

STANDARD AIRCRAFT CHARACTERISTICS

F9F-4 "PANTHER"

GRUMMAN

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

POWER PLANT

NO. & MODEL.....(1) J33-A-16
 MFR.....Allison
 ENG. LENGTH.....100"
 ENG. DIA.....50"

RATINGS

	<u>Lbs.</u>	<u>Hph</u>	<u>Alt.</u>
T. O. (wet)	6,900	11,800	S.S.L.
MIL.	6,250	11,800	S.S.L.
NOEM.	5,125	11,300	S.S.L.

SPEC. NO. 285-B

ORDNANCE**GUNS**

<u>No.</u>	<u>Size</u>	<u>Location</u>	<u>Mag.</u>
4	20 mm	Nose	760

BOMBS & ROCKETS

<u>Rockets</u>	<u>No.</u>	<u>Location</u>	<u>Max. Cap.</u>
Aero 14A	6	Wing	500lbs.
Mk. 51-12			
or			
Mk. 51-11	2	Wing	1000lbs.

MAX. BOMB CAPACITY 1000lbs.

FIRE CONTROL

AFCS Mk. 6-0

MISSION AND DESCRIPTION

The F9F-4 is a carrier based single seat fighter airplane designed to destroy opposing aircraft and for ground support operation. Twenty-five gallons of water injection is available to aid in take-off.

Leading edge flaps, under-fuselage split flaps, and wing slotted flaps are fitted. The guns and radio are accessible by sliding forward the movable nose. The engine is serviced or changed by removal of the tail section of the fuselage.

Two removable tip tanks feed into the main fuel tank. These tanks are not droppable in flight.

A pressurized cabin with temperature control and a Grumman ejection seat are installed.

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

Dive brakes are located under the fuselage. All control surfaces are metal covered and spot welded. The elevator is electrically trimmed.

DIMENSIONS**WING**

AREA.....	250 sq. ft.
SPAN.....	35' - 0"
M.A.C.....	7' - 5"
LENGTH.....	38' - 10"
HIGHT.....	12' - 3"
TERRAD.....	5' - 3"

WEIGHTS

<u>Loading</u>	<u>Lbs.</u>	<u>L.F.</u>
EMPTY.....	10,042.....	
BASIC.....	10,950.....	
DESIGN.....	14,900..7.5	
COMBAT.....	15,264.....	
MAX.T.O..(Field)	21,250*.....	
	(Cat.) 20,600.....	
MAX.LAND.(Field)	16,000.....	
	(Arrest.) 14,000..4.0	

All weights are actual.
 *Maximum anticipated loading.

FUEL AND OIL

<u>Gals.</u>	<u>No. Tanks</u>	<u>Location</u>
763	2	Fus., S.S.
240	2	Wing. Tip

FUEL GRADE....80 or higher
 FUEL SPEC.....MIL-F-557E

OIL

CAPACITY (Gals.).....2.4
 GRADE.....1010
 SPEC.....MIL-O-60815

ELECTRONICS

VHF COM1....AN/ABC-1 or -1A
 VHF COM2....AN/ABC-27
 (P.S.I.-Repl.for AN/ABC-1)
 UHF D.F....AN/ABA-25(P.S.I.)
 HOMING.....AN/ABR-2A
 HOMING...AN/ABR-21 (P.S.I.-
 Repl. for ABR-2A & ABR-6)
 ALTIMETER.....AN/APN-1
 IFF.....AN/APX-6
 RADAR RANGING EQUIP...AN/APG
 -30
 ANT.....AN/ABN-6

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) FIGHTER Fixed Tip Tanks	(3) GRD. SUPPORT 6-5" HVAR Rocket Fixed Tip Tanks
TAKE-OFF WEIGHT	lb. 17,671	18,626
Fuel (Internal/Fixed Tip)	lb. 4578/1440	4578/1440
Payload	lb. 471	1311
Wing loading	lb./sq.ft. 70.7	74.5
Stall speed - power-off	(C) kn. 113.8	118.1
Take-off run at S.L. - calm	(C) ft. (Dry) 2,238	(Dry) 2,470
Take-off run at S.L. 25 km. wind	(C) ft. (Dry) 1,422	(Dry) 1,548
Take-off to clear 50 ft. - calm	ft. ---	---
Max. speed/altitude	(A) kn./ft. 487/10,000	426/15,000
Rate of climb at S.L.	(B) fpm 4,730	3,750
Time: S.L. to 20,000 ft. (B)	min. 5.1	7.5
Time: S.L. to 30,000 ft. (B)	min. 8.8	16.0
Service ceiling (100 fpm) (B)	ft. 43,300	32,700
Combat range	n.mi. 1,150	785
Average cruising speed	kn. 430	355
Cruising altitude(s)	ft. 42,000/46,900	30,800/34,400
Combat radius	n.mi. 435	165
Average cruising speed	kn. 430	355
COMBAT LOADING CONDITION	(2) FIXED TIP TANKS	(4) FIXED TIP TANKS 6-144 Launchers
COMBAT WEIGHT	lb. 15,264	15,379
Engine power	Military	Military
Fuel	lb. 3,611	3,611
Combat speed/combat altitude	kn./ft. 475/35,000	503/8, L.
Rate of climb/combat altitude	fpm/ft. 1950/35,000	43,000
Combat ceiling (500 fpm)	ft. 43,000	5,560
Rate of climb at S.L.	fpm 5,600	503
Max. speed at S.L.	kn. 515	503/8, L.
Max. speed/altitude	kn./ft. 515/8, L.	
LANDING WEIGHT	lb. 12,728	
Fuel	lb. 1,075	
Stall speed - power-off	kn. 105.8	
Stall speed - with approach power	kn. 103.3	

(A) Normal Rated Thrust

NOTES

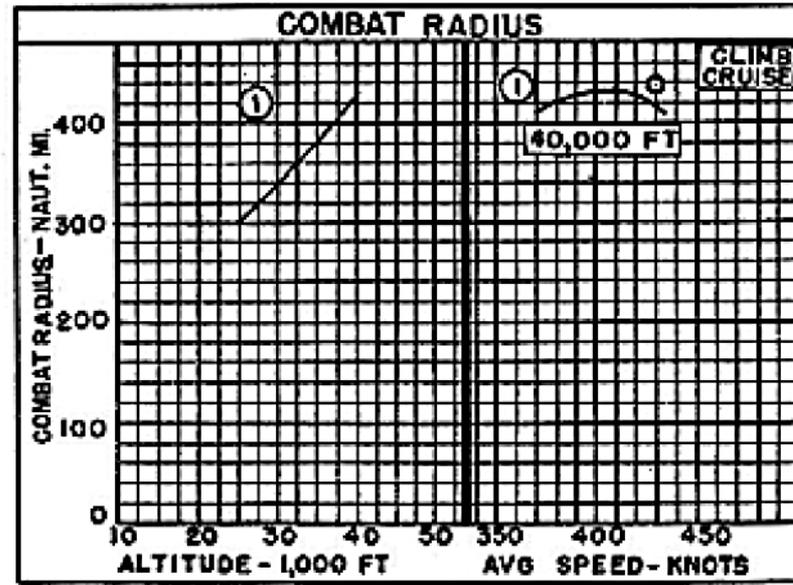
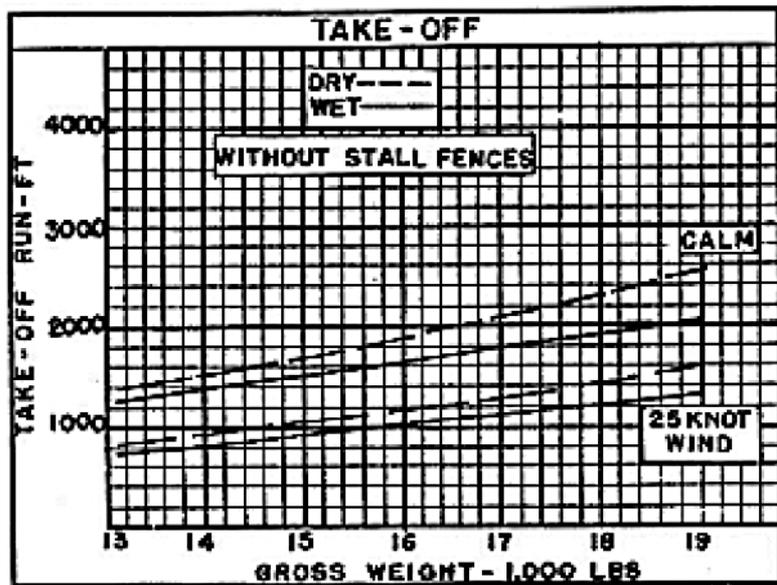
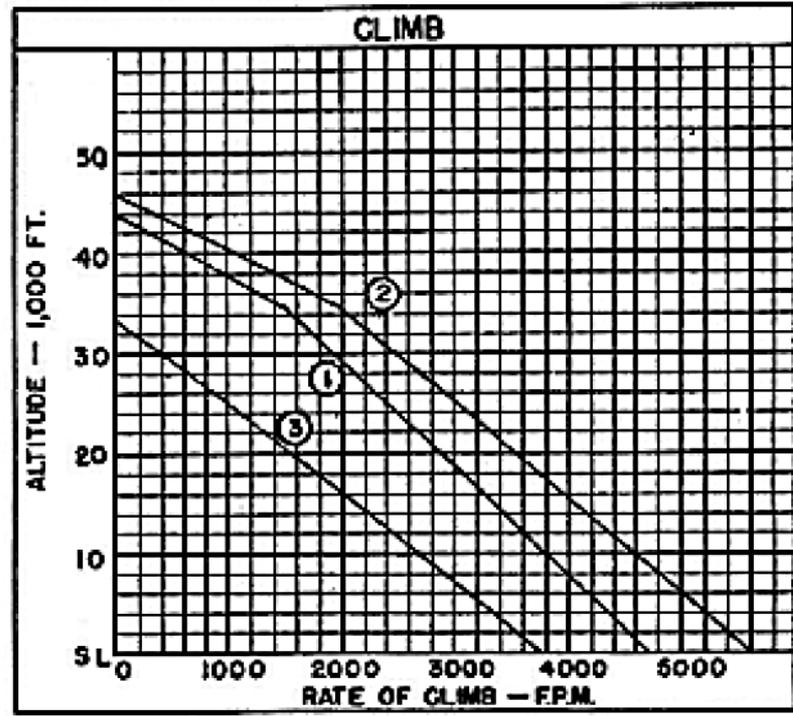
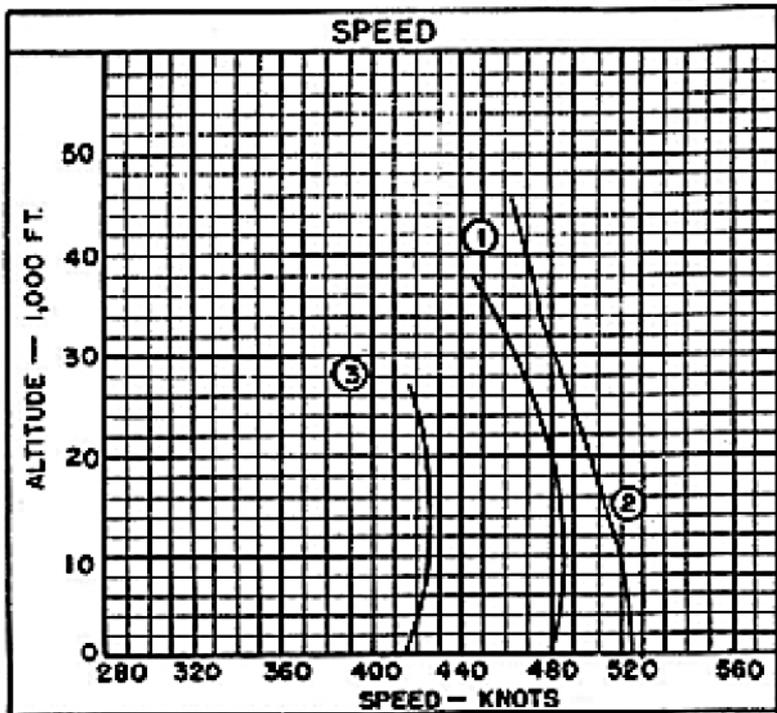
(B) Military Rated Thrust

(C) Without Stall Fences

Performance is based on NATC flight test of the P9F-4 airplane

Range and radius are based on flight test fuel consumption increased by 5%

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○ LOADING CONDITION COLUMN NUMBER

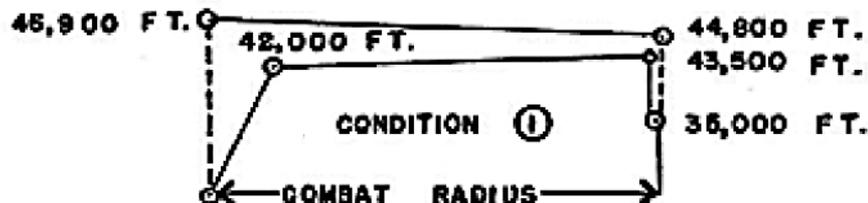
NOTES

SPOTTING: 200 ft. length is required to spot 28 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on CV-9 class carriers.

GENERAL PURPOSE AND ESCORT FIGHTER COMBAT RADIUS PROBLEM

WARM-UP, TAXI, TAKE-OFF: 5 minutes at normal power
CLIMB: To cruising ceiling at military power (cruising ceiling = altitude for 300 ft/min. at normal power)
CRUISE-OUT: At velocity for long range at cruising ceiling
DESCEND: To 35,000 ft. (no fuel used, no distance gained)
COMBAT: At 35,000 ft. for 20 minutes at military power. (Assume combat concluded at initial cruise-back altitude)
CRUISE-BACK: At velocity for long range at cruising ceiling
RESERVE: 20 minutes at velocity for maximum endurance at S.L. plus 5% of initial fuel load

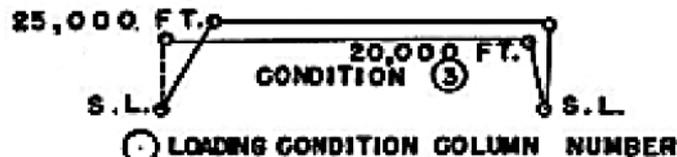
COMBAT RADIUS = CLIMB + CRUISE-OUT + CRUISE-BACK



Based on F-5 problem, combat radius would increase to 515 N.Mi.
 Based on reserve fuel allowance of F-5 problem (10% of initial fuel load), range would increase to 1310 N.Mi.
 Radius is reduced approximately 6.5 N.Mi. for each additional minute of combat

GROUND SUPPORT FIGHTER COMBAT RADIUS PROBLEM

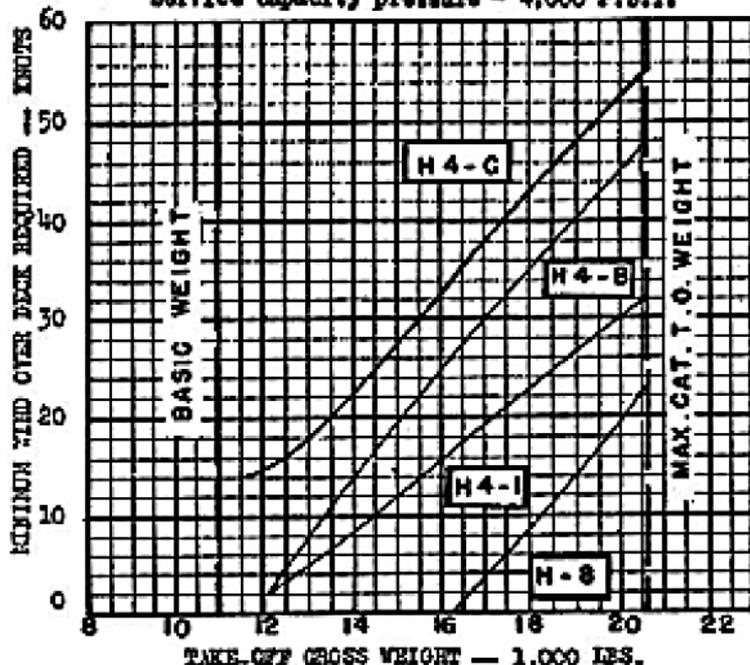
WARM-UP, TAXI, TAKE-OFF: 5 minutes at normal power
CLIMB: To altitude for max. radius (25,000 ft.) at military power
CRUISE-OUT: At velocity for long range at cruising altitude
DESCEND: To S.L. (No fuel used, no distance gained)
LOITER: 10 minutes at airspeeds for maximum endurance at S.L.
DROP BOMBS AND FIRE EXTERNAL ROCKETS
COMBAT: At S.L. for 10 minutes at military power
CLIMB: To altitude for maximum radius (20,000 ft.) at military power
CRUISE-BACK: At velocity for long range at 20,000 ft.
RESERVE: 20 minutes at velocity for maximum endurance at S.L. plus 5% of initial fuel load.



CARRIER SUITABILITY

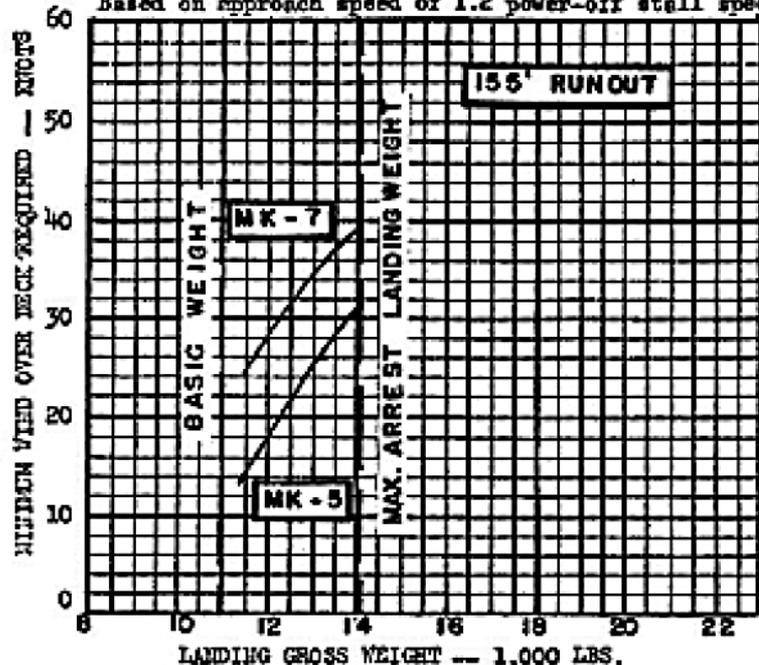
MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING
VS. GROSS WEIGHT

Based on minimum safe take-off speed
Service capacity pressure = 4,000 P.S.I.



MINIMUM WIND OVER DECK REQUIRED FOR LANDING
VS. GROSS WEIGHT

Based on approach speed of 1.2 power-off stall speed



NOTES

- (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) Based on NATC flight test.

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