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NAVAIR 00-110AF14-1

Classified by F-14 TDP WIG-27R1
Subject to GDS of EO 11652
Automatically Downgraded at Two
Year Intervals
Declassified on December 31, 1980

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BY T.G. Hill ON 12/19/76

Standard Aircraft Characteristics

NAVY MODEL F-14A AIRCRAFT

(TITLE UNCLASSIFIED)

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PUBLISHED BY DIRECTION OF THE
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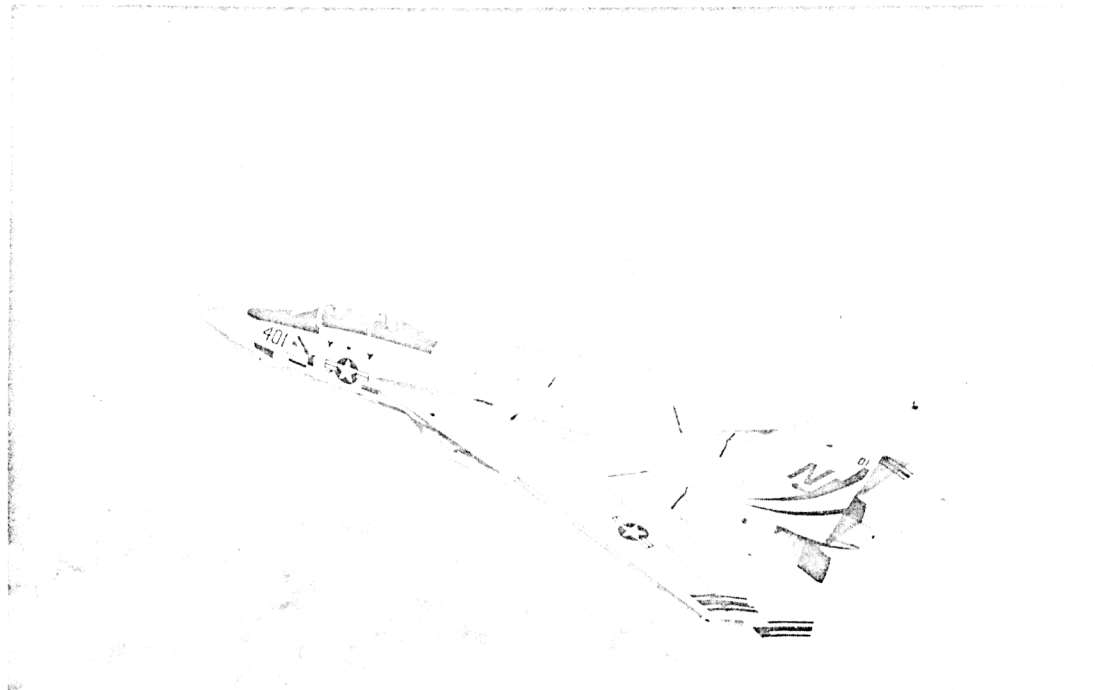
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SERVICE



STANDARD AIRCRAFT CHARACTERISTICS

F-14A TOMCAT

GRUMMAN

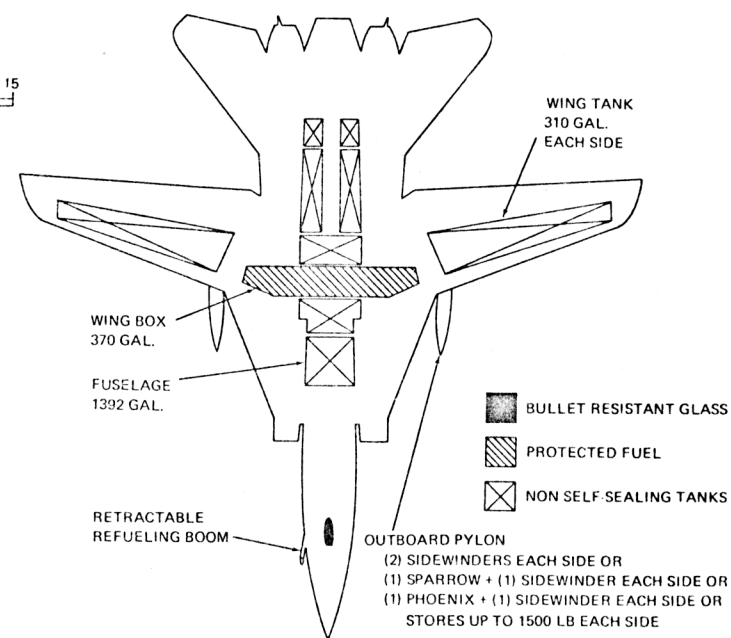
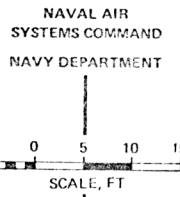
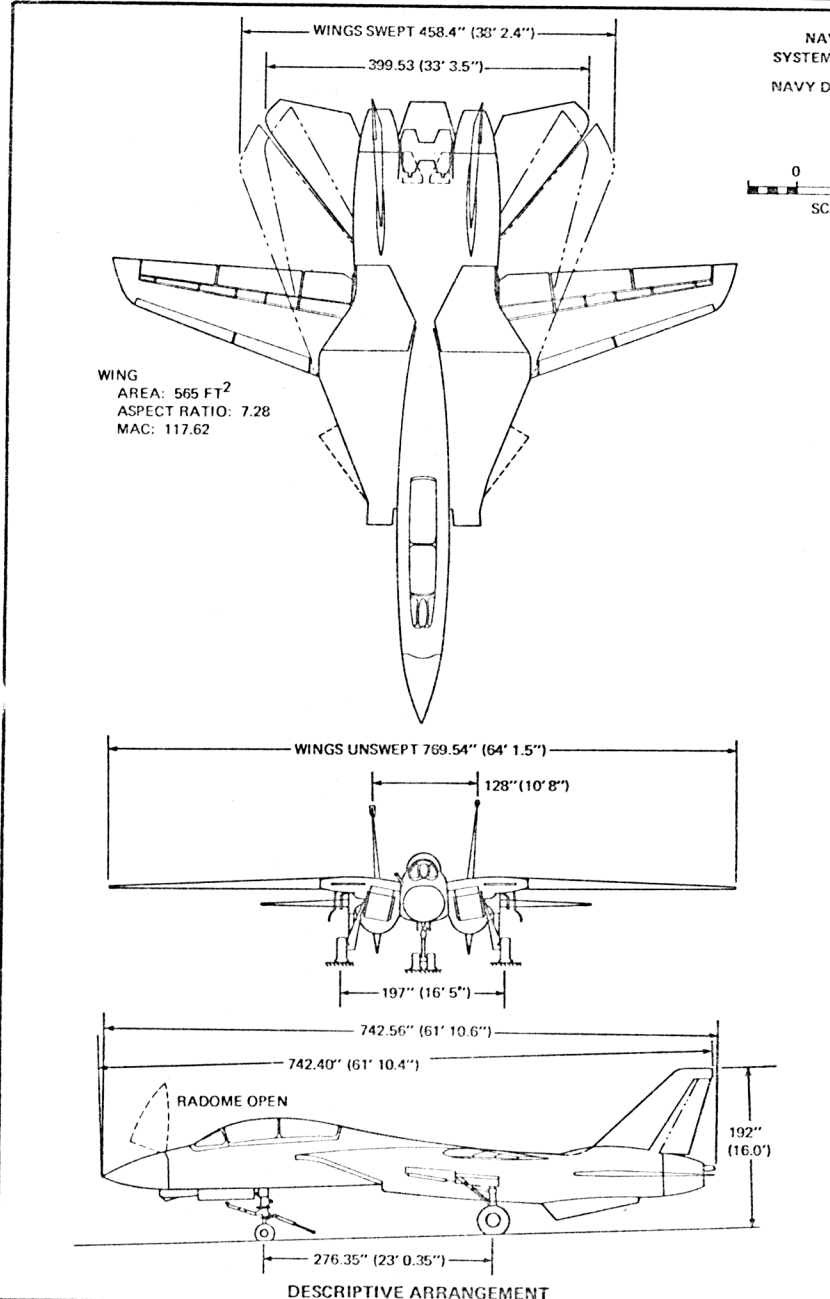
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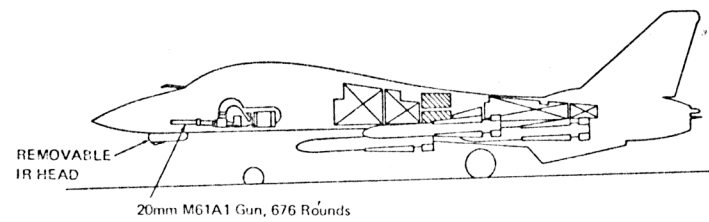
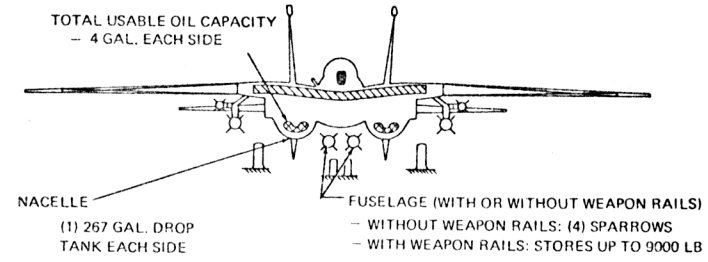
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F-14A



TOTAL USABLE FUEL CAPACITY
 - INTERNAL: 2382 GAL.
 - WITH (2) 267 GAL. DROP TANKS: 2916 GAL.



ARMAMENT AND TANKAGE

POWERPLANT			
Number and Model	(2) TF30 P 412A		
Manufacturer	Pratt & Whitney		
Engine Specification Number	N-6191, 30 May 1972		
Type	Twin-Spool Axial Flow Turbofan		
Augmentation	Modulated A/B		
Length with A/B	(Operating Temp, Nozzle in A/B Position) 223.59 in.		
Diameter (Operating Temp.)	50.5 in.		
Dry Weight	3971 lb		
Nozzle Type	Translating C-D Iris		
RATINGS STATIC THRUST AT SEA LEVEL			
	THRUST, LB	SFC	RPM (N ₂) TIME LIMIT
Maximum A/B	20,900	2.780	14,780 45 min
Intermediate	12,350	0.689	14,800 45 min
Max Continuous	10,800	0.631	14,300 None
ELECTRONICS			
WEAPONS CONTROL			
Airborne Missile Control System	AN/AWG 9/A		
Fire Control System	AN/AWG 15		
ELECTRONIC WARFARE			
Radar Warning System	AN/ALR-50, AN/ALR-45(V)		
Defensive Electronic Countermeasures	AN/ALO-100		
Chaff/Flare Dispenser	AN/ALE 39		
FLIGHT CONTROL			
Automatic Flight Control Set	AN/ASW 32		
Approach Power Control Set	AN/ASN 105		
AICS Programmer	C-8684/A		
COMMUNICATION			
Intercommunication Set	LS 460B/AIC		
IFF Transponder	AN/APX 72		
IFF Interrogator	AN/APX-76(V)		
Cryptographic System	JULIET-28		
UHF Communication	AN/ARC-51A		
Interference Blanker	MX 9467/A		
Digital Data Link	AN/ASW 27B		
UHF Auxiliary Receiver Set	AN/ARR 69		
Beacon Augmentor	R 1623/APN		
Radar Beacon	AN/APN-154(V)		
Receiver Decoder Group	AN/ARA 63		
NAVIGATION			
Radar Altimeter	AN/APN-194(V)		
Inertial Navigation System	AN/ASN-92(V)		
Attitude Heading Reference	A/A24G27-A		
TACAN Set	AN/ARN-84(V)		
UHF Auto Direction Finder	AN/ARA-50		
Central Air Data Computer	CP-1145/A		
Signal Data Converter Computer	CP-1030/A		

MISSION AND DESCRIPTION	
<p>The F-14A is a carrier based, variable sweep wing, all weather, two-man, tandem cockpit, high performance weapons system. Two afterburner-equipped turbofan engines are mounted in podded nacelles, permitting adaptation to future powerplant requirements.</p> <p>The primary roles of air superiority and fleet air defense are achieved by the incorporation of an integrated airborne missile control system in specially designed pallets. Other electronic devices are incorporated to fulfill additional alternate missions.</p> <p>A Mach/Sweep programmer provides optimum performance and maneuvering throughout the entire operating range of the aircraft without pilot attention. Control about all three axes is achieved by irreversible hydraulically actuated surfaces. Symmetric movement of the all-movable horizontal tail surfaces provides longitudinal control. Lateral control is provided by spoilers and asymmetric movement of the horizontal tail surfaces. Twin rudders are used for directional control.</p> <p>High lift devices consist of simply pivoted single-slotted trailing edge flaps and conventional leading edge slats. Increased maneuverability in supersonic flight is provided by extension of glove vanes housed in the leading edge of the wing glove. The flaps and glove vanes are also used as maneuvering aids during subsonic and transonic flight. Deceleration control is provided by speed brakes located on the upper and lower surfaces of the aft fuselage.</p> <p>A wing oversweep position results in an optimized spotting factor of 1.45 based on 132 A-7 aircraft. Nose tow catapulting is used. A retractable boom is provided for in-flight refueling.</p>	
DEVELOPMENT	
Contract Date	Feb 1969
First Flight	Dec 1970
Initial NPE	Dec 1971
Initial Carrier Suitability Trials Completed	Nov 1973
Fleet Introduction	Sept 1974
DIMENSIONS	
WING	
Area (Reference)	565 sq ft
Unswept Leading Edge Sweep	20°
Span	64.13 ft
MAC	117.62 in.
Incidence at B.L. 96.3	+0.74°
Dihedral	-1°50'
Swept Leading Edge Sweep	68°
Span	38.2 ft
Overswept Leading Edge Sweep	75°
Span	33.29 ft
LENGTH	61.9 ft
HEIGHT	16 ft
TREAD	16.142 ft

WEIGHTS			
LOADINGS			
	LB	L.F.	
Empty (Actual Weight)	38,188		
Basic Fighter Escort	39,576		
Flight Design Gross Weight			
Fighter	49,548	6.5N _z	
Attack	57,685	*7.5N _z	
Maximum Takeoff			
Field/Catapult	72,566	**4.6N _x	
Maximum Landing			
Arresting	51,830	6.6N _z	
Field	60,029		
*Leading edge sweep greater than 55°			
**Catapult horizontal tow force is not to exceed 213,000 lb limit load			
FUEL AND OIL			
FUEL			
NO. OF TANKS	GAL	LB (JP-5)	LOCATION
2	620	4216	Wings
2	370	2516	Wing Box
8	1,392	9466	Fuselage
2	534.2	3632	Drop Tanks
Fuel Grade			JP 4 or JP 5
Fuel Specification			MIL F 5624
OIL			
Capacity	4 gal./engine (usable)		
Specification	MIL L 23699		
ORDNANCE			
GUN			
Vulcan	M61A1 (676 rounds)		
MISSILES			
Sparrow	AIM 7E, AIM 7F		
Sidewinder	AIM 9G&H		
Phoenix	AIM 54A		
BOMBS			
Gen Purpose	MK-81, MK-82, MK-83, MK-84		
	MK-81 W/MK-14, MK-82 W/MK-15,		
	MK-40 W/MAU 91A/B		
Cluster	MK 20 Mod 2, CBU 59/B		
Practice	MK-76		
ROCKET PACKAGES			
	LAU 10A/A,		
FLARES			
	MK 45		
FUEL TANKS			
	FPU-1/A (267 gal)		
LAUNCHERS			
	LAU 92/A (AIM-7), LAU 7A-3		
	(AIM-9), LAU 93/A (AIM 54)		
BOMB RACKS			
	MAK-79C/A37B		
MULTI-ADAPTERS			
Triple Ejector Rack	A/A37B-5		
FUEL TANK JETTISON MECHANISM			
	MXU-611/A		

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SERVICE

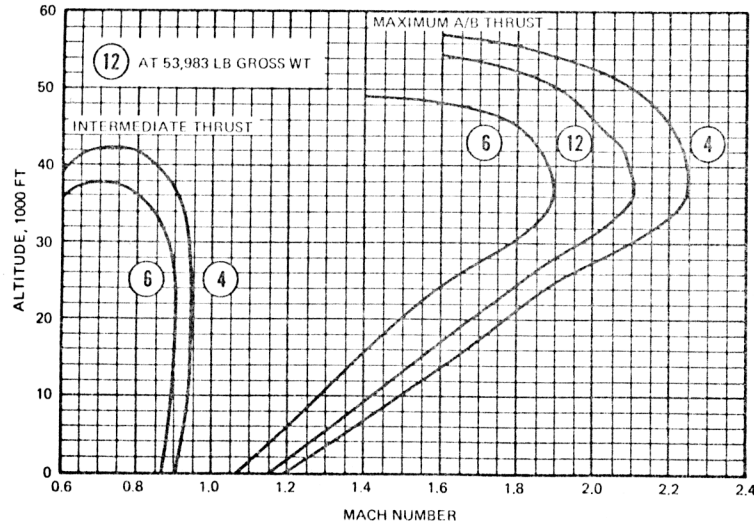
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PERFORMANCE SUMMARY

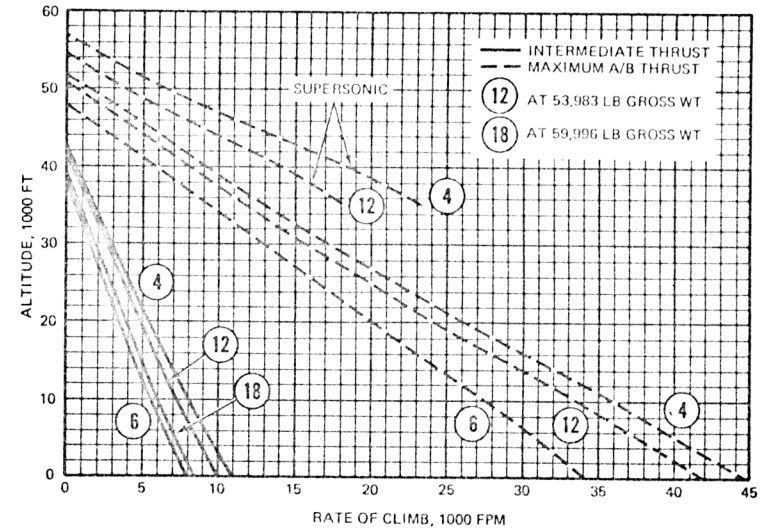
TAKEOFF LOADING CONDITION		① HI-HI-HI (1) M61A1 20MM GUN	③ FIGHTER ESCORT (4) SPARROWS + (1) M61A1 20MM GUN	⑤ FLEET AIR DEFENSE (6) PHOENIX + (2) 267 GAL. DROP TANKS	⑦ DECK LAUNCHED INTCP (4) SPARROWS + (1) M61A1 20MM GUN + (2) 267 GAL. DROP TANKS	⑨ FERRY RANGE (2) 267 GAL. DROP TANKS
TAKEOFF WEIGHT	lb	56,790	58,750	68,649	63,052	60,038
Fuel internal/external (JP-5)	lb/lb	16,200	16,200	16,200/3,632	16,200/3,632	16,200/3,632
Payload	lb	378	2,378	5,910	2,378	
Wing loading	lb/sq ft	100.5	104.1	121.5	111.6	106.3
Stall speed - power off	kn	115	117	126	121	118
Takeoff run at S.L. - calm (A)	ft	2,240	2,350	3,000	2,600	2,430
Takeoff run at S.L. - 25 kn wind (A)	ft	1,450	1,550	2,000	1,700	1,600
Takeoff to clear 50 ft - calm (A)	ft	3,000	3,150	3,950	3,500	3,250
Max speed/altitude (A)	kn/ft	608/S.L.	605/S.L.	562/10,000	595/S.L.	598/S.L.
Rate of climb at S.L. (A)	fpm	10,050	9,600	6,600	8,500	9,100
Time: S.L. to 20,000 ft (A)	min	2.7	2.8	4.5	3.1	3.0
Time: S.L. to 30,000 ft (A)	min	5.3	5.4	9.2	6.2	5.8
Service ceiling (100 fpm) (A)	ft	41,000	40,200	34,900	38,400	39,500
Combat range	n mi	1,553	1,480	1,375 (C)	1,784 (C)	1,940 (C)
Average cruising speed	kn	407	406	402	406	407
Cruising altitude(s)	ft	35,000/39,700	34,400/39,000	31,900/36,300	33,200/38,900	34,000/40,200
Combat radius/mission time (E)	n mi/hr	741/3.73	446/2.23	150/2.38	158.7/595	-----
Average cruising speed	kn	406	407	404	405-1,033	-----
Ferry Range	n mi	-----	-----	-----	-----	1,840 (D)
Loiter time @ 35,000 ft	hr	-----	-----	1.56	-----	-----
COMBAT LOADING CONDITION		②	④ MISSILES RETAINED	⑥ TANKS OFF MISSILES RETAINED	⑧ TANKS OFF MISSILES RETAINED	⑩ TANKS RETAINED
COMBAT WEIGHT	lb	50,310	52,310	60,256	54,659	52,105
Engine power		MAX A/B	MAX A/B	MAX A/B	MAX A/B	MAX A/B
Fuel	lb	9,720	9,720	11,899	11,899	11,899
Combat speed/combat altitude (B)	kn/ft	1,314/35,000	949/10,000	1,090/35,000	1,272/45,000	-----
Rate of climb/combat altitude (B)	fpm/ft	27,300/35,000	35,800/10,000	10,200/35,000	10,500/45,000	-----
Combat ceiling (500 fpm)/speed (B)	ft/kn	57,600/1,030	56,400/975	48,200/920	54,200/1,030	53,400/920
Rate of climb at S.L. (B)	fpm	47,900	44,800	34,200	42,600	43,800
Max speed at S.L. (B)	kn	805	795	708	787	729
Max speed/altitude (B)	kn/ft	1,314/38,000	1,289/38,000	1,090/38,000	1,272/38,000	1,038/35,000
LANDING WEIGHT	lb	44,590	46,590	52,357	46,760	44,206
Fuel	lb	4,000	4,000	4,000	4,000	4,000
Stall speed - power off/approach power	kn/kn	102/94	104/96	110/101	104/96	101/93
Landing distance - ground roll/over 50 ft obstacle	ft/ft	2,550/3,500	2,650/3,600	2,920/3,870	2,650/3,600	2,530/3,500
NOTES						
SPOTTING: A total of 91 airplanes can be accommodated in a safe parking area on the flight & hangar decks of a CVA 59 class angled deck carrier.		(A) Intermediate Thrust		(E) Mission Time Excludes Time for Warmup And Takeoff And 20 Minute Loiter At Sea Level		
PERFORMANCE BASIS: Flight Test		(B) Max A/B Thrust				
		(C) Drop Tanks Symmetrically Dropped When Empty				
		(D) Drop Tanks Retained				

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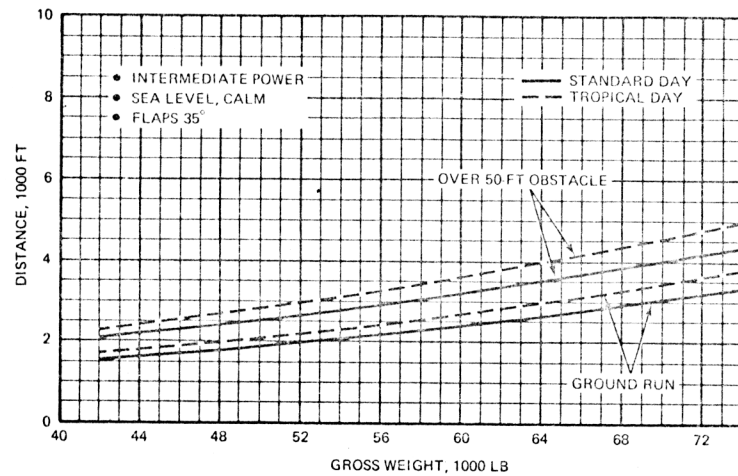
SPEED



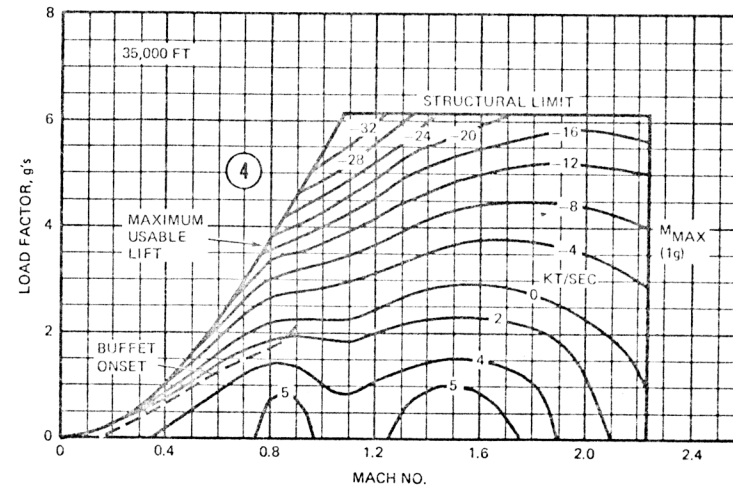
CLIMB



TAKEOFF



MANEUVERABILITY



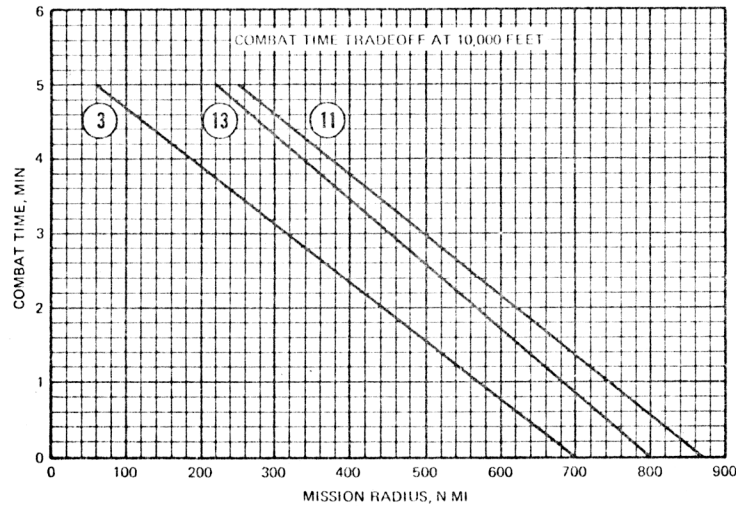
○ LOADING CONDITION COLUMN NUMBER

MISSION SUMMARY — ALTERNATE LOADINGS

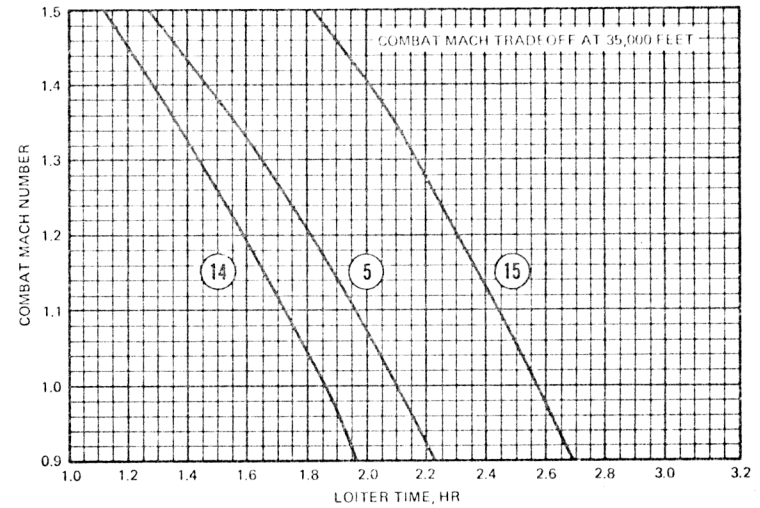
		FIGHTER ESCORT		FLEET AIR DEFENSE		LO - LO - LO		LO - LO - HI		HI - LO - LO - HI		CLOSE SUPPORT	
EXTERNAL STORE LOADING	TOW	COMBAT RADIUS, n mi	MISSION TIME, hr	LOITER TIME AT 35,000 FT, hr	MISSION TIME, hr	COMBAT RADIUS, n mi	MISSION TIME, hr	COMBAT RADIUS, n mi	MISSION TIME, hr	COMBAT RADIUS, n mi	MISSION TIME, hr	COMBAT RADIUS, n mi	MISSION TIME, hr
11 (4) Sparrows + (1) M61A1 20MM Cannon + (2) 267 Gallon Drop Tanks	63,052	618	3.06										
12 (4) Sparrows + (1) M61A1 20MM Cannon + (4) Sidewinders	60,463	409	2.05										
13 (4) Sparrows + (4) Sidewinders + (1) M61A1 20MM Cannon + (2) 267 Gallon Drop Tanks	64,725	570	2.84										
14 (4) Phoenix	61,586			1.37	2.17								
15 (4) Phoenix + (2) 267 Gallon Drop Tanks	65,848			2.08	2.89								
16 (6) MK-82 Snakeyes + (1) M61A1 20MM Cannon	61,732					313	2.50	392	2.53	438	2.53	437	3.16
17 (6) MK-82 Snakeyes + (1) M61A1 20MM Cannon + (2) 267 Gallon Drop Tanks	65,994					399	3.14	506	3.21	601	3.32	594	3.93
18 (14) MK-82 Snakeyes + (1) M61A1 20MM Cannon	66,476					303	2.40	374	2.39	409	2.38	390	2.92
19 (14) MK-82 Snakeyes + (1) M61A1 20MM Cannon + (2) 267 Gallon Drop Tanks	70,738					386	3.01	483	3.05	563	3.13	538	3.66

Note: Drop tanks symmetrically dropped when empty

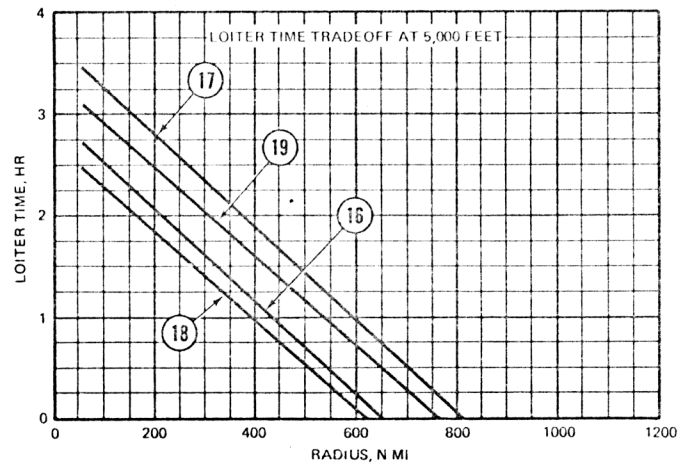
FIGHTER ESCORT



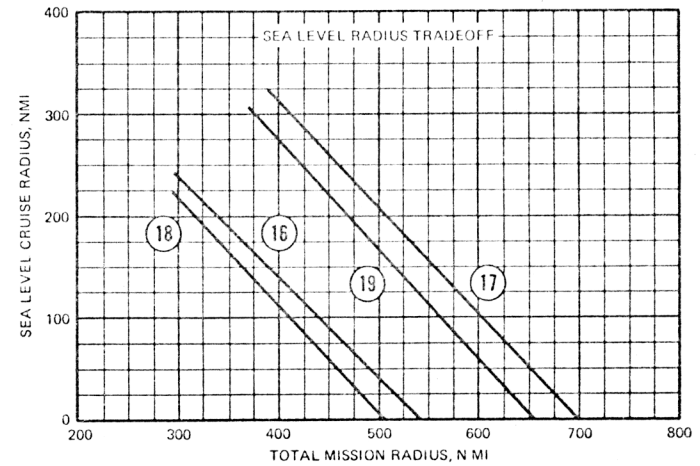
FLEET AIR DEFENSE



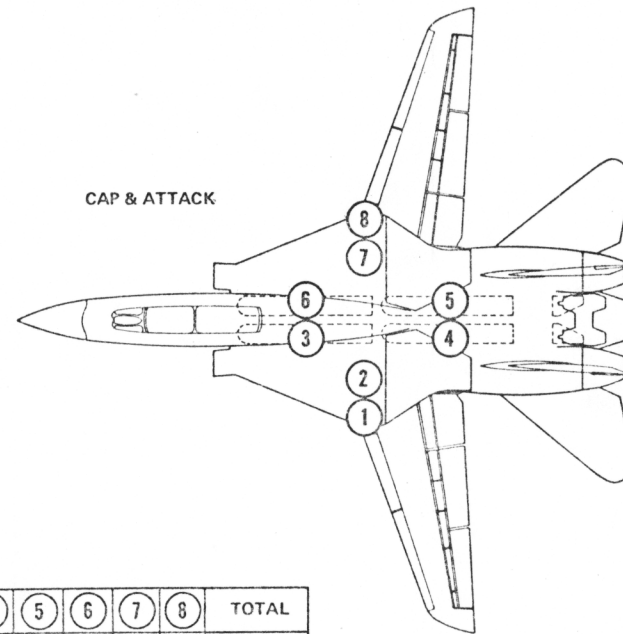
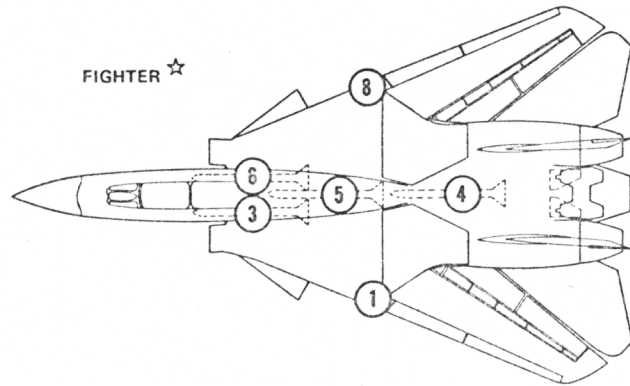
CLOSE SUPPORT



HI-LO-LO-HI



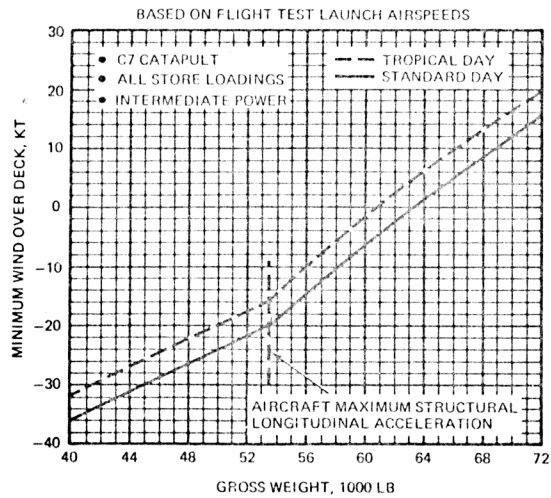
○ LOADING CONDITION COLUMN NUMBER



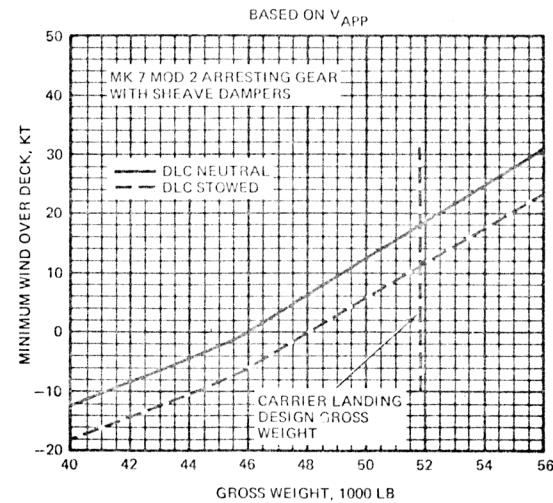
STORE STATION	1	2	3	4	5	6	7	8	TOTAL
MISSILES									
AIM-7E/F (Sparrow) ☆	1		1	1	1	1		1	6
AIM-9G (Sidewinder)	2							2	4
AIM-54/A (Phoenix)	1		1	1	1	1		1	6
BOMBS									
MK-81 (Lo & Hi Drag)			4	3	3	4			14
MK-82 (Lo & Hi Drag)			4	3	3	4			14
MK-83 (Lo Drag)			3	1	1	3			8
MK-84 (Lo Drag)			1	1	1	1			4
MK-40 (Destructor)			2	1	1	2			6
MK-20 (Rockeye)			2	1	1	2			6
CBU-59/B (APAM)			2	1	1	2			6
MK-76 (Practice)			4		4				8
FLARES									
MK-45				4		4			8
ROCKETS									
LAU-10A/A			2			1			3
FUEL TANKS									
FPU-1/A (267 Gal.)		1					1		2
MULTI-ADAPTER									
A/A37B-6(TER-7)			1			1			2

PLUS INTERNAL M61A1 20-MM GUN/678 ± 2 RDS

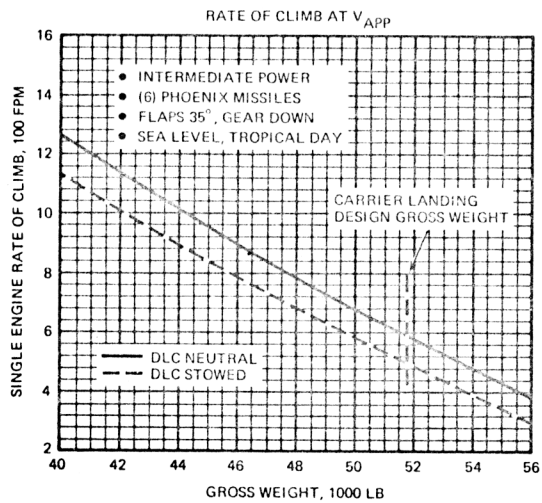
MINIMUM WIND OVER DECK FOR CATAPULTING



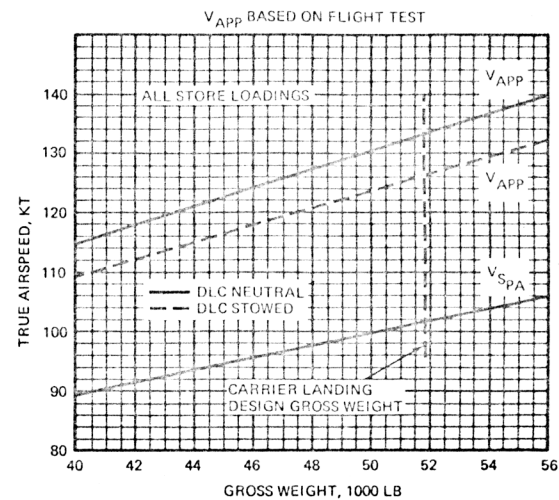
MINIMUM WIND OVER DECK FOR ARRESTING



SINGLE ENGINE RATE OF CLIMB



CARRIER APPROACH SPEEDS

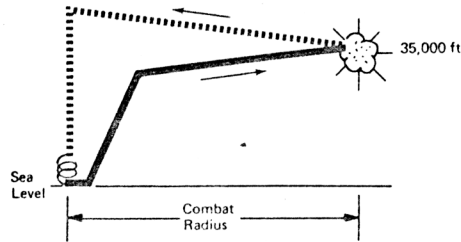


(A) These curves should be used for planning purposes only. Actual catapult and arresting gear operation should be in accordance with applicable Aircraft Technical Orders, and Catapult and Arresting Gear Bulletins.

(B) Flap deflection for catapulting and landing = 35°.

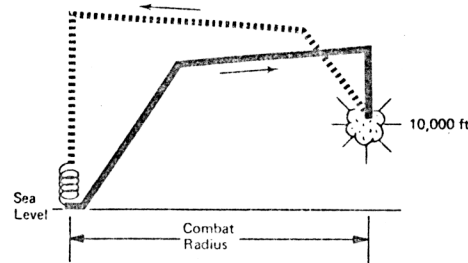
(C) DLC = Direct Lift Control.

HI-HI-HI



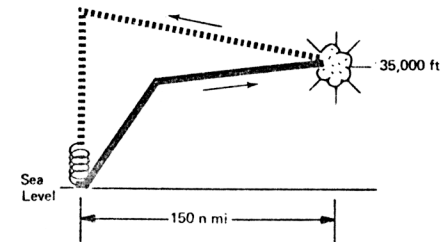
- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Climb on course to optimum cruise altitude with intermediate power
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty)
- Combat: 5 min at 35,000 ft altitude intermediate power M_{max} (stores on, no distance gained)
- Cruise back at maximum range speed at optimum cruise altitude
- Descend to sea level: No distance gained or fuel used.
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level

FIGHTER ESCORT



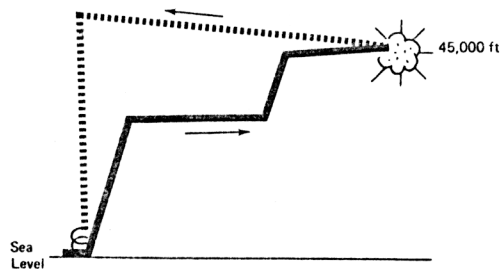
- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Climb on course to optimum cruise altitude with intermediate power.
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty)
- Descend to 10,000 ft: No distance gained or fuel used
- Combat: 2 min at max A/B power at $M = 1.0$.
- Climb at intermediate power climb from 10,000 ft to best cruise altitude
- Cruise back at maximum range speed at optimum cruise altitude.
- Descend to sea level: No distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level

FLEET AIR DEFENSE



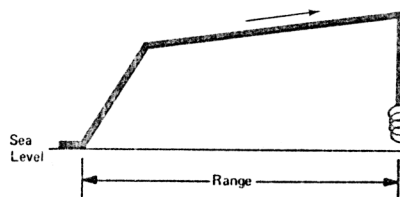
- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Climb on course to optimum cruise altitude with intermediate power
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty)
- Loiter at maximum endurance speed at 35,000 ft (no distance gained)
- Accelerate at 35,000 ft from maximum endurance speed to $M = 1.35$ at max A/B power (no distance gained)
- Combat: 2 min at $M = 1.35$ at max A/B power
- Cruise back at maximum range speed at optimum cruise altitude
- Descend to sea level: No distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level

DECK-LAUNCHED INTERCEPT



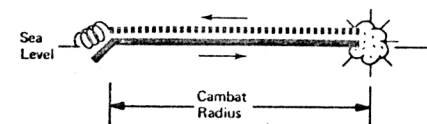
- Warmup, taxi, takeoff: 5 min with max continuous power and 1 minute max A/B power at sea level static
- Climb with max A/B M= 1.8 and 45,000 ft altitude. (Drop external fuel tanks when empty)
- Dash: Dash out at M=1.8 and 45,000 ft
- Combat: 2 min at M = 1.8 and 45,000 ft
- Cruise back at max range speed at optimum cruise altitude
- Descend to sea level; no distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at max endurance speed at sea level

FERRY OR COMBAT RANGE



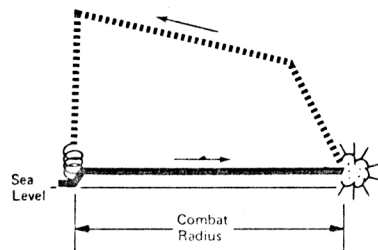
- Warmup, taxi, takeoff: 5 min at sea level static with max continuous power
- Climb on course to optimum cruise altitude with intermediate power
- Cruise out at max range speed at optimum cruise altitude.
- Descend to sea level; no distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at max endurance speed at sea level

LO-LO-LO



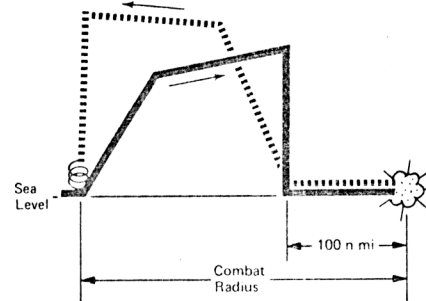
- Warmup, taxi, takeoff: 5 min at sea level static with max continuous power
- Cruise out at max range speed at sea level (Drop external fuel tanks when empty)
- Combat: 5 min at sea level intermediate power. M_{max} (Stores on, no distance gained.) Stores dropped after combat
- Cruise back at max range speed at sea level
- Reserve: 5% of initial fuel plus 20 min at max endurance speed at sea level

LO-LO-HI



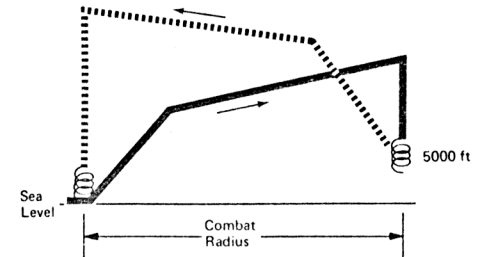
- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Cruise out at maximum range speed at sea level (drop external fuel tanks when empty)
- Combat: 5 min at sea level intermediate power M_{max} . Stores dropped after combat
- Climb on course to optimum cruise altitude with intermediate power
- Cruise back at maximum range speed at optimum cruise altitude
- Descend to sea level: No distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level

HI-LO-LO-HI



- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Climb on course to optimum cruise altitude with intermediate power
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty)
- Descend to sea level when 100 n mi from target (no fuel used, no distance gained)
- Cruise out at sea level at maximum range speed to target
- Combat: 5 min at sea level intermediate power M_{max} . (Stores on, no distance gained) Stores dropped after combat
- Cruise back at sea level at maximum range speed to a point 100 n mi from target
- Climb on course to optimum cruise altitude with intermediate power
- Cruise back at maximum range speed at optimum cruise altitude
- Descend to sea level: No distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level

CLOSE SUPPORT



- Warmup, taxi, takeoff: 5 min at sea level static with maximum continuous power
- Climb on course to optimum cruise altitude with intermediate power
- Cruise out at maximum range speed at optimum cruise altitude (drop external fuel tanks when empty)
- Descend to 5000 ft (no fuel used, no distance gained)
- Loiter 1 hr at maximum endurance speed at 5000 ft (stores on, no distance gained) Stores dropped at end of loiter
- Climb on course to optimum cruise altitude with intermediate power
- Cruise back at maximum range speed at optimum cruise altitude
- Descend to sea level: No distance gained or fuel used
- Reserve: 5% of initial fuel plus 20 min at maximum endurance speed at sea level