

STANDARD AIRCRAFT CHARACTERISTICS

AD-2 "SKYRAIDER"

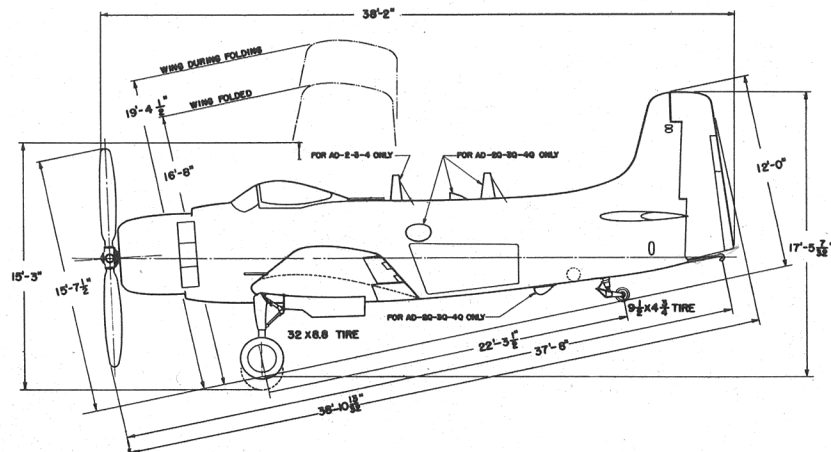
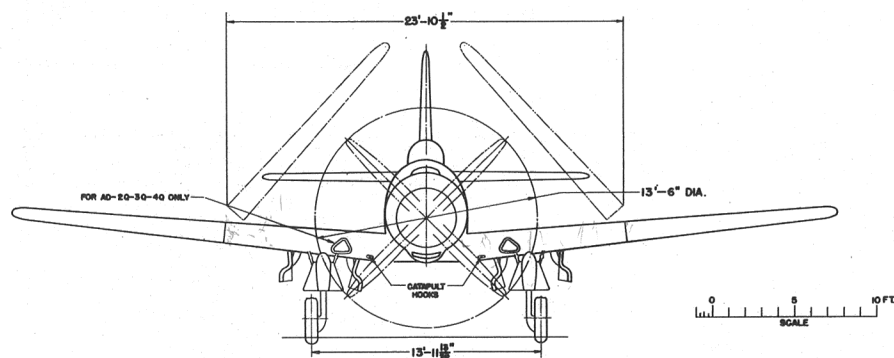
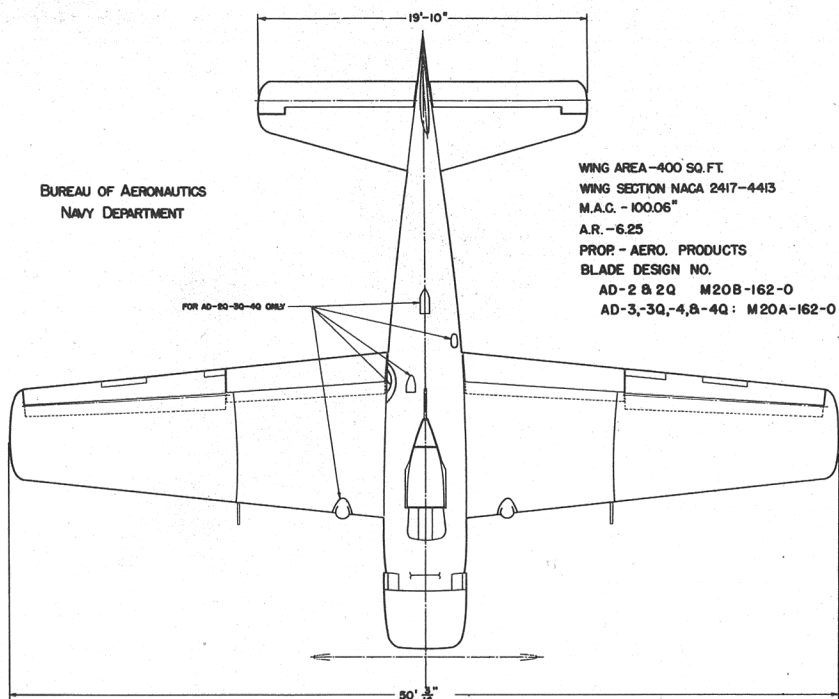
DOUGLAS

DECLASSIFIED

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

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

WING AREA-400 SQ. FT.
WING SECTION NACA 2417-4413
M.A.C. - 100.06"
A.R. - 6.25
PROP - AERO. PRODUCTS
BLADE DESIGN NO.
AD-2 & 2Q M20B-162-0
AD-3, 3Q, 4, & 4Q: M20A-162-0



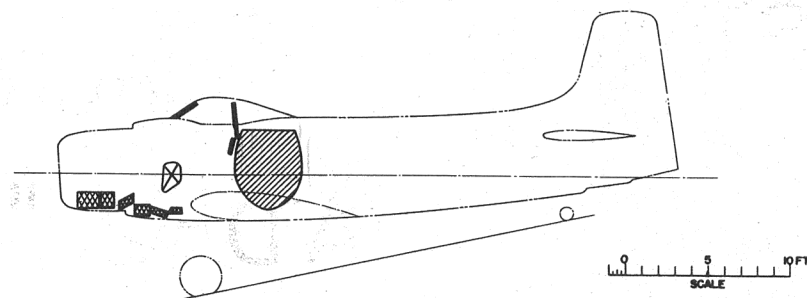
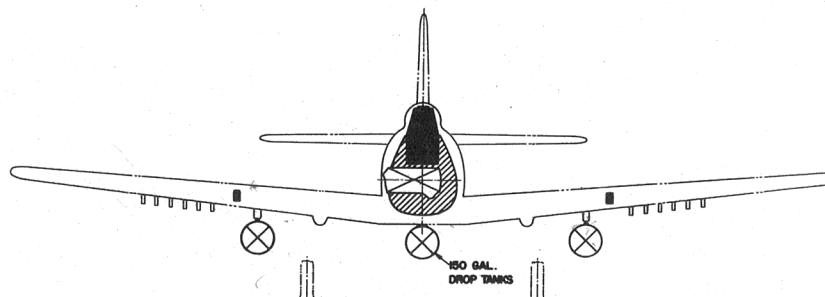
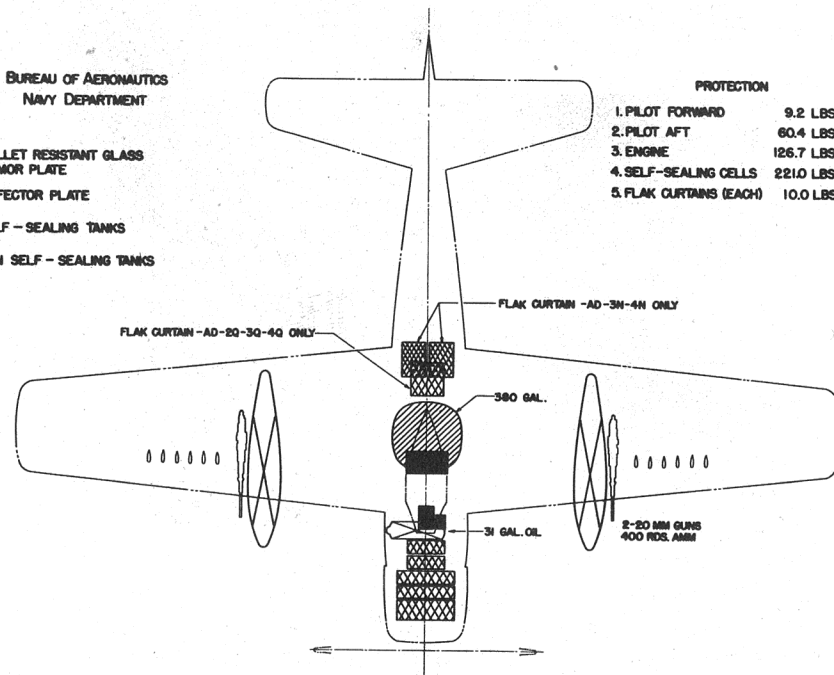
DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

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

PROTECTION

- | | |
|-------------------------|------------|
| 1. PILOT FORWARD | 9.2 LBS. |
| 2. PILOT AFT | 60.4 LBS. |
| 3. ENGINE | 126.7 LBS. |
| 4. SELF-SEALING CELLS | 221.0 LBS. |
| 5. FLAK CURTAINS (EACH) | 10.0 LBS. |



ARMAMENT AND TANKS

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MISSION AND DESCRIPTION

The primary mission of the AD-2 is the destruction of sea and ground targets by dive bombing attacks. The airplane is also capable of torpedo, glide bombing and rocket attacks. The AD-2 is designed to operate from all classes of naval aircraft carriers or from land bases.

The airplane is conventional in design and structure. Landing gear, canopy, slotted flaps, wing folding and three fuselage dive brakes are hydraulically operated. Increased lateral control is obtained by addition of power boost to the aileron system. The rudder is equipped with a spring tab system. Longitudinal trim is achieved by an electrically adjustable stabilizer. Elevators and interchangeable power plant are conventional with a monocoque engine mount. Oxygen for five hours is supplied. Bomb displacing gear at the centerline station is powder operated by a standard engine starter cartridge. Twenty gallons of ADI fluid are supplied for injection.

DIMENSIONS

WING AREA.....400 sq. ft.
SPAN.....50' - 0"
LENGTH.....38' - 2"
HEIGHT.....15' - 8"
TREAD.....13' - 11"
M.A.C.....8' - 4"
PROP. CLEAR.....6"

WEIGHTS

Loadings	Lbs.	L.F.
EMPTY.....	10,546.....	
BASIC.....	11,040.....	
DESIGN.....	15,600..7.0	
COMBAT.....	14,126..7.0	
MAX.T.O..(Cat.)..	19,700..5.5	
	(Field)..23,126*.4.5	
MAX.LD.(Smooth)..	19,000.....	
	(Rough)..16,800.....	
	(Arrest.)..17,000.....	
	(Qualif.)..15,600.....	

*Tentative

All weights are actual.

FUEL AND OIL

Gal.	No. Tanks	Location
380	1	Fuse, S.S.
150	1	Ctr., Drop
300	2	Wing, Drop

FUEL GRADE.....115/145

FUEL SPEC.....AN-F-48

OIL

CAPACITY (Gals.).....31
GRADE.....1120
SPEC.....AN-O-8

ELECTRONICS

RANGE RECEIVER.....AN/ARC-5
HOMING.....AN/ARR-2A
VHF.....AN/ARC-1
RADIO ALT.....AN/APN-1
IFF.....AN/APX-2A
SEARCH RADAR.....AN/APS-4

POWER PLANT

NO. & MODEL....(1) R-3350-26W
MFR.....Wright
SUPERCH.....1 Stage, 2 Speed
PROP. GEAR RATIO.....0.4375
PROP. MFR.....Aero Prod
PROP. DES. NO.....M20B-162-0
NO. BL./DIA.....4/13'-6"

RATINGS

	Bhp @	Rpm @	Alt.
T. O.	2,700	2,900	S. L.
COMBAT	3,020	2,900	S. L.
	2,570	2,600	8,900'
MIL.	2,700	2,900	3,700'
	2,100	2,600	14,500'
NORMAL	2,300	2,600	S. L.
	1,900	2,600	17,100'

SPEC. NO. N-836

ORDNANCE

No.	Size	GUNS		Rds.
		Location		
2	20 mm	Wing		400

Type	Size	BOMBS & ROCKETS		No.
		Location		
HVAR	5"	Wing		12
A.R.	11.75"	Wing		2
Torp.	Mk-13	External		3
D.B.	325#	External		3
Mine	1,000#	External		3
Mine	2,000#	External		3
Bomb	500#	External		3
Bomb	2,000#	External		3

FIRE CONTROLS

Sighting Sys.....Mk 1 Mod 2
Bomb Director.....AN/ASG-10A

MAX. BOMB CAP.....9,000 lbs.

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PERFORMANCE SUMMARY				
LOADING CONDITION		(1) ATTACK 1-2000# Bomb 2-150 Gal. Ext. Tanks		(5) ATTACK 1-2000# Bomb AN/APS-4
TAKE-OFF WEIGHT	lbs.	18,263		16,268
Fuel (Fixed/Drop)	lbs.	2,280/1,800		2,280
Bombs	lbs.	2,000		2,000
Wing/Power Loading (A)	lbs/sq.ft; lbs/bhp.	45.7/9.6		40.7/8.6
Stall Speed--Power off	kn.	81.5		77.0
Stall Speed--Power off - No Fuel	kn.	71.9		71.4
Stall Speed--Power on	kn.	76.5		72.2
Maximum Speed/Alt (B)	kn/ft.	272/18,300		279/18,300
Take-off Distance, deck -- calm	ft.	902		685
Take-off Distance, deck 25 kn.	ft.	431		310
Take-off Distance, Airport	ft.			
Rate of climb -- sea level (B)	ft/min.	2,340		2,800
Service Ceiling (B)	ft.	30,200		32,700
Time-to-climb 10,000ft. (B)	min.	4.6		3.8
Time-to-climb 20,000ft. (B)	min.	11.4		9.0
Combat Range/V av 15,000	ft. n.mi/kn.	1,535/181		795/172
Combat Radius/V av B-1	ft. n.mi/kn.	740/176		280/175
LOADING CONDITION		(2) COMBAT	(3) COMBAT	(4) COMBAT
GROSS WEIGHT	lbs.	14,126	14,126	14,126
Engine power		Combat	Military	Normal
Fuel	lbs.	2,280	2,280	2,280
Bombs/Tanks				
Max. speed at sea level	kn.	319	298	281
Max. speed/Alt	kn/ft.	324/10,700	318/16,200	315/18,700
Combat speed/Alt	kn/ft.	318/1,500	302/1,500	285/1,500
Rate of climb SL	ft/min.	4,600	4,130	3,500
Ceiling for 500 fpm R/C	ft.	34,600	34,600	34,600
Time-to-climb/Alt.	min/ft.			

NOTES

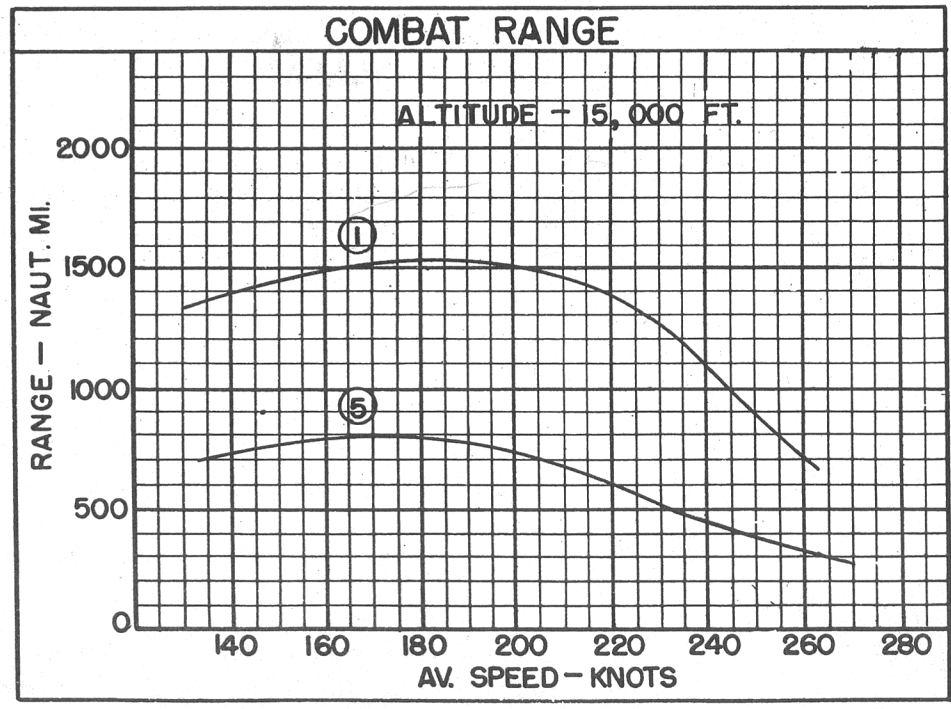
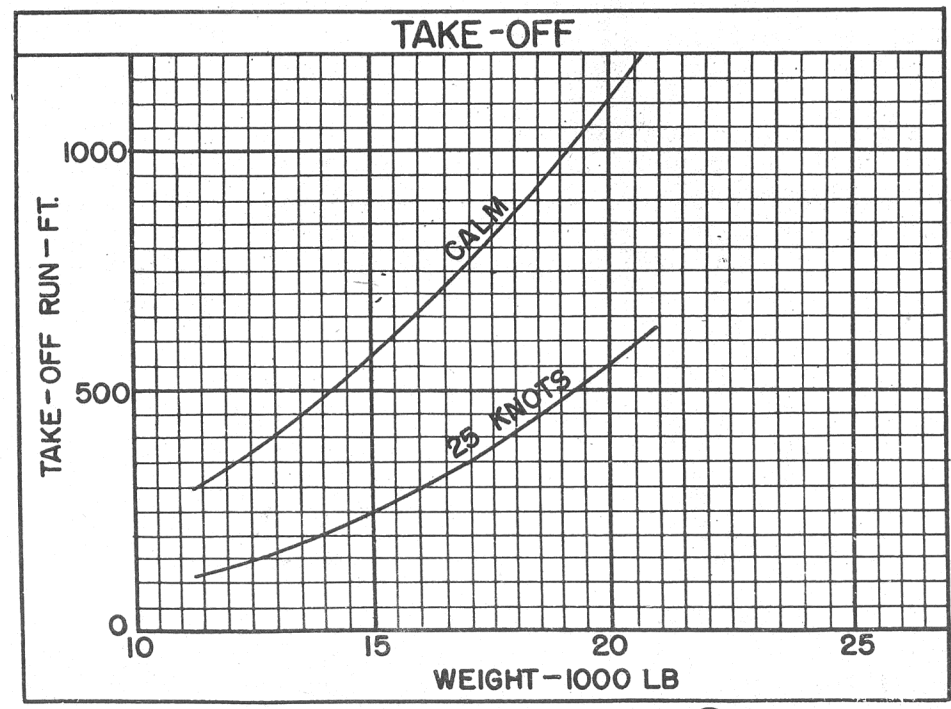
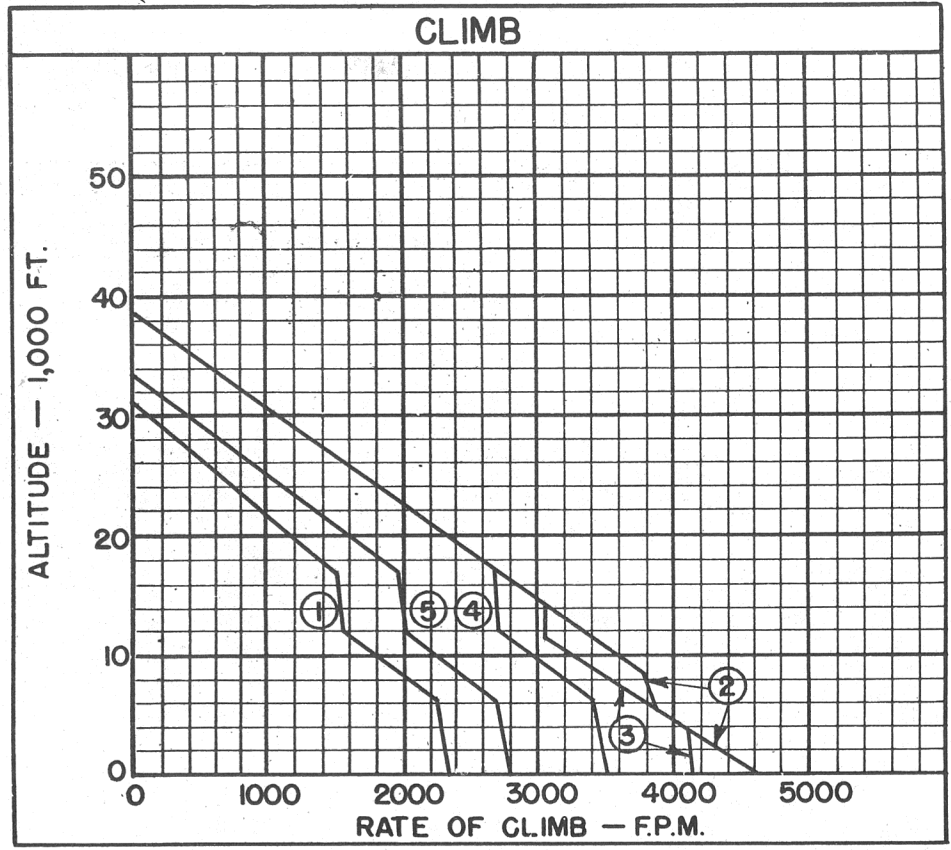
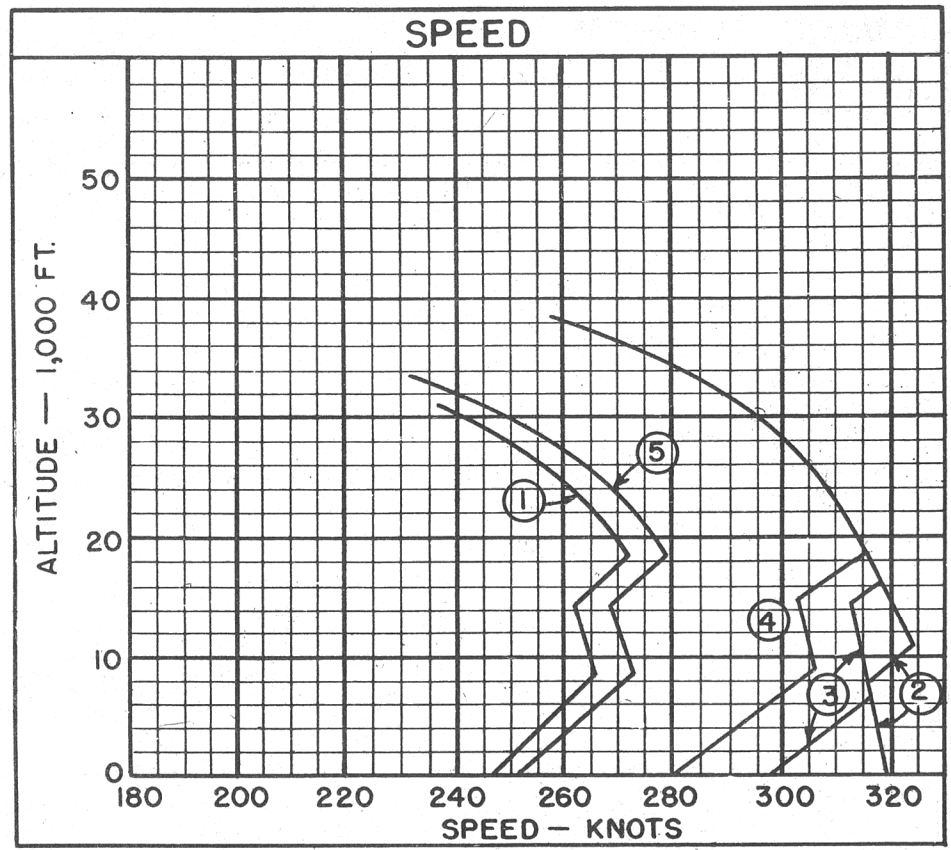
- (A) BHP at Maximum Critical Altitude
(B) Normal BHP

Performance is based on NATC flight test of AD-1 and AD-1Q.

Combat range and radius are based on engine manufacturer's specification fuel consumption data increased 5%.

Rocket launchers not aboard. Addition of 12 launchers to Cond. (2) reduces V_{max} , S. L. to 312 kn. and $V_{max.}/ACA$ to 317 kn./10,700 ft. Addition of 12 launchers and 12-5" HVAR increases gross weight of Cond. (2) to 15,855 lbs. and decreases V_{max} , S. L. to 293 kn. and $V_{max.}/ACA$ to 297 kn./10,700 ft.

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



○ LOADING CONDITION COLUMN NUMBER

~~RESTRICTED~~

NOTES

All loadings include 2 Mk-51 wing bomb racks with sway bracing and fuselage bomb ejector with sway bracing.

AN/APS-4 radar is carried on port side wing bomb rack for Condition (5) only.

Twelve 100 lb. bombs or twelve 250 lb. bombs can be carried at Mk-9 rocket launcher positions by replacing launchers with Mk-55 bomb racks.

Twenty gallons of ADI fluid are available for 12 minutes at combat power.

200 ft. length is required to spot 20 planes on the 96 ft. wide deck immediately aft of the forward ramp on the CV-9 class carriers.

ATTACK COMBAT RADIUS FORMULA NO. B-1

<u>WARM-UP</u>	<u>RENDEZVOUS</u>	<u>CLIMB</u>	<u>CRUISE-OUT</u>	<u>DROP TANKS</u>	<u>COMBAT</u>	<u>CRUISE-BACK</u>	<u>RESERVE</u>
20 min. $\frac{1}{2}$ Normal RPM	20 min. at Sea Level at 60%	to 15000 ft. at Normal Power	at 15,000 ft. 180 kts. TAS Normal Mixture	<u>DESCEND</u> to 1,500 ft. <u>DROP BOMBS</u> FIRE ROCKETS	15 min. at 1,500 ft. 5 min. combat and 10 min. N. Pr.	at 1,500 ft. 170 kts. TAS Normal Mixture	60 min. at V for Max. Range at 1,500 ft. Normal Mixture

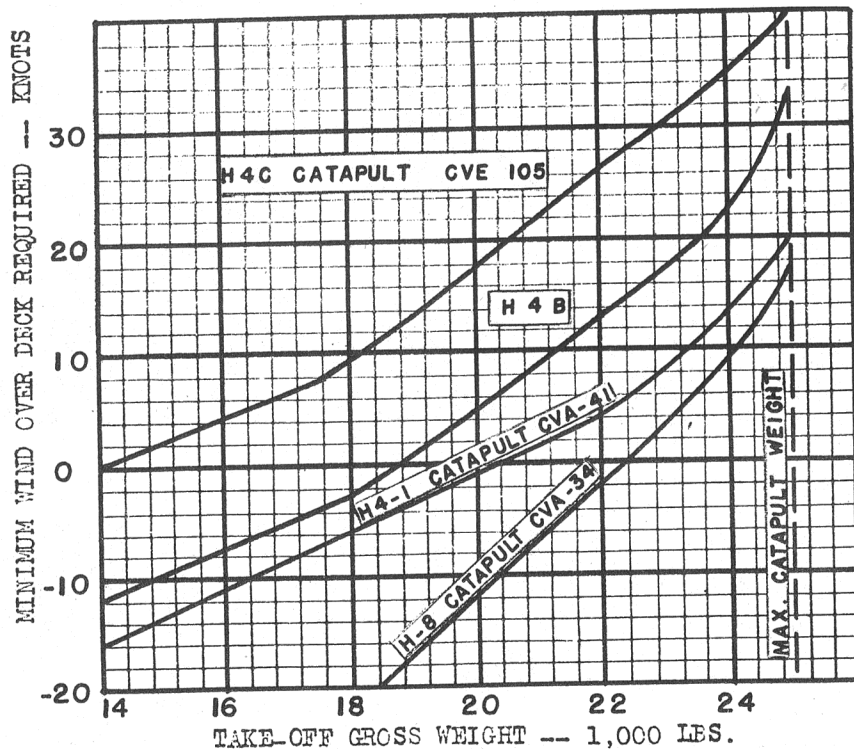
$$\text{RADIUS} = \text{CLIMB} / \text{CRUISE-OUT} = \text{CRUISE-BACK}$$

Combat radius with 2-300 gal. external tanks and 1-2,000 lb. bomb is 1,106 n.mi. Average speed is 176 kn. Flight time is 13.2 hr. B-1 formula used except that external tanks are not empty until in combat. Both external tanks dropped together when empty.

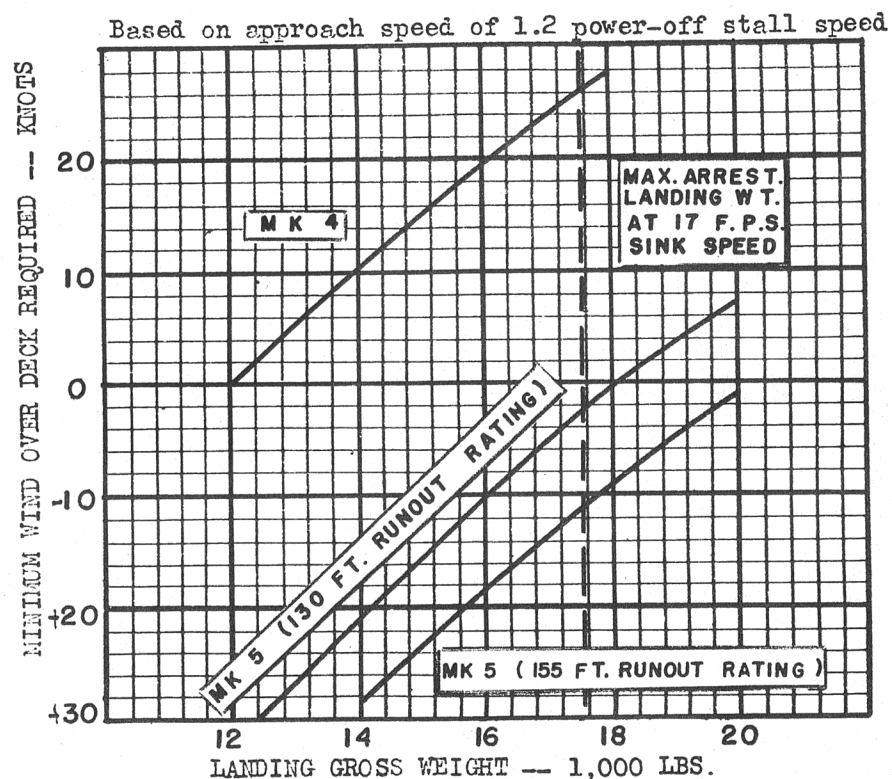
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CARRIER SUITABILITY

MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING
VS. GROSS WEIGHT



MINIMUM WIND OVER DECK REQUIRED FOR LANDING
VS. GROSS WEIGHT



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.

NAVAER-13351 (New 5-52)

