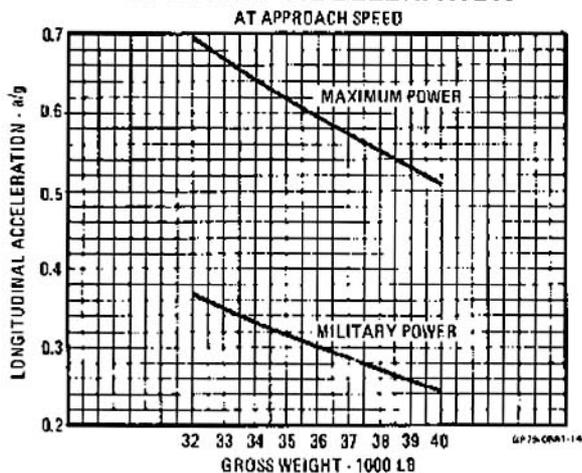
MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING vs GROSS WEIGHT



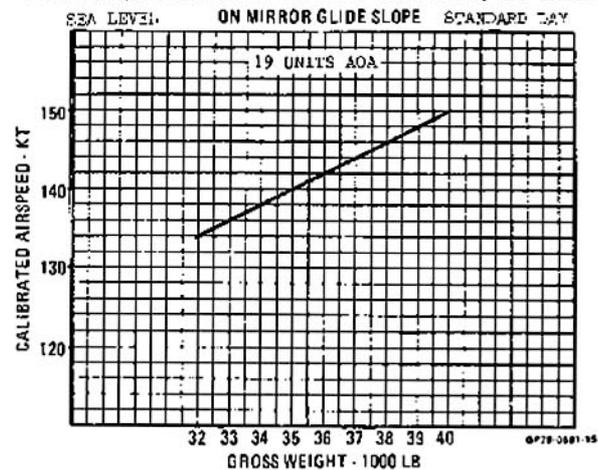
MINIMUM WIND OVER DECK REQUIRED FOR ARRESTING vs GROSS WEIGHT



WAVE-OFF ACCELERATION



MINIMUM CARRIER APPROACH SPEEDS



EXTERNAL STORE LOADING



STORE	9	8	7	6	5	4	3	2	1
GUIDED MISSILES - AIR-TO-AIR									
AIM-7		1	1	1		1	1	1	
AIM-9		2						2	
ROCKET LAUNCHERS									
LAU-3A, 60/A, -61/A-61A/A	2	3			3			3	2
LAU-69A, -69A/A	2	3			3			3	2
LAU-10A, -10A/A, -10B/A	3	3			3			3	3
LAU-32B/A, -56/A, -68/A, -68B/A	3	3			3			3	3
LAU-33A/A		1						1	
CONVENTIONAL BOMBS									
MK-81 250 LB LDGP	6	3			6			3	6
MK-82 500 LB LDGP	6	3			6			3	6
MK-83 1000 LB LDGP	2	2			3			2	2
MK-81 SNAKEYE	6	3			6			3	6
MK-82 SNAKEYE	6	3			6			3	6
MK-83 RETARD	1	2			2			2	1
GUIDED BOMBS									
MK-82 LGB	2	1			2			1	2
MK-83 LGB	1	1			1			1	1
FIRE BOMBS									
MK-77 MOD4	3	2			3			2	3
CLUSTER BOMBS									
CBU-59/B	3	2			4			2	3
ROCKEYE II	6	2			6			2	6
DISPENSERS									
AN/ALE-37	3	2						2	3
FLARES/SENSORS									
MK-24, MK-45, MK-58	6	3			6			3	6
SUU-40/44	2								2
ADSID1	6	3						3	6
FUEL TANKS									
370 GALLON	1								
600 GALLON					1				1

EXTERNAL STORE LOADING



STORE	9	8	7	6	5	4	3	2	1
PRACTICE SHAPES									
MK-76	6	3			6			3	6
MK-86	6	3			6			3	6
MK-87	6	3			6			3	6
MK-88	2	2			3			2	2
MK-89	3	2			3			2	3
MK-106	6	3			6			3	6
MK-124	6	3			6			3	6
AQM-37A TGT/LAU-24A LAUNCH					1				
MK-12 SMOKE TANK	1	2						2	1
CTU-1 DELIVERY CONTAINER	1				1				1
LB-30A PHOTO POD						1			
NAMAR CAMERA POD		1						1	
ALQ-120 ECM POD		1						1	
MK-4 GUN POD					1				
D-704 REFUELING (BUDDY) TANK					1				
RMU-8A TOW TARGET					1				
ASDC CONTAINER	2	2						2	2
RCP 105 STARTER POD					1				
CNU169/A DELIVERY CONTAINER		1						1	
AN/ALE-29 (INTERNAL)									

NOTES

FIGHTER ESCORT

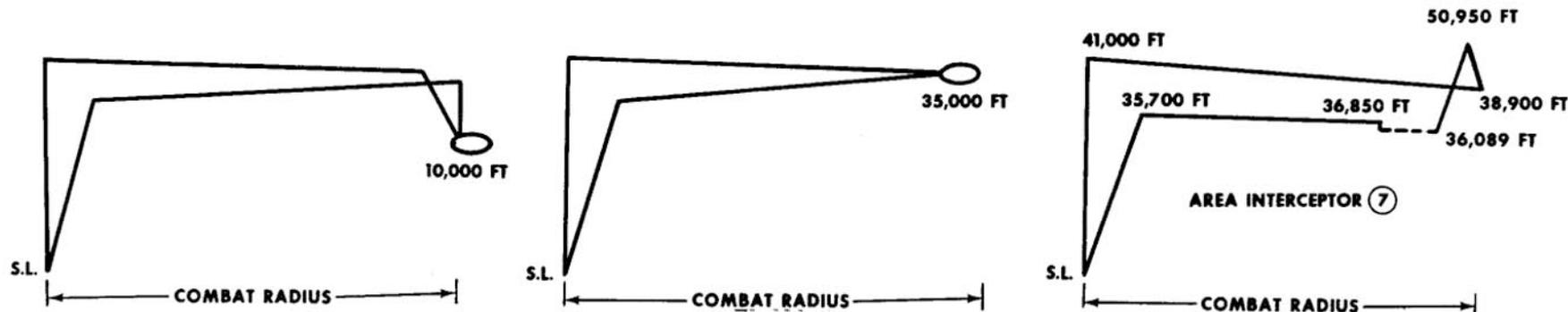
- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course at military thrust from sea level to best cruise altitude (not to exceed cruise ceiling).
- CRUISE OUT: Cruise climb at best cruise altitude and MN (not to exceed cruise ceiling, drop external fuel tanks when empty).
- DESCENT: To 10,000 Ft. No fuel used or distance gained.
- COMBAT FUEL ALLOWANCE: 2 minutes with maximum thrust at MN 1.0 10,000 feet missiles retained. (No distance gained)
- CLIMB: On course at military thrust from 10,000 Ft. to best cruise altitude (not to exceed cruise ceiling).
- CRUISE BACK: Cruise climb at best cruise altitude and MN (not to exceed cruise ceiling).
- DESCENT: To sea level. No fuel used or distance gained.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.

COMBAT AIR PATROL

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course at military thrust from sea level to best cruise altitude (not to exceed cruise ceiling).
- CRUISE OUT: Cruise climb at best cruise altitude and MN (not to exceed cruise ceiling drop external fuel tanks when empty).
- LOITER: At maximum endurance speed at 35,000 feet. (No distance gained).
- ACCELERATE: At 35,000 feet at maximum endurance speed to MN 1.35 at maximum thrust. (No distance gained).
- COMBAT FUEL ALLOWANCE: 2 minutes with maximum thrust at MN 1.35 at 35,000 feet missiles retained. (No distance gained).
- CRUISE BACK: Cruise climb at best cruise altitude and MN (not exceed cruise ceiling).
- DESCENT: To sea level. No fuel used or distance gained.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.

AREA INTERCEPTOR

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course at military thrust from sea level to best cruise altitude (not to exceed cruise ceiling).
- CRUISE OUT: At altitudes and speed for maximum range.
- ACCELERATE: At 36,089 feet to maximum supersonic climb speed.
- CLIMB: On course with maximum thrust to supersonic combat ceiling.
- COMBAT FUEL ALLOWANCE: 2 minutes with maximum thrust at 1.5 MN at 50,000 Ft. (No distance gained).
- CRUISE BACK: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel used or distance gained.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.



Notes: All takeoff gross weights of 52,000 pounds and over require afterburner therefore an additional 1 minute CRT in the takeoff allowance is added.
 Fuel tanks dropped when empty.
 Performance basis: Calculated data based on flight test of F-4E/S aircraft.
 No 5% service tolerance on fuel flow.



LOADING CONDITION COLUMN NUMBER

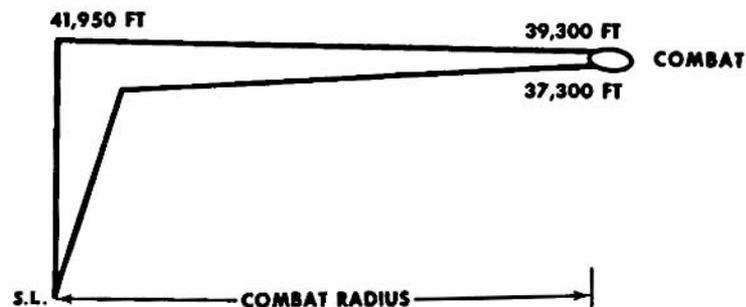
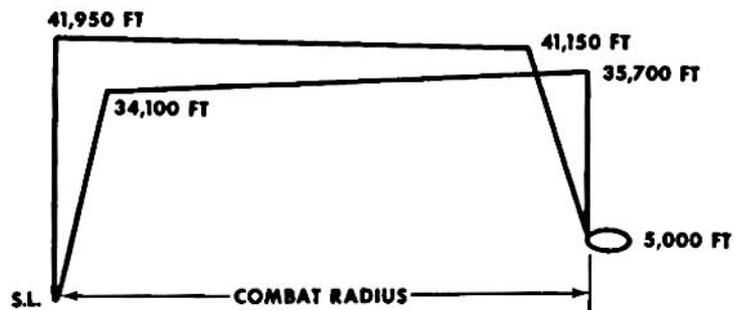
NOTES

CLOSE SUPPORT

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE OUT: At altitudes and speeds for maximum range.
- DESCENT: To 5000 feet. No fuel, time or distance credited.
- LOITER: At 5000 feet for 1 hour at speeds and power for maximum endurance. Stores are dropped after loiter.
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE BACK: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.

HIGH ALTITUDE SUBSONIC: HI-HI-HI

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE OUT: At altitudes and speeds for maximum range.
- COMBAT FUEL ALLOWANCE: 5 minutes at maximum speed with military thrust (No distance credited). Drop stores after combat.
- CRUISE BACK: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.



Notes: Configuration illustrated is (6) MK-82 S.E. + (2) 370 gallon tanks.
 All takeoff gross weights of 52,000 pounds and over require afterburner therefore an additional one minute CRT in the takeoff fuel allowance is added.
 Fuel tanks dropped when empty.
 Performance basis: calculated data based on F-4E/S aircraft.
 No 5% service tolerance on fuel flow.

○ LOADING CONDITION COLUMN NUMBER

NOTES

HI-LO-HI

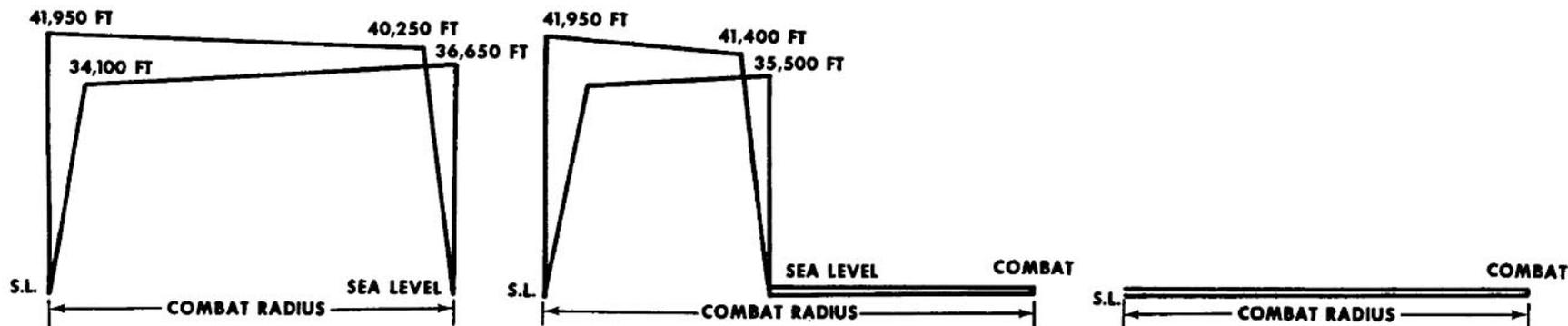
- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE OUT: At optimum cruise altitude at speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- COMBAT FUEL ALLOWANCE: 5 minutes with maximum speed with military thrust (No distance credited). Drop stores after combat.
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE BACK: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speed for maximum endurance with both engines operating.

SEA LEVEL RUN-IN (HI-LO-LO-HI)

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE OUT: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- CRUISE OUT: 100 nautical miles at speeds for maximum range at sea level.
- COMBAT FUEL ALLOWANCE: 5 minutes at maximum speed with military thrust. (No distance credited). Drop stores after combat.
- CRUISE BACK: 100 nautical miles at speeds for maximum range at sea level.
- CLIMB: On course with military thrust to optimum cruise altitude.
- CRUISE BACK: At altitudes and speeds for maximum range.
- DESCENT: To sea level. No fuel, time or distance credited.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speed for maximum endurance with both engines operating.

SEA LEVEL LO-LO-LO

- ENGINE START, TAXI, TAKEOFF AND ACCELERATE: 5 minutes normal static sea level thrust. (See Note)
- CRUISE OUT: At sea level at speed for maximum range.
- COMBAT FUEL ALLOWANCE: 5 minutes at maximum speed with military thrust. (No distance credited). Drop stores after combat.
- CRUISE BACK: At sea level at speeds for maximum range.
- RESERVE: Fuel shall be 5% of total initial fuel plus fuel for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.



Notes: Configuration illustrated is (6) MK-82 S.E. + (2) 370 gallon tanks. All takeoff gross weights of 52,000 pounds and over require afterburner therefore an additional 1 minute CRT in the takeoff fuel allowance is added. Fuel tanks dropped when empty.

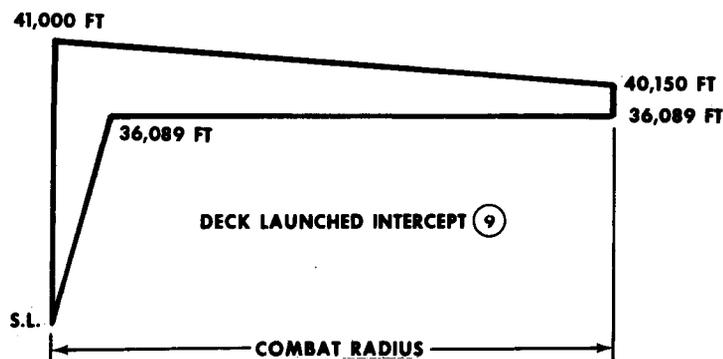
Performance basis: Calculated data based on F-4E/S aircraft No 5% service tolerance on fuel flow.

○ LOADING CONDITION COLUMN NUMBER

NOTES

DECK LAUNCHED INTERCEPT MISSION

1. ENGINE START, TAXI, TAKEOFF AND ACCELERATE:
5 minutes normal static sea level thrust.
(See Note)
2. CLIMB: On course to 36,089 feet with maximum thrust.
3. ACCELERATE: To 1.8 MN at 36,089 feet.
4. CRUISE OUT: On course at 36,089 feet at 1.8 MN with modulated afterburner.
5. COMBAT FUEL ALLOWANCE: 2 minutes at 1.8 MN at 36,089 feet. (No distance credited)
6. CRUISE BACK: At altitudes and speeds for maximum range.
7. DESCENT: To sea level. No fuel, time and distance credited.
8. RESERVE: Fuel shall be 5% of total initial fuel plus fuel required for 20 minutes loiter at sea level at speeds for maximum endurance with both engines operating.



Notes: All takeoff gross weights of 52,000 pounds and over require afterburner therefore an additional one minute CRT in the takeoff fuel allowances is added.
Fuel tanks dropped when empty.
Performance basis: calculated data based on flight test of F-4E/S aircraft.
No 5% service tolerance on fuel flow.



LOADING CONDITION COLUMN NUMBER