

## **A-3 SKYWARRIOR**

The introduction of nuclear bombs into the U.S. arsenal of weapons opened new possibilities to Naval Aviation. Carrier based aircraft could achieve a true strategic strike capability in addition to their mobile tactical role. Due to the size of the early A-bombs, a large plane was needed to carry them.

Early experimental work was done with prop-driven planes and the first heavy attack squadrons were equipped with the AJ Savage. But as jet engine technology improved, a design for a large twin-jet attack bomber was developed. Douglas was awarded a contract in 1949 to build the XA3D-1 prototype, which first flew in October 1952. Re-engined with J-57s, the first deliveries of these Skywarriors were to VAH-1 in March 1956. The following year, the first A3D-2s (A-3B) went to VAH-2. The A3D-2 featured more powerful engines, inflight refueling system and a modified bomb bay to accommodate a wider range of weapons.

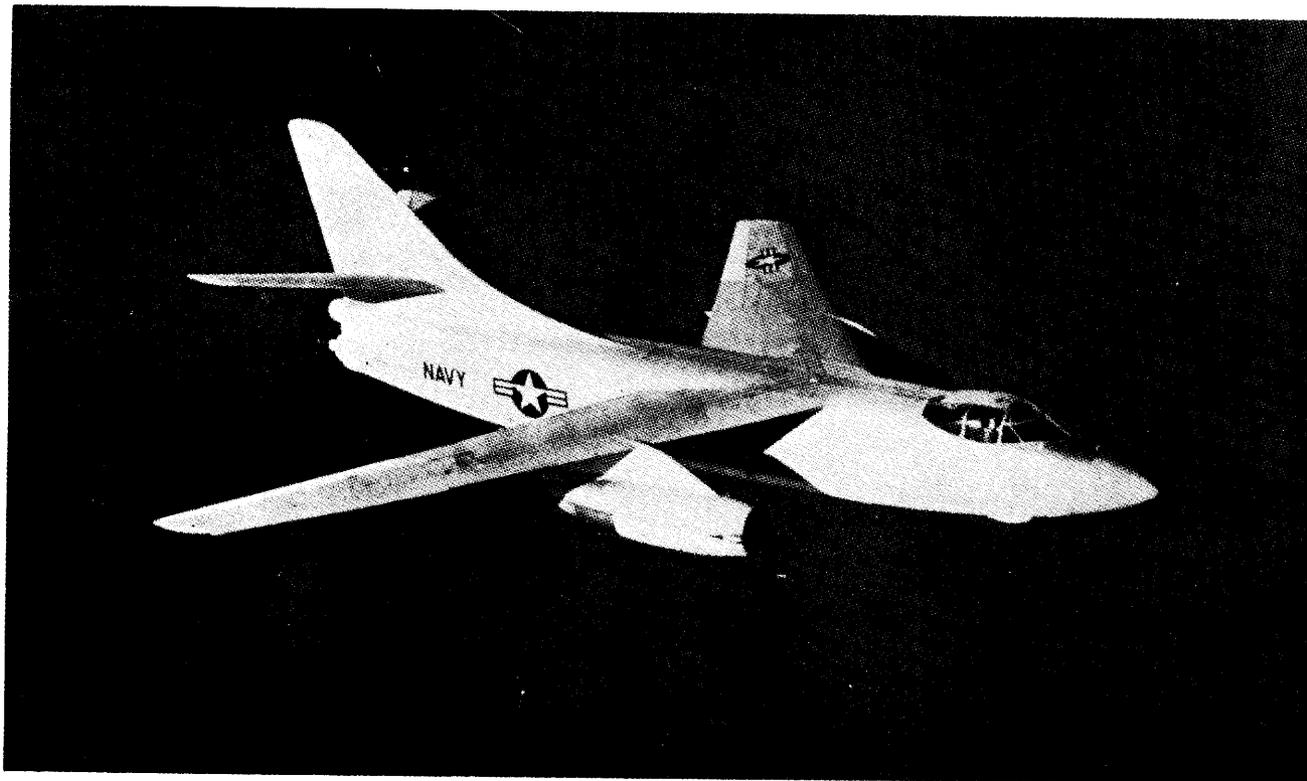
Reconnaissance versions were produced to equip two heavy photographic squadrons (VAPs 61 and 62). These were modified to pressurize the entire fuselage and accommodate two reconnaissance specialist crewmen and up to 12 oblique and/or vertical cameras. This model was designated the A3D-2P (RA-3B). A related model, the A3D-2Q (EA-3B), added four electronic specialists to the flight crew and an assortment of radar and other electronic detection equipment. This variant went to VQs 1 and 2.

A radar/navigation training version, A3D-2T (TA-3B) was also produced which had space for six students.

Redesignated in the early sixties to the A-3 series, the existing versions of the A-3B (now RA, EA, and TA) were joined by the widely used KA tankers and ERA and EKA multipurpose versions, as well as one VA for special mission support. In these roles, the Skywarriors supported the Southeast Asia combat action of the next decade, as well as serving Navy mission needs elsewhere in the world.

The last A-3 Skywarriors were removed from the Naval Aircraft Inventory in March 1991.

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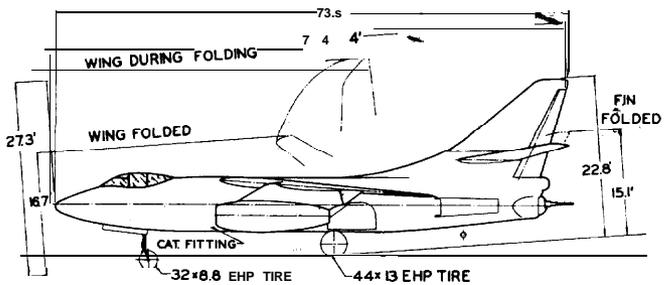
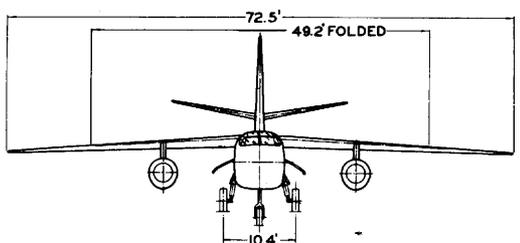
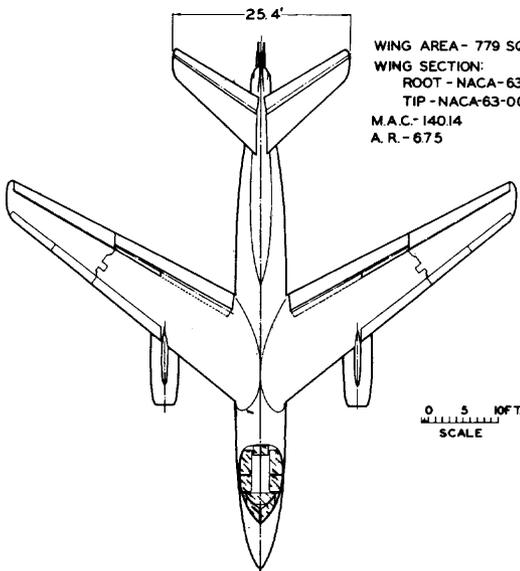
# STANDARD AIRCRAFT CHARACTERISTICS

## A-3A SKYWARRIOR

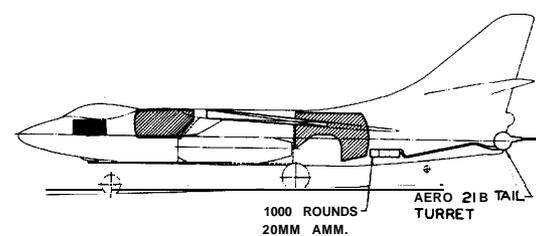
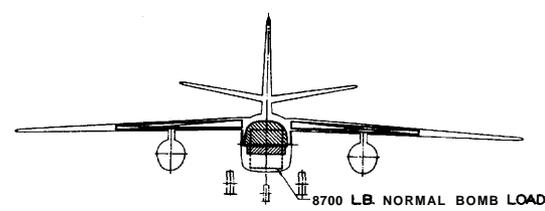
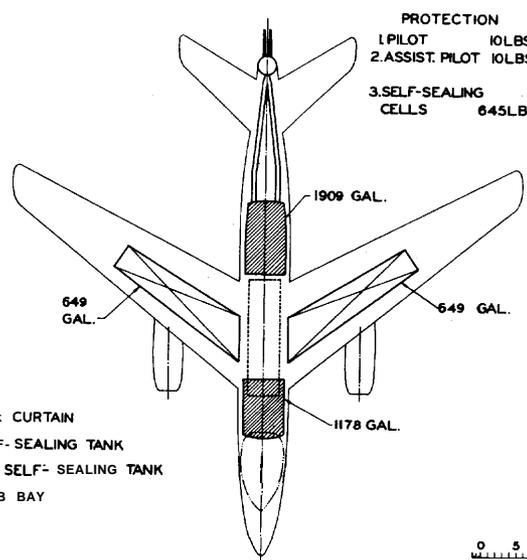
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SERVICE



DESCRIPTIVE ARRANGEMENT



ARMAMENT & TANKAGE

2

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NAVAIR 00-110AA3-1

**SERVICE****POWER PLANT**

No. & Model ..... (2) J57-P-6  
 Mfr. .... Pratt & Whitney  
 Eng. Spec.No.--- N-1671-E ( 5-10-55)  
 Type ..... Axial Comp  
 Length ..... 159 in.  
 Diameter ..... 41 in.  
 No. & Type Assist--12-5KS4500 JATO  
 Tail Pipe Nozzle--C nos' Exit Area

**RATINGS**

Sea Level Static

|          | Thrust<br>Lb. | R.P.M.         |                |
|----------|---------------|----------------|----------------|
|          |               | N <sub>1</sub> | N <sub>2</sub> |
| Maximum  | 10000         | 6130           | 9900           |
| Military | 9500          | 6030           | 9800           |
| Normal   | 8250          | 5770           | 9550           |

Spec No. N-1671-E

**ORDNANCE**

Maximum Bomb Capacity:  
12,800 lbs.

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

Mines -----2-2000 lb. Mk.10  
 -4-2000 lb. Mk.25  
 6-1000 lb. Mk.36  
 8-500 lb. Mk.50

Special Stores

Guns/Amm.

2-20mm M3L/500 rounds per gun.

Tail Turret System---- Aero 21B  
 Bomb Director Mk.5 ASB-1A

**MISSION AND DESCRIPTION**

The primary mission of the A3D-1 airplane is the attack and destruction of enemy ground and surface targets.

The airplane has a conventional swept-wing structure. Two turbo-jet engines are enclosed in underwing nacelles. Provisions are made for a three-man crew; a pilot, a bomber-assistant pilot, and a gunner-navigator.

The tricycle landing gear, arresting gear, wing-fold and tail-fold mechanisms, single-lotted 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 provisions are provided. A landing deceleration chute is provided.

**DEVELOPMENT**

First Flight ..... September 1953  
 Service Use ..... April 1956

**DIMENSIONS**

Wing:

Area ..... 779 Sq. ft.  
 Span ..... 72.5 ft.  
 M.A.C. .... 140.14 in.  
 Sweepback ..... 36°

Length ..... 74.4 ft.  
 Height ..... 22.8 ft.  
 Tread ..... 10.4 ft.

**WEIGHTS**

| Loading         | Lbs.   | L.F. |
|-----------------|--------|------|
| Empty           | 35,999 | (A)  |
| Basic           | 36,178 |      |
| Design          | 55,942 | 2.67 |
| Combat          | 59,942 | 2.49 |
| Take-Off, Field | 70,000 | 2.13 |
| Landing         | 70,000 | 2.13 |
| a. Field        | 56,000 |      |
| b. Carrier      | 49,000 |      |

**FUEL AND OIL**

| Gal.                                | No Tanks | Location |
|-------------------------------------|----------|----------|
| 3087                                | 2        | Fuselage |
| 1298                                | 2        | wing     |
| Fuel Grade-----JP-4 or JP-5         |          |          |
| Fuel Spec (applicable)---MIL-F-5624 |          |          |

**OIL**

| Gal.                     | No. Tanks | Location             |
|--------------------------|-----------|----------------------|
| 11                       | 2         | Integral with Engine |
| Oil Spec----- MIL-L-7808 |           |                      |

**ELECTRONICS**

UHF Dir. Finder ..... AN/ARA-25  
 VOR Homin6 ..... \*AN/ARN-14E  
 VHF Trans-Rec ..... AN/ARC-27A  
 HF Transmitter ..... AN/ART-13  
 HF Receiver ..... AN-ARR-15A  
 IFF ..... AN/APX-6B & AN/APA-89  
 Interphone ..... AN/AIC-4A  
 Radio Altimeter ..... AN/APN-22

\* Alternate ..... AN/ARN-21

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SERVICE

**PERFORMANCE SUMMARY**

| TAKE-OFF LOADING CONDITION                 | (1) HIGH ALTITUDE<br>ATTACK 2-3100 LB.<br>STORES | (3) HIGH ALTITUDE<br>ATTACK 2-2025 LB.<br>STORES | (5) LOW ALTITUDE<br>ATTACK 3-1300 LB.<br>STORES | (7) LOW ALTITUDE<br>ATTACK 1-2025 LB.<br>STORE | (9) FERRY<br>NO STORES<br>FULL INT. FUEL |
|--|--|--|---|--|--|
| TAKE-OFF WEIGHT                            | lb. 70,000                                       | 70,000   | 70,000  | 70,000   | 68,377                                   |
| Fuel (JP-5)                                | lb. 25,145                                       | 27,290   | 27,352  | 29,411   | 29,818                                   |
| Payload                                    | lb. 6200   | 4050   | 3900  | 2025   | NONE                                     |
| Wing loading                               | lb./sq.ft. 89.9                                  | 89.9   | 89.9  | 89.9   | 87.8                                     |
| Stall speed - power-off                    | kn. 129.5  | 129.5  | 129.5   | 129.5  | 127.9                                    |
| Take-off run at S.L. - calm (A)            | ft. 4740   | 4740   | 4740  | 4740   | 4410                                     |
| Take-off run at S.L. 25 kn. wind (A)       | ft. 3320   | 3320   | 3320  | 3320   | 3090                                     |
| Take-off to clear 50 ft. - calm (B)        | ft. 6550   | 6550   | 6550  | 6550   | 6140                                     |
| Max. speed/altitude (A)                    | kn./ft. 544/1700                                 | 544/1700   | 544/1700  | 544/1700                                       | 544/1700                                 |
| Rate of climb at S.L. (A)                  | fpm. 4190  | 4190   | 4190  | 4190   | 4300                                     |
| Time: S.L. to 20,000 ft. (A)               | min. 6.0   | 6.0  | 6.0   | 6.0  | 5.8                                      |
| Time: S.L. to 30,000 ft. (A)               | min. 11.0  | 11.0   | 11.0  | 11.0   | 10.5                                     |
| Service ceiling (100 fpm) (A)              | ft. 39,200                                       | 39,200   | 39,200  | 39,200   | 39,700                                   |
| Combat range                               | n.mi. 2070                                       | 2325   | 2345  | 2600   | 2680 (C)                                 |
| Average cruising speed                     | kn. 457  | 457  | 457   | 457  | 457                                      |
| Cruising altitude(s)                       | ft. 36,400/43,000                                | 36,400/43,950                                    | 36,400/44,300                                   | 36,400/45,200                                  | 37000/45,900                             |
| Combat radius/Mission time                 | n.mi./hr. 1080/4.7                               | 1180/5.2   | 1085/4.9  | 1195/5.3                                       |  |
| Average cruising speed                     | kn. 457  | 457  | 457   | 457  |  |
| IFR-Radius/Mission time (B)                | n.mi./hr. 1778/8.0                               |  |   | 1775/8.1                                       |  |
| IFR-Fuel Transf/distance (B)               | lb./n.mi. 16730/800                              |  |   | 13880/940                                      |  |
| <b>COMBAT LOADING CONDITION</b>            | <b>(2) 60% FUEL<br/>STORES RETAINED</b>          | <b>(4) 60% FUEL<br/>STORES RETAINED</b>          | <b>(6) 60% FUEL<br/>STORES RETAINED</b>         | <b>(8) 60% FUEL<br/>STORES RETAINED</b>        |  |
| COMBAT WEIGHT                              | lb. 59,942                                       | 59,084   | 59,059  | 58,236   |  |
| Engine power                               | MAXIMUM  | MAXIMUM  | MAXIMUM   | MAXIMUM  |  |
| Fuel                                       | lb. 15,087                                       | 16,374   | 16,413  | 17,647   |  |
| Combat speed/combat altitude               | kn./ft. 495/39,800                               | 494/40,200                                       | 535/Sea Level                                   | 535/Sea Level                                  |  |
| Rate of climb/combat altitude              | fpm/ft. 770/39,800                               | 700/40,200                                       | 5140/Sea Level                                  | 5230/Sea Level                                 |  |
| Combat ceiling (500 fpm)                   | ft. 40,900                                       | 41,200   | 41,200  | 41,500   |  |
| Rate of climb at S.L.                      | fpm. 5050  | 5130   | 5140  | 5230   |  |
| Max. speed at S.L.                         | kn./M. 535/.810                                  | 535/.810   | 535/.810  | 535/.810                                       |  |
| Max. speed/Mach No./Alt.                   | kn./ft. 545/.829/1700                            | 545/.829/1700                                    | 545/.829/1700                                   | 546/.830/1700                                  |  |
| Max. speed at 35,000 ft.                   | lb. 510/.886                                     | 510/.886   | 510/.886  | 510/.886                                       |  |
| LANDING WEIGHT                             | lb. 41,862                                       | 41,984   | 41,424  | 41,344   |  |
| Fuel                                       | lb. 3207   | 3324   | 2676  | 2780   |  |
| Stall speed - power-off                    | appr.pwr. kn/kn. 100.1/98.2                      | 100.2/98.4                                       | 99.6/97.7                                       | 99.5/97.5                                      |  |
| Landing Distance - Ground run/50 ft. obst. | ft./ft. 4630/6620                                | 4640/6630  | 4590/6580                                       | 4580/6570                                      |  |

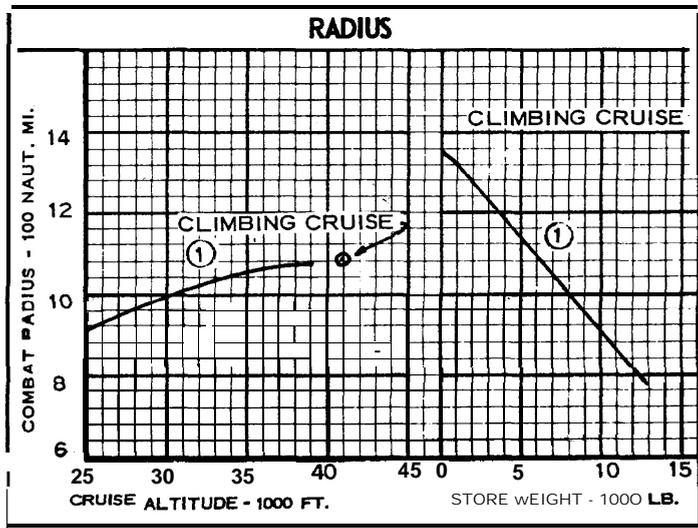
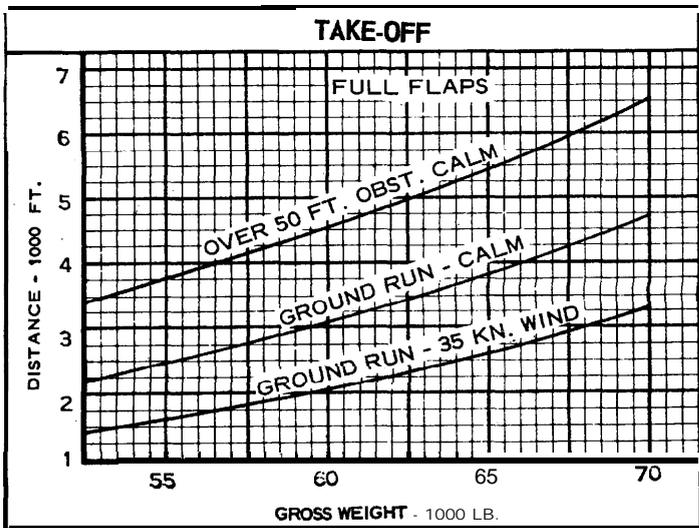
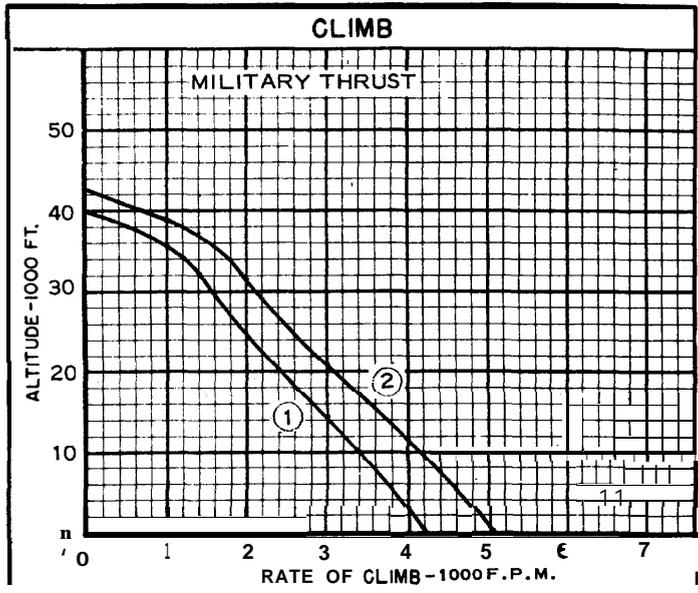
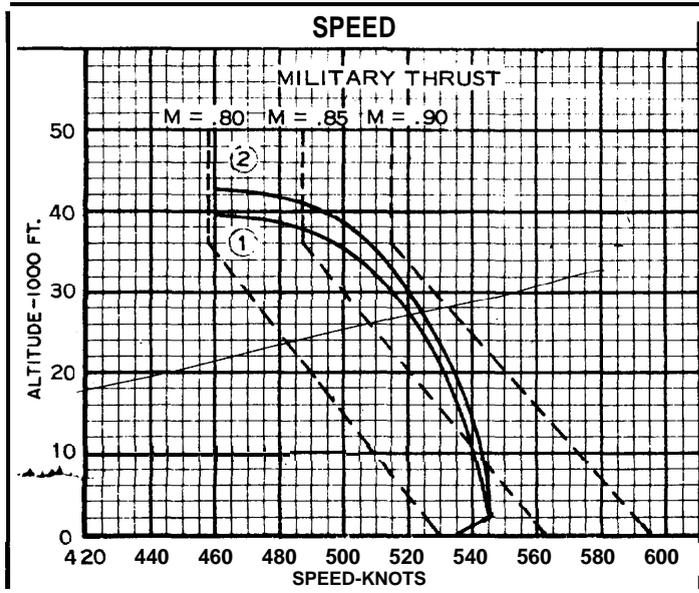
**NOTES**

PERFORMANCE BASIS: Naval Air Test Center flight tests of A3D-1 and Contractor flight tests of the A3D-2.

- (A) Maximum Thrust
- (B) One rendezvous in-flight refueling from A3D-2 Tanker
- (C) With JP-4 fuel (28,503 lb.) instead of JP-5, ferry range is decreased to 2540 n.mi.

SPOTTING: A total of 27 airplanes can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class angled deck carrier.

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○ LOADING CONDITION COLUMN NUMBER

**DECLASSIFIED**

# 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-CUT: 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

## HIGH ALTITUDE ATTACK WITH IN-FLIGHT REFUELING

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\*

## 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

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

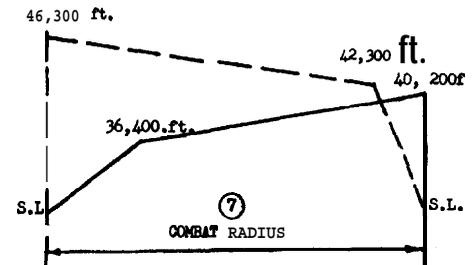
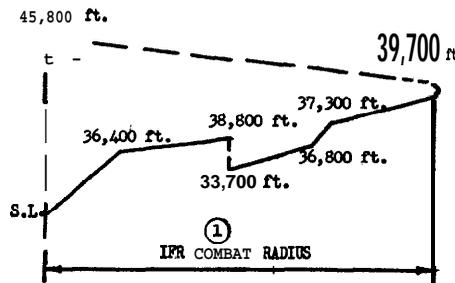
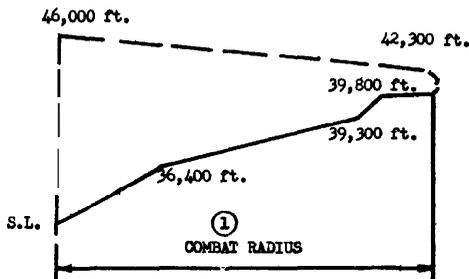
DROP BOMBS

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



① LOADING CONDITION COLUMN NUMBER