

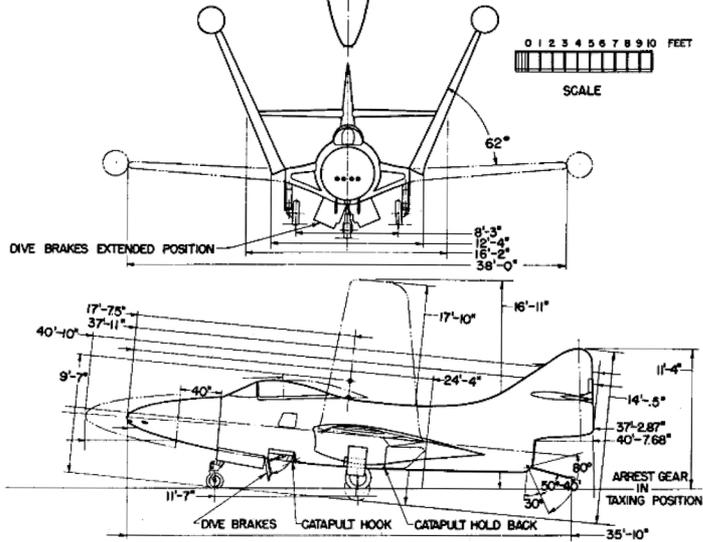
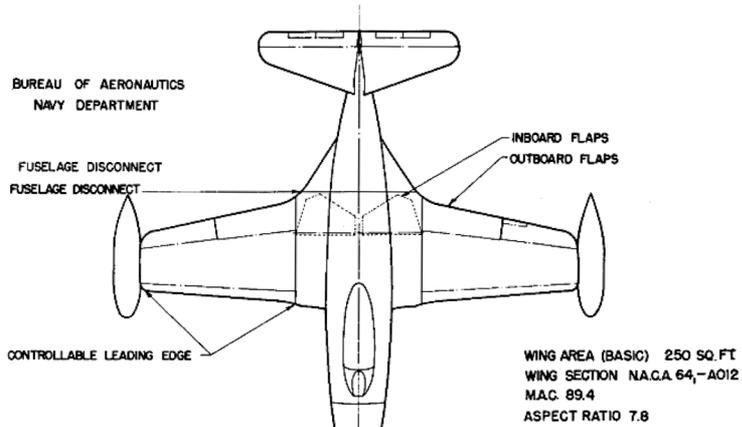


STANDARD AIRCRAFT CHARACTERISTICS

F9F-3 "PANTHER"

GRUMMAN

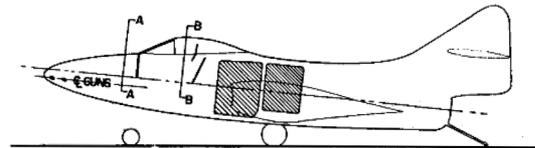
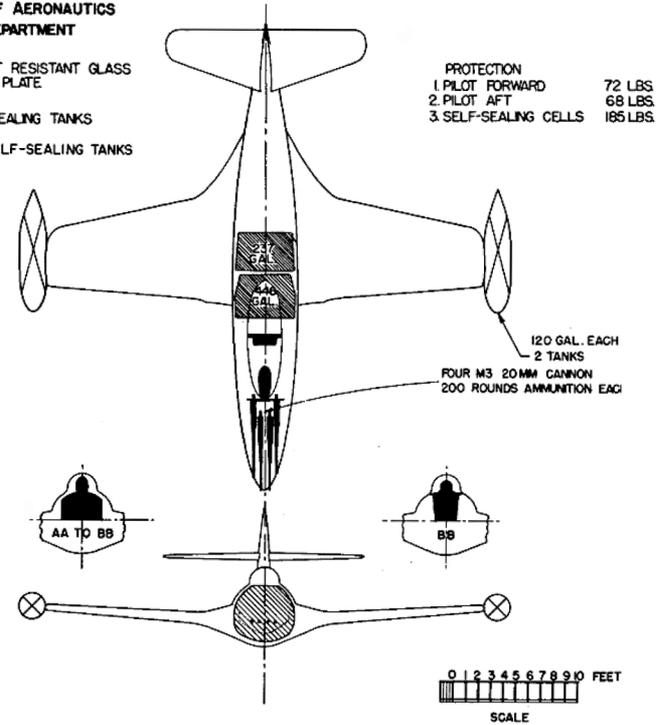
BUREAU OF AERONAUTICS
NAVY DEPARTMENT



DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

- BULLET RESISTANT GLASS ARMOR PLATE
- ▨ SELF-SEALING TANKS
- ⊗ NON SELF-SEALING TANKS



ARMAMENT & TANKS

MISSION AND DESCRIPTION

The F9F-3 is a single seat carrier-based fighter airplane whose mission is the destruction of opposing aircraft. Water injection is available to aid in take-off. Leading edge flaps are fitted for take-off and landings.

Guns and radio are accessible by sliding forward the movable nose. The engine is serviced or changed quickly by removal of the tail section of the fuselage.

All internal fuel is in two interconnected tanks and two removable tip tanks also feed automatically into the main fuel tank.

The pressurized cabin has temperature control and a Grumman ejection seat.

For normal aileron control a hydraulic boost system is provided. In case of hydraulic failure a mechanical boost is available. The canopy is hydraulically operated.

Dive brakes are located under the fuselage. All control surfaces are metal covered and spot welded. All control surfaces are equipped with conventional trim tabs.

DIMENSIONS

WING AREA.....250 sq. ft.
SPAN.....38'- 0"
LENGTH.....37'-11"
HEIGHT.....11'- 4"
TREAD.....8'- 3"
M.A.C.....7'- 5"

WEIGHTS

Loadings	Lbs.	L.F.
EMPTY.....	8,692.....	
BASIC.....	11,046.....	
DESIGN.....	13,000.....	7.0
COMBAT.....	13,540.....	7.0
MAX.T.O.....	15,754.....	6.0
MAX.LAND.....	14,200.....	

All weights are calculated.

FUEL AND OIL

Gal.	No. Tanks	Location
683	2	Fuselage (S.S.)
240	2	Wing, Tip
FUEL GRADE.....100/130		
FUEL SPEC.....AN-F-48		

OIL

CAPACITY (Gals.).....2.3
GRADE.....1010
SPEC.....AN-0-9

ELECTRONICS

COMMUNICATION.....AN/ARC-1
or AN/ARC-19
HOMING.....AN/ARR-2A
IFF.....AN/APX-1
or AN/APX-6
RADIO ALTIMETER.....AN/APN-1
ADF.....AN/ARN-6

POWER PLANT

NO. & MODEL.....(1) J33-A-8
MFR.....Allison
ENG. LENGTH.....104"
ENG. DIAMETER.....49.5"

RATINGS

	Lbs.	@ Rpm	@ Alt.
T.O. (Wet)	5400	11750	SSL
MILITARY	4600	11750	SSL
NORMAL	3900	11250	SSL

SPEC. NO. 263-C

ORDNANCE**GUNS**

No.	Size	Location	Rds.
4	20 mm	Fuselage	800

FIRE CONTROL

AFCS.....Mk. 6-Mod. 1
Radar Ranging Equip...
AN/APG-30



PERFORMANCE SUMMARY

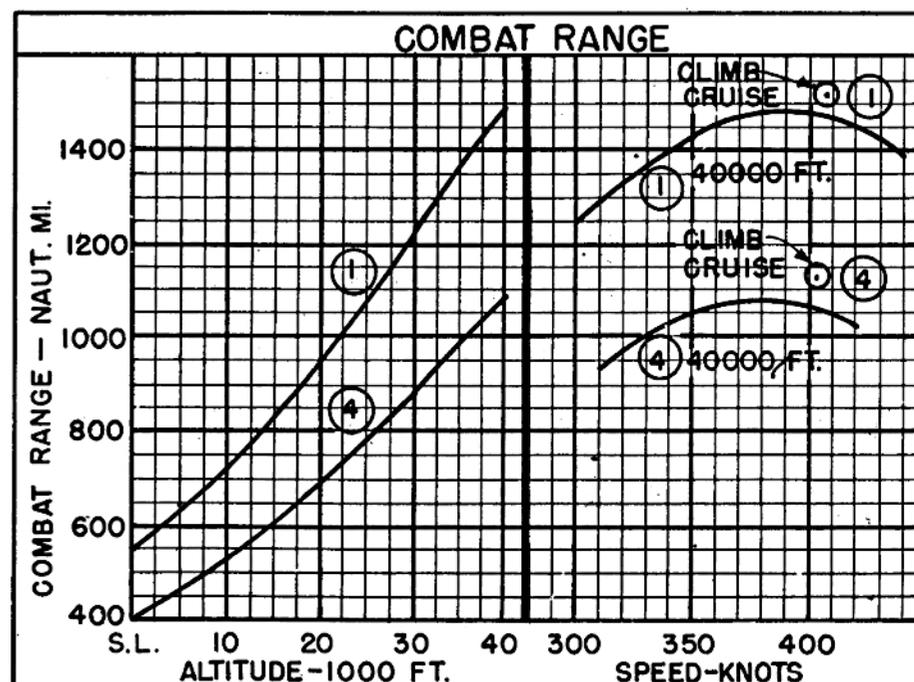
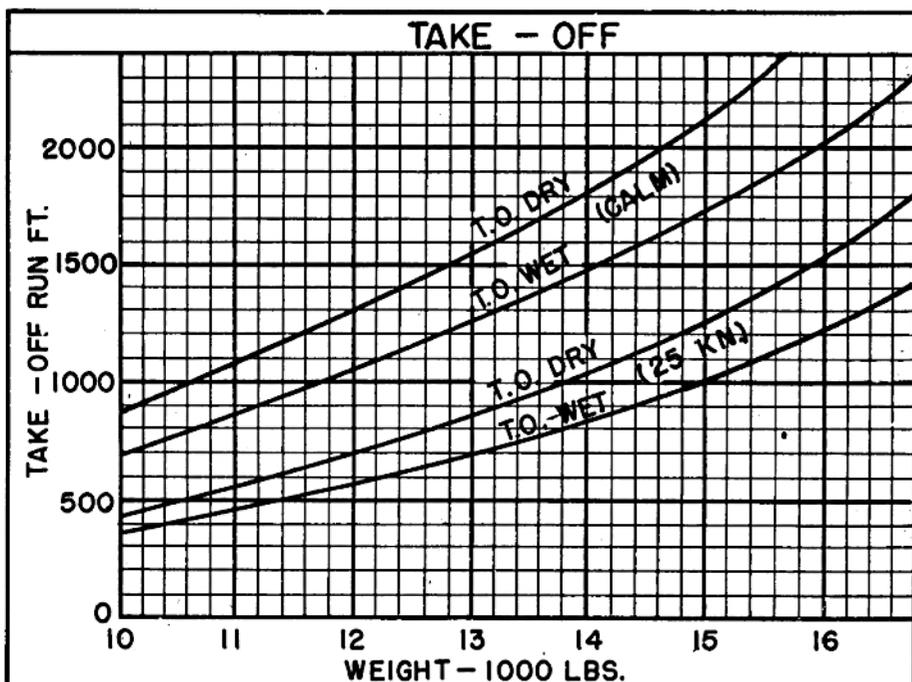
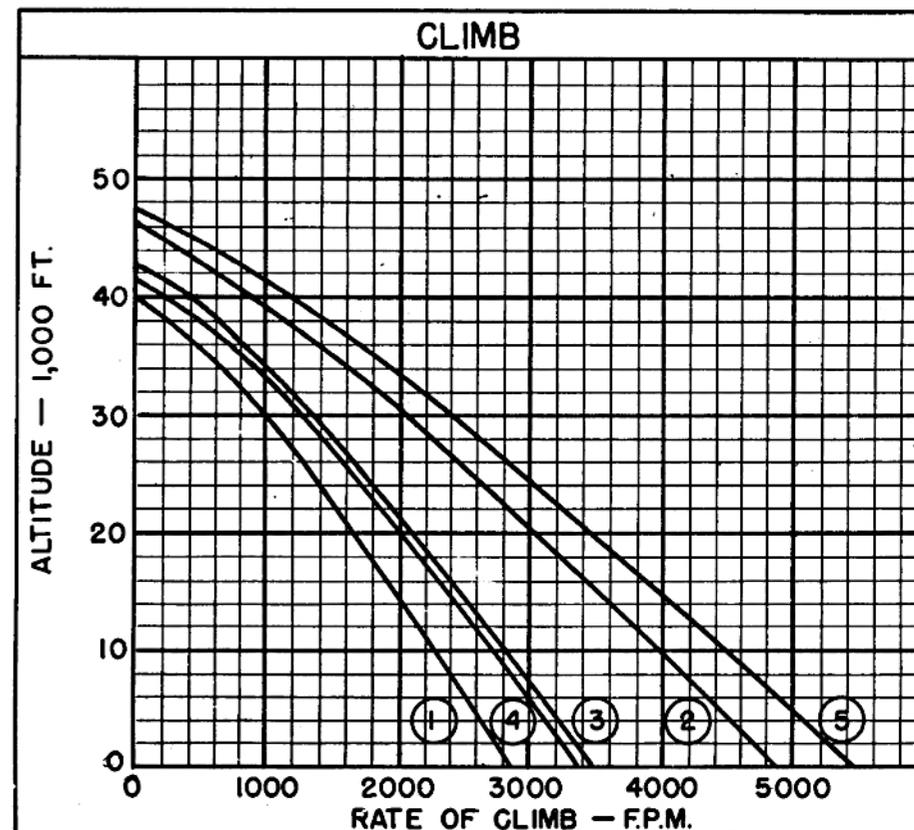
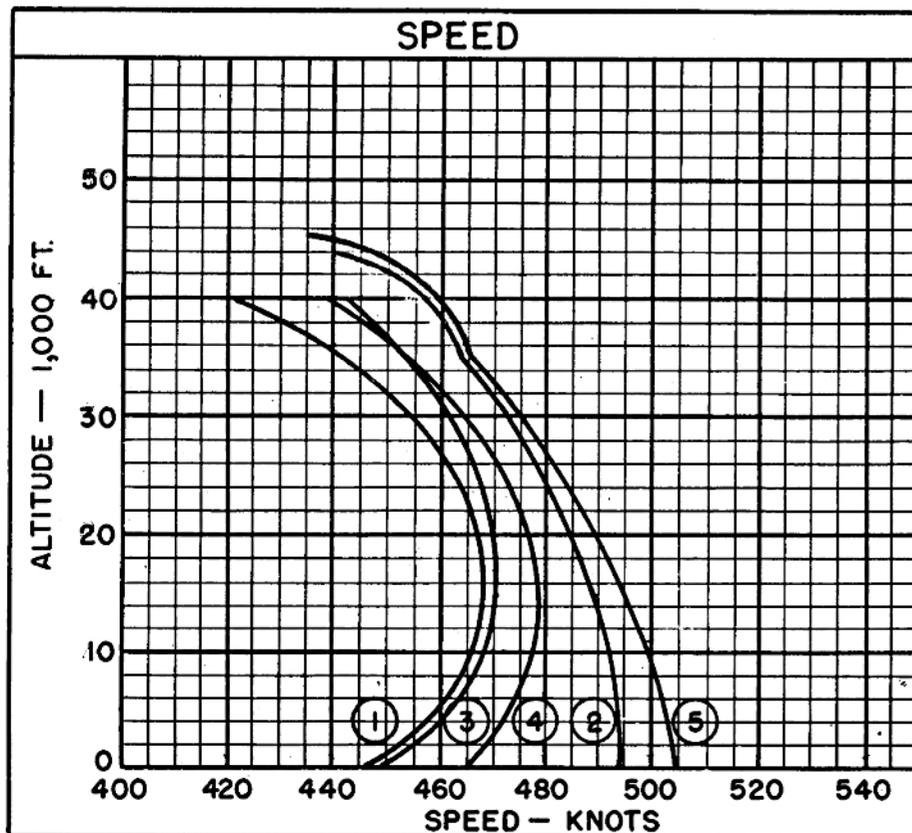
LOADING CONDITION	(1) FIGHTER 2-120 Gal. Tip Tanks	(4) FIGHTER Full Internal	
TAKE-OFF WEIGHT lbs.	15,754	14,196	
Fuel (Internal/Fixed Tip) lbs.	4,098/1,440	4,098	
Bombs lbs.	None	None	
Wing/Power Loading (A) lbs/sq.ft; lbs/bhp.	63/-	56.8/-	
Stall Speed--Power off kn.	101.9	96.7	
Stall Speed--Power off - No Fuel kn.	82.2	81.4	
Stall Speed--Power on kn.	101.9	96.7	
Maximum Speed/Alt (B) kn/ft.	469/15,000	478/15,000	
Take-off Distance, deck -- calm (C) ft.	1,965(2,430)	1,525(1,890)	
Take-off Distance, deck 25kn. (C) ft.	1,160(1,435)	870(1,080)	
Take-off Distance, Airport ft.			
Rate of climb -- sea level (B) ft/min.	2,870	3,390	
Service Ceiling (B) ft.	39,200	41,100	
Time-to-climb 20,000 ft. (B) min.	9.0	7.6	
Time-to-climb 30,000 ft. (B) min.	16.4	13.7	
Combat Range/V av (Climb) ft. n.mi/kn.	1,520/408	1,125/404	
Combat Radius/V av F-5 ft. n.mi/kn.	652/408	445/404	
LOADING CONDITION	(2) COMBAT	(3) COMBAT	(5) COMBAT
GROSS WEIGHT lbs.	13,540	13,540	12,557
Engine power	Military	Normal	Military
Fuel lbs.	3,323	3,323	2,459
Bombs/Tanks	FixedTipTanks	FixedTipTanks	No Tip Tanks
Max. speed at sea level kn.	494	450	504
Max. speed/Alt kn/ft.	494/S.L.	471/15,000	504/S.L.
Combat speed/Alt kn/ft.	464/35,000	453/35,000	466/35,000
Rate of climb SL ft/min.	4,860	3,480	5,485
Ceiling for 500 fpm R/C ft.	43,000	40,000	44,700
Time-to-climb/Alt. min/ft.	12.0/35,000	16.8/35,000	10.4/35,000

NOTES

- (A) BHP at Maximum Critical Altitude
 (B) Normal BHP
 (C) Take-off is with water injection. Figures in parentheses are with dry engine rating.

Performance is based on calculations.

 Range and radius are based on engine specification fuel consumption increased by 5%.



NOTES

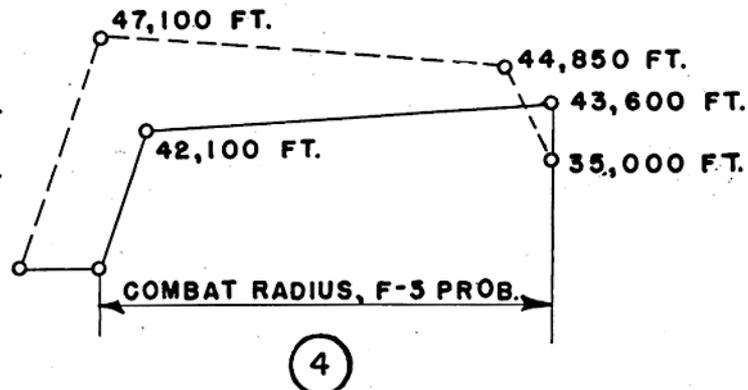
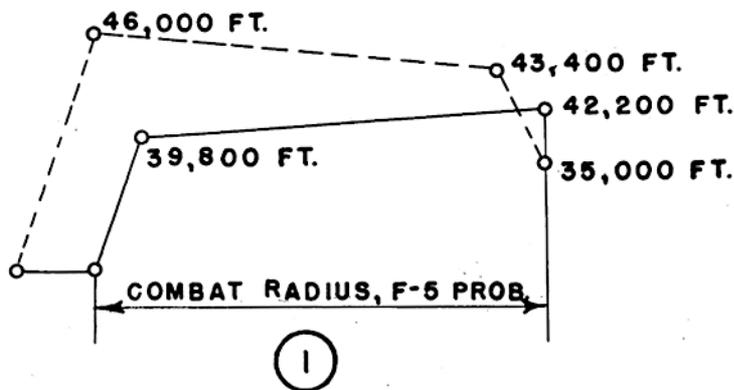
Spotting: 200 ft. length is required to spot 42 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on CV-9 class carriers.

ESCORT FIGHTER COMBAT RADIUS PROBLEM NO. F-5 (Gas Turbine Engine)

<u>WARM-UP TAXI TAKE-OFF</u>	<u>CLIMB (A)</u>	<u>CRUISE-OUT</u>	<u>DESCEND</u>	<u>COMBAT</u>	<u>CLIMB (B)</u>	<u>CRUISE-BACK</u>	<u>RESERVE</u>
5 min. at sea level static normal power of all engines	at max. rate with mil. power to initial cruise-out alt. (Alt. not greater than alt. for 300 ft./min. max. rate of climb with normal power)	with optimum range operation. (State altitudes and any special engine operations involved.)	to 35,000 ft. unless alt. at end of cruise-out is less (No fuel used, no distance made good) <u>DROP TANKS</u> only when empty and state when dropped	35,000 ft. or at alt. at end of cruise-out if less, and V_{max} , 15 min. at Mil. power of which 5 min. is with augmentation if available (Fuel used, but no distance made good)	to initial cruise-back alt. under same conditions as for Climb (A). (Fuel used and distance made good)	under same conditions as Cruise-Out	10% of total initial fuel load.

COMBAT RADIUS = CLIMB (A) \neq CRUISE-OUT = CRUISE-BACK \neq CLIMB (B)

For Condition (1) altitude at start of cruise, 39,800 feet. Altitude at end of cruise, 46,000 feet.
For Condition (4) altitude at start of cruise, 42,100 feet. Altitude at end of cruise, 47,100 feet.



Standard Aircraft Characteristics NAVAR 1335F (REV. 1-49)

AIRPLANE CHARACTERISTICS & PERFORMANCE

BUREAU OF AERONAUTICS, NAVY DEPT.

COLUMN NUMBER		1	2	3	
LOADING CONDITION		COMBAT 60% FUEL	COMBAT 60% FUEL	FIGHTER FULL FUEL	
GROSS WEIGHT	LBS.	11345	11345	12946	
EMPTY WEIGHT (ESTIMATED)	LBS.	7555			
FUEL/OIL	GALS.	400	400	667	
FIXED GUNS/AMMUNITION		4-20mm/800 Rds. - MK.6 Fire Control Sys. (MK.8 Gunsight Unit)			
FLEXIBLE GUNS/AMMUNITION		NONE			
ENGINE POWER USED FOR PERFORMANCE		MILITARY	NORMAL	NORMAL	
WING LOADING	LBS./SQ.FT.	45.4	45.4	51.8	
POWER LOADING ①	LBS./BHP.				
V-MAX. SEA LEVEL	KN.	508	454	454	
V-MAX. @ 20,000 Ft.	KN./FT.	492	474	473	
V-STALL GROSS WEIGHT ②	KN.	86.6	86.6	92.4	
V-STALL. WITHOUT FUEL ②	KN.	76.9	76.9	76.9	
TIME-TO-CLIMB -10000FT-	MIN.	1.7	2.9	3.4	
TIME-TO-CLIMB -20000FT-	MIN.	3.8	6.5	7.7	
SERVICE CEILING	FT.	48700	44700	43300	
TAKE-OFF DISTANCE -CALM-	FT.			1201	
TAKE-OFF DISTANCE -15 KN-	FT.			860	
TAKE-OFF DISTANCE -25 KN-	FT.			662	
TAKE-OFF DISTANCE -50 FT. OBST.	FT.				
TAKE-OFF TIME	SECONDS				
RATE OF CLIMB -SL-	FT./MIN.	6290	3890	3300	
MAX. RANGE / V-AV. ③ *	N MI./KN.			945/310	
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.				
RADIUS (Special Prob.) *	N MI.			320	
COMBAT RADIUS * (F-3)	N MI.			180	
ENGINE		Allison J33-A-8 Turbo Jet			
ENGINE RATING BHP/RPM/ALT.	MILITARY	NORMAL		WET T. O. RATING	
	4600# Static Thrust/11750 RPM/S.L.	3600# Static Thrust/1100 RPM/S.L.		5400# Static Thrust/11750 RPM	
TANKAGE IN GALLONS		OIL	FUEL		
AUX. FIXED	PROTECTED		667		
	UNPROTECTED				
	TOTAL - FIXED INTERNAL		667		
	DROPPABLE				
	DROPPABLE				
TOTAL			667		
NOTE	① BHP AT MAX. CRIT. ALT.				
	② STALL - WITHOUT POWER				
	③ AT 20,000' ALTITUDE				
	* Gasoline was fuel used.				

AIRPLANE CHARACTERISTICS & PERFORMANCE

BUREAU OF AERONAUTICS, NAVY DEPT.

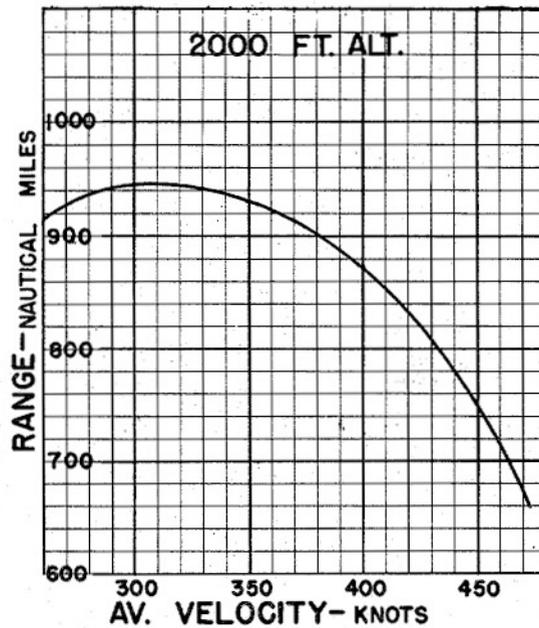
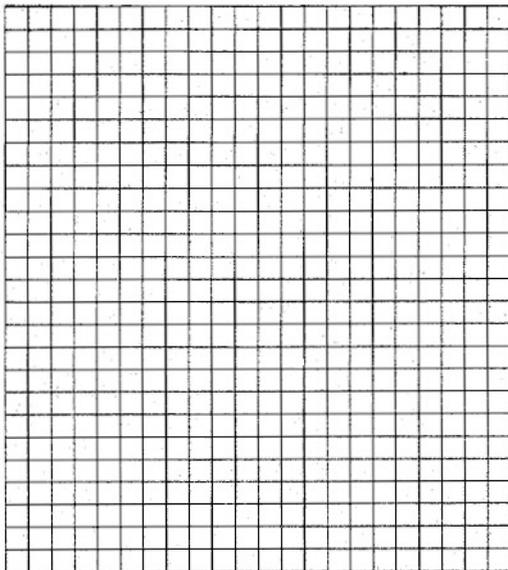
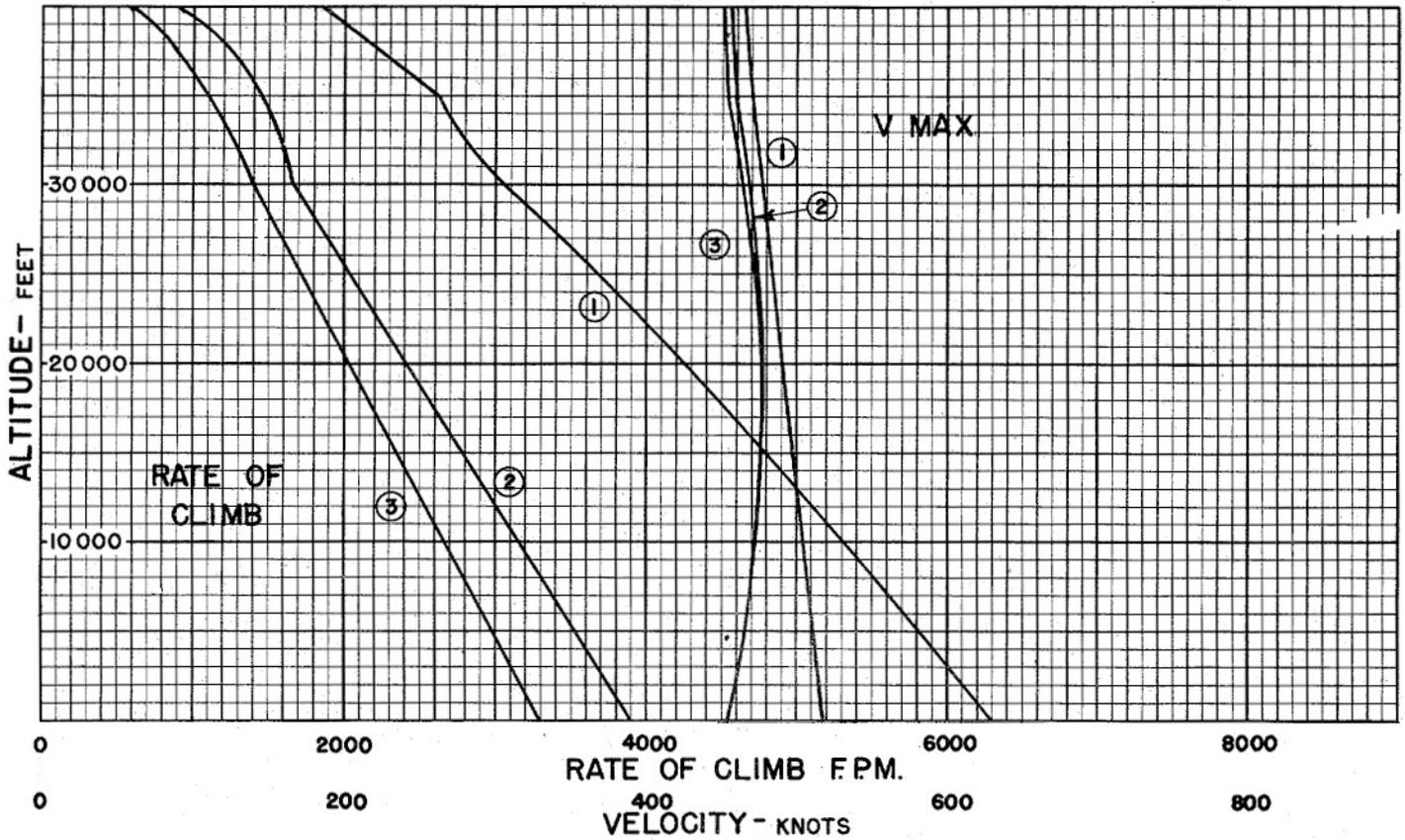
Performance is based on calculations. Range and radius are based on engine specification fuel consumption data increased by 7.5% to conform with past experience.

FIGHTER COMBAT RADIUS FORMULA NO. F-3-CONDITIONS NO. - 3					RADIUS-CLIMB-CRUISE-OUT-CRUISE BACK		
WARM-UP	RENDEZVOUS	CLIMB	CRUISE OUT	DROP TANKS and BOMBS and DESCEND to 15000 ft. FIRE ROCKETS	COMBAT	CRUISE BACK	RESERVE
30 sec. at Max Stat. Thrust	Climb to 5000 ft.	to 20000 ft.	at 20000 ft.		15 min.-V max. at 15000 ft.	at 20000 ft.	15 min. at 10000 ft.
<u>TAKE-OFF</u> 1 min. at T.O. Thrust	Mil. Thrust 10 min. REND. Vel. for Max. Range	Mil. Thrust	at Vel. for Max. Range		Mil. Thrust <u>RETURN</u> to 20000 ft. Mil. Thr.	at Vel. for Max. Range	15 min. at S.L. Vel. for max. End.

SPECIAL PROBLEM, CONDITION NO. - 3

WARM-UP	CLIMB	CRUISE-OUT	COMBAT	CRUISE BACK	DESCEND
30 sec. at Max. Stat. Thrust	to 30000' at Max. Thrust	at 30000 ft. at Vel. for Max. Range	15 min. at 30000 ft. at Mil. Thrust	at 30000 ft. at Vel. for Max. Range	to 10000 ft. 45' minutes
<u>TAKE-OFF</u> 1 min. at T.O. Thrust					<u>RENDEZVOUS</u> at 10000 ft. at Vel. for max. endurance

SPOTTING: - 200 ft. length is required to spot 42 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on CV-9 Class carriers.



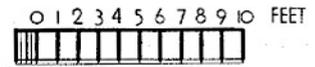
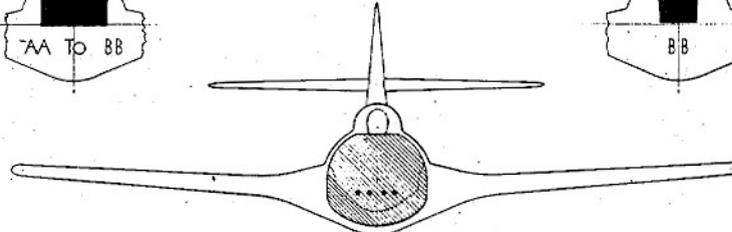
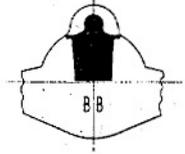
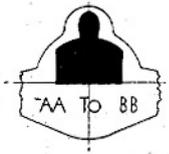
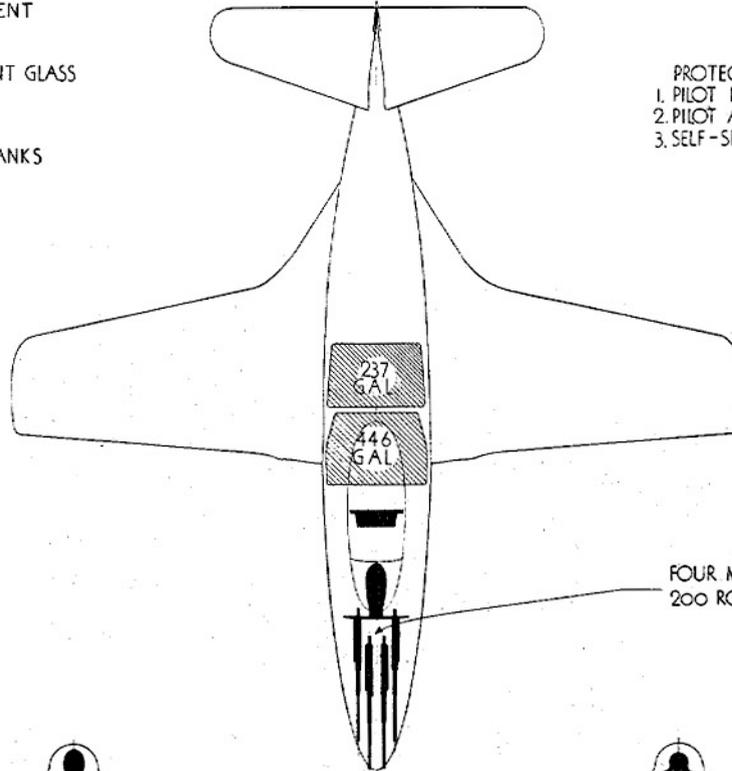
○ LOADING CONDITION COLUMN NUMBER

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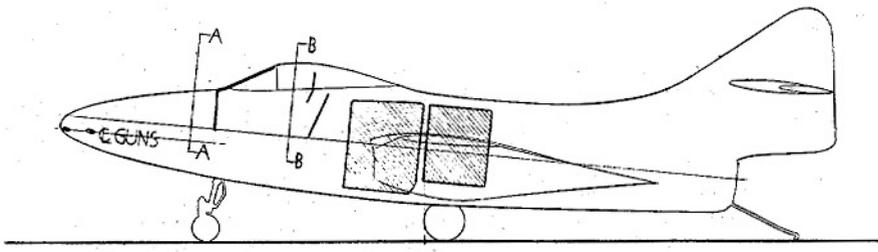
MODEL F9F-3

-  BULLET RESISTANT GLASS ARMOR PLATE
-  SELF-SEALING TANKS

- PROTECTION
- | | |
|-----------------------|----------|
| 1. PILOT FORWARD | 72 LBS. |
| 2. PILOT AFT | 68 LBS. |
| 3. SELF-SEALING CELLS | 185 LBS. |



SCALE



BUREAU OF AERONAUTICS
NAVY DEPARTMENT

