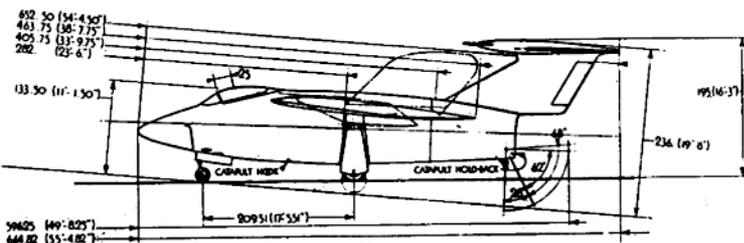
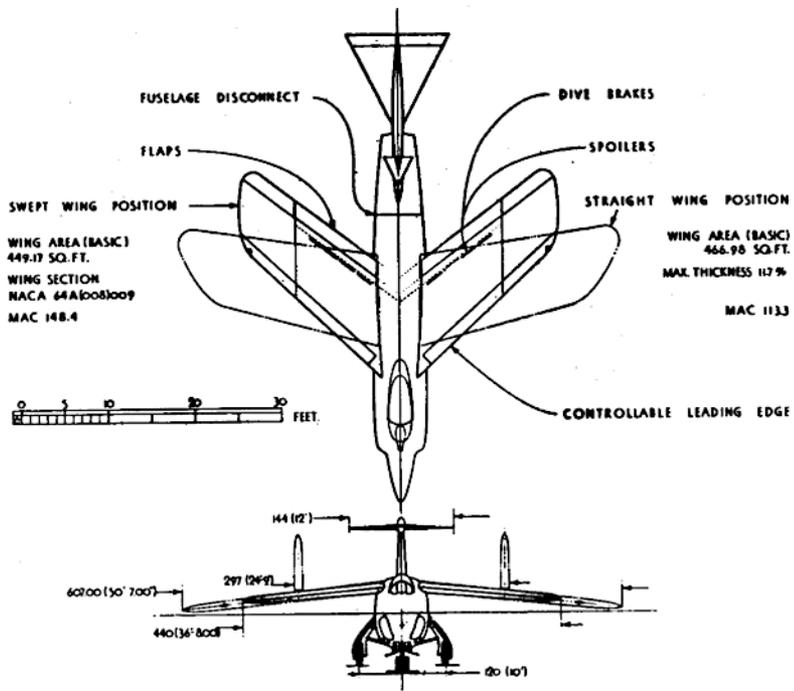


STANDARD AIRCRAFT CHARACTERISTICS

F10F-1

GRUMMAN

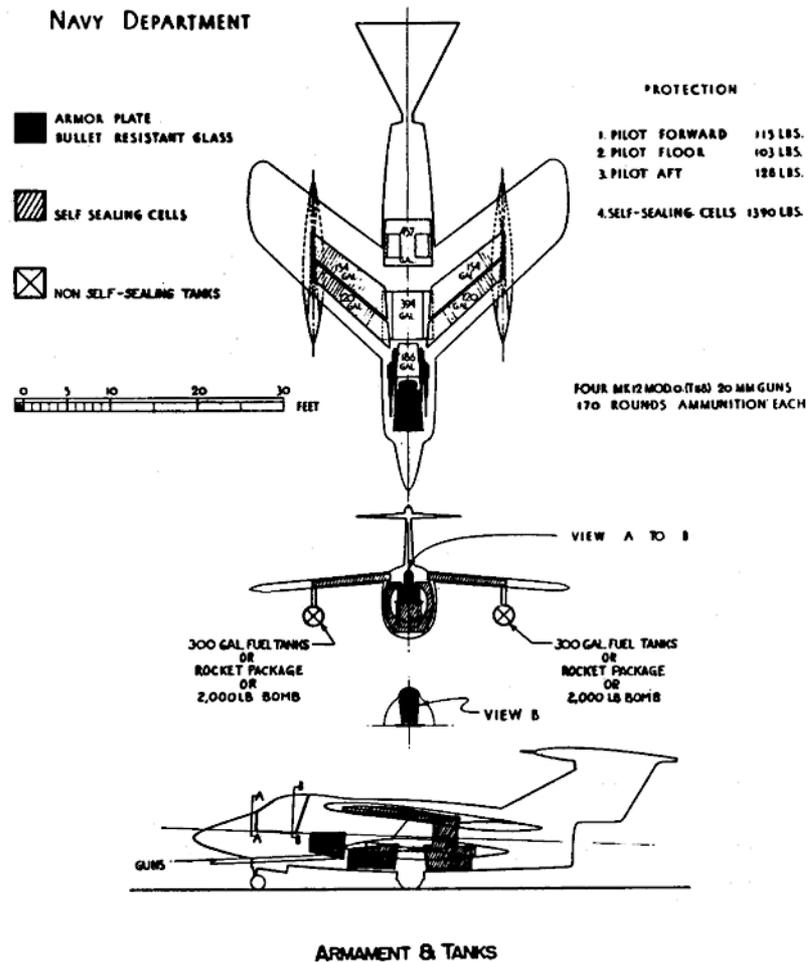
BUREAU OF AERONAUTICS
NAVY DEPARTMENT



DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

MODEL XFIOF-1



ARMAMENT & TANKS

Standard Aircraft Characteristics NAVAER 13358 (REV. 1-49)

MISSION AND DESCRIPTION

The F10F-1 is a single seat, general purpose, carrier or land based, transonic fighter whose primary mission is destruction of other aircraft at ranges of up to 600 nautical miles from its base. It is designed to operate from CV-34 or CVB class carriers.

The F10F-1 has a hydraulically operated variable sweep. Take-offs, landings, and cruising will be done with the straight wing (13.5° sweep); combat, with a 42.5° swept wing. Lateral control is obtained by ailerons in the landing configuration and by spoilers alone in all other configurations. Longitudinal control is provided by a canard balanced horizontal tail. Spoilers are used as speed brakes. Extensible slotted flaps and leading edge slats are supplied as high-lift devices. The F10F-1 is equipped solely with manual operated flight controls. Wings fold for carrier stowage.

Mock-up date — 29 April 1949 (XF10F-1)

First production — January 1952 (estimated)

DIMENSIONS

WING AREA*	467 sq. ft.
WING AREA**	450 sq. ft.
SPAN*	50' - 7"
SPAN**	36' - 8"
LENGTH	54' - 5"
HEIGHT	16' - 3"
TREAD	10' - 0"
M.A.C.*	9' - 5"
M.A.C.**	12' - 4"

* Straight Wing

** Swept Wing

WEIGHTS

Loadings	Lbs.	L.F.
EMPTY	20,426	
BASIC	21,035	
DESIGN	27,351	7.5
COMBAT	27,451	7.5
MAX.T.O.	35,450	5.7
MAX.LAND	27,700	

All weights are estimated.

FUEL AND OIL

Gals.	No. Tanks	Location
548	2	Wings
1,037	3	Fuselage
600	2	Drop,Wings

FUEL GRADE.....JP-3

FUEL SPEC....MIL-F-5624

OIL (SEE NOTES)

CAPACITY (Gals.)	41
GRADE	1010
SPEC	MIL-O-6081

ELECTRONICS

ADF	AN/ARN-6
ALTIMETER	AN/APN-1, -2
HOMING	AN/ARR-2A
IFF	AN/APX-6
SEARCH RADAR	AN/APQ-41
UDF D.F.	AN/ARA-25
VHF	AN/ARC-27
VHF (Prov. Only)	AN/ARC-1
Planned Service Installation:	
IFF (I-R UNIT)	AN/APX-17
SINGLE CHANNEL UHF	AN/ARC()
VOR	AN/ARN-21
(to replace AN/ARN-6)	

POWER PLANT

NO. & MODEL	(1) J-40-WH-8
MFR	Westinghouse
AFTERBURNER	Integral
A.B. MFR	Westinghouse
TYPE	14 Stage, Axial Flow
ENGINE LENGTH	287"
ENGINE DIAMETER	43"

RATINGS

Thrust @ Rpm @ Alt.

T. O. 10,900 7,260 S.S.L.
(Mil. + A.B.)

MIL. 7,400 7,260 S.S.L.

NORM. 6,700 7,260 S.S.L.

SPEC. NO. WAGT-X40E2-2E

ORDNANCE

GUNS

No.	Size	Location	Rds.
4	20 mm	Fuse., Fwd.	680
		(Mk.12-0)	

BOMBS AND ROCKETS

Type	Size	Location	No.
FFAR	2.75"	Wings	48
or			
HPAG	5.0"	Wings	12
or			
Bombs	2,000#	Wings	2

FIRE CONTROL SYSTEM

Interceptor Armament Control System — Aero-6B

MAX. BOMB CAP.....4,000 lbs.



PERFORMANCE SUMMARY					
LOADING CONDITION		(1) FIGHTER	(5) FIGHTER 24 x 2.75" Rockets	(6) GROUND ATTACK 2-2,000# Bombs	(7) LONG RANGE FIGHTER 2-300 Gal. Tank
TAKE-OFF WEIGHT	lbs.	31,255	32,565	35,450	35,370
Fuel (Fixed/Drop)	lbs.	9,510/-	9,510/-	9,510/-	9,510/3,600
Bombs	lbs.	--	--	4,000	--
Wing/Power Loading (A) lbs/sq.ft; lbs/bhp.		67.0/-	69.7/-	75.9/-	75.7/-
Stall Speed--Power off	kn.	99.4	101.5	105.9	105.7
Stall Speed--Power off - No Fuel	kn.	82.8	85.4	90.5	83.8
Stall Speed--Power on	kn.	97.0	99.0	103.1	103.1
Maximum Speed/Alt (B)	kn/ft.	506/5,000	490/12,500	488/12,500	482/12,500
Take-off Distance, deck -- calm	ft.	1,630(3,040)	1,800(3,340)	2,200(4,170)	2,190(4,140)
Take-off Distance, deck 25 kn.	ft.	960(1,808)	1,075(1,970)	1,340(2,575)	1,340(2,555)
Take-off Distance, Airport	ft.	--	--	--	--
Rate of climb -- sea level (B)	ft/min.	2,900	2,480	2,200	2,090
Service Ceiling (B)	ft.	36,500	30,700	29,000	27,800
Time-to-climb 20,000 ft. (B)	min.	9.8	12.1	14.1	15.4
Time-to-climb 30,000 ft. (B)	min.	20.4	32.9	--	--
Combat Range/V av (Climb) ft. n.mi./kn.		1,450/415	1,150/407	1,045/411	1,815/413
Combat Radius/V av (F-5) ft. n.mi./kn.		550/415	445/414	--	745/414
Combat Radius/V av (Grd. Attack) n.mi./kn.		--	--	300/415	--
LOADING CONDITION		(2) COMBAT	(3) COMBAT	(4) COMBAT	
GROSS WEIGHT	lbs.	27,451	27,451	27,451	
Engine power		Mil. + A.B.	Military	Normal	
Fuel	lbs.	5,706	5,706	5,706	
Bombs/Tanks		--	--	--	
Max. speed at sea level	kn.	617(568)	550(517)	504(494)	
Max. speed/Alt	kn/ft.	617/S.L.	554/5,500	525/7,500	
Combat speed/Alt	kn/ft.	549(501)/35000	498(471)/35000	(463)/35,000	
Rate of climb SL	ft/min.	13,350(12,800)	4,110(4,410)	3,150(3,750)	
Ceiling for 500 fpm R/C	ft.	45,800(48,200)	32,400(38,500)	27,500(36,000)	
Time-to-climb/Alt.	min/ft.	4.5(4.6)/35000	(16.5)/35,000	(20.2)/35,000	

(A) BHP at Maximum Critical Altitude

(B) Normal BHP

NOTES

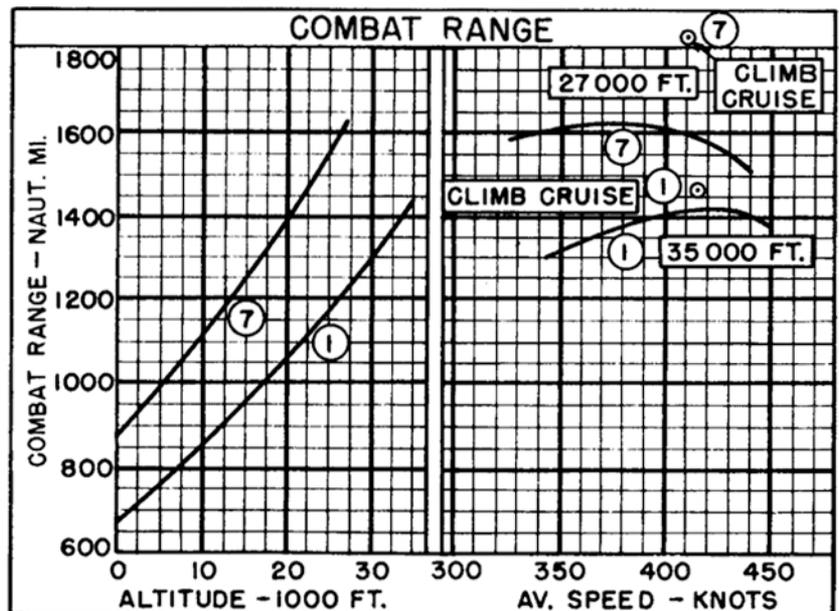
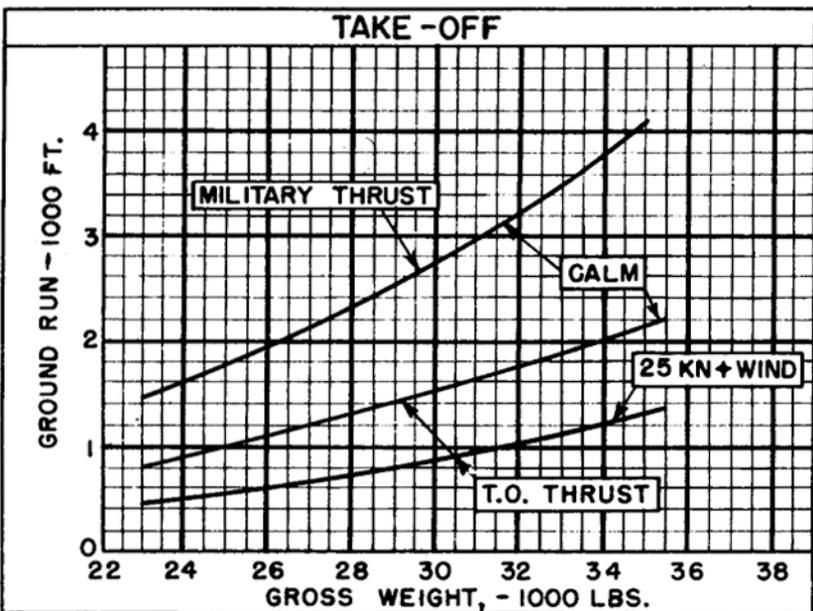
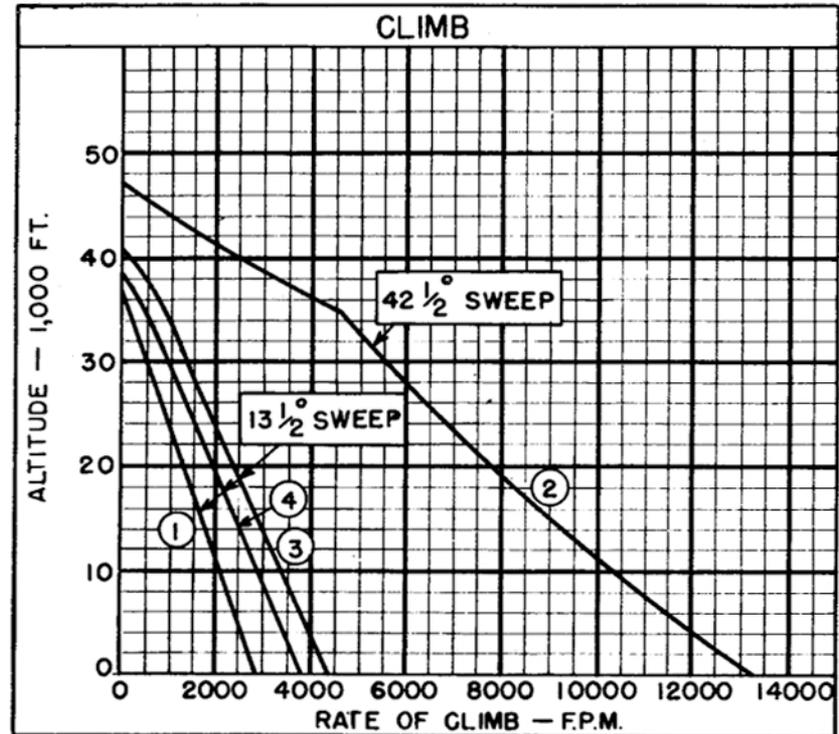
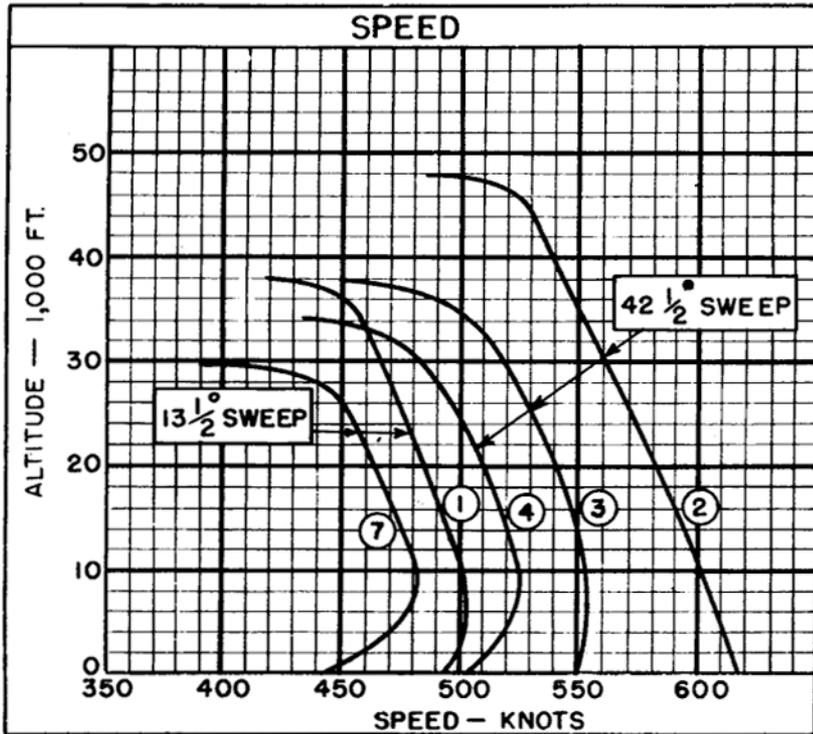
The J-40-WE-8 is designed for JP-3 fuel. This chart is calculated on the assumption that gasoline may be used with no performance change at equal weights of fuel.

Performance is based on calculations. Range and radius are based on engine specification fuel consumption data increased by 5%.

Take-off distances are with take-off thrust (afterburning). The take-off distances in parentheses are with military thrust (no afterburning).

Spotting: 200 ft. length is required to spot 10 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on the CV-9 class carriers.

In conditions (1), (2), (3), (4) there are no external stores or store pylons.



○ LOADING CONDITION COLUMN NUMBER

Standard Aircraft Characteristics: NAVAL AIR 1335E (REV. 2-50)

NOTES

The performance figures shown for the take-off weight loading conditions correspond to the 13-1/2 degree sweep position of the wing.

The performance figures shown for the combat loading conditions correspond to the 42-1/2 degree wing sweep where not in parentheses, and to the 13-1/2 wing degree sweep where in parentheses.

FIGHTER COMBAT RADIUS PROBLEM NO. F-5

WARM-UP TAKE-OFF RENDEZVOUS Fuel for 5 min., static S.L. normal power -- all engines	CLIMB (A) At max. R/C w/mil. power to initial cruise-out alt. (not greater than 300 ft./min. max. R/C, nor. pr.	CRUISE-OUT at V for long-range operation (State altitude and special engine operations involved).	DESCEND to 35,000 ft. alt. if alt. at end of cruise-out is greater. No fuel used, no distance gained. Drop tanks only when empty and state when dropped.	COMBAT at 35,000 ft. alt. or alt. at end of cruise-out if less, and at V max., for 15 min. w/mil. pr. of which 5 min. is with augmentation if available (no distance made good)	CLIMB (B) At max. R/C w/mil. pr., to initial cruise-in altitude.	CRUISE-IN Under same conditions as Cruise-Out.	RESERVE 10% of initial fuel load.
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$$\text{COMBAT RADIUS} = \text{CLIMB (A)} + \text{CRUISE-OUT} = \text{CLIMB (B)} + \text{CRUISE-IN}$$

GROUND ATTACK PROBLEM

WARM-UP TAKE-OFF RENDEZVOUS Fuel for 5 min. static S.L. normal power.	CLIMB (A) At max. R/C w/mil. pr. to initial cruise-out alt. (not greater than 300 ft./min. max. R/C normal power.	CRUISE-OUT at V for long-range operation	DESCEND to sea level, no fuel used, no distance gained.	COMBAT at sea level. Drop bombs. 5 min. at max. power (no distance made good)	CLIMB (B) At max. R/C w/mil. pr. to initial cruise-in altitude.	CRUISE-IN under same conditions as Cruise-Out.	RESERVE 10% of initial fuel load.
--	--	---	--	--	--	---	--------------------------------------

$$\text{COMBAT RADIUS} = \text{CLIMB (A)} + \text{CRUISE-OUT} = \text{CLIMB (B)} + \text{CRUISE-IN}$$

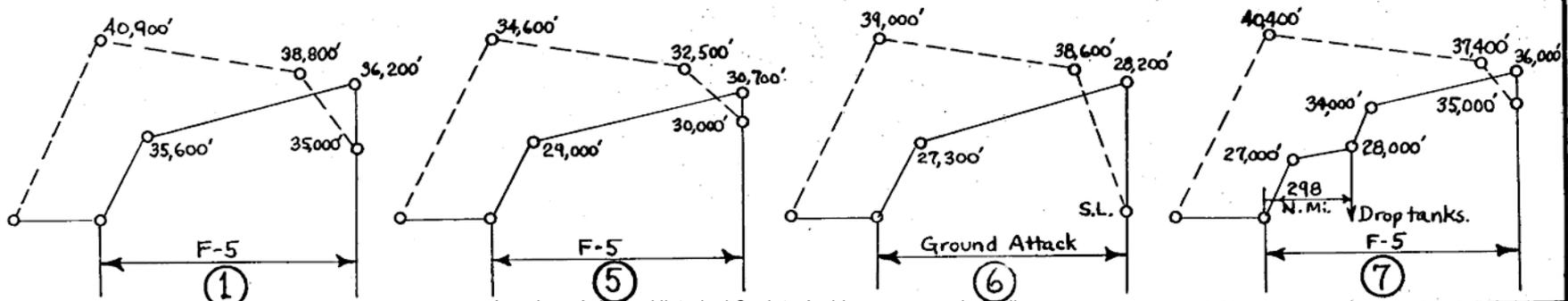
Combat Range is flown in climb cruise:

Condition (1), altitude at start of cruise, 35,600 ft. Altitude at end of cruise, 40,900 ft.

Condition (5), altitude at start of cruise, 29,000 ft. Altitude at end of cruise, 34,600 ft.

Condition (6), altitude at start of cruise, 27,300 ft. Altitude at end of cruise, 32,500 ft.

Condition (7), altitude at start of cruise, 27,000 ft. Altitude at end of cruise, 40,400 ft.



AIRPLANE CHARACTERISTICS & PERFORMANCE

BUREAU OF AERONAUTICS, NAVY DEPT.

COLUMN NUMBER		1	2	3	4
LOADING CONDITION		COMBAT 60% FUEL	COMBAT 60% FUEL	FIGHTER	OVERLOAD
GROSS WEIGHT	LBS	15500	15500	16600	18400
EMPTY WEIGHT	LBS	10731			
FUEL/OIL	GALS.	726/1.5	726/1.5	910/1.5	1210/1.5
FIXED GUNS/AMMUNITION		4-20mm/800 rds. MK.7 gunsight			
FLEXIBLE GUNS/AMMUNITION		NONE			
ENGINE POWER USED FOR PERFORMANCE		AFTERBURNER	MILITARY	NORMAL	NORMAL
WING LOADING	LBS/SQ.FT.	44.3	44.3	47.4	52.6
POWER LOADING ①	LBS/BHP				
V-MAX. SEA LEVEL	KN	596	500	432	431
V-MAX / 30,000'	KN/FT.	550	512	455	437
V-STALL GROSS WEIGHT ②	KN	96.5	96.5	98.0	105.1
V-STALL WITHOUT FUEL ②	KN	80.3	80.3	80.3	80.3
TIME-TO-CLIMB -10000FT-	MIN	1.1	2.3	4.2	4.8
TIME-TO-CLIMB -20000FT-	MIN	2.4	5.4	10.0	11.8
SERVICE CEILING	FT.	46,300	40,300	34,000	31,200
TAKE-OFF DISTANCE -CALM-	FT.			1380	1820
TAKE-OFF DISTANCE -15 KN-	FT.			1010	1340
TAKE-OFF DISTANCE -25 KN-	FT.			800	1100
TAKE-OFF DISTANCE -50 FT. OBST.	FT.				
TAKE-OFF TIME	SECONDS				
RATE OF CLIMB -SL-	FT./MIN.	10,270	4,980	2650	2350
MAX. RANGE / V-AV. ③	N MI./KN			830	1080
RANGE / V-AV. -60%NSP-③-	N MI./KN				
SEARCH RADIUS / V-AV. -20%R-	N MI./KN				
A.S.W. RADIUS / V-AV. -20%R-	N MI./KN				
SCOUT RADIUS	N MI.				
COMBAT RADIUS (P-3 MOD.)	N MI.				335
ENGINE / PROP GEAR RATIO		XJ-42-TT2 (WENE)			
ENGINE RATING BHP/RPM/ALT	AFTERBURNER		MILITARY		
	6950 lbs./12300 RPM/SL Static		5000 lbs./12300 RPM/SL Static		
	NORMAL		TAKE-OFF (WET)		
	4000 lbs./11600 RPM/SL Static		6950 lbs./12300 RPM/SL Static		
TANKAGE IN GALLONS		OIL	FUEL	OFFENSIVE ARMAMENT	
AUX. FIXED	PROTECTED		1210	NONE	
	UNPROTECTED	1.5			
	TOTAL-FIXED INTERNAL	1.5	1210		
	DROPPABLE				
	DROPPABLE				
TOTAL		1.5	1210		
NOTE	① BHP AT MAX. CRIT. ALT.				
	② STALL - WITHOUT POWER				
	③ AT 20,000' ALTITUDE				

AIRPLANE CHARACTERISTICS & PERFORMANCE

DES. 83

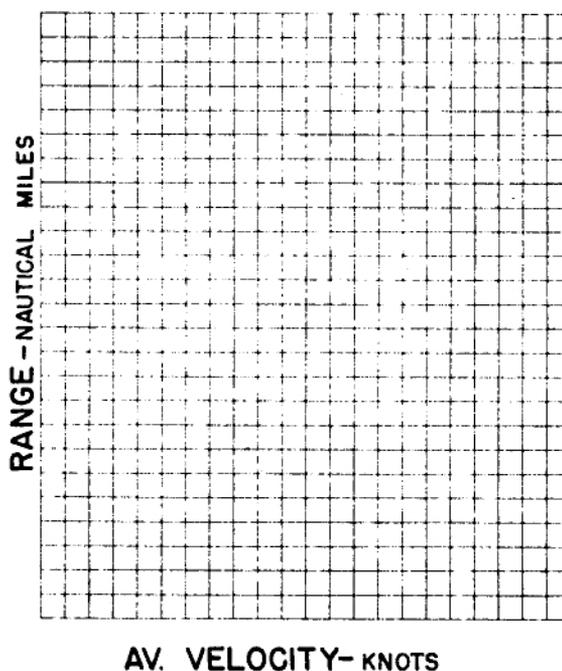
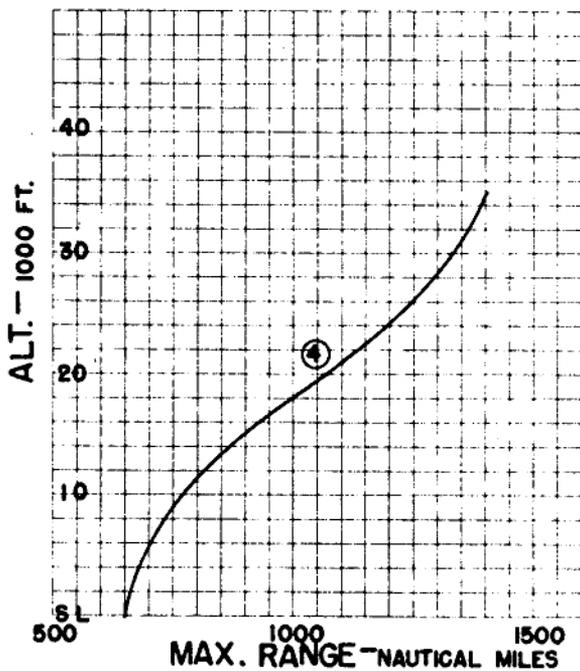
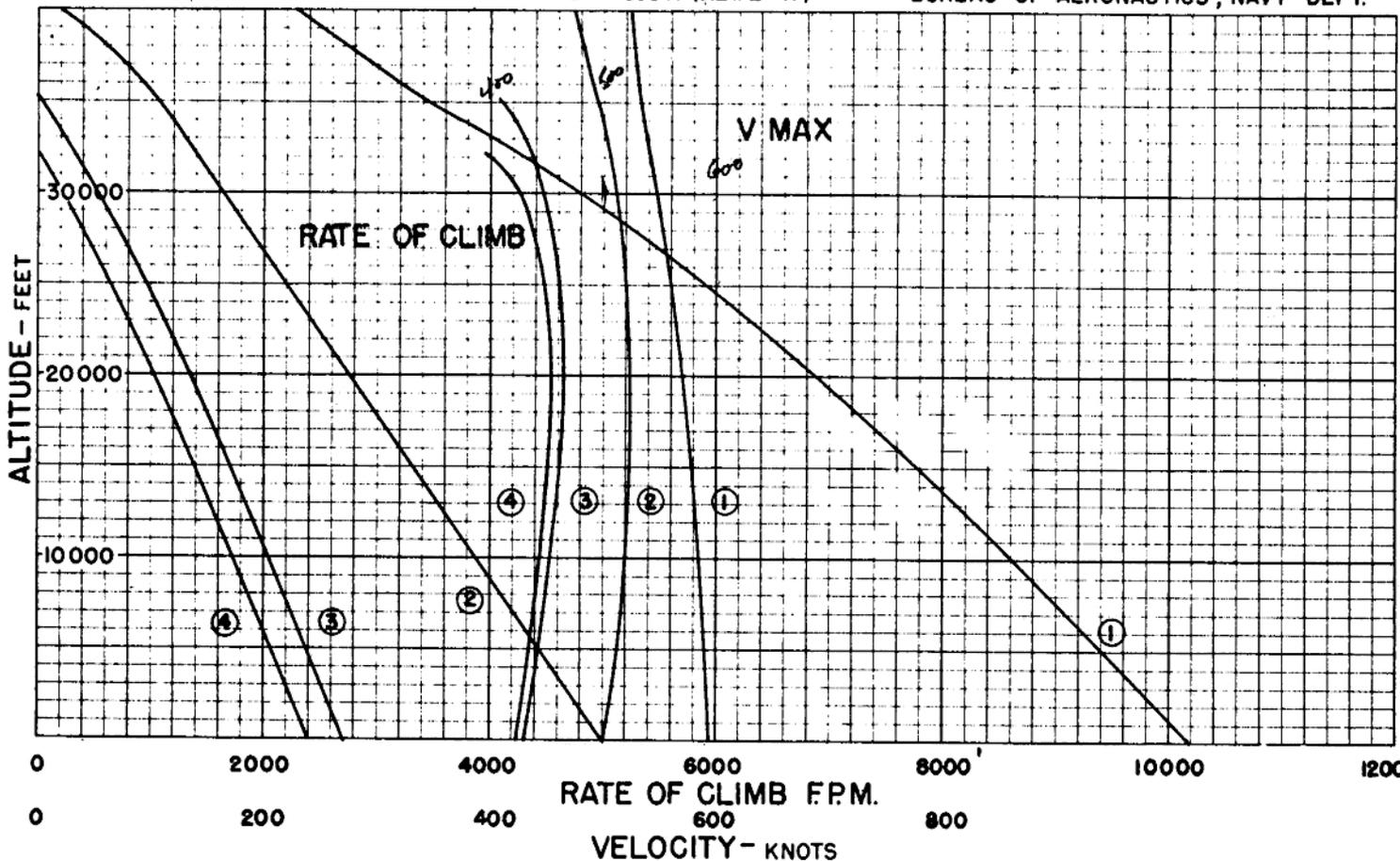
BUREAU OF AERONAUTICS, NAVY DEPT.

Performance is based on contractors estimates. Range and radius are based on specification fuel consumption data increased by 7.5% to conform with past experience.

FIGHTER COMBAT RADIUS FORMULA NO. F-3 MOD.-CONDITION NO. 4

RADIUS-CLIMB-CRUISE-OUT-CRUISE BACK

<u>WARM UP</u>	<u>ASCEND</u>	<u>CLIMB</u>	<u>CRUISE OUT</u>	<u>DESCEND</u>	<u>COMBAT</u>	<u>CRUISE BACK</u>	<u>RESERVE</u>
30 sec. at Mil Thrust	Climb to 5000 ft. Mil Thrust	to 30000 ft. Mil Thrust	at 30000 ft. at Vel. for Max. Range	to 20000 ft.	5 min. with afterburner at 20000 ft 5 min. at Mil. Thrust	at 30000 ft. at Vel. for Max. Range	15 min. at 10000 ft. 10 min. at S.L. Vel. for max. Rad.
<u>TAKE-OFF</u> 1 min. at Mil. & After- burner Thrust	10 min. <u>REND</u> Vel. for Max. Range				<u>RETURN</u> to 30000 ft. Mil Thrust		



○ LOADING CONDITION COLUMN NUMBER

PROPOSAL

GRUMMAN DES. 83