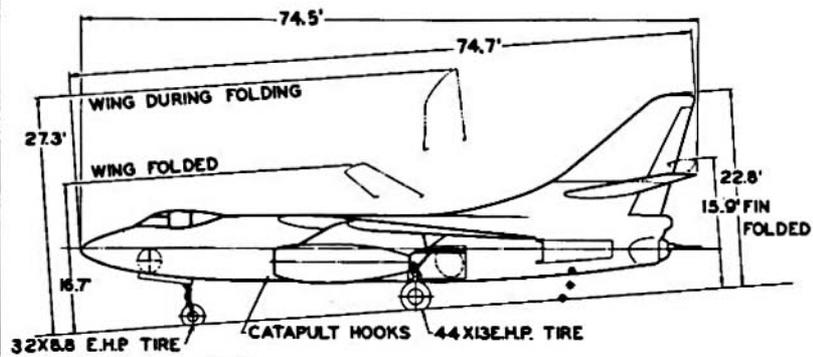
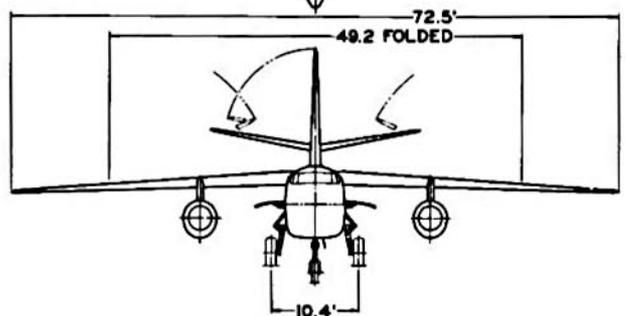
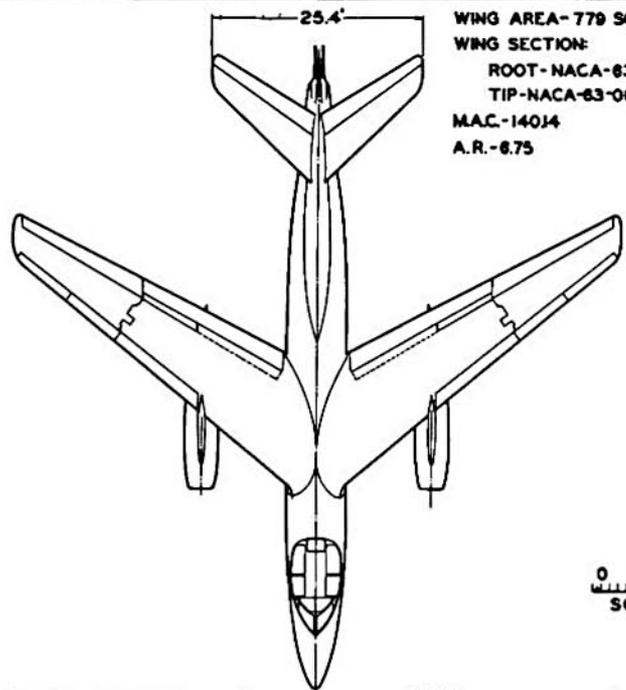
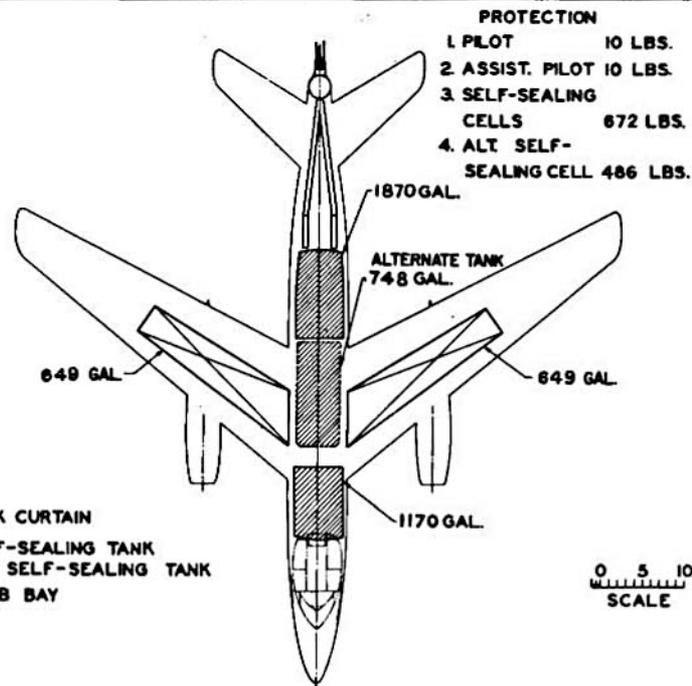


STANDARD AIRCRAFT CHARACTERISTICS
A3D-2 SKYWARRIOR
(UNCAMBERED WING)

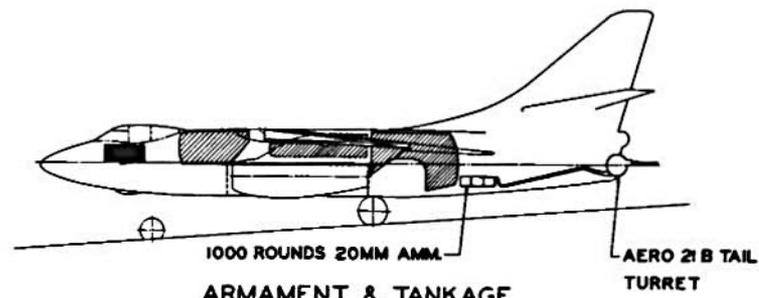
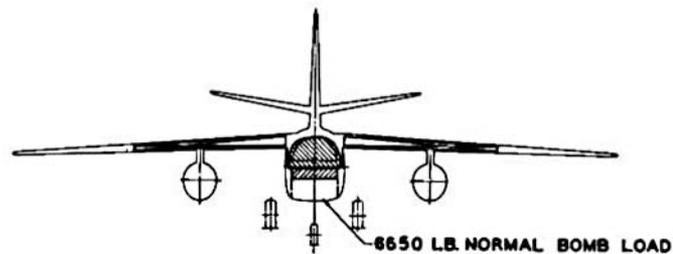
DOUGLAS



DESCRIPTIVE ARRANGEMENT



- FLAK CURTAIN
- SELF-SEALING TANK
- NON SELF-SEALING TANK
- BOMB BAY



ARMAMENT & TANKAGE

POWER PLANT

No. & Model (2) J57-P-10
 Mfr: Pratt & Whitney
 Eng. Spec. No. N-1700-A(2-2-55)
 Type Turbojet
 Compr. Dual rotor, Axial Flow
 Length 158 in.
 Diameter 41 in.
 NO. & Type Assist. 12-5KS4500 JATO
 Nozzle Type Constant Exit Area

RATINGS

Sea level static

	THRUST		RPM	
	LB.	N ₁ *	N ₂ **	
Maximum	10500	6150	9900	
Military	10500	6150	9900	
Normal	9000	5900	9650	

*N₁ Speed of low pressure compressor
 **N₂ Speed of high pressure compressor

ORDNANCE

Maximum Bomb Capacity: 12,800 lbs.

Bombs 12-500 lb. G.P.
 6-1000 lb. G.P.
 8-1600 lb. A.P.
 4-2000 lb. G.P.

Mines 12-500 lb. Mk. 50
 6-1000 lb. Mk. 36
 4-2000 lb. Mk. 25
 2-2000 lb. Mk. 10
 6-1000 lb. Mk. 52-1
 12-374 lb. Mk. 53-0
 4-2000 lb. XG-7
 1-1558 lb. Mk-12
 4-2000 lb. Mk. 39-0

Special Stores

GUNS/AMM.

2-20mm (M3)/500 rds. per gun

Tail Turret System Aero 21B

Radar Bomb Director AN/ASB-1A

MISSION AND DESCRIPTION

The primary mission of the A3D-2 airplane is the attack and destruction of enemy ground and surface targets as required for mine-laying, reconnaissance, and high or low altitude attack missions. The airplane is designed to operate from land bases and from carriers.

The airplane has a conventional swept-wing structure with two turbo-jet engines in under-wing nacelles. Provisions are made for a three-man crew: pilot, bomber-assistant-pilot, and gunner-navigator with provisions for a 4th man.

The tricycle landing gear, arresting gear, wing-fold and tail-fold mechanisms, single-slotted wing flaps, fuselage speed brakes, and power mechanisms for rudder, elevator and ailerons are operated by hydraulic power. The horizontal stabilizer is adjustable for trim in flight. Leading edge slats are actuated automatically by aerodynamic loads.

Anti-skid braking is provided. The JATO installation accommodates twelve 4500-pound-thrust bottles. In-flight refueling and tanker provisions have been developed for these airplanes and incorporation will be by ASC-28.

DEVELOPMENT

Status: Fleet Delivery Complete October 1958

Prototype: A3D-1

Contracts: NOA(s) 55-190, 123 airplanes

First Flight: June 1956

DIMENSIONS

Wing:

Area 779 sq. ft.
 Span 72.5 ft.
 M. A. C. 140.14 in.
 Sweepback 36°
 Length 74.7 ft.
 Height 22.8 ft.
 Tread 10.4 ft.

WEIGHTS

Loading	Lbs.	L. F.
Empty	37,077 (A)	
Basic	37,545	
Design	55,942	3.4
Combat	61,377	3.10
Maximum T.O. (Land)	78,000	2.44
Maximum T.O. (Cat.)	73,000	2.60
Max. Landing (Land)	56,000	
Max. Landing (Carrier)	49,000	

FUEL AND OIL

Gal.	No. Tanks	Location
3040	2	*Fuselage
1298	2	Wing
748	1	* Bomb Bay (Aux.)
Fuel grade		JP-4 or JP-5
Fuel spec.		MIL-F-5624
*Self-sealing		
**(Incorporation by ASC-78)		

OIL

Gal.	No. Tanks	Location
11	2	Integral with engines
Oil spec.		MIL-L-7808

ELECTRONICS

TACAN	AN/ARN-21*
VOR Homing	AN/ARN-14E
VHF Trans-Receiver	AN/ARC-27A
HF Trans-Recr.	AN/ARC-38*
Radio Altimeter	AN/APN-22
IFF Transponder	AN/APX-6B
Interphone	AN/AIC-4A
Coder	AN/APA-89
UHF Direction	
Finder	AN/ARA-25
*Last 20A/C Prior A/C by S/C	

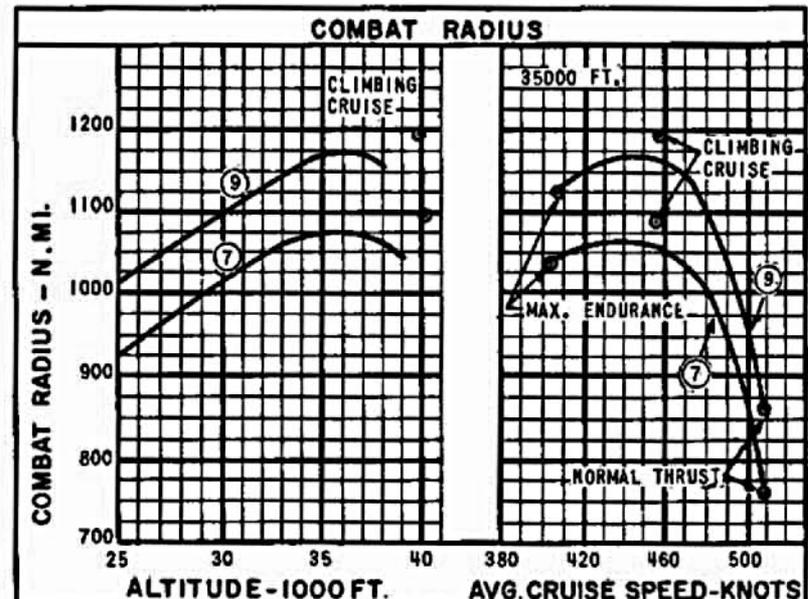
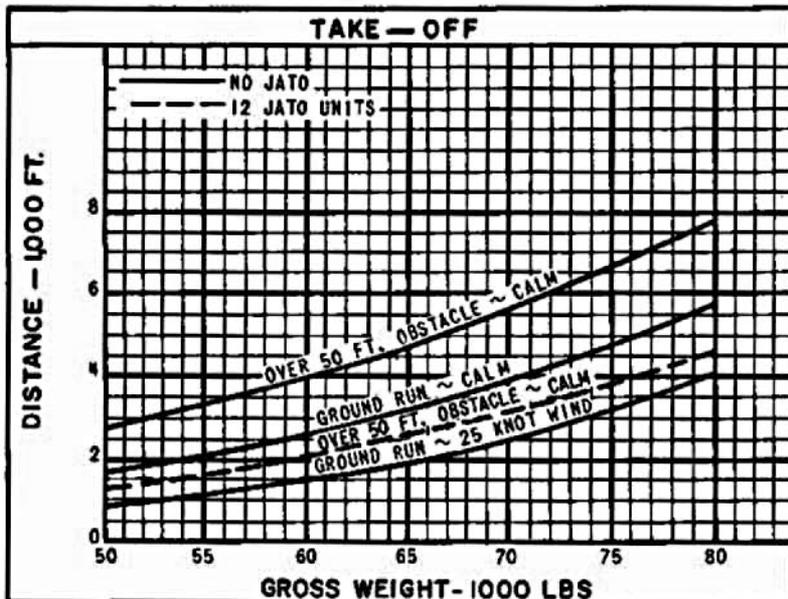
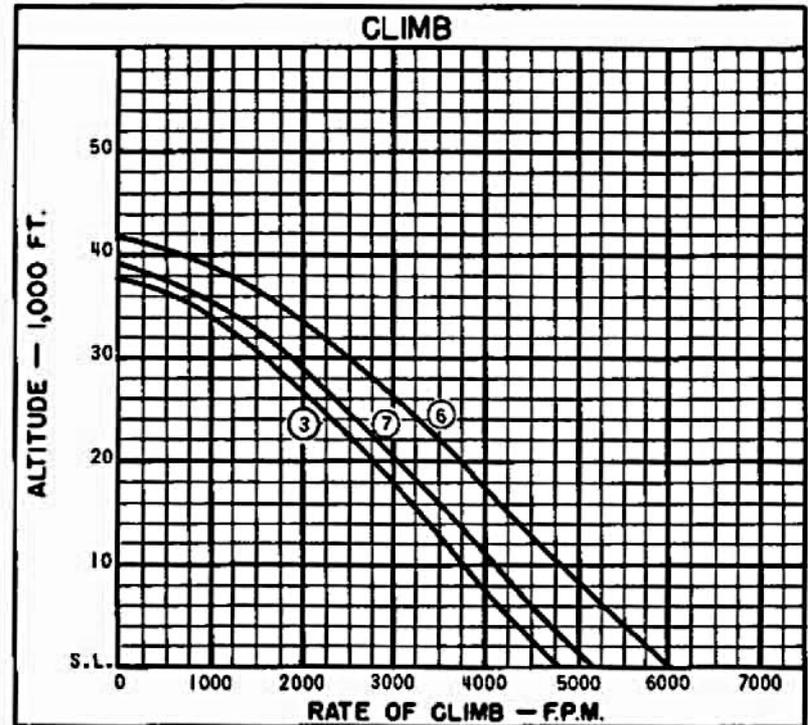
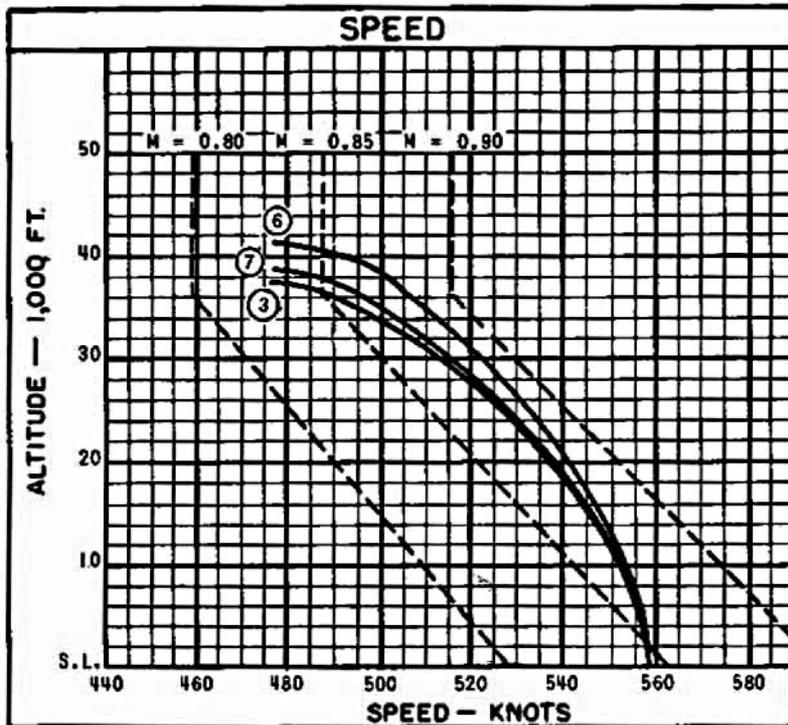
PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		High Alt. Attack 2-2050 lb. Stores		(5) Full Fuel	(7) Full Fuel	(9) Full Fuel
		(1) Limit Carrier Take-off Weight	(2) Limit Field Take-off Weight Upper BB Tank	High Alt. Attack 1-6650lb Store	Low Alt. Attack 3-1300 lb Stores	High Altitude Attack 3-2035 lb Stores
TAKE-OFF WEIGHT (A)	lb.	73,000	78,000	75,668	73,302	75,513
Fuel (JP-5)	lb.	29,057 (E)	33,278 (C)	29,498	29,498	29,498
Payload	lb.	4100	4100	6650	3900	6105
Wing loading	lb./sq.ft.	93.7	100.1	97.1	94.1	96.9
Stall speed - power-off (D)	kn.	132	137	135	132	134
Take-off run at S.L. - calm (D)	ft.	4460	5340	4920	4500	4890
Take-off run at S.L. 25 kn.wind (D)	ft.	2940	3690	3310	2970	3280
Take-off to clear 50 ft. - calm (D)	ft.	6270	7340	6800	6310	6770
Max. speed/altitude	kn./ft.	558/SL	558/SL	558/SL	558/SL	558/SL
Rate of climb at S.L.	fpm	5100	4700	4900	5060	4900
Time: S.L. to 20,000 ft.	min.	4.9	5.3	5.1	4.9	5.1
Time: S.L. to 30,000 ft.	min.	8.7	9.8	9.2	8.8	9.2
Service ceiling (100 fpm)	ft.	39,100	37,700	38,300	39,000	38,400
Combat range	n.mi.	2360	2640	2300	2400	2310
Average cruising speed	kn./M	459/.80	459/.80	459/.80	459/.80	459/.80
Cruising altitude(s)	ft.	75,400-43,400	34,000-43,300	34,600-42,400	35,200-43,400	34,600-42,400
Combat radius/Mission Time	n.mi./hr.	1200/5.2 (F)	1350/5.9 (E)	1200/5.2	1090/4.9 (F)	1200/5.2
Average cruising speed	kn./M	459/.80	459/.80	459/.80	459/.80	459/.80
IFR-Radius/Mission Time	n.mi./hr.	1650/7.5 (E) (G)	1870/8.4 (E) (H)	1710/7.7 (H)	1610/7.4 (H)	1700/7.7 (H)
IFR-Fuel Trans/Distance	lb./n.mi.	11,100/620	13,600/710	12,520/760	12,300/770	12,510/760
COMBAT LOADING CONDITION		(2) 60% Fuel Stores Retained	(4) 60% Fuel Stores Retained	(6) 60% Fuel Stores Retained	(8) 60% Fuel Stores Retained	(10) 60% Fuel Stores Retained
COMBAT WEIGHT	lb.	61,377	64,689	63,869	61,503	63,714
Engine power		MILITARY	MILITARY	MILITARY	MILITARY	MILITARY
Fuel	lb.	17,434	19,967	17,699	17,699	17,699
Combat speed/combat altitude	kn./ft.	485/41,500	485/40,600	485/40,800	559/SL	485/40,900
Rate of climb/combat altitude	fpm/ft.	490/41,500	450/40,600	470/40,800	6250/SL	470/40,900
Combat ceiling (500 fpm)	ft.	41,500	40,300	40,600	41,400	40,700
Rate of climb at S.L.	fpm	6250	5850	5950	6250	5950
Max. speed at S.L.	kn./M	559/.84	559/.84	559/.84	559/.84	559/.84
Max. speed at 35,000 ft.	kn./M	512/.89	509/.88	510/.88	511/.89	510/.88
LANDING WEIGHT	lb.	42,916	43,921	42,607	42,998	43,004
Fuel	lb.	3073	3299	3087	3094	3094
Stall speed - power-off/Aprpr Pwr	kn./kn.	100/99	102/100	100/99	101/99	101/99
Land. Dist. Gr. Run/Over 50 ft. (I)	ft./ft.	4930/5640	5000/5710	4900/5610	4940/5650	4940/5650

- (A) The limit catapult take-off weight of 73,000 pounds and the limit field take-off weight of 78,000 pounds are consistent with current operating bulletins. Under emergency conditions increased take-off weights may be utilized.
- (B) Fuel limited to maintain limit take-off weight of 73,000 pounds. With full (29,498 lb.) fuel (T.O.Wt.=73,441 lbs), radius is 1220 n.mi. without refueling.
- (C) Fuel limited to maintain limit take-off weight of 78,000 lb. With full (34,584 lb) fuel (T.O. Wt. = 79,306 lb), radius is 1400 n. mi. without refueling.
- (D) Full flaps
- (E) For Low Alt. Attack mission combat radius is decreased by

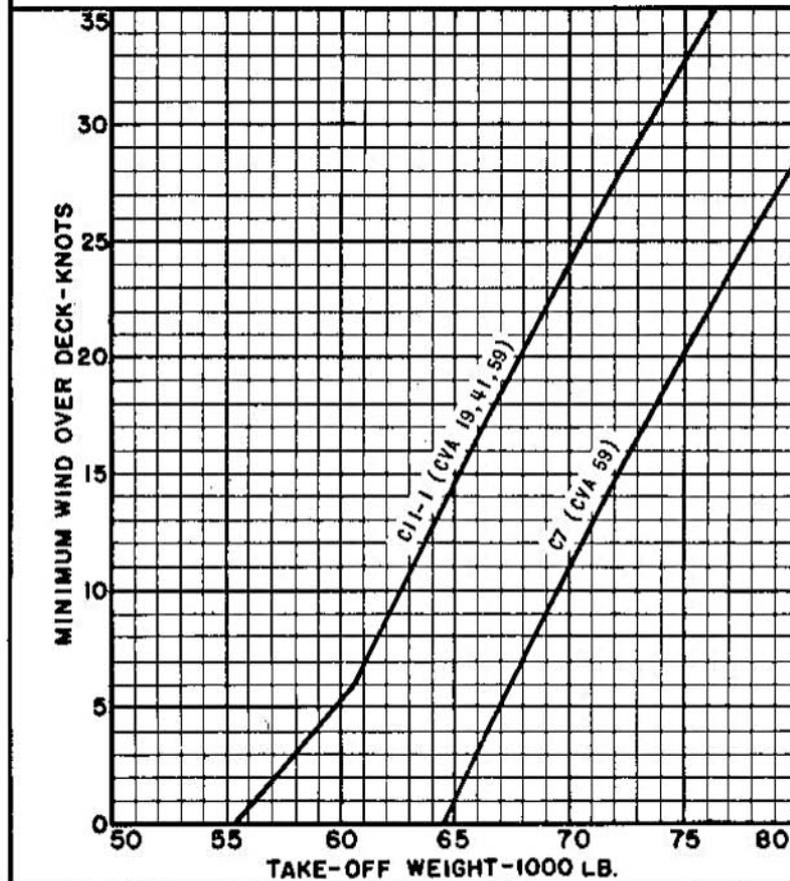
NOTES

- 125 n.mi. and mission time is decreased by 0.5 hr.
- (F) For Sea Level target approach, total radius is reduced:
60 n.mi. for ea. 100 mi. cruise in at S.L. maximum range
120 n.mi. for ea. 100 mi. run in at S.L. with military thrust
- (G) One refuel from A3D-2 (CW) tanker-T.O.Wt.=73,000 lb.
- (H) One refuel from A3D-2 (CW) tanker-T.O.Wt.=78,000 lb.
- (I) Without chute. With chute, land. dist. is decreased appr. 2200 ft.
- (J) All loadings include IFR probe.
- (K) Perf. Basis: NATC & Contr. flt. test of Model A3D-2. Range & radii based on flt. test fuel consumptions.
- (L) Spotting: 27 A/C can be accommodated in landing spot on flt. and hangar decks of CVA-19 class angled deck carrier.



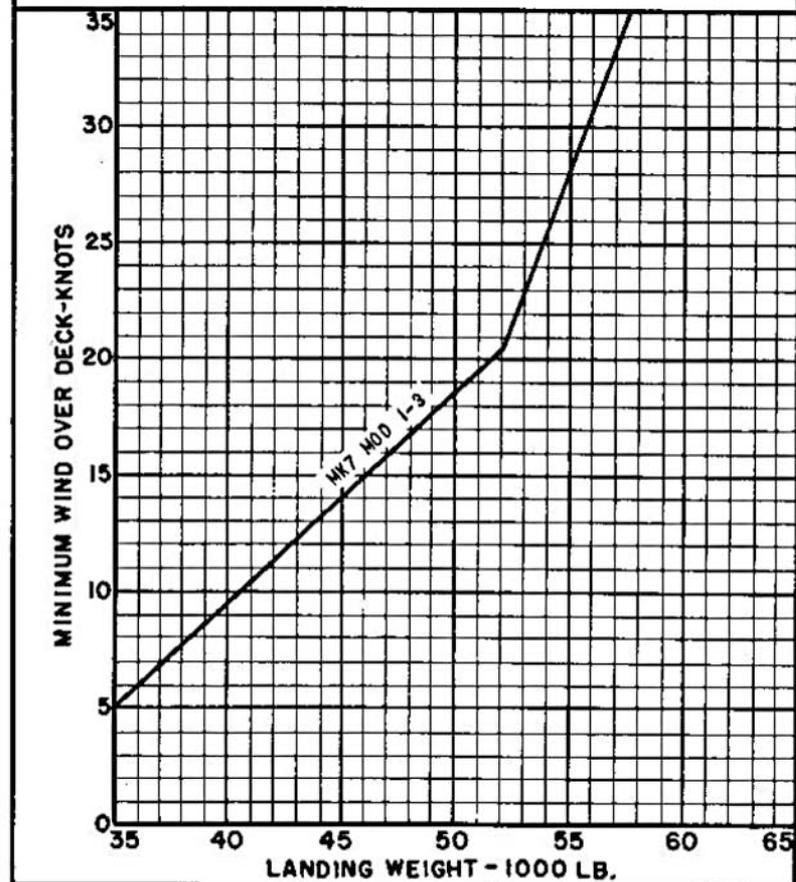
○ DENOTES LOADING CONDITION COLUMN NUMBER

CARRIER SUITABILITY

DECK WIND REQUIRED
FOR CATAPULTING

Catapult take-off speed is based on Launching Bulletin No. 6-49.

Catapult end speed limited by aircraft strength below 60,700 lbs. on C11 Catapult and below 64,200 lbs. on the C7 Catapult. Above these weights catapult end speed is limited by catapult capacity.

DECK WIND REQUIRED
FOR LANDING

Approach speed is based on NATC recommended minimums.

Engaging speed limited by Airplane strength limit as determined by maximum rate of sink

NOTES

HIGH ALTITUDE ATTACK

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE-OUT: At altitudes and speeds for maximum range.

CLIMB: At maximum rate of climb with maximum rated thrust on course to cruise ceiling.

BOMB RUN: Cruise in level flight 15 minutes at normal rated thrust at combat altitude.

DROP BOMBS

EVASIVE ACTION: 2 minutes at maximum speed with normal rated thrust at combat altitude (no distance gained).

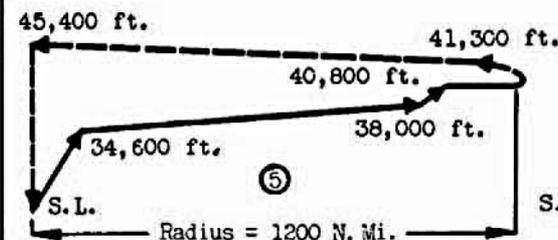
ESCAPE: 8 minutes at maximum speed with normal rated thrust (climb to optimum cruising altitude is accomplished in evasive action and escape periods).

CRUISE-BACK: At altitudes and speeds for maximum range.

RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

Combat Radius = Climb + Cruise-Out + Climb + Bomb Run = Escape + Cruise-Back

Mission Time = Time Required For Climb + Cruise-Out + Climb + Bomb Run + Evasive Action + Escape + Cruise-Back



HIGH ALTITUDE ATTACK WITH IN-FLIGHT REFUELING LOW ALTITUDE ATTACK

WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE-OUT: At altitudes and speeds for maximum range.

REFUEL: 15 minutes at 35,000 feet at speed for maximum endurance. Refuel to full internal fuel.

CRUISE-OUT: At altitudes and speeds for maximum range.

CLIMB: At maximum rate of climb with maximum rated thrust on course to cruise ceiling.

BOMB RUN: Cruise in level flight 15 minutes at normal rated thrust at combat altitude.

DROP BOMBS

EVASIVE ACTION: 2 minutes at maximum speed with normal rated thrust at combat altitude (no distance gained).

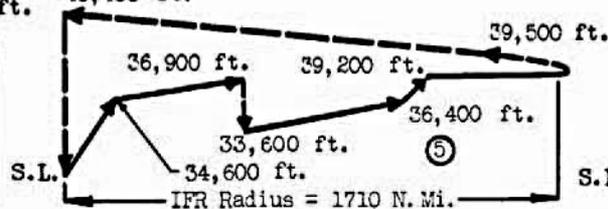
ESCAPE: 8 minutes at maximum speed with normal rated thrust (climb to optimum cruising altitude is accomplished in evasive action and escape periods).

CRUISE-BACK: At altitudes and speeds for maximum range.

RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

Combat Radius = Climb + Cruise-Out + Climb + Bomb Run = Escape + Cruise-Back

Mission Time = Time Required for Climb + Cruise-Out + Refueling + Cruise-Out + Climb + Bomb Run + Evasive Action + Escape + Cruise-Back



WARM-UP, TAKE-OFF AND ACCELERATE: 5 minutes at normal rated thrust at sea level.

CLIMB: On course to optimum cruise altitude with maximum rated thrust.

CRUISE-OUT: At altitudes and speeds for maximum range.

DESCEND TO SEA LEVEL: No fuel consumed. No distance credit.

DROP BOMBS

COMBAT: 5 minutes at maximum rated power at sea level (no distance gained).

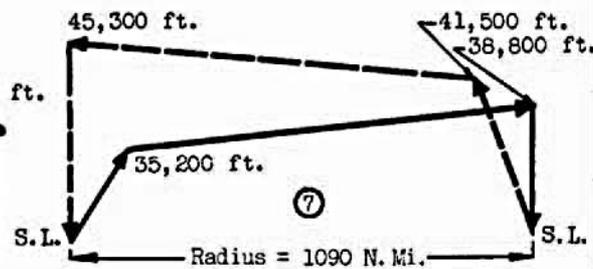
CLIMB: On course to optimum cruise altitude with maximum rated thrust

CRUISE-BACK: At altitudes and speeds for maximum range.

RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5% of initial fuel load.

Combat Radius = Climb + Cruise-Out = Climb + Cruise-Back

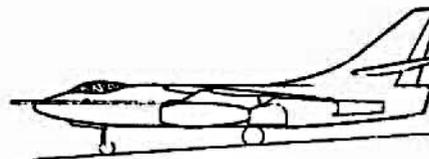
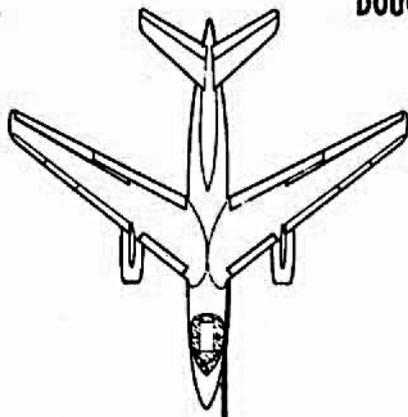
Mission Time = Time Required For Climb + Cruise-Out + Combat + Climb + Cruise-Back



CHARACTERISTICS SUMMARY

ATTACK AIRPLANE A3D-2 CAMBERED WING

DOUGLAS SKYWARRIOR



WING AREA 812 Sq. Ft.

WING SPAN 72.5 Ft.

LENGTH 74.7 Ft.

HEIGHT 22.8 Ft.

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

STATUS

Contract NOa (s) 55-190c:

First Flight: 18 Jan 1958
 First Fleet Delivery: March 1959
 Last Twenty Deliveries: Complete

Contract NOa(s) 59-0150:

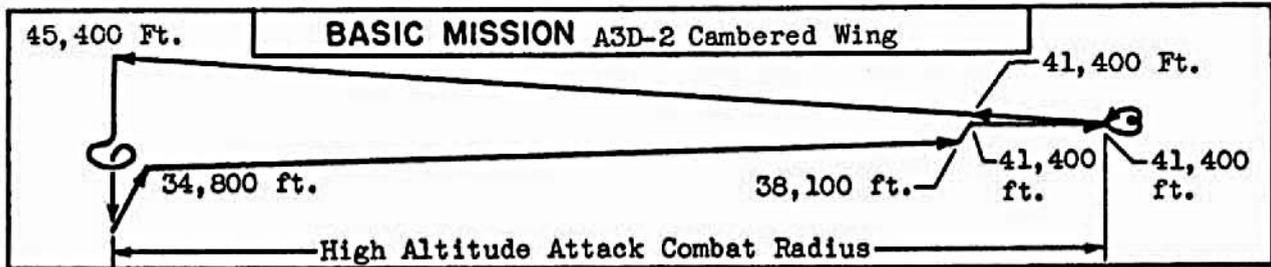
First Flight: March 1960
 First Acceptance: April 1960

ENGINES	
(2) Pratt & Whitney J57-P-10	
	Thrust lbs.
Maximum	10,500
Military	10,500
Normal	9,000
JATO-(12)	5KS4500 Units

FEATURES
Crew: Three
Internal Bomb Bay
Swept Wing
Carrier-based with Catapult and Arrested Landing Provisions
Folding Wings and Tail
Adjustable Horizontal Stabilizer

ARMAMENT
Max. Bomb Capacity:
8-1600 lb. Bombs
or
4-2000 lb. Mines
or
Special Stores
Radar Bombing

CHARACTERISTICS SUMMARY



PERFORMANCE

COMBAT RADIUS	COMBAT RANGE	SPEED
1230 nautical miles at 436 knots average speed in 5.7 hours	2372 nautical miles at 436 knots average speed in 5.5 hours	507 knots at 35,000 ft. 483 knots at 40,000 ft. Combat Weight Maximum Thrust
CLIMB	CEILING	TAKE OFF
5050 fpm at sea level Take-off weight Maximum Thrust	SERVICE: 39,250 ft. 100 fpm rate of climb Take-off Weight Maximum Thrust	4350 ft., ground roll full flaps, no wind no JATO
6100 fpm at sea level Combat Weight Maximum Thrust	COMBAT: 41,100 ft. 500 fpm rate of climb Combat Weight Maximum Thrust	6050 ft. to clear 50 ft. obstacle. Full flaps, no wind, no JATO
LOAD	WEIGHTS	STALLING SPEED
Fuel 4338 gal. (JP-5) 1-6650 lb. Store	Empty 39,683 lbs. Landing 44,289 lbs. Combat 65,648 lbs. Take-off 77,447 lbs.	128 knots Take-off Weight Power off
		TIME TO CLIMB
		30,000 ft. in 9.0 min. Take-off Weight Maximum Thrust

NOTES

Performance is derived from NATC and Contractor's flight test of Prototype Cambered Wing Model A3D-2.

Combat Range and Radii based on flight test fuel consumptions.