

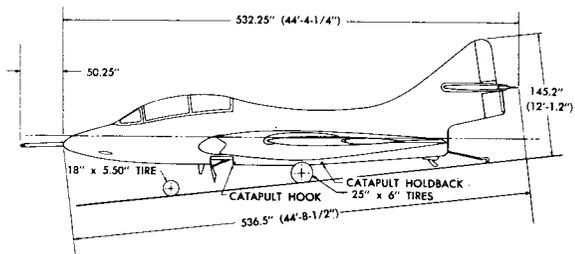
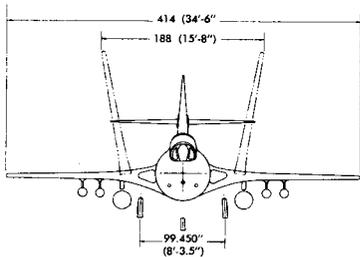
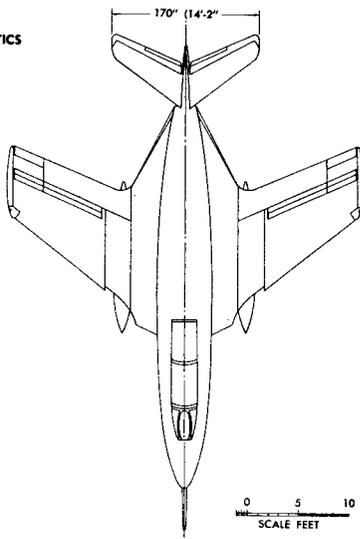


STANDARD AIRCRAFT CHARACTERISTICS

TF-9J COUGAR

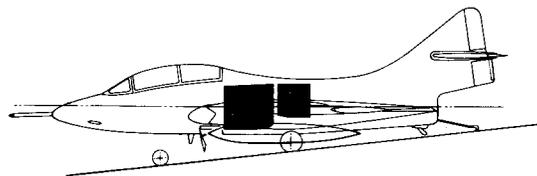
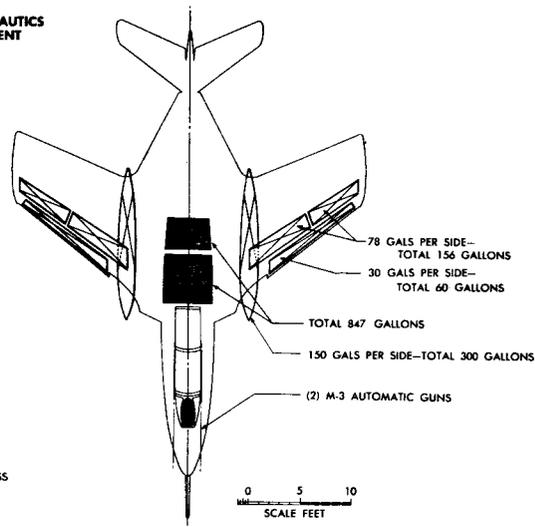
GRUMMAN

BUREAU OF AERONAUTICS
NAVY DEPARTMENT



DESCRIPTIVE ARRANGEMENT
F9F-8T

BUREAU OF AERONAUTICS
NAVY DEPARTMENT



ARMAMENT & TANKAGE
F9F-8T

POWER PLANT

NO. & MODEL.....(1) J48-P8A
 MFR.....Pratt & Whitney
 TYPE.....Centrifugal Compressor
 ENG. LENGTH.....110.0"
 ENG. DIAMETER.....51.0"

RATINGS

	LBS.	@	RPM	@	ALT.
T.O.	7,250		11,000		S.S.L.
MIL.	7,250		11,000		S.S.L.
NORM.	5,600		10,400		S.S.L.

SPEC. NO. N-1614E, Appendix A

ORDNANCE

GUNS
 2 20mm M-3 Fuse. 260 rds

FIRE CONTROL
 ACS AERO 5D-1
 AFCS MK 6 Mod. 3
 RADAR AN/APG-30A
 LABS AERO 18C
 RANGE RADAR AN/APG-30A

EXTERNAL STORES PROVISIONS

Wing Sta.	Rack	Capability
71	Aero 65A	Bombs (1000# Max.) Rocket Pkgs.; 150 gallon Fuel Tank
96 & 117	Aero 15B	Bombs (500# Max.) Rocket Pkgs. Sidewinders
	Universal Pylon & Launcher Mod. D	

MISSION AND DESCRIPTION

The F9F-ST is a two seat version of the swept-wing F9F-8. Its basic mission is training, secondary missions of the F9F-ST are the same as the F9F-8.

It differs from the F9F-8 in providing an additional cockpit which adds 34 inches to the overall length of the airplane. This cockpit is virtually identical to the F9F-8 cockpit in equipment controls and visibility. In-flight refueling provisions are standard equipment.

The Landing Signal Officer or Minor Landing Aid are visible from both cockpits during the carrier approach. Both cockpits may be used interchangeably by the instructor of the student. The forward cockpit is occupied by the pilot in solo flight.

Single point ejection seats are installed in the F9F-ST. Ejector is accomplished by the face curtain method.

DEVELOPMENT

First Production Airplane.....July 1956
 Fleet Delivery.....March 1957

DIMENSIONS

WING
 AREA.....337 sq. ft.
 SPAN.....34' - 6"
 MAC.....119.83
 SWEEPBACK C/4.....35°

LENGTH.....44' - 1/4"
 (INCL. FUEL BOOM).....48' - 6 1/2"
 HEIGHT.....12' - 1"
 TREAD.....8' - 3"

WEIGHTS

LOADINGS	LBS.	Lt.E.
EMPTY.....	12,768	
BASIC.....	13,863	7.0
DESIGN.....	16,780	
COMBAT.....	17,790	7.0
MAX. T.O. (Field).....	25,500	
(Cat.).....	25,500	
MAX. LAND (Field).....	25,500	
(Arrest).....	17,600	

FUEL AND OIL

GALS.	NO. TANKS	LOCATION
847	2	Fuse. C.S.
216	6	Wing Internal
300	2	Wing Droppable

FUEL GRADE.....JP-4
 FUEL SPEC.....applicable...MIL-F-5624

OIL

CAPACITY (Gals).....3.25
 GRADE.....1010
 SPEC.....applicable...MIL-O-6081

ELECTRONICS

UHF.....AN/ARC-27A
 UHF DF.....AN/ARA-25
 ADF.....AN/ARN-6
 IFF.....AN/APX-6B
 Radar Altimeter.....AN/APN-22

Provisions for Service Installation of

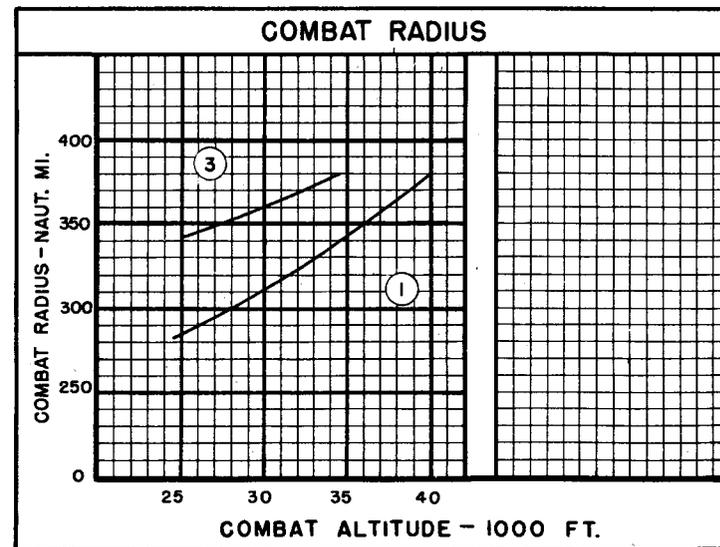
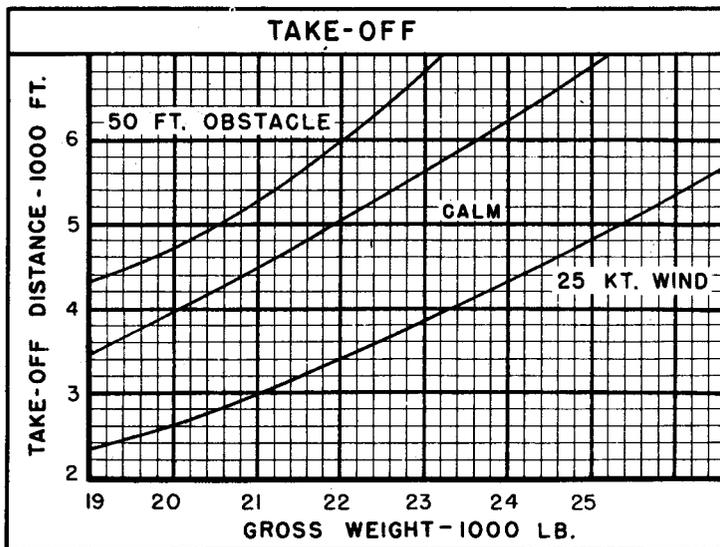
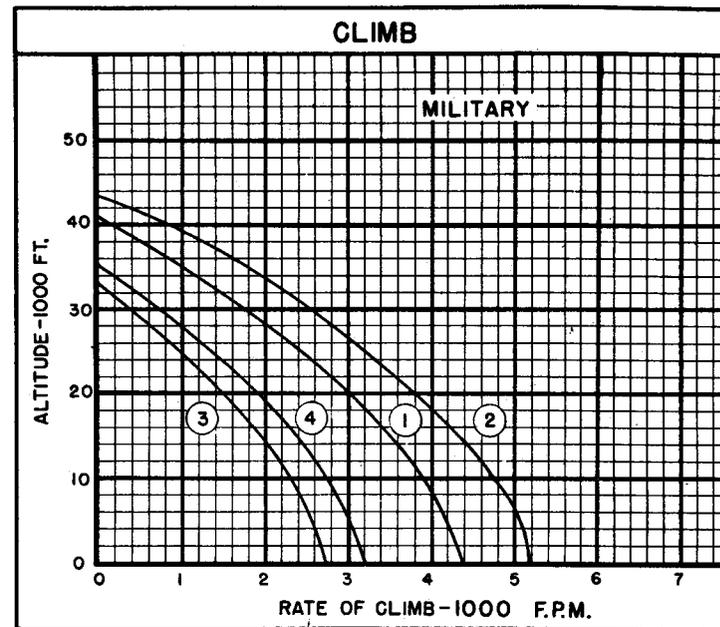
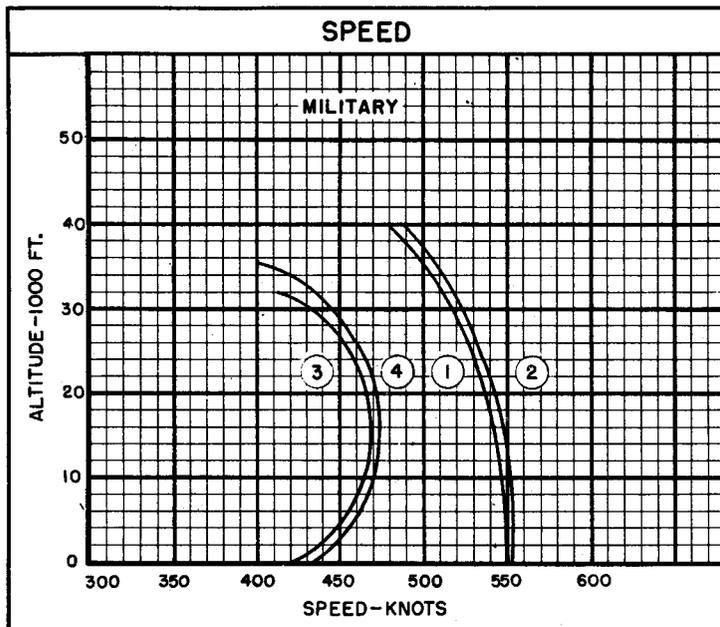
TACAN.....AN/ARN-21
 SIF.....AN/APA-89
 UHF RADIO REC.....AN/ARR-40

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) General Purpose Fighter Guns - Int. Fuel	(3) General Purpose Fighter 4-Sidewinders + guns 2-150 gal. Drop Tanks		
TAKE-OFF WEIGHT	lb.	20,574	24,178		
Fuel internal/external (JP-4)	lb.	6930/-	6930/1950		
Fayload	lb.	124	977		
Wing loading	lb./sq.ft.	61.1	71.7		
Stall speed - power-off	kn.	114.6	124.4		
Take-off run at S.L. - calm	ft.	4200	6400		
Take-off run at S.L. 25 kn. wind	ft.	2800	4500		
Take-off to clear 50 ft. - calm	ft.	5000	8000		
Max. speed/altitude (A)	kn./ft.	550/S.L.	469/15,000		
Rate of climb at S.L. (A)	fpm.	4400	2770		
Time: S.L. to 20,000 ft. (A)	min.	5.1	8.7		
Time: S.L. to 30,000 ft. (A)	min.	9.0	16.8		
Service ceiling (100 fpm) (A)	ft. (B)	40,400	32,300		
Combat range	n.mi.	845	780		
Average cruising speed	kn.	424	345		
Cruising altitude(s)	ft.	36,000/40,500	26,400/38,200		
Combat radius/Mission Time	n.mi.	340/1.9	380/2.6		
Average cruising speed	kn.	424	342		
CAP Loiter @ 30,000 ft./Mission Time	hr./hr.		.81/2.0		
IFR - Radius/Mission Time (C)	n. mi./hr.		655/4.3		
COMBAT LOADING CONDITION		(2) Clean (with guns)	(4) Drop Tanks Off 4-Sidewinders + guns 2-Aero 65A Racks	(5) Drop Tanks Off 2-Aero 65A Racks 4-Sidewinder Racks	
COMBAT WEIGHT	lb.	17,802	22,446	21,355	
Engine power (B)		Military	Military	Military	
Fuel	lb.	4158	6930	6930	
Combat speed/combat altitude	kn./ft.	500/35,000	410/35,000	460/35,000	
Rate of climb/combat altitude	fpm/ft.	1800/35,000	50/35,000	770/35,000	
Combat ceiling (500 fpm)	ft.	41,000	31,700	36,000	
Rate of climb at S.L.	fpm.	5200	3220	4120	
Max. speed at S.L.	kn.	553	435	482	
Max. speed/altitude	kn./ft.	553/S.L.	474/17,000	503/13,000	
LANDING WEIGHT	lb.	14,073	14,983	14,983	
Fuel	lb.	1247	1376	1376	
Stall speed - power-off/with approach power	kn./kn.	95.2/91.8	97.8/94.6	97.8/94.6	
Landing distance - gnd. roll/over 50' obst. ft/ft		2760/3950	2950/4220	2950/4220	

NOTES

- (A) MILITARY RATED THRUST
 (B) RPM limited to 98.3% above 30,000 ft. due to tailpipe temperature limitation. Limitation would decrease V_{max} at 35,000 ft. by 1.5%; Service Ceiling by 5%; R/C at 35,000 ft. by 20%
 (C) IN-FLIGHT REFUELING - Outbound only. Transfer 5079 lbs. @ 348 n. mi. Out. Radius is reduced 14.0 n. mi. and refueling allowance is increased 5 minutes for each additional aircraft up to a total of 3 aircraft
 PERFORMANCE BASIS: Calculated data; contractor's and NATC flight test data
 RANGE AND RADIUS: Based on contractor's flight test fuel consumption data increased by 5%
 External fuel tanks are dropped when empty
 MISSION TIME: Any time where fuel is used and distance gained including CAP Loiter, Combat and Refueling Allowance Time
 (D) BASIS: Estimated data of 15 April 1954



○ LOADING CONDITION COLUMN NUMBER

5

NOTES

SPOTTING: A total of 103 airplanes can be accommodated on the flight and hangar decks of a CVA-19 class angled deck carrier.

GENERAL PURPOSE AND ESCORT FIGHTER

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE OUT: At altitudes and speeds for maximum range.
 COMBAT FUEL ALLOWANCE: At 35,000 ft., 20 min. at maximum speed with military rated thrust. (Assume combat concluded at initial cruise back altitude).
 CRUISE BACK: At altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

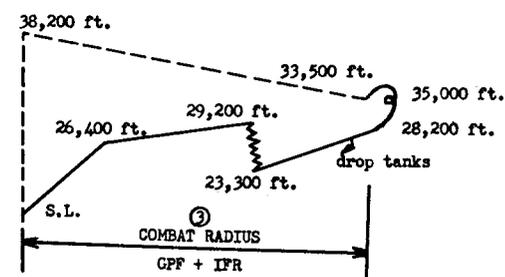
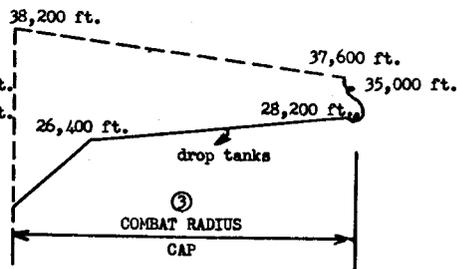
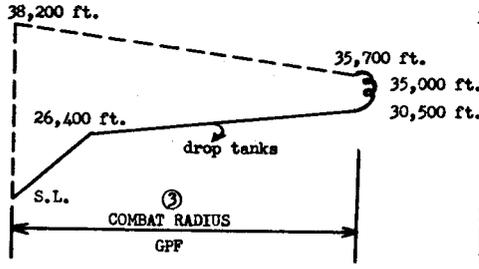
COMBAT AIR PATROL

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal rated thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE: To a point 150 nautical miles from base at altitudes and speeds for maximum range.
 LOITER: On station at speed for maximum endurance at approximate final cruise out altitude.
 COMBAT FUEL ALLOWANCE: At 35,000 ft. for 20 min. at maximum speed with military rated thrust.
 CRUISE: Back to base 150 nautical miles at altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

GENERAL PURPOSE FIGHTER WITH INFLIGHT REFUELING

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE OUT: At altitude and speeds for maximum range. External tanks retained.
 REFUELING ALTITUDE, 30,000 ft.: No distance gained.
 ALLOWANCE FOR RENDEZVOUS, HOOK-UP, AND FLIGHT CONTINGENCIES: 15 minutes at maximum endurance air speeds. (Assume no fuel used, no distance gained during transfer of fuel).
 REFUEL POINT: Limited to return of aircraft to base with normal reserve if contact for refueling is not made.
 CRUISE: Continue cruise out at altitudes and speeds for maximum range - External tanks dropped when empty.

The remainder of the problem is the same as the general purpose and escort fighter problem of loading condition column (3).



If JP-5 fuel is used, the following are applicable:

	△ WEIGHT	△ RANGE	△ RADIUS	△ MISSION TIME
① General Purpose Fighter; Clean	+ 320 lb.	+ 70 n. mi.	+ 35 n. mi.	+ .156 hr.
③ General Purpose Fighter; 4 Sidewinders + 2-150 gal. drop tanks	+ 410 lb.	+ 66 n. mi.	+ 33 n. mi.	+ .166 hr.
③ Combat Air Patrol; 4 Sidewinders + 2-150 gal. drop tanks	+ 410 lb.	--	--	+ .123 hr.
③ General Purpose Fighter - IFR; 4 Sidewinders + 2-150 gal. drop tanks	+ 410 lb.	--	+ 44 n. mi.	+ .151 hr.

With JP-5, an increase of 400 lbs. of fuel is used to extend refueling point 26 n. mi. for IFR problem (3). Total fuel transferred 5310 lbs. at 374 n. mi. out. JP-5 IFR radius is increased 42 n. mi. to a radius of 700 n. mi.

○ LOADING CONDITION COLUMN NUMBER