

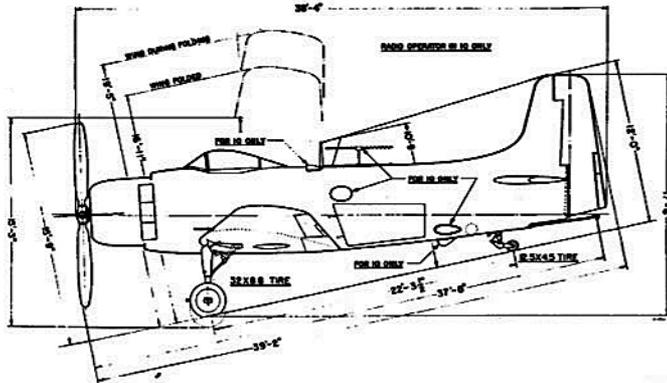
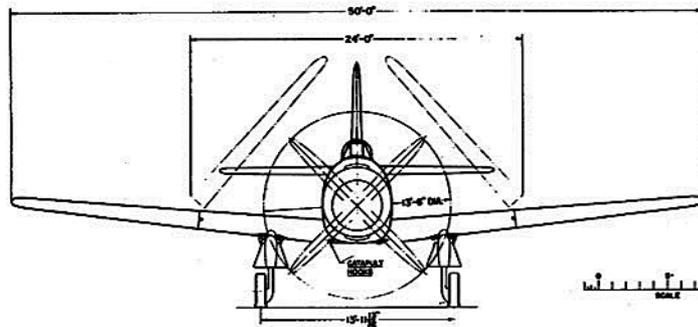
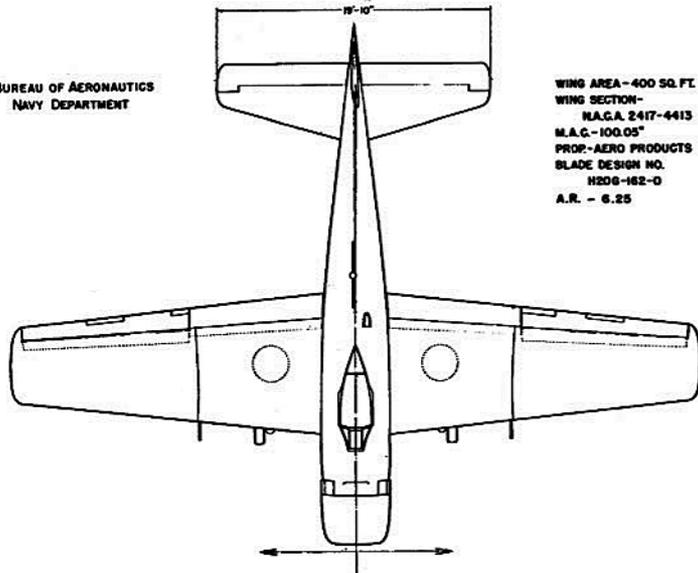
# STANDARD AIRCRAFT CHARACTERISTICS

## AD-1 "SKYRAIDER"

DOUGLAS

BUREAU OF AERONAUTICS  
NAVY DEPARTMENT

WING AREA - 400 SQ. FT.  
WING SECTION -  
N.A.G.A. 2417-4413  
M.A.C. - 100.05"  
PROP. AERO PRODUCTS  
BLADE DESIGN NO.  
H200-162-0  
A.R. - 6.25

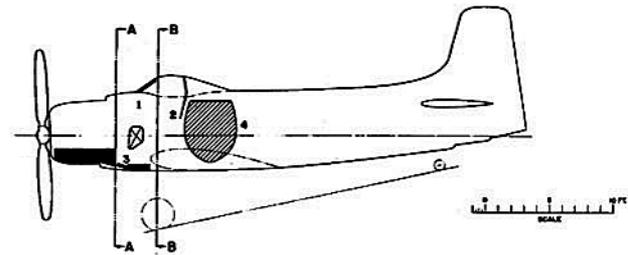
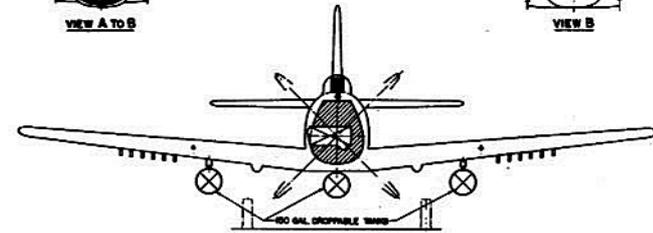
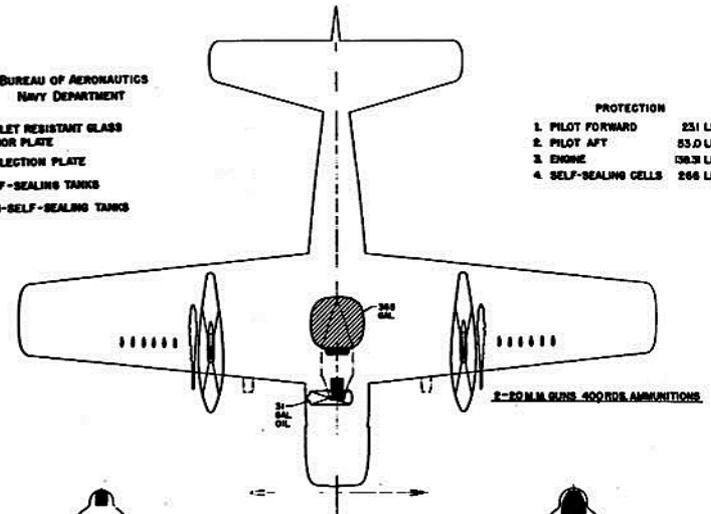


DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS  
NAVY DEPARTMENT

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

- PROTECTION
1. PILOT FORWARD 251 LBS.
  2. PILOT AFT 53.0 LBS.
  3. ENGINE 136.3 LBS.
  4. SELF-SEALING CELLS 266 LBS.



ARMAMENT AND TANKS

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

**MISSION AND DESCRIPTION**

The primary mission of the AD-1 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-1 is designed to operate from all classes of naval aircraft carriers or from land bases.

The airplane is conventional in design and structure with all-metal two-spar wing, semi-monocoque fuselage. Landing gear, canopy, slotted flaps, wing folding and three fuselage dive brakes are hydraulically operated. Sealed-gap ailerons and rudders with spring tabs and trim tabs are used. Longitudinal trim is achieved by an electrically adjustable stabilizer. Elevators and interchangeable power plant installation are conventional with a monocoque engine mount. Oxygen for five hours is supplied. Bomb displacing gear at the centerline station is power operated by a standard engine starter cartridge. Twenty gallons of water are supplied for injection.

Variations of this model have been built for use as night attack, countermeasures, photographic, airborne early warning and utility airplanes.

**DIMENSIONS**

WING AREA.....400 sq. ft.  
SPAN.....50'- 0"  
LENGTH.....38'- 4"  
HEIGHT.....15'- 9"  
TREAD.....13'-11"  
M.A.C.....8'- 4"  
PROP. CLEAR.....7"

**WEIGHTS**

| Loadings                         | Lbs.         | L.F. |
|----------------------------------|--------------|------|
| EMPTY.....                       | 10,519.....  |      |
| BASIC.....                       | 11,009.....  |      |
| DESIGN.....                      | 15,600..7.0  |      |
| COMBAT.....                      | 13,923..7.0  |      |
| MAX.T.O. (Cat.)...17,800..6.1    |              |      |
| (Field).....                     | 22,923*..4.7 |      |
| MAX.LD. (Smooth).....18,000..... |              |      |
| (Rough).....                     | 15,800.....  |      |
| (Arrest.).....                   | 16,000.....  |      |
| (Qualif.).....                   | 14,600.....  |      |

\*Tentative

All weights are actual.

**FUEL AND OIL**

| Gal. | No. Tanks | Location   |
|------|-----------|------------|
| 365  | 1         | Fuse, S.S. |
| 150  | 1         | Ctr., Drop |
| 300  | 2         | Wing, Drop |

FUEL GRADE.....100/130

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

**OIL**

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

**ELECTRONICS**

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

**POWER PLANT**

NO. & MODEL....(1) R-3350-24W  
MFR.....Wright  
SUPERCH.....1 Stage, 2 Speed  
PROP. GEAR RATIO.....0.4375  
PROP. MFR.....Aero Prod  
PROP. DES. NO.....H20G-162-0  
NO. BL./DIA.....4/13'-6"

**RATINGS**

|           | Bhp @ | Rpm @ | Alt.   |
|-----------|-------|-------|--------|
| T. O.     | 2,500 | 2,900 | S. L.  |
| COMBAT    | 2,950 | 2,800 | S. L.  |
|           | 2,570 | 2,600 | 6,200  |
| MIL.      | 2,500 | 2,800 | 3,500  |
|           | 1,900 | 2,600 | 14,800 |
| NORMAL    | 2,100 | 2,400 | 5,500  |
|           | 1,800 | 2,400 | 15,000 |
| SPEC. NO. | N-825 |       |        |

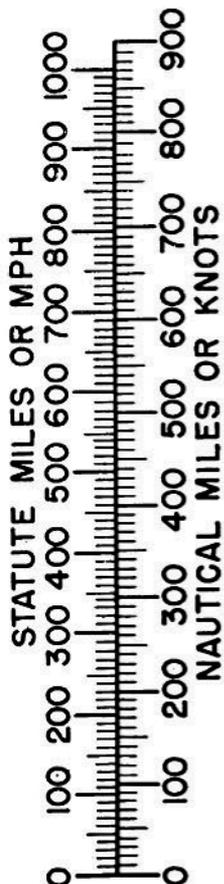
**ORDNANCE**

| No.                        | Size   | GUNS     |  | Rds. |
|----------------------------|--------|----------|--|------|
|                            |        | Location |  |      |
| 2                          | 20mm   | Wing     |  | 400  |
| <b>BOMBS &amp; ROCKETS</b> |        |          |  |      |
| Type                       | Size   | Location |  | No.  |
| D.B.                       | 325#   | External |  | 3    |
| Bomb                       | 500#   | External |  | 3    |
| Bomb                       | 2000#  | External |  | 3    |
| Mine                       | 1000#  | External |  | 3    |
| Mine                       | 2000#  | External |  | 3    |
| Torp.                      | Mk-13  | External |  | 3    |
| A.R.                       | 11.75" | Wing     |  | 2    |
| HVAR                       | 5"     | Wing     |  | 12   |

**FIRE CONTROLS**

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

MAX. BOMB CAPACITY...9,000 #



| PERFORMANCE SUMMARY              |                     |  |            |  |
|----------------------------------|---------------------|--|------------|--|
| LOADING CONDITION                |                     | (1) ATTACK<br>1-2000# Bomb<br>2-150 Gal.<br>Ext. Tanks |            | (5) ATTACK<br>1-2000# Bomb<br>AN/APS-4 Radar |
| TAKE-OFF WEIGHT                  | lbs.                | 18,029   |            | 16,065                                       |
| Fuel (Fixed/Drop)                | lbs.                | 2,190/1,800  |            | 2,190  |
| Bombs                            | lbs.                | 2,000  |            | 2,000  |
| Wing/Power Loading (A)           | lbs/sq.ft; lbs/bhp. | 45.1/10.0  |            | 40.2/8.9                                     |
| Stall Speed--Power off           | kn.                 | 81.0   |            | 76.5   |
| Stall Speed--Power off - No Fuel | kn.                 | 71.5   |            | 71.1   |
| Stall Speed--Power on            | kn.                 | 76.0   |            | 71.8   |
| Maximum Speed/Alt (B)            | kn/ft.              | 256/16,000   |            | 265/16,000                                   |
| Take-off Distance, deck -- calm  | ft.                 | 958  |            | 717  |
| Take-off Distance, deck 25 kn.   | ft.                 | 455  |            | 324  |
| Take-off Distance, Airport       | ft.                 |  |            |  |
| Rate of climb -- sea level (B)   | ft/min.             | 2,050  |            | 2,490  |
| Service Ceiling (B)              | ft.                 | 28,000   |            | 30,400                                       |
| Time-to-climb 10,000 ft. (B)     | min.                | 6.0  |            | 4.7  |
| Time-to-climb 20,000 ft. (B)     | min.                | 14.4   |            | 11.0   |
| Combat Range/V av 15,000         | ft. n.mi/kn.        | 1,390/174  |            | 705/169                                      |
| Combat Radius/V av B-1           | ft. n.mi/kn.        | 675/175  |            | 260/175                                      |
| LOADING CONDITION                |                     | (2) COMBAT   | (3) COMBAT | (4) COMBAT                                   |
| GROSS WEIGHT                     | lbs.                | 13,923   | 13,923     | 13,923                                       |
| Engine power                     |                     | Combat   | Military   | Normal                                       |
| Fuel                             | lbs.                | 2,190  | 2,190      | 2,190  |
| Bombs/Tanks                      |                     |  |            |  |
| Max. speed at sea level          | kn.                 | 311  | 285        | 267  |
| Max. speed/Alt                   | kn/ft.              | 311/S.L.   | 301/15,800 | 299/16,400                                   |
| Combat speed/Alt                 | kn/ft.              | 310/1,500  | 289/1,500  | 271/1,500                                    |
| Rate of climb SL                 | ft/min.             | 4,630  | 3,840      | 3,230  |
| Ceiling for 500 fpm R/C          | ft.                 | 33,200   | 33,200     | 32,600                                       |
| Time-to-climb/Alt.               | min/ft.             |  |            |  |

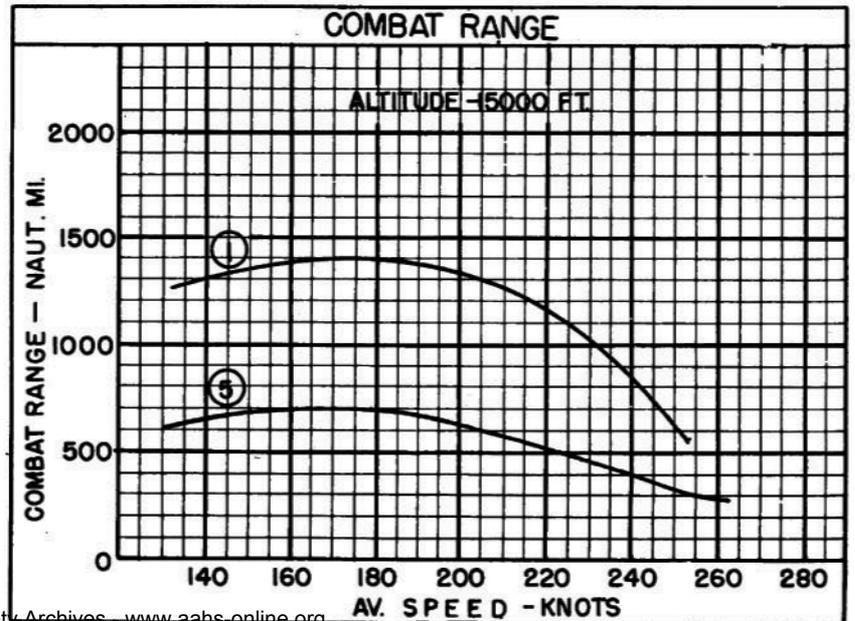
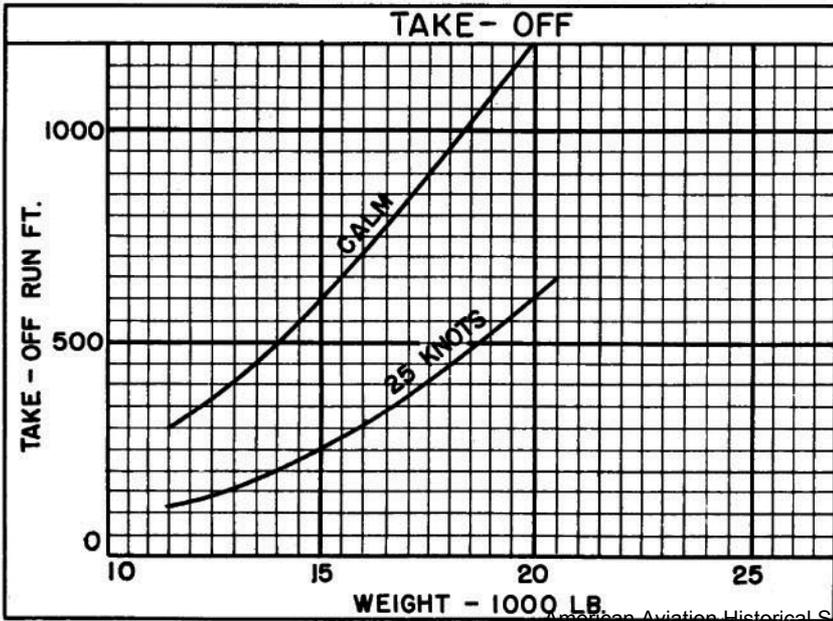
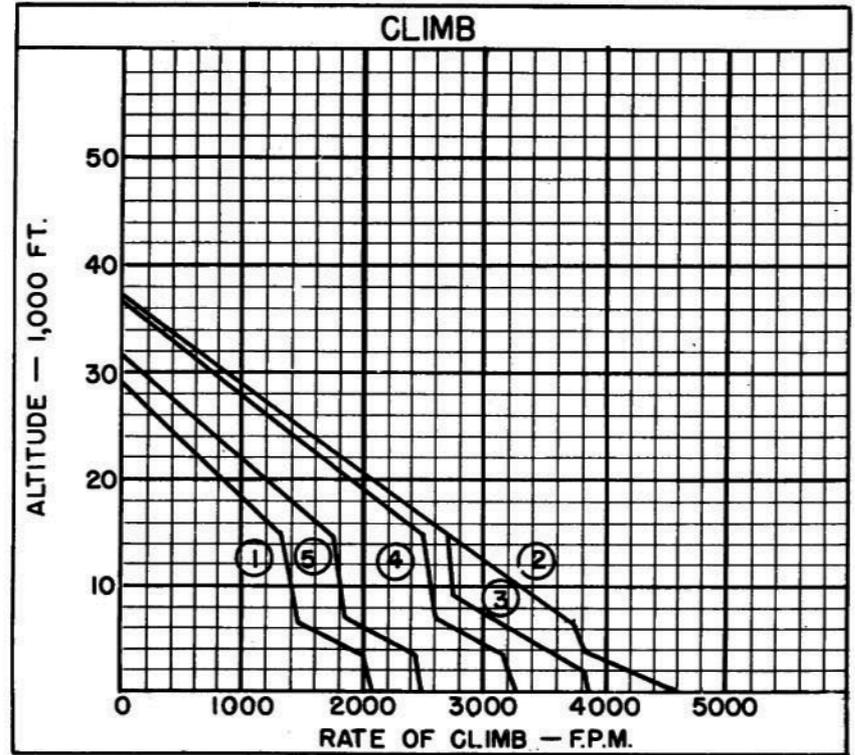
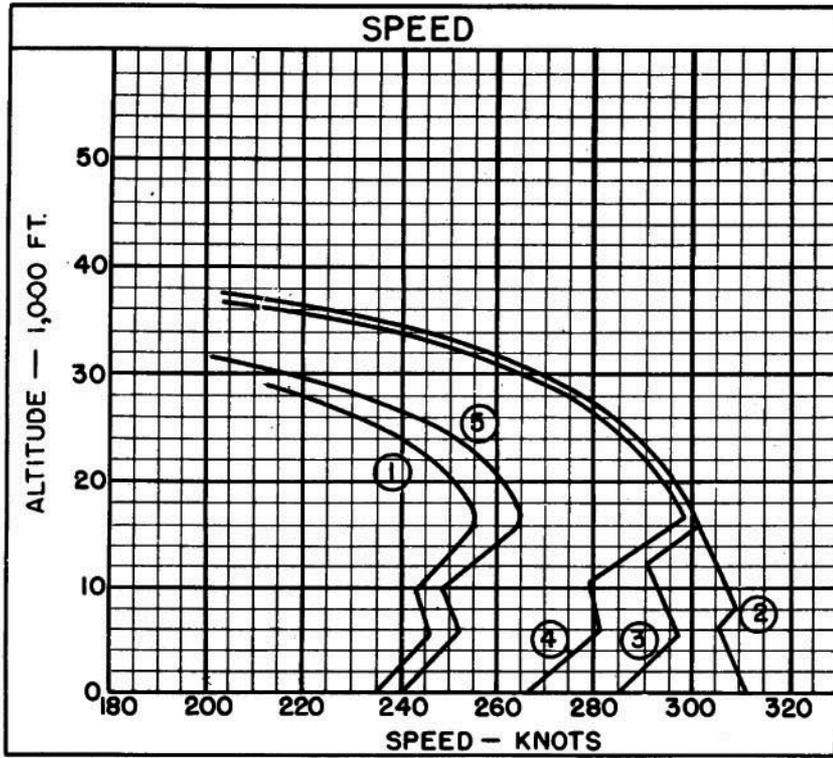
**NOTES**

- (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 contractor's flight test fuel consumption data increased 5%.

Rocket launchers not aboard. Addition of 12 launchers to Cond. (2) reduces  $V_{max}$ , S. L. to 304 kn. and  $V_{max.}/ACA$  to 302 kn./8,000 ft. Addition of 12 launchers and 12-5" HVAR increases gross weight of Cond. (2) to 15,652 lbs. and decreases  $V_{max}$ , S. L. to 285 kn. and  $V_{max.}/ACA$  to 282 kn./8,000 ft.



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

○ LOADING CONDITION COLUMN NUMBER

# 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.<br>3/4 Normal RPM | 20 min. at<br>Sea Level | to<br>15000 ft.   | at<br>15,000 ft.  | <u>DESCEND</u><br>to 1,500 ft. | 15 min. at<br>1,500 ft. | at 1500 ft.<br>170 kts. | 60 min. at<br>V for Max. |
| <u>TAKE-OFF</u>           | at 60%                  | at Normal         | 180 kts.          | <u>DROP BOMBS</u>              | 5 min. combat           | TAS Normal              | Range at 1500 ft.        |
| 1 min. at<br>T. O. Pr.    | N. Pr.                  | Power             | TAS Normal        | <u>FIRE</u>                    | and 10 min.             | Mixture                 | Normal                   |
|                           | Normal<br>Mixture       | Normal<br>Mixture | Mixture           | <u>ROCKETS</u>                 | N. Pr.                  |                         | Mixture                  |

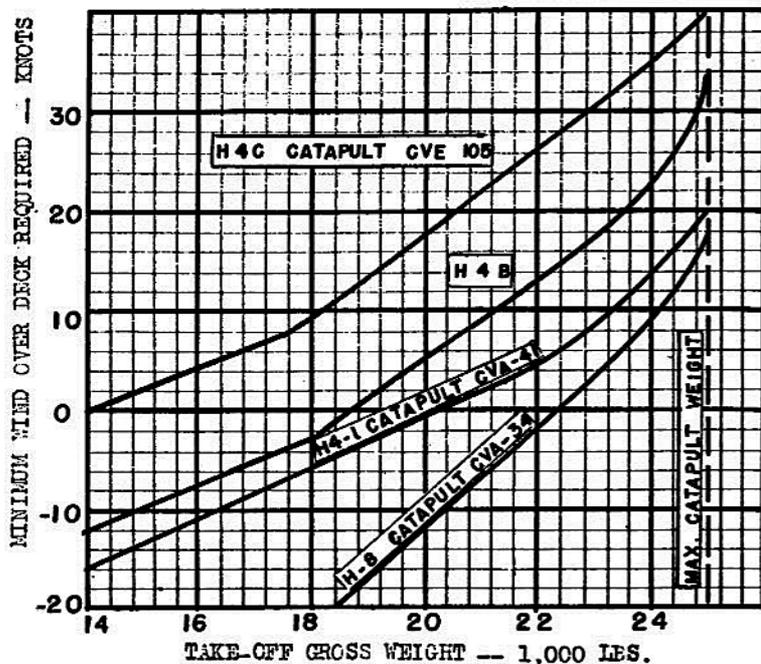
$$\text{RADIUS} = \text{CLIMB} \div \text{CRUISE-OUT} = \text{CRUISE-BACK}$$

Following engine ratings from flight test were used in preparation of performance data:

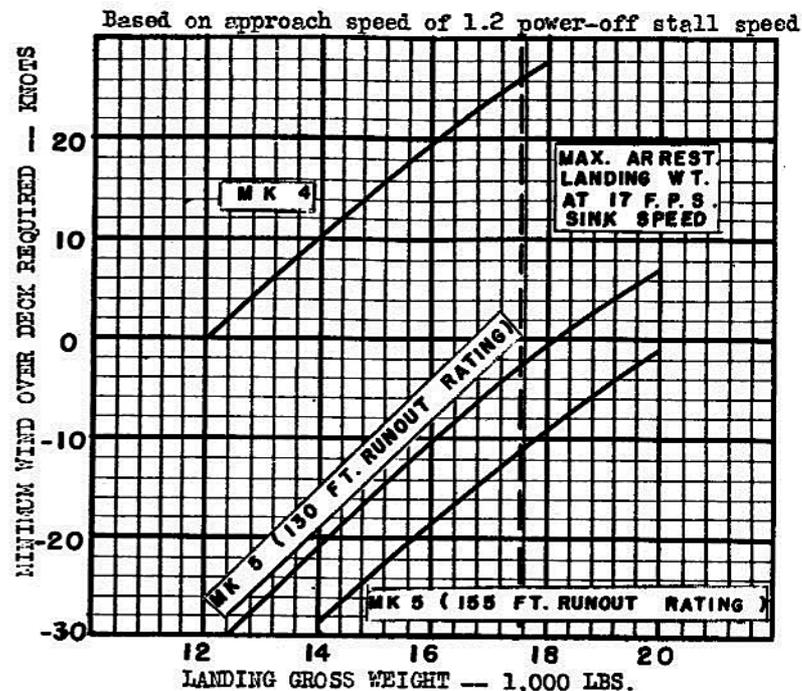
|       | <u>Bhp.</u> | <u>Rpm.</u> | <u>Alt.</u> |
|-------|-------------|-------------|-------------|
| T.O.  | 2500        | 2900        | S. L.       |
| Mil.  | 2500        | 2800        | 2000'       |
|       | 1900        | 2600        | 14300'      |
| Norm. | 2100        | 2400        | 3300'       |
|       | 1800        | 2400        | 14800'      |

# 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)