

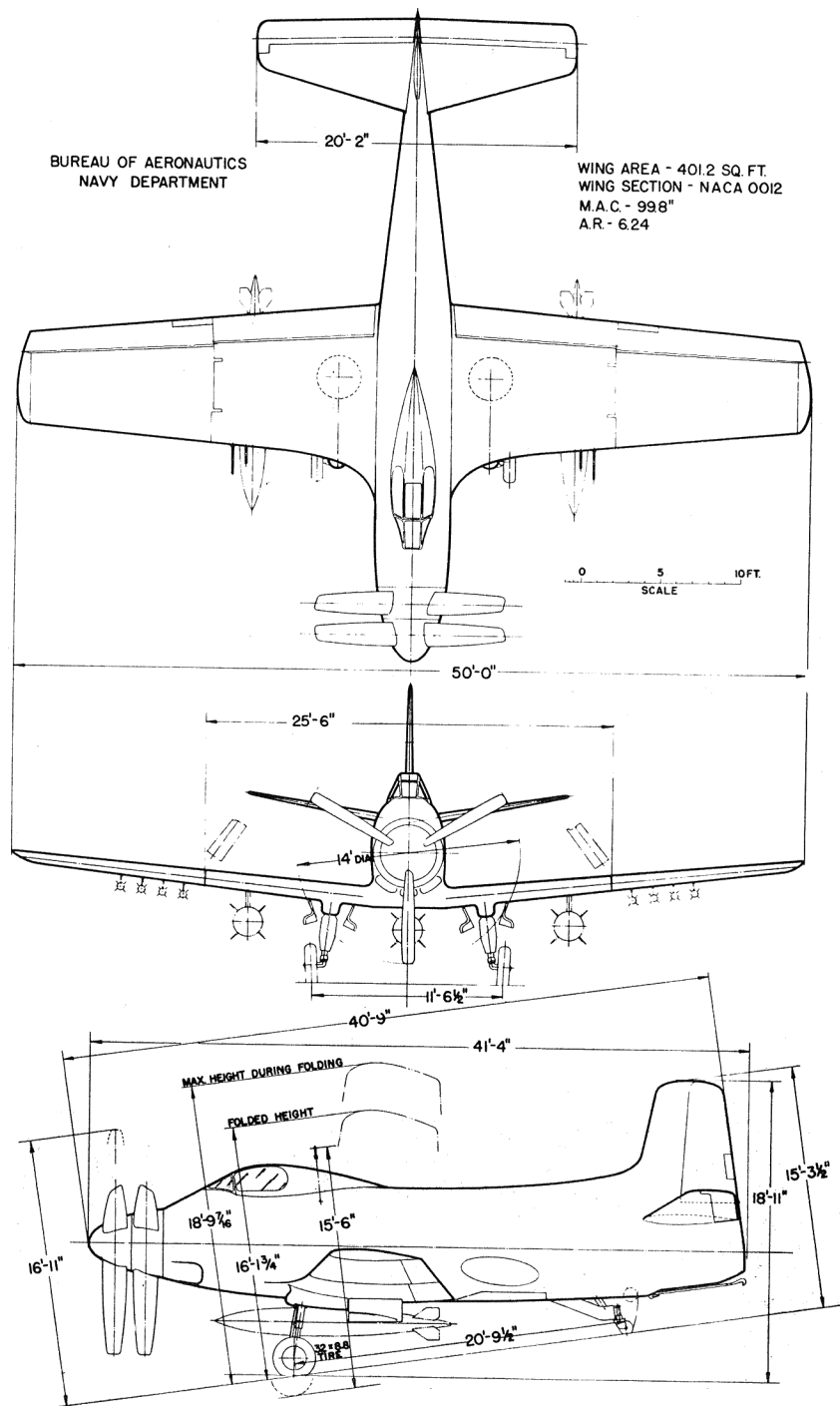
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# STANDARD AIRCRAFT CHARACTERISTICS

## A2D-1 "SKYSHARK"

DOUGLAS

DECLASSIFIED



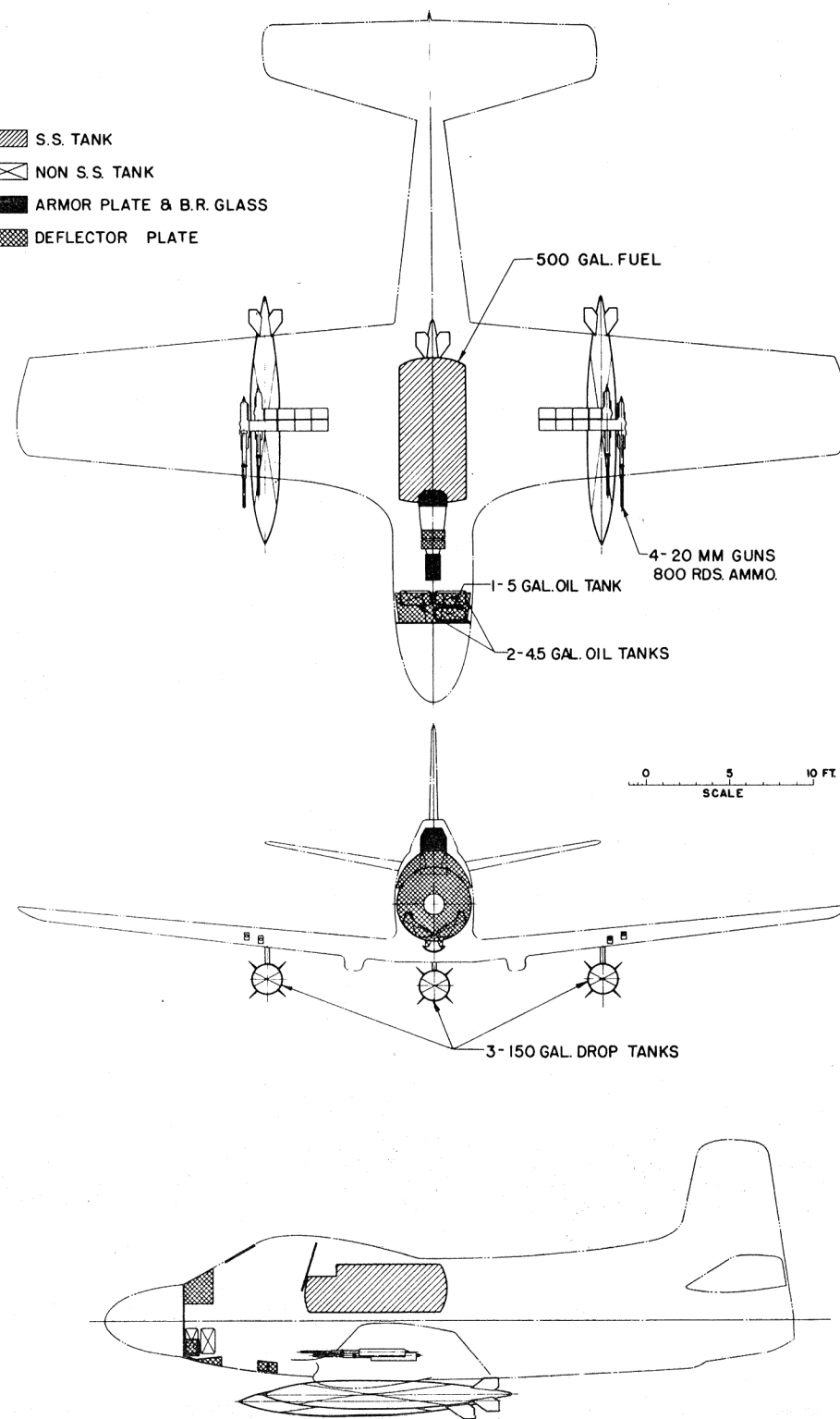
BUREAU OF AERONAUTICS  
NAVY DEPARTMENT

WING AREA - 401.2 SQ. FT.  
WING SECTION - NACA 0012  
M.A.C. - 99.8"  
A.R. - 6.24

0 5 10 FT.  
SCALE

DESCRIPTIVE ARRANGEMENT

- S.S. TANK
- NON S.S. TANK
- ARMOR PLATE & B.R. GLASS
- DEFLECTOR PLATE



ARMAMENT & TANKS

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**MISSION AND DESCRIPTION**

The primary mission of the A2D-1 airplane is the destruction of sea and ground targets by gunfire, bomb, rocket and torpedo attack. The airplane will also serve in steep dive-bombing tactics and in close ground support operations and with the addition of droppable fuel tanks, will serve as a long range attack type aircraft. The airplane is capable of operation from carriers of the CVE-105 class and larger, and from runways of limited length.

Arrangement and structure are conventional. Two gas turbine units drive each dual rotation propeller through a single gear box. Landing gear, slotted flaps, wing-folding and speed-brake are hydraulically operated. Stabilizer is fully adjustable and electrically operated. Ailerons and elevator are operated by power boost system but manual operation is available for emergencies.

Mock-up date -- Cockpit, 5 October 1950  
 First flight date -- Estimated February 1952  
 Production scheduled to start -- January 1952  
 Service use estimated -- March 1952

**DIMENSIONS**

WING AREA.....401 sq. ft.  
 SPAN.....50' - 0"  
 LENGTH.....40' - 9"  
 HEIGHT.....15' - 4"  
 TREAD.....11' - 7"  
 M.A.C.....8' - 3"

**WEIGHTS**

Loadings	Lbs.	L.F.
EMPTY.....	15,044.....	
BASIC.....	15,485.....	
DESIGN.....	17,000.....	7.5
COMBAT.....	19,160.....	6.5
MAX.T.O.....	27,835.....	4.3
MAX. LAND....	19,641.....	

All weights are estimated.

**FUEL AND OIL**

Gal.	No. Tanks	Location
500	1	Fuse., S.S.
900	3	Drop

FUEL GRADE.....100/130  
 FUEL SPEC...MIL-F-5624

**OIL**

CAPACITY (Gals.).....14  
 GRADE.....M  
 SPEC.....MIL-O-6086

**ELECTRONICS**

VHF.....AN/ARC-1  
 RANGE REC.....AN/ARC-5  
 HOMING.....AN/ARR-2A  
 ALTIMETER.....AN/APN-1  
 SEARCH RADAR.....AN/APS-19A  
 IFF.....AN/APX-6  
 RANGING RADAR.....AN/APG-30  
 RADIO COMPASS.....AN/ARN-6  
 The following to be S.I.  
 VHF.....AN/ARC-27  
 VOR.....AN/ARN-19  
 IFF (I-R UNIT).....SN/APX-17

**POWER PLANT**

NO. & MODEL.....(1) XT40-A-6  
 MFR.....Allison  
 PROP. GEAR RATIO.....0.0638  
 PROP. MFR.....Aeroproducts  
 PROP. DES. NO...F40A-198-30M4  
 NO. BL./DIA.....6/14 ft.

**RATINGS**

Shp Thrust @ Rpm

All ratings Static Sea Level

T. O. 5,035 1,225 14,300

MIL. 5,035 1,225 14,300

NORM. 4,470 1,115 14,000

SPEC. NO. 300-A

**ORDNANCE****GUNS**

No.	Size	Location	Rds.
4	20 mm	Wings	560

**BOMBS AND ROCKETS**

Type	Size	Location	No.
HVAR	5"	Wings	22
Torp.	2,200#	Wings	2
Torp.	1,700#	Wings	2
Torp.	1,700#	Fuselage	1
Bombs	4,000#	Fuselage	1
Bombs	2,000#	Fuselage	1
Bombs	1,000#	Fuselage	1
Bombs	2,000#	Wings	2
Bombs	1,000#	Wings	2
Bombs	500#	Wings	10
Bombs	250#	Wings	20
Bombs	100#	Wings	22

**FIRE CONTROL**

Bomb Director.....Mk. 3  
 Aircraft Sighting Sys..Mk.1-4  
 MAX. BOMB CAP.....8,700 lbs.

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PERFORMANCE SUMMARY					
LOADING CONDITION		(1) 2-1,000# Bombs 8 - 5" Rockets 1-150 Gal.Tank	(4) 1-2,000# Bomb 8 - 5" Rockets 2-300 Gal.Tank	(5) 3-1,000# Bombs 22-5" Rockets	(6) 22-5" Rockets 2-150 Gal.Tank
TAKE-OFF WEIGHT	lbs.	23,944	26,893	25,871	24,780
Fuel (Fixed/Drop)	lbs.	3,000/900	3,000/3,600	3,000/-	3,000/1,800
Bombs/Rockets	lbs.	2,000/1,104	2,000/1,104	3,000/3,036	--/3,036
Wing/Power Loading (A) lbs/sq.ft; lbs/bhp.		59.8/-	67.0/-	64.5/-	61.8/-
Stall Speed--Power off	kn.	98.2	104.3	102.2	100.0
Stall Speed--Power off - No Fuel	kn.	89.8	90.3	96.0	89.6
Stall Speed--Power on	kn.	96.6	102.8	100.5	98.3
Maximum Speed/Alt (B)	kn/ft.	371/28,500	356/25,500	342/26,000	351/27,500
Take-off Distance, deck -- calm	ft.	1,150	1,600	1,440	1,280
Take-off Distance, deck 25 kn.	ft.	660	940	850	740
Take-off Distance, 50 ft. Height	ft.	2,300	2,930	2,710	2,580
Rate of climb -- sea level (B)	ft/min.	4,120	3,500	3,620	3,870
Service Ceiling (B)	ft.	39,500	37,000	37,100	38,200
Time-to-climb 20,000 ft. (B)	min.	6.7	8.2	7.9	7.2
Time-to-climb 30,000 ft. (B)	min.	12.9	16.6	16.2	14.4
Combat Range/V av 35,000	ft. n.mi./kn.	790/291	1,350/289	440/278	930/282
Combat Radius/V av (A-2)	ft. n.mi./kn.	370/288	690/282	200/281	470/282
LOADING CONDITION		(2)	(3)		
GROSS WEIGHT	lbs.	19,160	19,160		
Engine power		Military	Normal		
Fuel	lbs.	2,340	2,340		
Bombs/Tanks		--	--		
Max. speed at sea level	kn.	392	367		
Max. speed/Alt	kn/ft.	430/28,200	416/30,000		
Combat speed/Alt	kn/ft.	396/1,500	371/1,500		
Rate of climb SL	ft/min.	6,750	5,750		
Ceiling for 500 fpm R/C	ft.	43,300	42,300		
Time-to-climb/Alt.	min/ft.	8.6	11.0		

## NOTES

(A) BHP at Maximum Critical Altitude

(B) Normal BHP

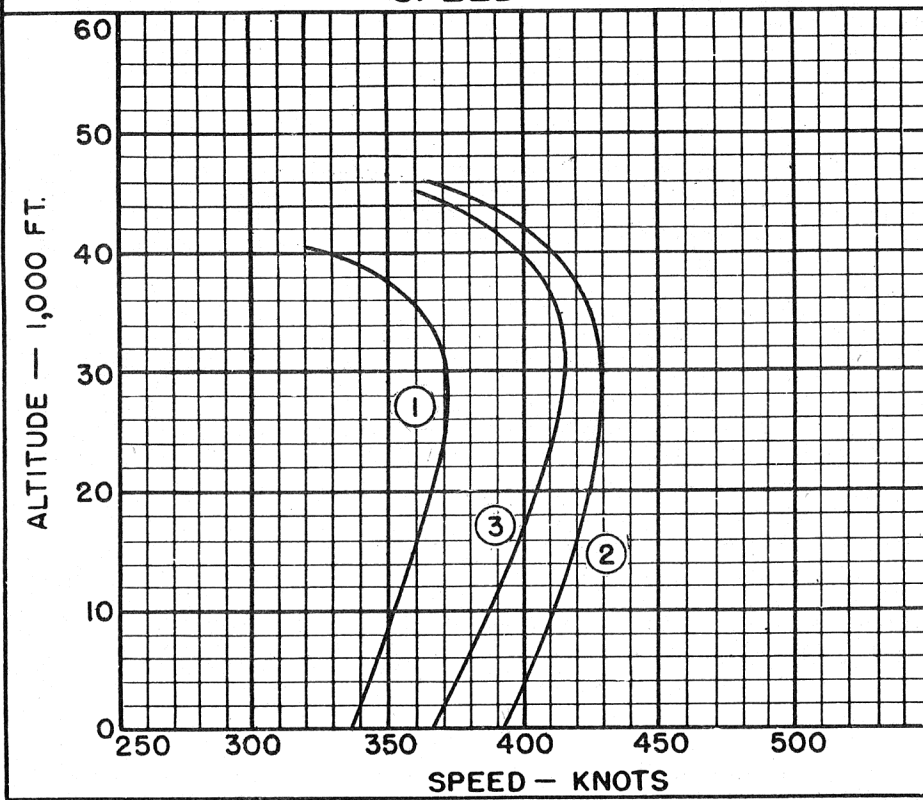
Performance is based on calculations.

Range and radius are based on engine specification fuel consumption data increased by 5%.

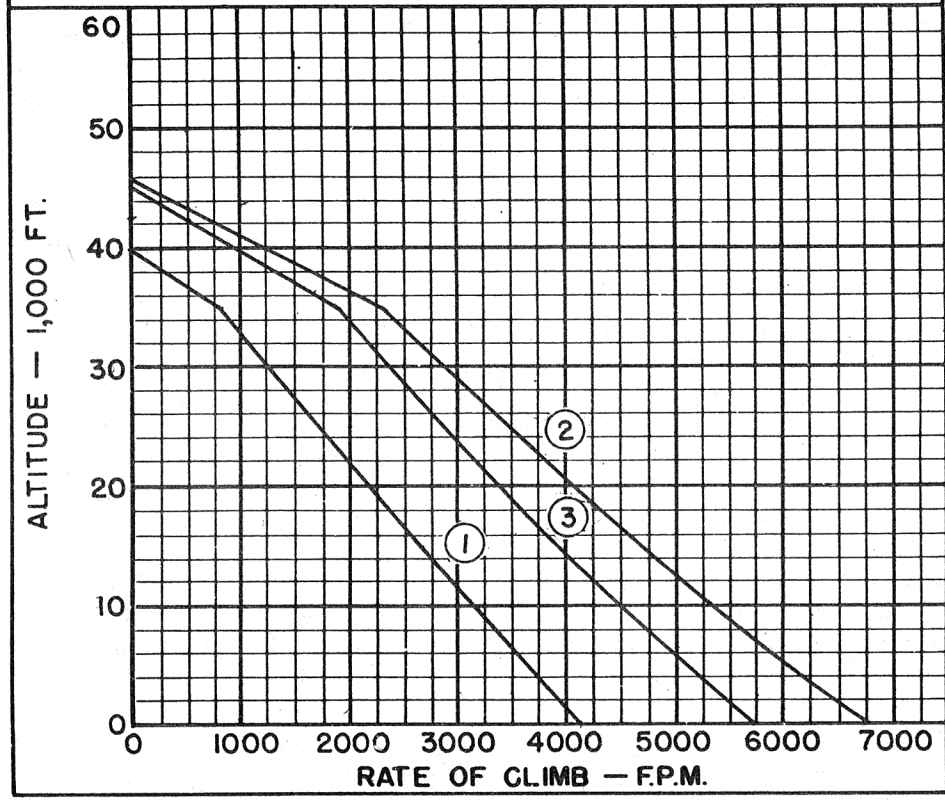
Spotting: 200 ft. length is required to spot 14 airplanes on the 96 ft. wide deck immediately aft of the forward ramp on the CV-9 class carriers.

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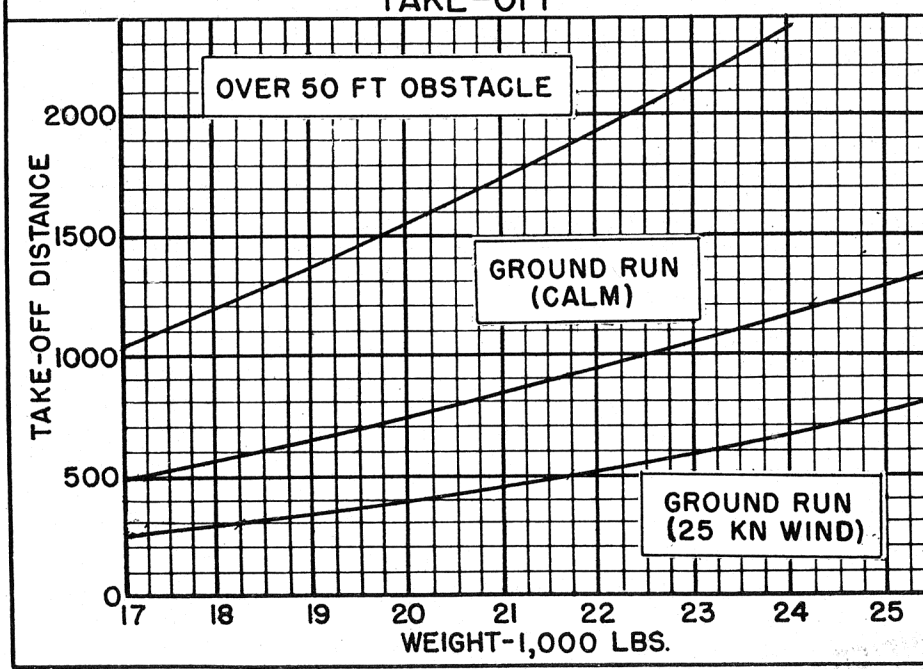
### SPEED



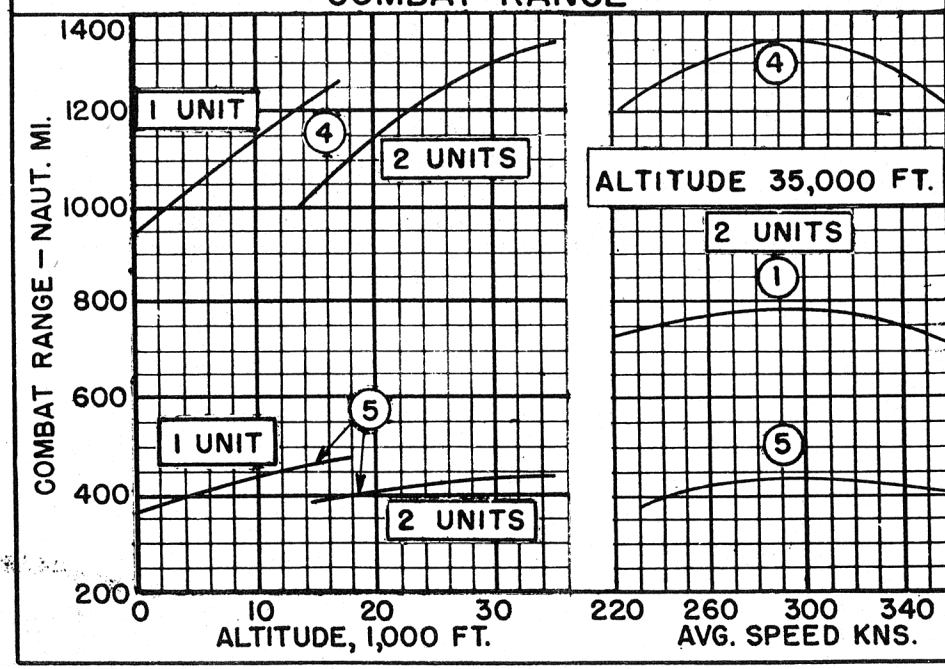
### CLIMB



### TAKE-OFF



### COMBAT RANGE



○ LOADING CONDITION COLUMN NUMBER

# NOTES

Performance for additional loading conditions is given as follows:

LOADING CONDITIONS		22-5" Rockets	7-500# Bombs 18-250# Bombs	1-4,000# Bomb 2-300 Gal. Tank
TAKE-OFF WEIGHT	lbs.	22,620	27,835	27,258
Fuel (Fixed/Drop)	lbs.	3,000/-	3,000/-	3,000/3,600
Bombs/Rockets	lbs.	-/3,036	8,000/-	4,000/-
Take-off Distance, Deck 25 kn.	ft.	560	1,180	960
Take-off Distance, 50 ft. Height	ft.	2,040	3,450	3,000
Combat Radius/V av. (A-2)	n.mi/kn.	245/285	155/267 (Cruise-out at 30,000 ft.)	690/283

Performance is based on the following assumptions: All external fuel tanks and bombs are carried in high speed external store, except the 500 pound bomb. In all conditions 22 - 5" Rocket Launchers are carried.

## ATTACK COMBAT RADIUS PROBLEM NO. A-2

<u>WARM-UP</u> <u>TAKE-OFF</u> <u>RENDEZVOUS</u> Fuel for 5 min., static SL, normal power -- all engines	<u>CLIMB (A)</u> at max. R/C w/mil. power to 35,000 ft.	<u>CRUISE-OUT</u> at V for long-range operation at 35,000 ft. Tanks dropped when empty	<u>DESCEND</u> to 1,500 ft. alt. No fuel used, no distance gained. Drop or fire ex- pendable ordnance.	<u>COMBAT</u> at 1,500 ft. alt. at V max. for 5 min. with mil. power	<u>CLIMB (B)</u> at max R/C with mil. power to 35,000 ft.	<u>CRUISE-IN</u> at V for long-range operation at 35,000 ft.	<u>RESERVE</u> 10% of initial fuel load.
COMBAT RADIUS = CLIMB (A) / CRUISE-OUT = CLIMB (B) / CRUISE-IN							

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