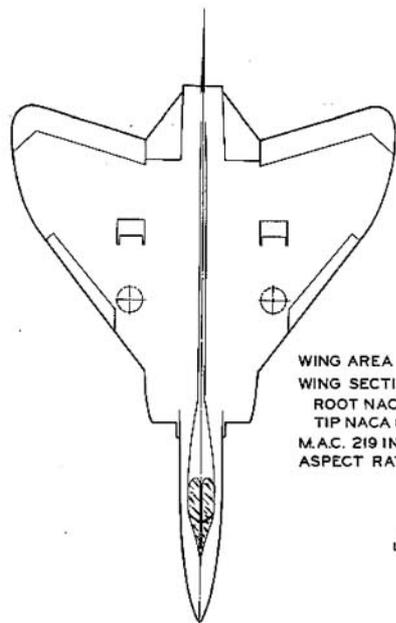




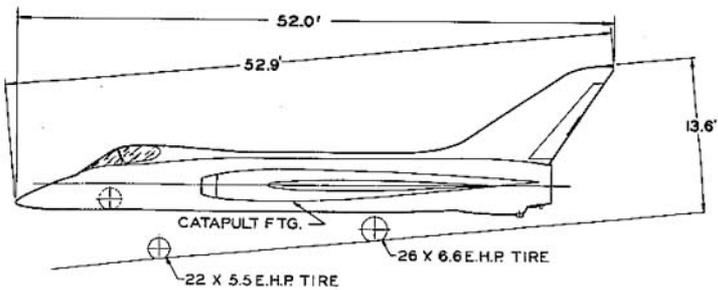
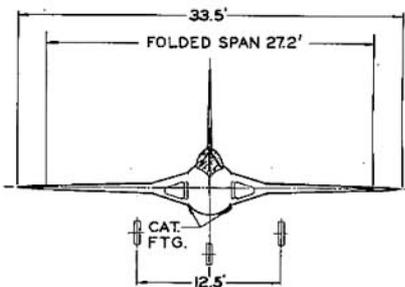
STANDARD AIRCRAFT CHARACTERISTICS F4D-2 "SKYRAY"

DOUGLAS

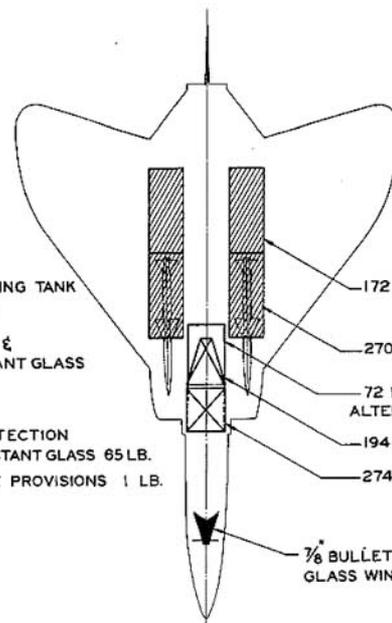


WING AREA 557 SQ. FT.
 WING SECTION:
 ROOT NACA 0005-11-30-6° MOD.
 TIP NACA 0003.2-11-30-6° MOD.
 M.A.C. 219 INCHES
 ASPECT RATIO 2.02

0 1 2 3 4 5 6 7 8
 SCALE



DESCRIPTIVE ARRANGEMENT



⊠ NCN SELF-SEALING TANK
 ▨ INTEGRAL TANK
 ■ ARMOR PLATE & BULLET RESISTANT GLASS

PILOT PROTECTION
 1. BULLET RESISTANT GLASS 85 LB.
 2. ARMOR PLATE PROVISIONS 1 LB.

172 GAL.

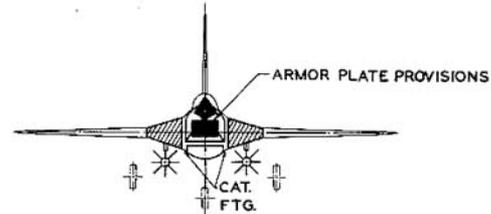
270 GAL.

72 FFAR ROCKETS
 ALTERNATE 4-MK12-20MM GUNS
 500 RDS. AMMO.

194 GAL.

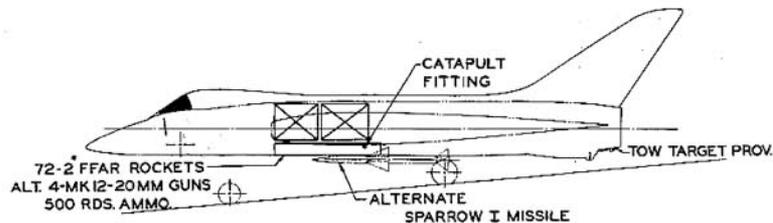
274 GAL.

7/8 BULLET RESISTANT
 GLASS WINDSHIELD



ARMOR PLATE PROVISIONS

CAT. FTG.



72-2 FFAR ROCKETS
 ALT. 4-MK12-20MM GUNS
 500 RDS. AMMO.

CATAPULT
 FITTING

TOW TARGET PROV.

ALTERNATE
 SPARROW I MISSILE

0 1 2 3 4 5 6 7 8
 SCALE

ARMAMENT & TANKAGE

Standard Aircraft Characteristics NAVAER 13358 (REV. 1-11-19)

POWER PLANT

NO. & MODEL.....(1) J57-F-4
 MFR.....Pratt & Whitney
 TYPE.....2 Rotor Axial
 LENGTH.....250"
 DIAMETER.....41"
 AUGMENTATION.....Afterburner

RATINGS

	LBS @ RPM		@ ALT	
	N ₁	N ₂		
MIL + AB	16,000	6055	9420	S.S.L.
MIL	10,200	6055	9420	S.S.L.
NORM.	8,700	5790	9180	S.S.L.

SPEC. No. N-1669

ORDNANCE**GUNS**

No.	Size	Location	Rds.
4	20mm	Fuselage	500

FIRE CONTROL

ACS AERO 13

EXTERNAL LOAD

Strength Provisions Only
 for 4 Missile Launchers.

MISSION AND DESCRIPTION

The primary mission of the F4D-2 airplane is the interception and destruction of enemy aircraft. The airplane is designed to operate from aircraft carriers or land bases.

The F4D-2, a development of the F4D-1, is a single place fighter of modified delta wing design having a turbo-jet engine with afterburner within the fuselage. Automatic leading edge slats are provided as high lift devices for take-off and landing.

Flight control is provided by means of power operated elevons which function as conventional elevators and ailerons. Longitudinal trim is actuated electrically, the direction trim hydraulically; the landing gear, dive brakes, arresting hook and auxiliary elevon system are operated from the utility hydraulic system.

DEVELOPMENT

Mock up.....November 1953
 First flight.....April 1956

DIMENSIONS

WING
 AREA.....557 sq.ft.
 SPAN.....33.5'
 M.A.C.....18.25'
 SWEEPBACK-c/l.....46.5°
 LENGTH.....52' -11"
 HEIGHT.....13' -7"
 TREAD.....12' -6"

WEIGHTS

LOADINGS	LBS.	L.F.
EMPTY.....	15,927.....	
BASIC.....	16,190.....	
DESIGN.....	19,628..7.0.	
COMBAT.....	19,914..6.9.	
MAX.T.O.(Field).....	26,000.....	
(Cat.).....	26,000..5.0.	
MAX.LAND.(Field).....	18,906.....	
(Arrest).....	18,906..7.0.	

All weights are calculated.

FUEL AND OIL

No. Tanks	Tot. Gal.	Location
4	884	Wing
2	468	Fuselage

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

OIL

CAPACITY(Gals).....3.5
 SPEC.....MIL-L-7808-1

ELECTRONICS

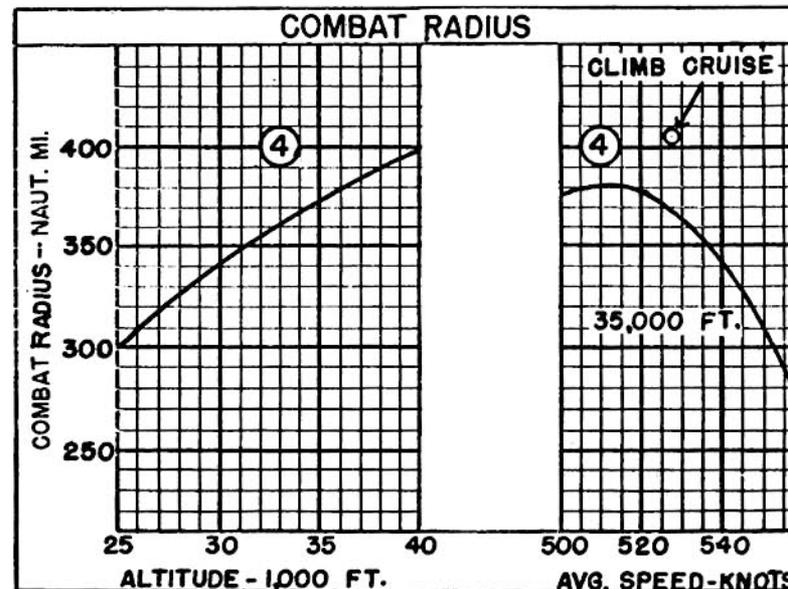
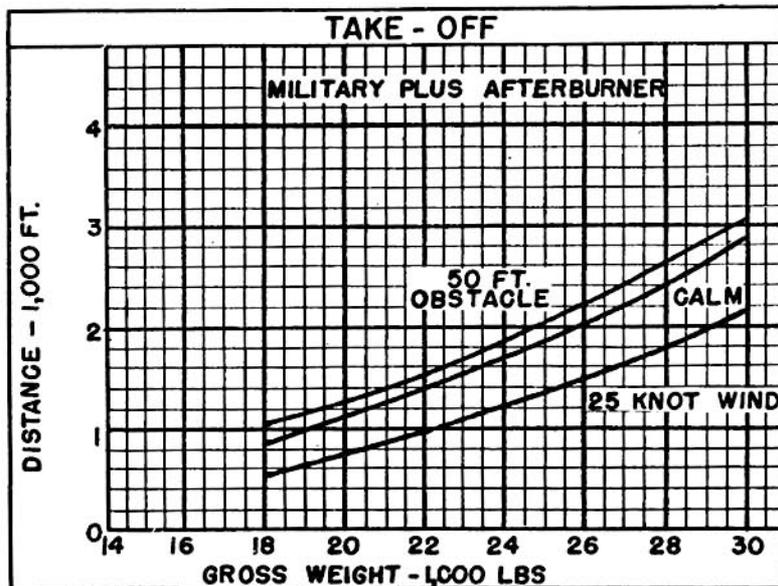
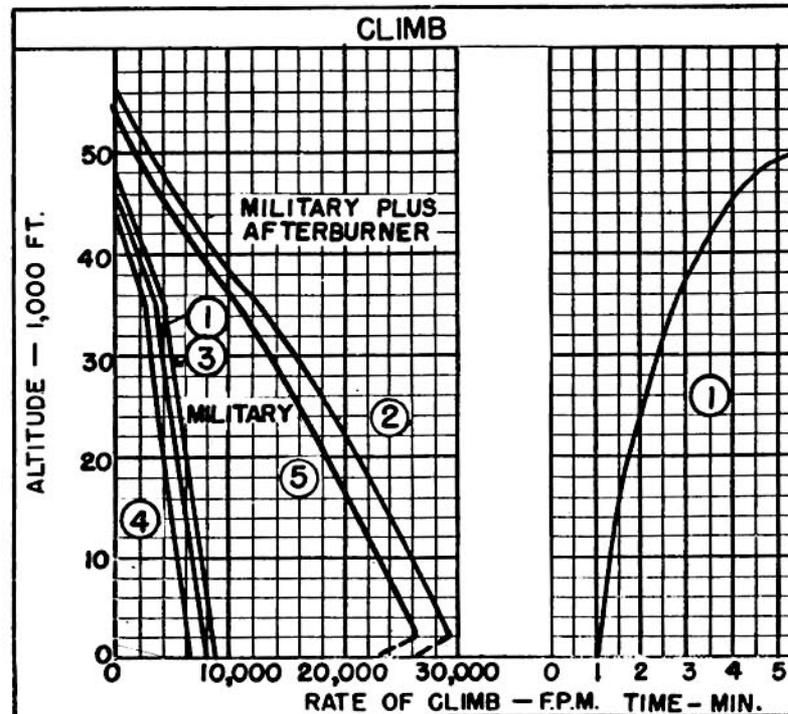
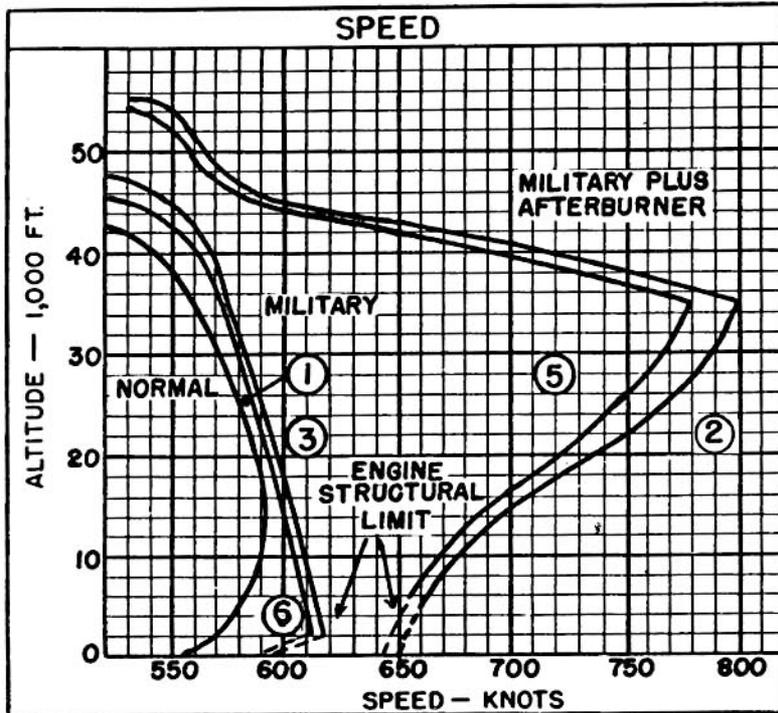
UHF.....AN/ARC-27A
 HOMING.....AN/ARN-21
 UHF D.F.....AN/ARA-25
 RADAR ALT.....AN/APN-22
 IFF.....AN/APX-6B
 IFF.....AN/APA-89
 RADAR.....AN/APQ-50A
 MARKER BEACON.....AN/ARN-12
 (External Store)(P.S.I.)
 NAV. REC.(VOR).....AN/ARN-14E
 (External Store)(P.S.I.)

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) POINT INTERCEPTOR	(3)	(4) GEN. PURPOSE FIGHTER - FULL INTERNAL FUEL	(5)	(6)
TAKE-OFF WEIGHT	lb.	21,786		25,894	
Fuel	lb.	4,680		8,788	
Payload	lb.	670		670	
Wing loading	lb./sq.ft.	39.1		46.5	
Stall speed - power-off	kn.	116.5		127.0	
Take-off run at S.L. - calm	ft.	1,360(B)		3,860(C)	
Take-off run at S.L. 25 kn. wind	ft.	940(B)		2,780(C)	
Take-off to clear 50 ft. - calm	ft.	1,510(B)		- - -	
Max. speed/altitude	kn./ft.	591/15,000		590/15,000	
Rate of climb at S.L.	fpm	24,200(B)		6,400(C)	
Time: S.L. to	ft. min.	3.2/40,000(D)		3.7/20,000(C)	
Time: S.L. to	ft. min.	5.3/50,000(D)		6.3/30,000(C)	
Service ceiling (100 fpm)	ft.	54,000(B)		43,500(C)	
Combat range	n.mi.			1,470	
Average cruising speed	kn.			535	
Cruising altitude(s)	ft.			39,000-45,000	
Combat radius	n.mi.			405	
Average cruising speed	kn.			535	
Total endurance (Point intercept)	min.	41.5(F)		- - -	
Mission time	hr.	- - -		1.9(E)	
COMBAT LOADING CONDITION	(2)	(3)	(5)	(6)	
COMBAT WEIGHT	lb.	19,914	19,914	22,381	22,381
Engine power		MIL + A/B	Military	MIL + A/B	Military
Fuel	lb.	2,808	2,808	5,270	5,270
Combat speed/combat altitude	kn./ft.	565/50,000	- - -	558/50,000	- - -
Rate of climb/combat altitude	fpm/ft.	3,000/50,000	- - -	1,800/50,000	- - -
Combat ceiling (500 fpm)	ft.	54,600	45,600	52,500	43,400
Rate of climb at S.L.	fpm	26,000	8,700	23,000	7,500
Max. speed at S.L.	kn.	650	595	645	590
Max. speed/altitude	kn./ft.	800/35,000	615/2,100	780/35,000	612/2,100
LANDING WEIGHT	lb.	17,936		18,362	
Fuel	lb.	830		1,256	
Stall speed - power-off	kn.	105.7		107.0	
Stall speed - with approach power	kn.	99.0		100.7	

NOTES

- (A) Normal rated thrust
- (B) Military rated thrust plus afterburning
- (C) Military rated thrust
- (D) Military rated thrust plus afterburner - time to climb includes time to take-off and accelerate to climb speed.
- (E) Mission time includes time to climb, cruise-out, combat, cruise back.



○ LOADING CONDITION COLUMN NUMBER

Standard Aircraft Characteristics NAVAER 1335E (REV. 2-50)

NOTES

(F) Total endurance time includes time to take-off, accelerate to climb speed, climb, combat and loiter.

(G) Performance Basis: Calculations.

(H) Range and Radius are based on engine specification fuel consumption data increased 5%.

SPOTTING: A total of 78 airplanes (wings folded) can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class canted deck carrier.

INTERCEPTOR FIGHTER COMBAT ENDURANCE PROBLEM (POINT INTERCEPT)

WARM-UP, TAKE-OFF, ACCELERATE: 2 minutes at normal rated thrust, 1 minute at military plus afterburner thrust.

CLIMB: To combat ceiling at military plus afterburner thrust.

COMBAT: Fuel allowance for 5 minutes at military power plus afterburner at 50,000 feet.

DESCEND: To 35,000 feet (no fuel used, no distance gained).

LOITER: At 35,000 feet for 27.7 minutes at speed for maximum endurance.

DESCEND: To sea level (no fuel used, no distance gained).

RESERVE: 20 minutes at speed for maximum endurance at sea level.

GENERAL PURPOSE AND ESCORT FIGHTER COMBAT RADIUS PROBLEM (GAS TURBINE)

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes at normal rated thrust.

CLIMB: To cruise ceiling at military rated thrust.

CRUISE-OUT: At velocity for long range at cruise ceiling.

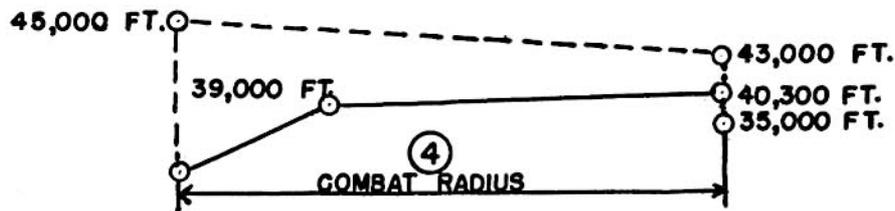
DESCEND: To 35,000 feet (no fuel used, no distance gained).

COMBAT: Fuel allowance for 20 minutes operation at 35,000 feet; of which 15 minutes are at military thrust, and 5 minutes are at military thrust plus afterburner (Assume combat concluded at initial cruise-back altitude).

CRUISE-BACK: At velocity for long range at cruise ceiling.

RESERVE: 20 minutes at velocity for maximum endurance at sea level plus 5% initial fuel load.

$$\text{COMBAT RADIUS} = \text{CLIMB} + \text{CRUISE-OUT} \pm \text{CRUISE BACK}$$



○ LOADING CONDITION COLUMN NUMBER