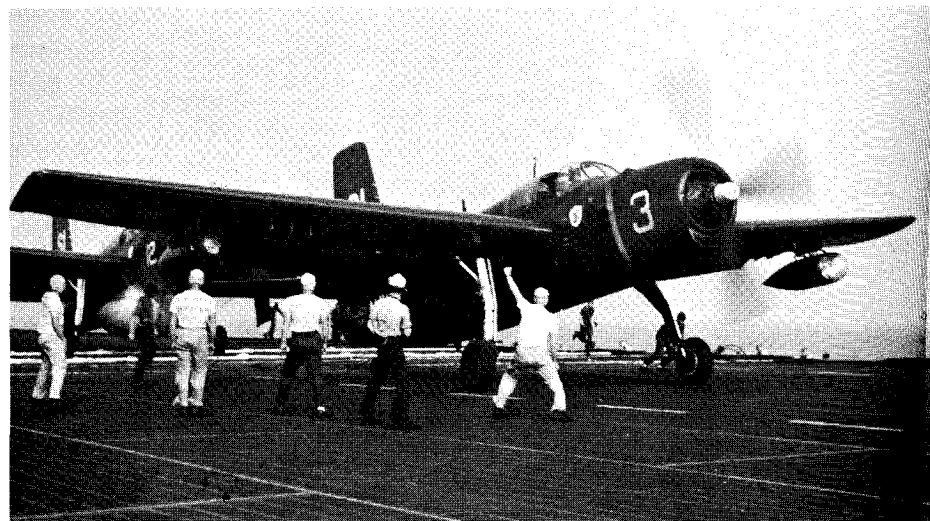
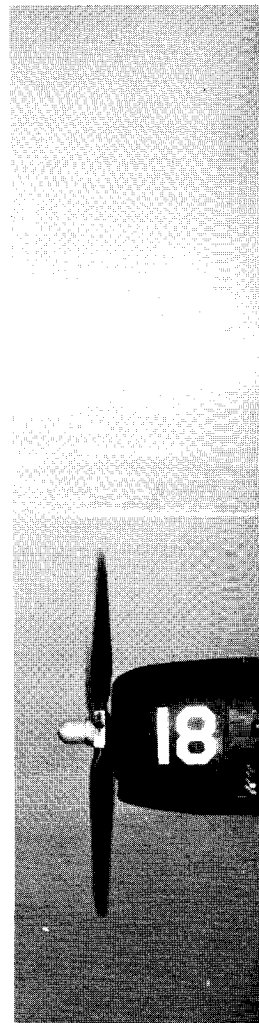
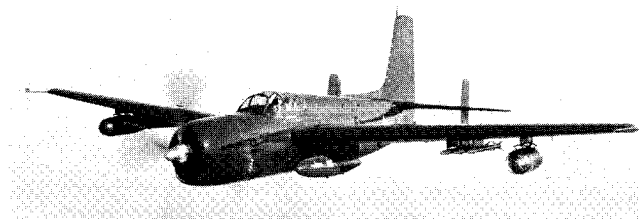
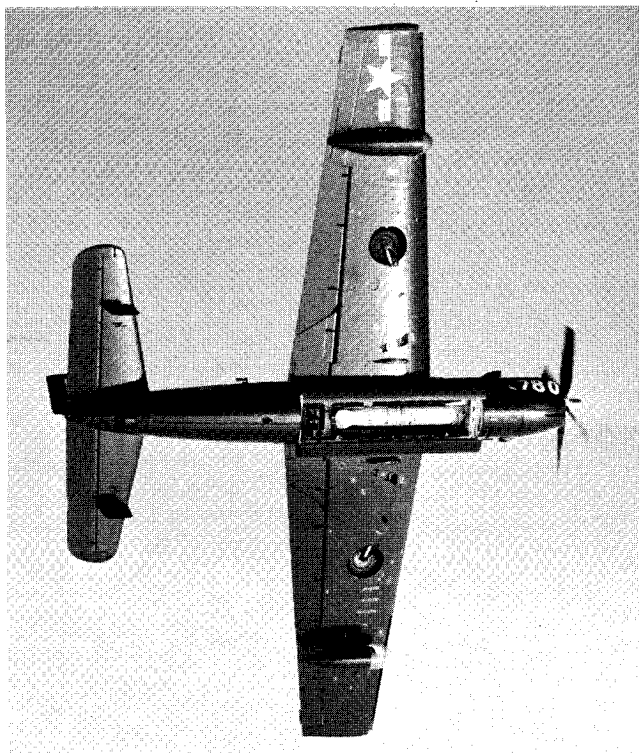


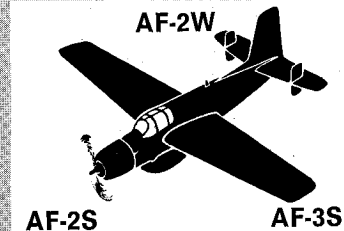
The Grumman-built *Guardian* was originally conceived as a torpedo bomber to replace the famous TBF *Avenger*. The prototype was ordered in early 1945 as the XTB3F-1, but shortly after its first flight, the following December, it was decided to revise the basic design and assign the aircraft an antisubmarine role.

Production models were ordered in two configurations: the AF-2W search version and the AF-2S attack plane. Operating together, they formed a hunter-killer team, a system which had been developed in the late '40s using the TBM-3W and TBM-3S. The AF-2W, with search as its primary mission, was fitted with radar and ECM detection equipment. After detecting a hostile submarine, it directed an accompanying AF-2S onto the target. The AF-2S *Guardian* would then lay a sonobuoy pattern, if the submarine had submerged, in order to localize the target for attack with torpedoes or depth bombs. In the event an enemy submarine remained on the surface, the S version was equipped with a radar and searchlight for guiding its attack, in which 5" HVAR rockets could be utilized in addition to the other stores.

The first flight of the *Guardian* in production form took place in November 1949 with the first deliveries beginning in October 1950 to VS-25. The last *Guardians* were delivered in 1953 and the plane was soon superseded by the S2F-1 *Tracker* which combined the functions of both versions of the *Guardian* in one aircraft. Squadrons began exchanging their AFs for *Trackers* in 1954. During production, 156 AF-2Ws, 190 AF-2Ss and 40 AF-3Ss were built. In its day, the *Guardian* was the largest, single-engined carrier aircraft operating.



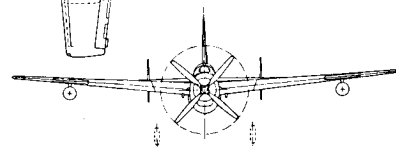
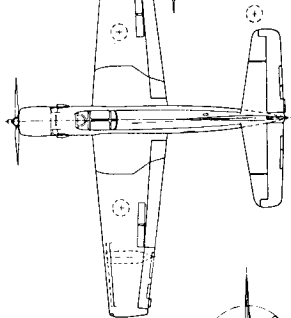
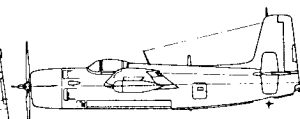
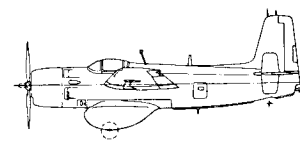
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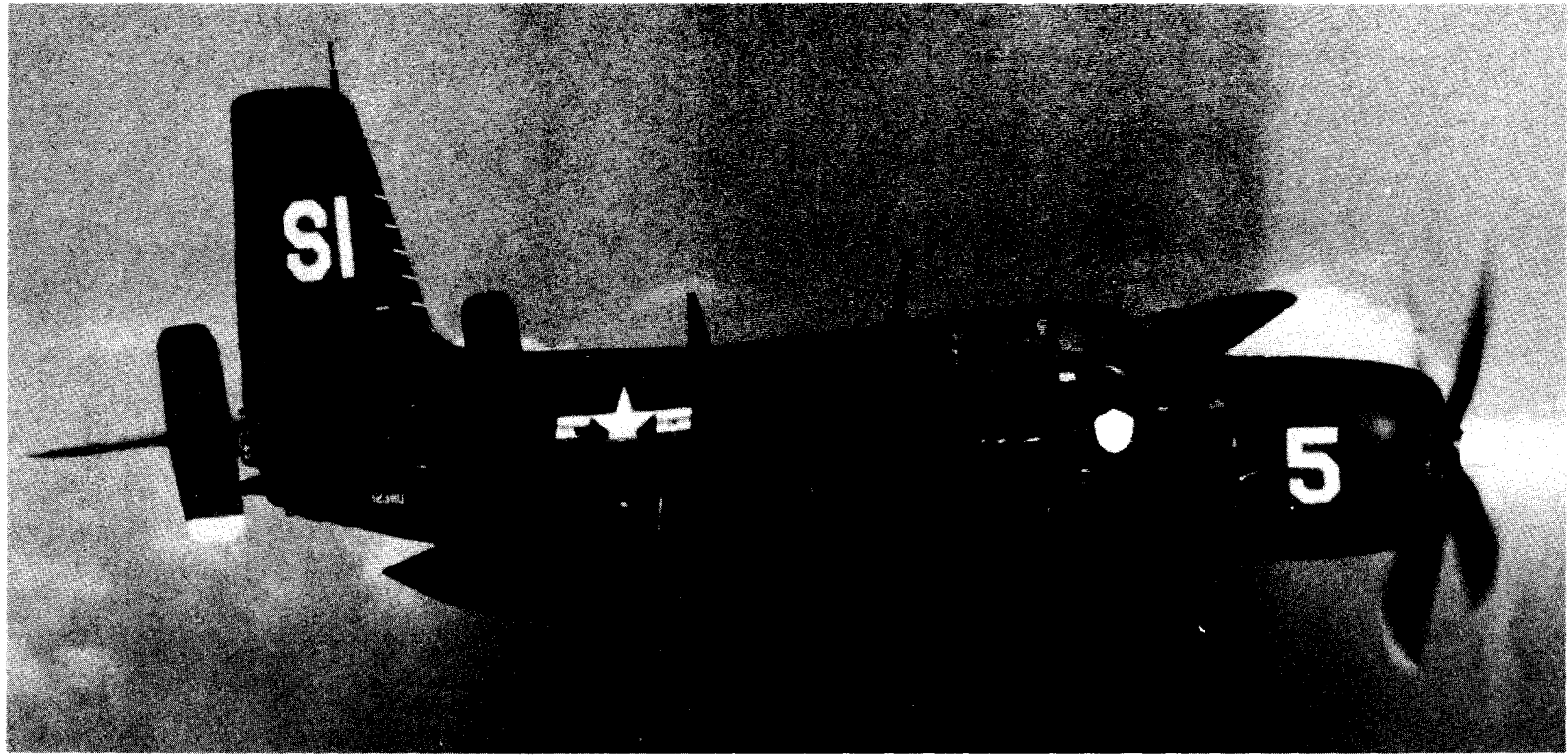
AF-2S

AF-3S

Length	43'5"
Height	16'7"
Wing span	60'0"
Power plant	P&W R-2800-48
Horsepower	2,300 hp at S.L.
Maximum speed	238 kts.
Service ceiling	
AF-2W	21,200'
AF-2S	22,900'
Combat radius with two 150-gal. auxiliary tanks	
AF-2W	525 nm
AF-2S	525 nm
Detection equipment	
AF-2W	APS-20, APA-70, APR-9
AF-2S	APS-31, searchlight, 16 sonobuoys
AF-3S	Same as 2S, plus MAD
Ordnance	
AF-2W	None
AF-2S	
	Maximum capacity 3,700 lbs., one torpedo or mine in the bomb bay, four 500-lb. bombs or depth bombs and six HVAR rockets on wing stations.
Crew	
AF-2W	Pilot, copilot, two radar operators
AF-2S	Pilot, navigator/bomb almer, radar operator



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5

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

STANDARD AIRCRAFT CHARACTERISTICS

AF-2S "GUARDIAN"

DECLASSIFIED

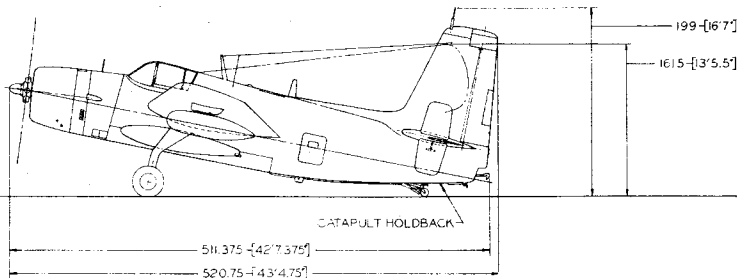
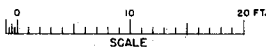
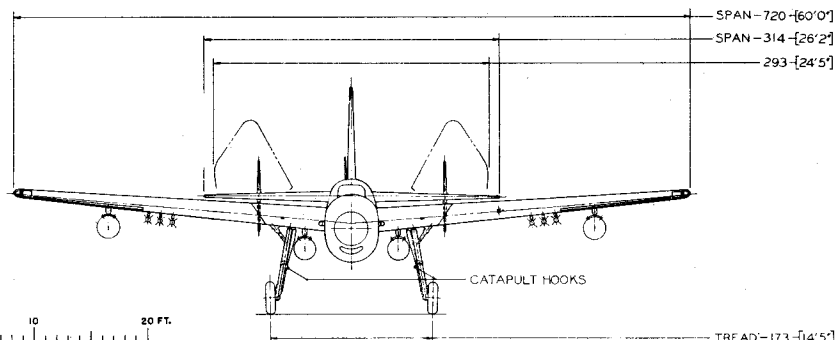
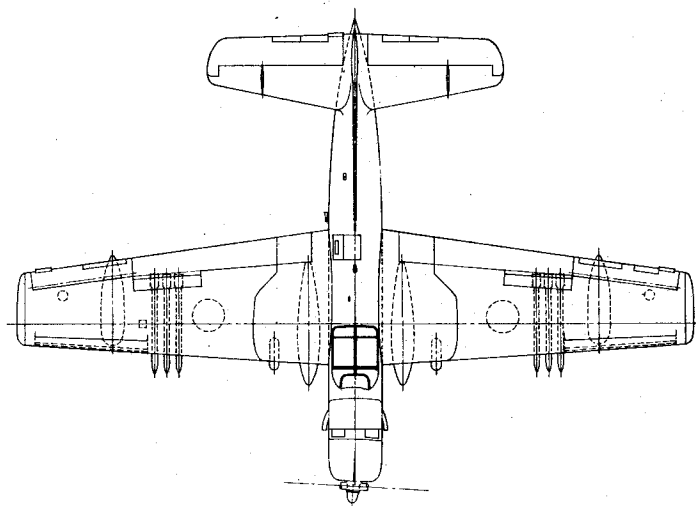
GRUMMAN

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BUREAU OF AERONAUTICS
NAVY DEPARTMENT

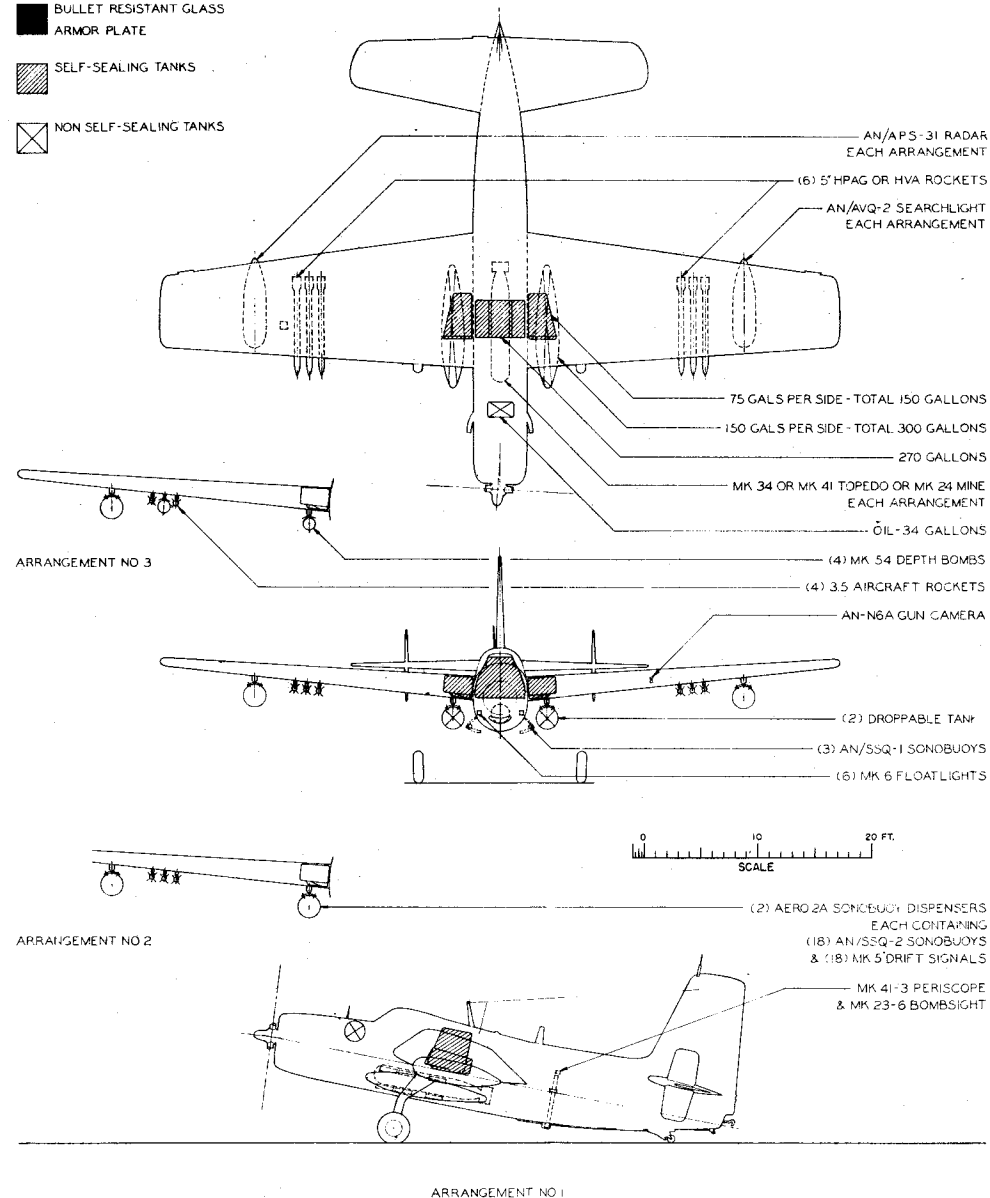
WING AREA—548.7
WING SECTION—
N.A.C.A. 23018-23012
M.A.C.— 115.07
ASPECT RATIO— 6.6



DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

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



ARMAMENT & TANKAGE

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DECLASSIFIED

POWER PLANT

NO. & MODEL.....(1) R-2800-48
MFR.....Pratt & Whitney
SUPERCH.....1 Stage, 1 Speed
PROP. GEAR RATIO.....0.45
PROP. MFR.....Ham. Std.
PROP. DES. NO.....6557A-6
NO. BL./DIA.....4/13'-2"

RATINGS

	Bhp @	Rpm @	Alt.
T. O.	2,300	2,800	S. L.
MIL.	2,300	2,800	3,500'
NORMAL	1,900	2,600	7,000'

SPEC. NO. N-8132-C

ORDNANCE

BOMBS AND ROCKETS

Type	Size	Location	No.
Torp.	Mk. 41	Bomb Bay	1
Torp.	Mk. 34	Bomb Bay	1
Torp.	Mk. 24	Bomb Bay	1
D.B.	Mk. 54	Wings	4

on 2 stub wing racks and 2 middle Aero 14A launchers (3.5" rockets only adjacent)

HVAR 5" Wings 6
on 6 - Aero 14A launchers

Sono.
Disp. Aero 2A Wings 2

FIRE CONTROL

1 Bombsight, MK. 23-6 mounted on a MK. 41-3 Periscope
1 Gun Sight, MK. 8-3

CAMERAS

Gun Camera.....AN-W6A
Recon. Camera.....K-25A
MAX. BOMB CAPACITY....3,700 #

MISSION AND DESCRIPTION

The AF-2S airplane's primary mission is to attack enemy submarines after it has been directed to the submarine position last sighted by its companion aircraft, the AF-2W (search version). The AF-2S lays down a pattern of sonobuoys to determine exact location of the enemy submarine, after which, it launches its sonic-directed torpedo to complete the attack. Rockets and depth bombs may be carried to augment the attack.

The airplane is a 3 place land plane for operation ashore or aboard aircraft carriers, with or without the aid of a catapult.

The airplane is conventional in design and structure, with an all-metal 2 spar wing and a semi-monocoque fuselage. Landing gear, slotted flaps, wing folding and pilot's canopy are hydraulically operated. Ailerons are of sealed balance type with spring tabs and one trim tab. Rudder has a combination trim and 4 to 1 ratio balance tab. Elevators are interconnected; one is equipped with a spring tab and the other with a trim tab. Power plant installation is conventional with steel tube mount.

DIMENSIONS

WING AREA.....549 sq. ft.
SPAN.....60' - 0"
LENGTH.....43' - 5"
HEIGHT.....16' - 7"
TREAD.....14' - 5"
M.A.C.....9' - 7"
PROP. CLEAR.....9"

WEIGHTS

Loadings	Lbs.	L.F.
EMPTY.....	14,658.....	
BASIC.....	15,336.....	
DESIGN.....	19,200..5.0	
COMBAT.....	18,123..5.0	
MAX.T.O. (Field).....	23,015*..4.2	
MAX.LAND. (Field).....	22,500.....	

All weights are actual.

*Maximum anticipated loading.

FUEL AND OIL

Gals.	No. Tanks	Location
270	1	Fuse., S.S.
150	2	Wing, S.S.
300	2	Wing, Drop

FUEL GRADE....115/145
FUEL SPEC..MIL-F-5572

OIL

CAPACITY (Gals.).....32
GRADE.....1100
SPEC.....MIL-O-6082

ELECTRONICS

VHF COMMAND.....AN/ARC-1
UHF COMM....AN/ARC-27 or -27A
(P.S.I., Repl. for AN/ARC-1)
MHF LIAISON.....AN/ARC-2
INTERPHONE....AN/AIC-4 or -4A
HOMING.....AN/ARR-2A
HOMING.....AN/ARN-21
(P.S.I., Repl. for AN/ARR-2A)
RANGE RECEIVER...R-23A/ARC-5
MARKER BEACON REC...AN/ARN-12
(Planned Service Installation)
RADAR ALT....AN/APN-1 or -22
Continued on NOTES sheet.

DECLASSIFIED

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) ATTACK 1-Mk. 34 Torp.	(3) ATTACK 1-Mk. 34 Torp. 3-Mk. 54 D.B. 4-3.5" ASW Rock	(4) ATTACK 1-Mk. 41-1 Torp. 6-5" HPAG Rock.	(5) ATTACK 1-Mk. 41-1 Torp. 6-5" HPAG Rock. 1-150 Gal. Tank
TAKE-OFF WEIGHT	lb.	20,298	21,555	21,463	22,565
Fuel (Fixed/Drop)	lb.	2,520/-	2,520/-	2,520/-	2,520/900
Payload	lb.	1,167	2,424	2,332	2,332
Wing loading	lb./sq.ft.	37.0	39.3	39.1	41.1
Stall speed - power-off	kn.	76.9	79.2	79.0	81.0
Take-off run at S.L. - calm	ft.	925	1,070	1,055	1,200
Take-off run at S.L. 17.5kn. wind	ft.	545	640	630	730
Take-off to clear 50 ft. - calm	ft.	--	--	--	--
Max. speed/altitude (1)	kn./ft.	231/9,200	216/9,200	225/9,200	221/9,200
Rate of climb at S.L. (1)	fpm	1,480	1,310	1,350	1,220
Time: S.L. to 10,000 ft. (1)	min.	7.3	8.3	7.8	8.9
Time: S.L. to 20,000 ft. (1)	min.	22.0	27.8	26.1	31.8
Service ceiling (100 fpm) (1)	ft.	22,900	21,100	21,700	20,500
Combat range	n.mi.	795	655	710	990
Average cruising speed	kn.	144	146	147	148
Cruising altitude(s)	ft.	1,500	1,500	1,500	1,500
Combat radius	n.mi.	320	260	285	395
Average cruising speed	kn.	144	146	147	148
COMBAT LOADING CONDITION		(2) COMBAT			
COMBAT WEIGHT	lb.	18,123			
Engine power		Military			
Fuel	lb.	1,512			
Combat speed/combat altitude	kn./ft.	233/1,500			
Rate of climb/combat altitude	fpm/ft.	2,280/1,500			
Combat ceiling (500 fpm)	ft.	21,600			
Rate of climb at S.L.	fpm	2,300			
Max. speed at S.L.	kn.	230			
Max. speed/altitude	kn./ft.	239/4,000			
LANDING WEIGHT	lb.	16,862			
Fuel	lb.	249			
Stall speed - power-off	kn.	70.1			
Stall speed - with approach power	kn.	65.1			

NOTES

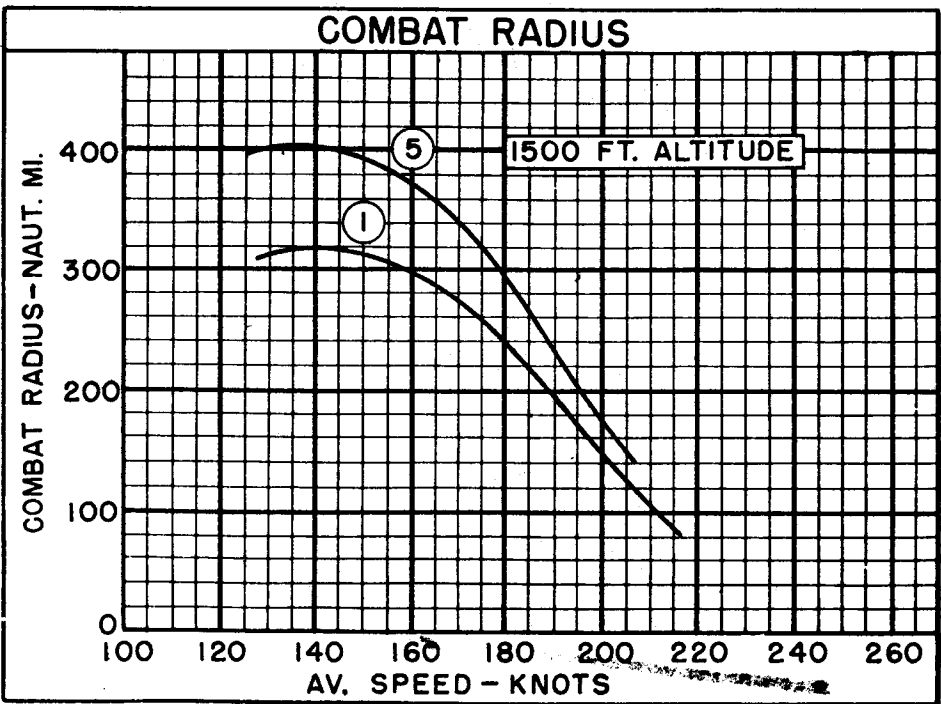
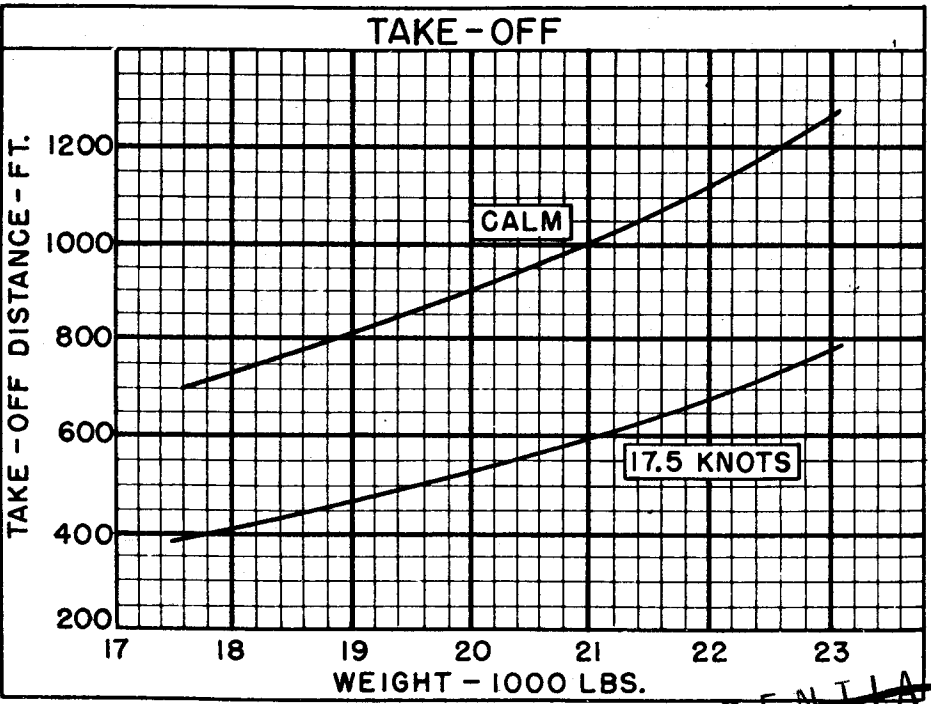
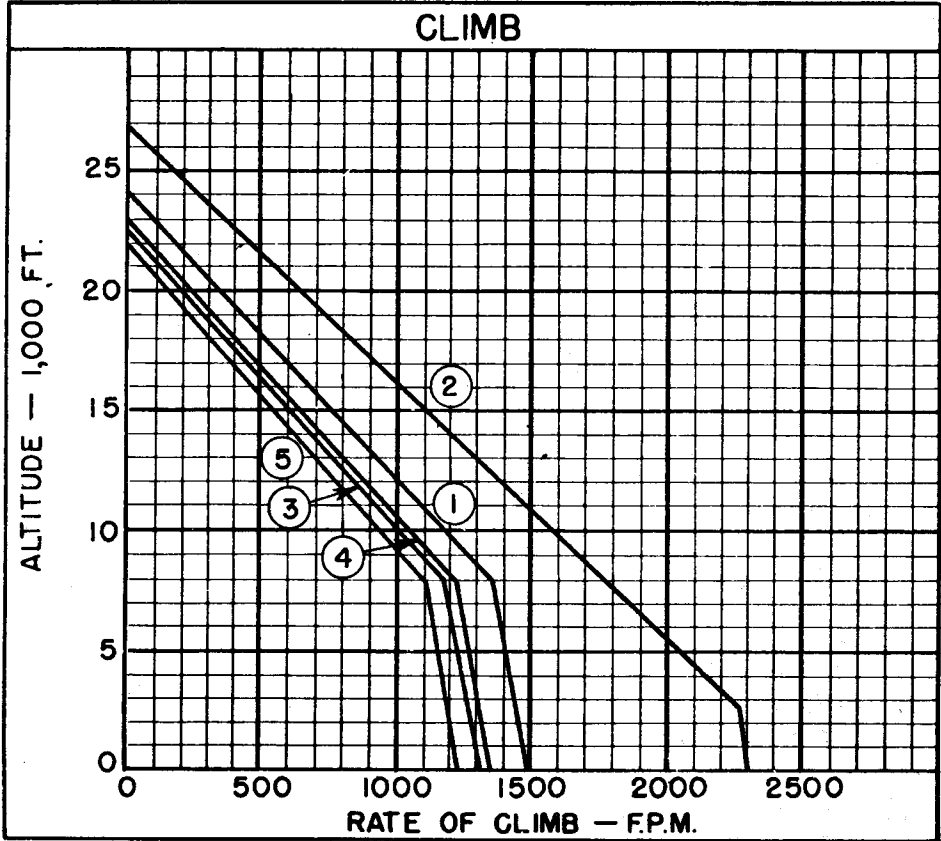
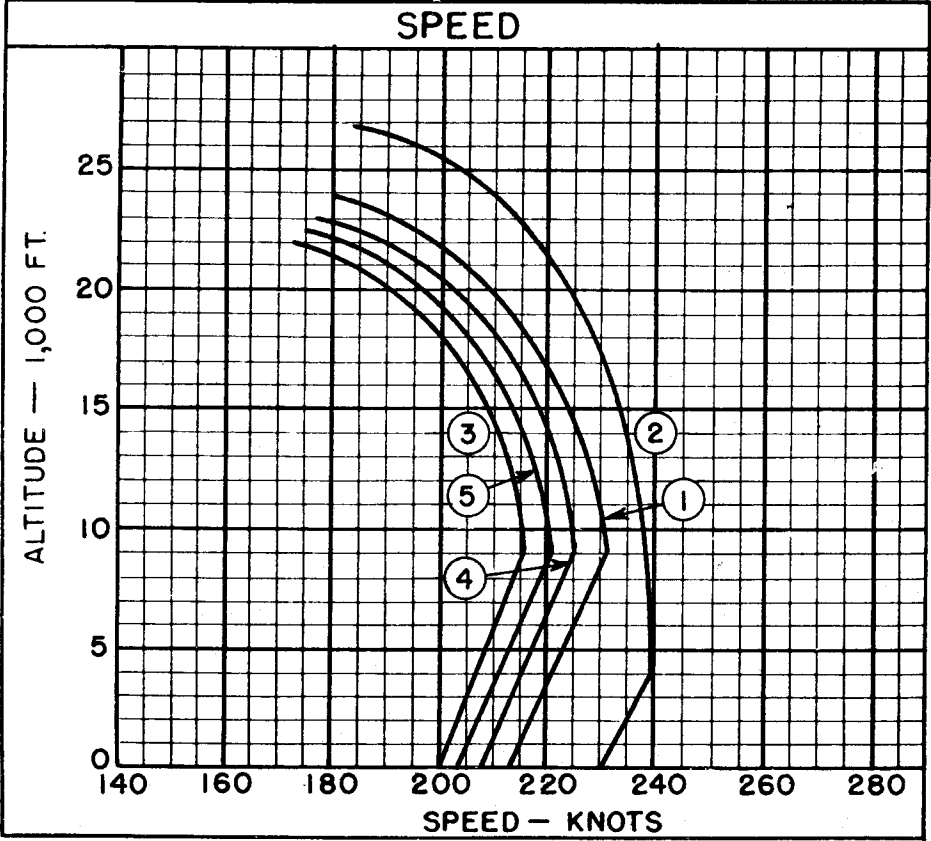
(1) Normal Power

Performance is based on NATC flight test of the AF-2S airplane.

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

All conditions include AN/AVQ-2 searchlight on port wing and AN/APS-31 radome on starboard wing.

All climbs were made with rich mixture for satisfactory engine cooling.



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NOTES

Spotting: 200 ft. length is required to spot 16 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on the CV-9 class carriers.

ASW RANGE AND RADIUS PROBLEM

WARM-UP, TAXI, TAKE-OFF: 10 minutes at normal power.

CLIMB: On course to 1,500 ft. at normal power.

COMBAT RANGE: Cruise at V for long range at 1,500 ft. External fuel tanks dropped when empty.

RESERVE: 20 minutes at V for long range plus 5% of initial fuel load.

COMBAT RADIUS = 40% OF COMBAT RANGE

ELECTRONICS (Continued)

SONOBUOY RECEIVER.....AN/ARR-31 or -26

RADAR.....AN/APS-31 or -31A

RADAR RELAY RECEIVER.....AN/ARR-27A

SEARCHLIGHT.....AN/AVQ-2A

IFF.....AN/APX-2 or -2A

16 SONOBUOYS IN AERO 2A DISPENSER.SSQ-2

IFF.....AN/APX-6

IFF (I-R UNIT).....AN/APX-17

(F.S.I., Repl. for AN/APX-2, -2A)

WIRE RECORDER....13-A-3-j or IC/VRW-7

SWEEP INTEGRATOR KIT.....

(Planned Service Installation)

This chart supersedes previously issued chart dated 1 October 1949.

Reason for reissue: NATC flight test data available.

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