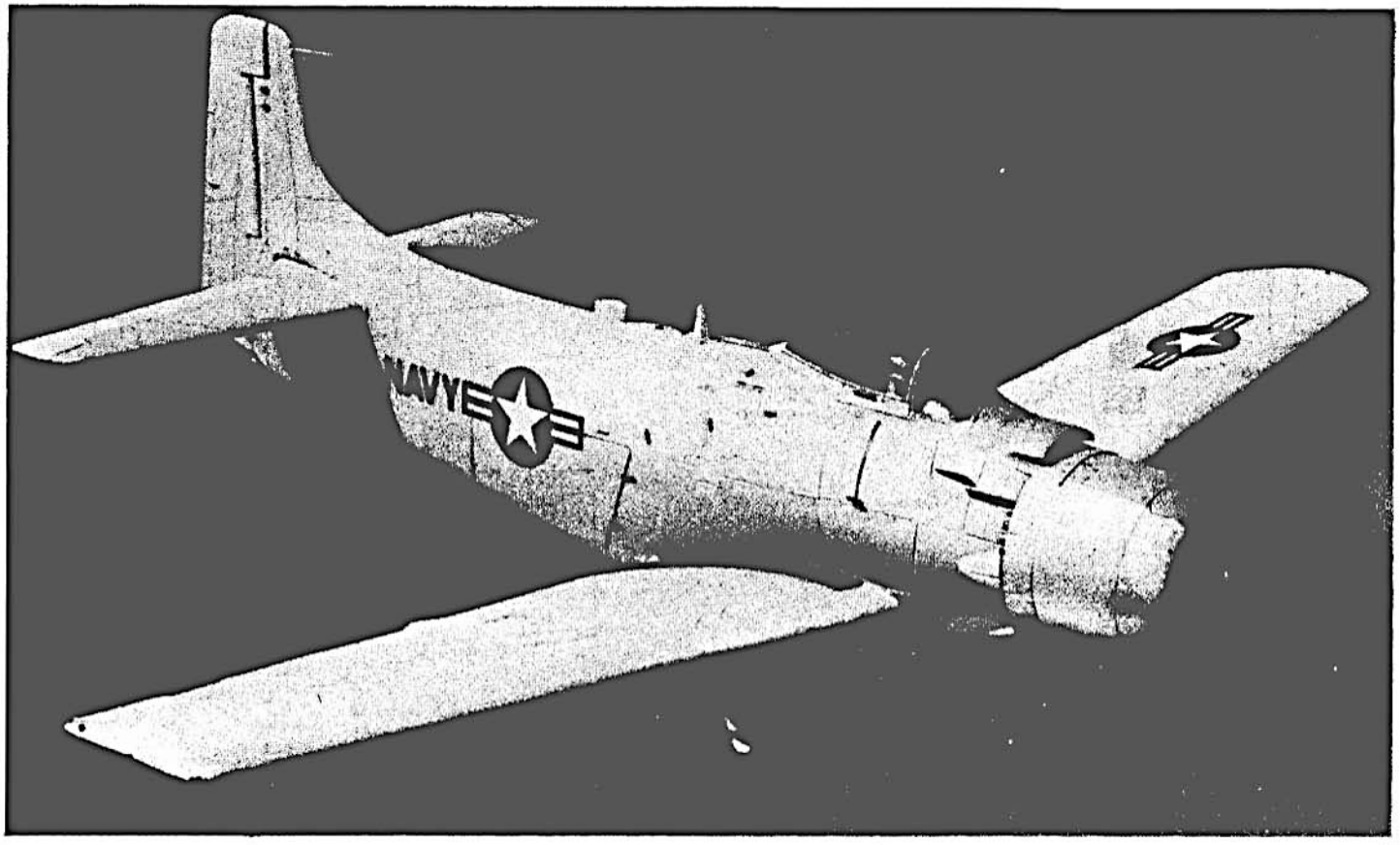


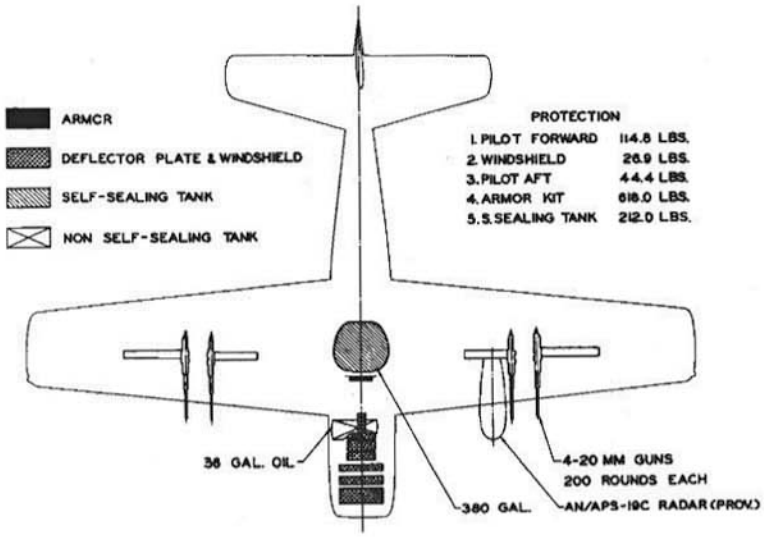
STANDARD AIRCRAFT CHARACTERISTICS

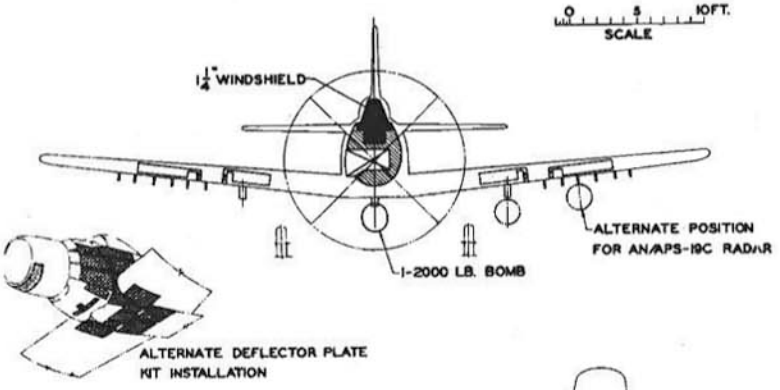
AD-7 "SKYRAIDER"

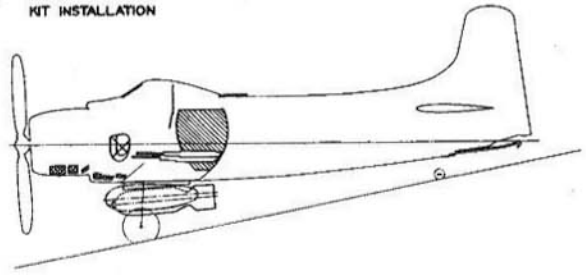
(A-1J)

DOUGLAS

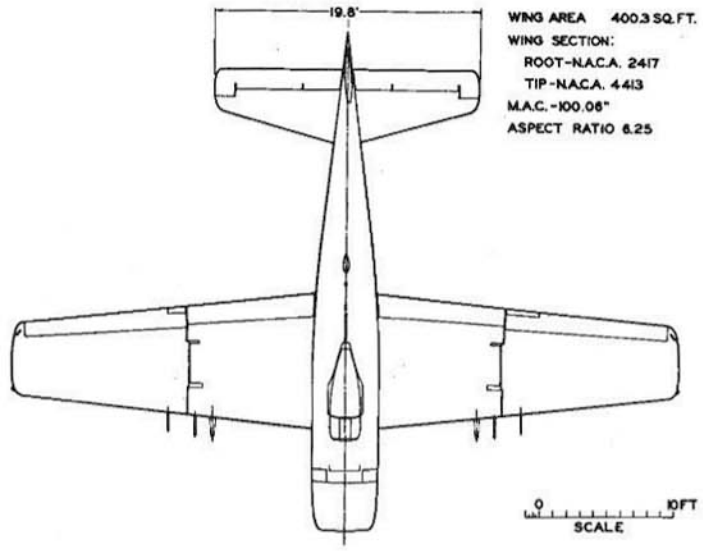
Standard Aircraft Characteristics NAVAER 1335A (REV. 1-55)

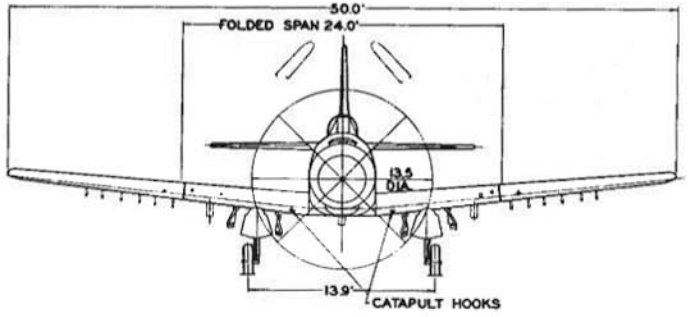


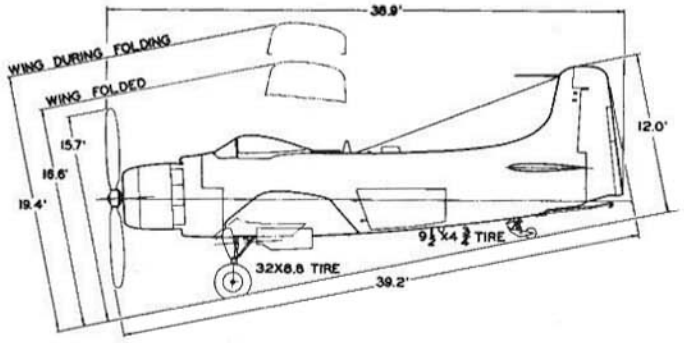




ARMAMENT & TANKAGE







DESCRIPTIVE ARRANGEMENT

POWER PLANT

NO. & MODEL.....(1) R-3350-26WB
MFR.....Wright
SUPERCH.....1 Stage, 2 Speed
RED. GR. RATIO.....0.4375
PROP. MFR.....Aero Products
BLADE DESIGN...A-642-G-805/M20A2-162-0
NO. BL./DIA.....4/13' - 6"

RATINGS

	BHP	RPM	ALT.
T.O.	2700	2900	S.L.
MIL.	2700	2900	S.L. to 3700'
	2100	2600	11500' to 14500'
NORM.	2300	2600	S.L. to 6200'
	1900	2600	12000' to 17000'

SPEC. NO. M-836D

ORDNANCE

GUNS

NO.	SIZE	LOCATION	RDS.
4	20mm, M-3	Wings	800

Armament Control Sys. (LABS) Aero 18C

EXTERNAL LOAD

RACKS	NO.	LOCATION	MAX. CAP.
Aero 3A Bomb Ejector	1	Fuselage C.L.	2000 lb.
Mk. 51 with Aero 1-A Adapter	2	Inner Wing	4000 lb.
Aero 14D-2 or Aero 14E	12	Outer Wing	3000 lb.

1 Mk. 7, Mk. 8, Mk. 12, Mk. 91, or HOAR store can be carried at the fuselage c.l.

MISSION AND DESCRIPTION

The primary mission of the AD-7 airplane is the destruction of sea and ground targets by dive bombing attacks. The airplane is also capable of torpedo, glide bombing, rocket attacks and tactical support missions. The AD-7 is designed to operate from all classes of naval aircraft carriers or from land bases.

The single-place airplane is conventional in design and structure. Landing gear, flaps, canopy, wing folding, and three fuselage dive brakes are operated hydraulically. Flaps are NACA single-slotted trailing-edge type. The pressure-balance type ailerons are operated by power boost. The rudder is equipped with a spring tab system. Longitudinal trim is achieved by an electrically adjustable stabilizer. Power plant, engine mount, and elevators are conventional. Oxygen for five hours is supplied.

The improvements included in the AD-7 over its predecessors include the use of the R-3350-26WB engine and structural improvements in the wing to improve fatigue life.

DEVELOPMENT

Prototype - - - - - - - - - - AD-6
First Flight - - - - - - - - - June 1956
Service Use - - - - - - September 1956

DIMENSIONS

WING
AREA.....400 Sq. Ft.
SPAN.....50' - 0"
MAC.....8' - 4"
LENGTH.....39' - 2"
HEIGHT.....15' - 8"
TREAD.....13' - 11"
PROP. GRD. CLEARANCE.....6"

WEIGHTS

LOADINGS	LBS.	L.F.
EMPTY	12,094	
BASIC	13,565	
DESIGN	15,595	7.0
COMBAT	16,199	[illegible]
MAX. T.O. (Field)	25,000	1
(Cat.)	25,000	
MAX. LAND. (Field)	21,000	
(Arrest)	17,500	

ALL WEIGHTS ARE CALCULATED

FUEL AND OIL

NO TANKS	TOTAL GAL.	LOCATION
1	380	[illegible] Fuse
1	150 or 300	[illegible] Drop
2	150 or 300	[illegible] Drop

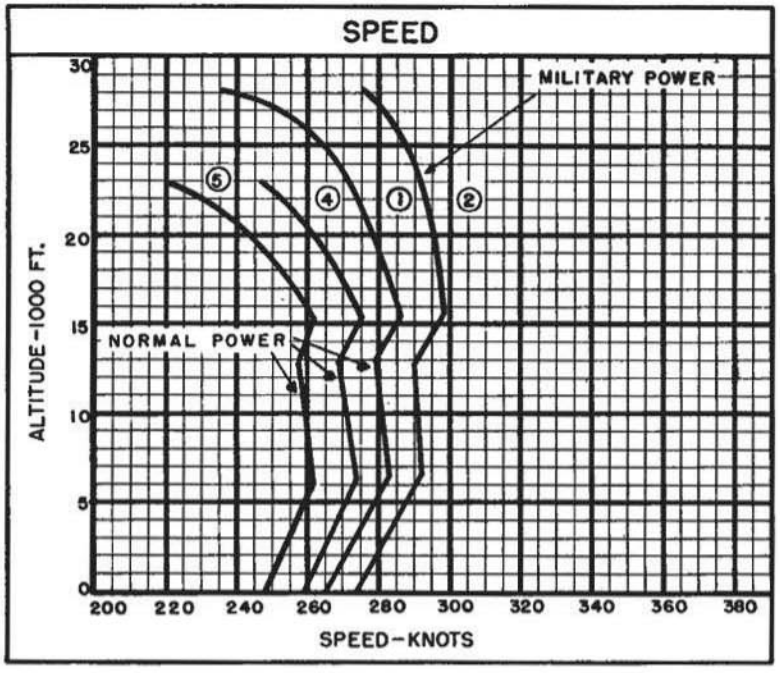
FUEL GRADE.....[illegible]-145
FUEL SPEC...applicable...MIL-[illegible]-72

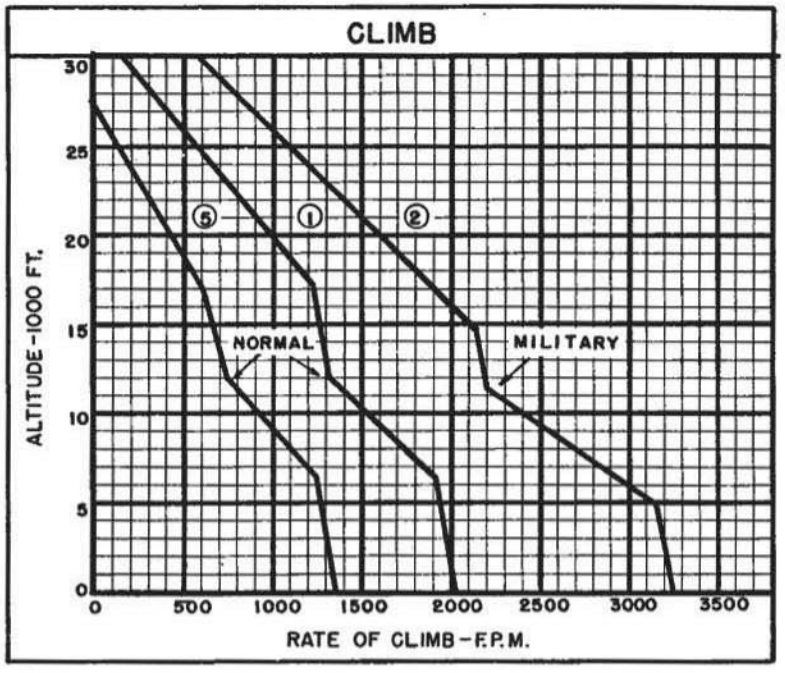
OIL

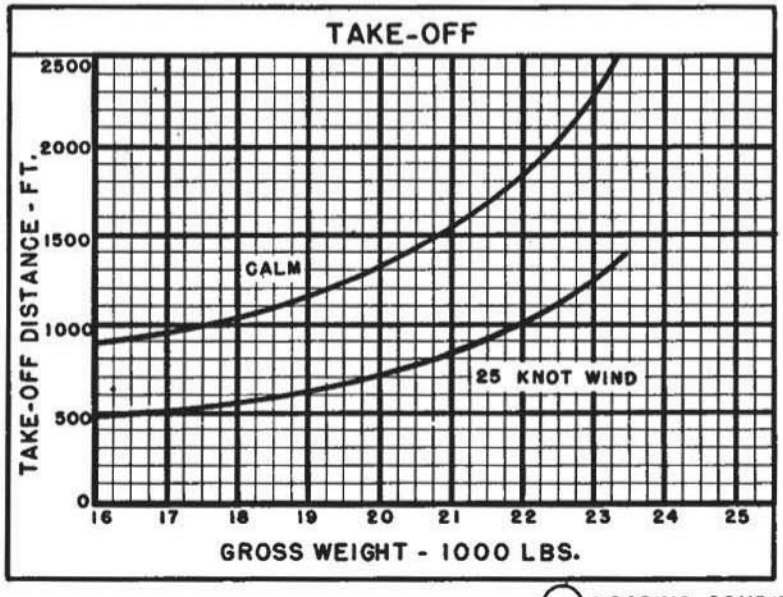
CAPACITY (Gal.).....36
GRADE.....1120
SPEC.....applicable.....[illegible]-6082

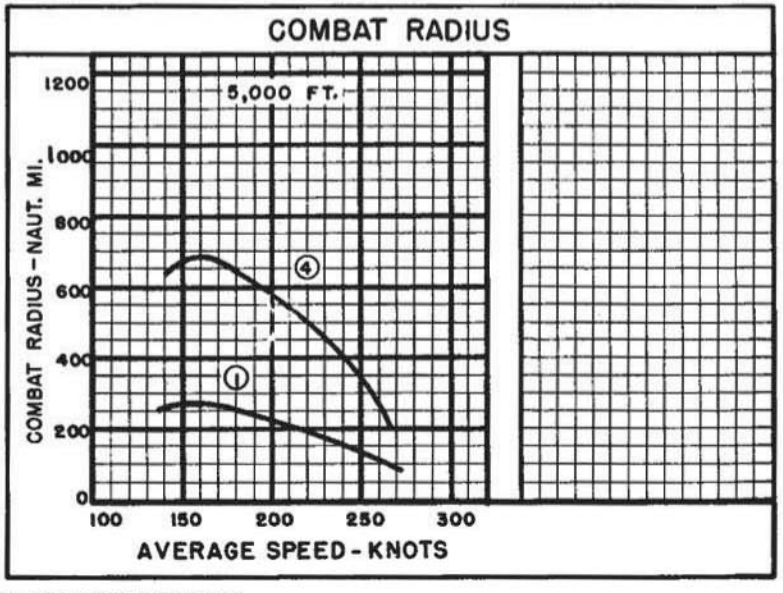
ELECTRONICS

UHF COMM.....AN/[illegible]-27A
IFF.....AN/APX-6B, AN/[illegible]A-39
LF ADF.....AN/ARN-6
UHF DIR. FINDER.....AN/[illegible]A-25
RADIO ALTIMETER.....AN/[illegible]-22
MARK. BEACON REC.....AN/[illegible]-12
TACAN (Alt. to AN/ARN-6).....AN/[illegible]-21
SEARCH RADAR (Prev.).....AN/[illegible]-19C









◯ LOADING CONDITION COLUMN NUMBER

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) ATTACK 1-2,000 lb. Bomb	(3) ATTACK 1-1,660 lb. Store	(4) ATTACK 1-1,660 lb. Store 2-300 Gal. Aero 1 A Fuel Tank	(5) ATTACK 1-2,000 lb. Bomb 2-150 Gal. Tanks 12-5 in. HVAR	(6) REFRESHER MISSION for refueling of Combat Air Patrol Aircraft (D) Full Internal Fuel
TAKE-OFF WEIGHT	lb.	19,111	18,771	22,781	22,795	25,510
Fuel Gasoline	lb.	2,280	2,280	5,880	4,080	2,280
Payload	lb.	2,000	1,660	1,660	3,680	--
Wing loading	lb./sq.ft.	47.8	46.9	57.0	57.0	63.8
Stall speed - power-off	kn.	86.6	85.8	94.5	94.6	100.1
Take-off run at S.L. - calm	ft.	1,185	1,140	2,165	2,170	3,700
Take-off run at S.L. 25 kn. wind	ft.	635	620	1,190	1,195	2,250
Take-off to clear 50 ft. - calm	ft.	—	—	—	—	—
Max. speed/altitude (B)	kn./ft.	286/15,500	288/15,500	275/15,300	262/15,100	—
Rate of climb at S.L. (A)	fpm.	2,000	2,070	1,420	1,350	—
Time: S.L. to 10,000 ft. (A)	min.	5.2	5.0	7.6	8.1	—
Time: S.L. to 20,000 ft. (A)	min.	12.8	12.2	20.2	21.8	—
Service ceiling (100 fpm) (A)	ft.	30,650	31,150	26,100	25,400	19,800
Combat range	n.mi.	720	740	1,960	1,130	—
Average cruising speed	kn.	170	170	170	170	—
Cruising altitude(s)	ft.	5,000	5,000	5,000	5,000	—
Combat radius	n.mi.	265	270	675 (C)	555	145
Average cruising speed	kn.	170	170	170	170	167
Total Mission Time	**hrs.**	3.4	3.5	8.1	6.8	1.91
Loiter Time	**hrs.**	—	—	—	—	.50

COMBAT LOADING CONDITION		(2) CLEAN
COMBAT WEIGHT	lb.	16,199
Engine power		Military
Fuel	lb.	1,368
Combat speed/combat altitude	kn./ft.	274/Sea Level
Rate of climb/combat altitude	fpm/ft.	3230/Sea Level
Combat ceiling (500 fpm)	ft.	30,900
Rate of climb at S.L.	fpm.	3,230
Max. speed at S.L.	kn.	274
Max. speed/altitude	kn./ft.	298/15,700
LANDING WEIGHT	lb.	15,043
Fuel	lb.	212
Stall speed - power-off	kn.	76.8
Stall speed - with approach power	kn.	72.2

NOTES

(A) Normal Rated Power

(B) Military Rated Power

(C) External fuel tanks and 1,247 lb. of external fuel dropped prior to combat

(D) Fuel available for transfer - 7,480 lb. JP-5
  a. 1-300 gal. inflight refueling store
  b. 2-480 gal. tanks

PERFORMANCE BASIS: Performance is calculated and based on flight tests of models AD-4B, AD-5 and AD-6. Combat range and radius are based on fuel consumption data from AD-4B, AD-5 and AD-6 flight tests

All loadings include centerline and inner wing bomb racks, 12-aero 14 racks, and 4-20mm guns

NAVAER-1335D (Rev. 1-55)

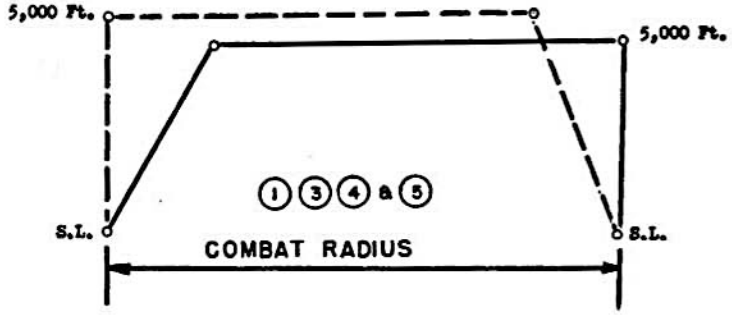
NOTES

SPOTTING: A maximum operating spot aboard a CVA-19 (Angled Deck) class carrier consists of 42 aircraft on the flight deck with elevators and landing area clear and 41 aircraft on the hangar deck with hangar bay fire doors and elevators clear. Total 83 aircraft.

LOW ALTITUDE ATTACK AND GROUND SUPPORT BOMBER

WARM-UP, TAKE-OFF, ACCELERATE: 10 minutes at normal rated power at sea level.
CLIMB: To 5,000 ft. at normal rated power.
CRUISE-OUT: At speed for long range at 5,000 ft.
DESCEND: To sea level - no fuel used - no distance gained.
DROP BOMBS AND FIRE ROCKETS
COMBAT: 5 minutes at maximum power plus 10 minutes at normal rated power at sea level.
CLIMB: To 5,000 ft. with normal rated power.
CRUISE-BACK: At speed for long range at 5,000 ft.
RESERVE: 20 minutes at speed for long range at sea level plus 5% of initial fuel.

MISSION TIME = TIME REQUIRED FOR CLIMB + CRUISE-OUT + COMBAT + CLIMB + CRUISE-BACK

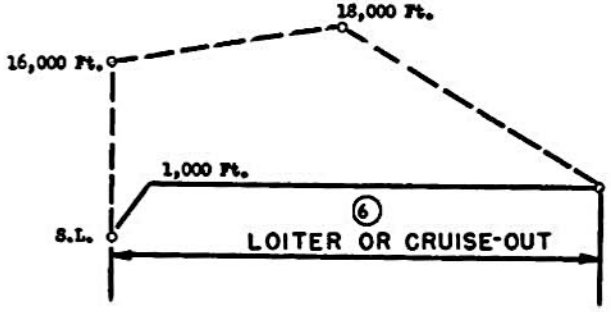


REFRESHER MISSION: FOR REFUELING OF COMBAT AIR PATROL AIRPLANES

WARM-UP, TAKE-OFF: 10 minutes at normal rated power at sea level.
CLIMB: To 1,000 ft. with normal rated power.
LOITER: On station (1,000 ft.) for 50 minutes at speed for maximum endurance, or cruise out (1,000 ft.) for 50 minutes to combat air patrol airplanes.
CLIMB: To 18,000 ft. at normal rated power.
REFUEL: For 20 minutes at normal rated power at 200 kn IAS. (See note 2)
RESERVE: 20 minutes at speed for long range plus 5% of initial fuel.

MISSION TIME = TIME REQUIRED FOR CLIMB + LOITER + CLIMB + REFUEL

NOTES:
1. Performance basis: NATC flight test results.
2. The dive angle required to maintain 200 kn IAS at 18,000 ft. is 1° on a Navy hot day.



◯ LOADING CONDITION COLMN NUMBER

NOTES

SPOTTING: A maximum operating spot aboard a CVA-19 (Angled Deck) class carrier consists of 42 aircraft on the flight deck with elevators and landing area clear and 41 aircraft on the hangar deck with hangar bay fire doors and elevators clear. Total 83 aircraft.

- -

LOW ALTITUDE ATTACK AND GROUND SUPPORT BOMBER

WARM-UP, TAKE-OFF, ACCELERATE: 10 minutes at normal rated power at sea level.
CLIMB: To 5,000 ft. at normal rated power.
CRUISE-OUT: At speed for long range at 5,000 ft.
DESCEND: To sea level - no fuel used - no distance gained.
DROP BOMBS AND FIRE ROCKETS
COMBAT: 5 minutes at maximum power plus 10 minutes at normal rated power at sea level.
CLIMB: To 5,000 ft. with normal rated power.
CRUISE-BACK: At speed for long range at 5,000 ft.
RESERVE: 20 minutes at speed for long range at sea level plus 5% of initial fuel.

- -

MISSION TIME = TIME REQUIRED FOR CLIMB + CRUISE-OUT + COMBAT + CLIMB + CRUISE-BACK

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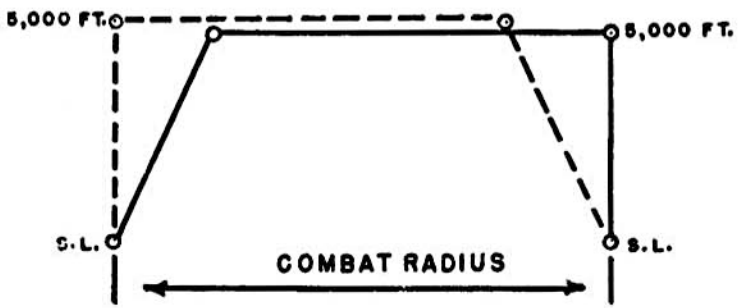
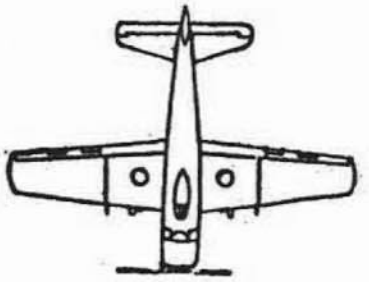
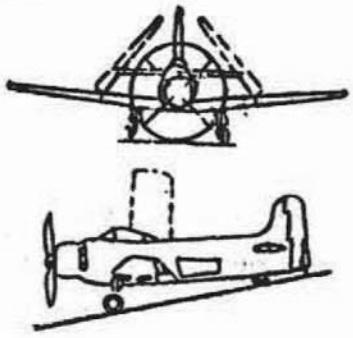


CHARACTERISTICS SUMMARY

LOW ALTITUDE ATTACK — **AD-7**

DOUGLAS "SKYRAIDER"





WING AREA 400 Sq. Ft.
WING SPAN 50' - 0"

LENGTH 39' - 2"
HEIGHT 15' - 8"

AVAILABILITY			PROCUREMENT				
NUMBER AVAILABLE			NUMBER DELIVERED IN FISCAL YEARS				
ACTIVE	RESERVE	TOTAL					

STATUS

First Flight . . . . . June 1956
Service Use . . . . . September 1956

ENGINES

(1) Wright R-3350-26WB

	BHP	RPM	ALT.
T.O.	2700	2900	S.L.
MIL.	2700	2900	S.L. - 3700'
	2100	2600	11500' - 14500'
NORM.	2300	2600	S.L. - 6200'
	1900	2600	12000' - 17000'

FEATURES

Crew - 1
Power operated canopy
Dive Brakes
Single slotted flaps
Folding wings
Wing structural integrity greater than AD-6

ARMAMENT

GUNS

NO.	SIZE	LOCATION	RDS.
4	20mm	Wings	800

BASIC MISSION
1-2000 lb. Bomb

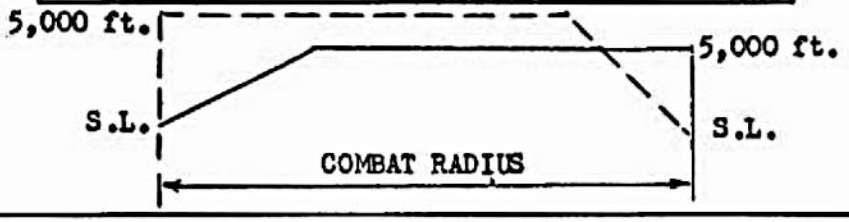
BOMBS, ROCKETS, SPECIAL WEAPONS

LOCATION	MAX. CAP.
Fuselage C.L.	3500 lbs.
Inner Wing	4600 lbs.
Outer Wing	5000 lbs.
Max.load cap.	8000 lbs.

NAVAER 1519 A (REV. 1-49)

CHARACTERISTICS SUMMARY

BASIC MISSION AD-7



PERFORMANCE

COMBAT RADIUS	COMBAT RANGE	SPEED
265 naut. mi. 170 knots avg. Mission Time 3.4 hrs. Basic Mission: Low Altitude Attack - (1) - 2,000 lb. Bomb	720 naut. mi. 170 knots avg. — hours	274 knots at S.L. ft. 298 knots at 15,700 ft. — knots at — ft. Combat Weight Military Power
CLIMB	**CEILING**	**TAKE OFF**
2,000 ft./min. Sea Level, T. O. wt. Normal Power	30,650 ft. 100 ft./min., T. O. wt. Normal Power	1,185 ft. - calm 635 ft. 25 kt. wind No Assist
LOAD	**WEIGHTS**	**STALLING SPEED**
Fuel 380 gal. fixed 380 drop —	Empty 12,094 lbs. *Combat 16,199 lbs. Take-off 19,111 lbs. * BOMB NOT RETAINED	86.6 knots Power Off Flaps down, T. O. wt.
		TIME TO CLIMB
		ft. in min. Combat Wt., Max. Power

NOTES

Performance is calculated and based on flight tests of models AD-4B, AD-5 and AD-6.