

Standard Aircraft Characteristics

BY AUTHORITY OF
COMMANDING GENERAL
AIR MATERIEL COMMAND
U. S. AIR FORCE

B-36B

Consolidated-Vultee

SIX R-4360-41

PRATT-WHITNEY

POWER PLANT

No. & Model..... (6) R-4360-41
 Mfr Pratt-Whitney
 Spec No. A-7063-D
 Sup.(turbo) (2) BH-1
 Turbo Mfr General Electric
 Red.Gear Ratio 0.375
 Prop.Mfr Curtiss
 Blade Design No. 1129-3C6-24
 Prop. Type CS, FF, Reverse
 No. Blades 3
 Prop. Dia 19'-0"
 Augmentation Water/alcohol

ENGINE RATINGS

BHP - RPM - ALT

T. O.: *3500 - 2700 - S. L.
 3250 - 2700 - S. L.

Mil: *3500 - 2700 - 500

Nor: 2650 - 2550 - 5500
 *Wet

DIMENSIONS

Wing
 Span 230.0'
 Incidence (root) 3°
 (tip) 1°
 Dihedral 2°
 Sweepback (LE) 15°5'39"
 Length 162.1'
 Height 46.8'
 Tread 46.0'
 Prop. Grd Clearance 4.46'

Mission and Description

The B-36B is a long range, high altitude, very heavy bombardment type aircraft. The crew of 15 consists of the pilot, co-pilot, engineer, navigator, radar-bombardier, nose turret operator, radio operator, two upper forward gunners, two upper aft gunners, two lower aft gunners, APG-3 operator and auxiliary crew member. Crew compartments are pressurized, heated and ventilated. A pressurized tunnel permits crew movement between the forward and aft compartments. A low pressure oxygen system is provided. Portable oxygen units are utilized in case of emergency or for crew movement in nonpressurized parts of the airplane.

Cabin heating, defrosting of blisters and enclosures, and anti-icing of the propeller, wing and tail are accomplished by heated air.

The defensive armament consists of three remotely controlled retractable twin turrets, a nose turret and an APG-3 controlled tail turret. There are provisions in (18) B-36B aircraft for two remotely controlled VB-13 "Tarzon" bombs. Bombing-navigation is accomplished by APG-24 radar.

The CO₂ purging systems are provided; two for the wing tanks and one for the bomb bay tanks. Later aircraft have provisions for single-point refueling.

The Curtiss propeller incorporates a pitch changing mechanism which derives power from the propeller shaft through a hydraulically operated clutch. Final stages of feathering and initial stages of unfeathering are accomplished by an electric motor.

Major differences from the B-36A include change from R-4360-25 engines to -41 engines with fluid injection; provisions for larger bombs and additional equipment.

Development

First flight: 8 July 48
 First service use: Nov 48
 Production completed: Sep 50

B O M B S

No.	Size	Type
2	43,000	G. P.
3	22,000	D. P.
4	12,000	D. P.
12	4000	G. P.
28	2000	G. P.
44	1600	A. P.
72	1000	G. P.
132	500	G. P.

Max Bomb Load: 86,000 lb

G U N S

No.	Size	Rd sea	Location
2	20mm	400	Fus, nose
4	20mm	600	Fus, up, fwd
4	20mm	600	Fus, up, aft
4	20mm	600	Fus, lwr, aft
2	20mm	600	Fus, tail

W E I G H T S

Loading	Lb	L. F.
Empty	140,640(A)	
Basic	144,066(A)	
Design	278,000	2.45
Combat	*227,700(C)	
Max T. O.	†328,000	2.05
Max Land	‡328,000	2.05

(A) Actual
 (C) Calculated
 * For Basic Mission
 † Limited by performance
 (See page 7 Note "f")
 ‡ Limited by take-off weight

F U E L

Location	No. Tanks	Gal
Wg, outbd**	2	4492
Wg, inbd**	2	8384
Wg, ctr**	2	8134
Bomb Bay*	4	†12,000
*Self-sealing		33,010

**Partial self-sealing

† See page 7, General Data, note "b"
 Grade 115/145
 Water/alcohol(gal) 54

OIL

Capacity (gal) 1200
 Grade W-1100;S-1120

ELECTRONICS

VHF Command AN/ARC-3
 Liaison AN/ARC-8
 Radio Compass AN/ARN-7
 Interphone USAF Combat
 IFF SCR-695B
 Glide Path AN/ARN-5A or -5B
 Bomb. -Nav. Radar ... AN/APQ-24
 Blind Approach RC-103A
 Marker Beacon RC-193A or B
 Loran AN/APN-9 or -9A
 Gun-Laying Radar AN/APG-3
 Range Receiver BC-453B
 Radar Altimeter SCR-718
 ECM See page 7, General Data, note "e"

Loading and Performance - Typical Mission

C O N D I T I O N S		BASIC	MAX BOMBS	40,000 FT. ALT. ZONE		MAX SPEED	FERRY	S N
		MISSION	MISSION	500 N. MI	1000 N. MI	MISSION	RANGE	
				MISSION	MISSION	MISSION		
TAKE-OFF WEIGHT	(lb)	328,000	328,000	328,000	328,000	328,000	328,000	
Fuel at 6.0 lb/gal (grade 115/145)	(lb)	157,304	82,831	157,304	157,304	157,304	165,775	
Military load (Bombs)	(lb)	10,000	86,000	10,000	10,000	10,000	None	
Wing loading	(lb/sq ft)	68.73	68.73	68.73	68.73	68.73	68.73	
Stall speed (power off, land. config.)	(kn)	100.4	100.4	100.4	100.4	100.4	100.4	
Take-off ground run at SL	① (ft)	6030	6030	6030	6030	6030	6030	
Take-off to clear 50 ft	① (ft)	8520	8520	8520	8520	8520	8520	
Rate of climb at SL	③ (fpm)	500	500	500	500	500	500	
Time: SL to 10,000 ft	③ (min)	21.5	21.5	21.5	21.5	21.5	21.5	
Time: SL to 20,000 ft	③ (min)	48.7	48.7	48.7	48.7	48.7	48.7	
Service ceiling (100 fpm)	③ (ft)	28,500	28,500	28,500	28,500	28,500	28,500	
Service ceiling (one engine out)	② (ft)	29,100	29,100	29,100	29,100	29,100	29,100	
COMBAT RANGE	④ (n. mi.)	7098	2957	6668	5800	3438	7659	
Average speed	⑧ (kn)	176	173	178/245	187/240	274	176	
Initial cruising altitude	(ft)	10,000	10,000	10,000	10,000	32,400	10,000	
Final cruising altitude	(ft)	25,000	25,000	40,000	40,000	40,000	21,800	
Total mission time	(hr)	40.55	17.24	37.68	31.08	12.26	43.63	
COMBAT RADIUS	④ (n. mi.)	3740	1757	3500	3300	1875	—	
Average speed	⑧ (kn)	177.5	180.5	186/266.5	198/263	288.5	—	
Initial cruising altitude	(ft)	10,000	10,000	10,000	10,000	32,400	—	
Bombing altitude	(ft)	25,000	25,000	40,000	40,000	39,300	—	
Bomb run speed	③ (kn)	278	283	307	308.5	304	—	
Final cruising altitude	(ft)	22,000	23,000	22,000	22,000	40,000	—	
Total mission time	(hr)	42.43	19.70	37.87	33.57	13.24	—	
COMBAT WEIGHT	⑤ (lb)	227,700	189,960	224,506	222,600	232,100	178,803	
Combat altitude	(ft)	25,000	25,000	40,000	40,000	39,300	25,000	
Combat speed	② (kn)	308	312	314	314.5	307	313.5	
Combat climb	② ⑨ (fpm)	1110	1545	380	395	450	1700	
Combat ceiling (500 fpm)	② (ft)	38,800	41,700	38,900	39,100	38,300	42,400	
Service ceiling (100 fpm)	③ (ft)	42,500	43,500	42,600	42,650	42,350	44,100	
Service ceiling (one engine out)	③ (ft)	40,200	42,200	40,400	40,500	40,000	42,700	
Max rate of climb at SL	② (fpm)	1510	1920	1540	1555	1465	2070	
Max speed at 34,500 ft	② (kn)	331	338	332	332	330	340	
LANDING WEIGHT	⑤ (lb)	168,561	163,310	168,561	168,561	168,561	178,807	
Ground roll at SL	⑥ (ft)	2220	2130	2220	2220	2220	2400	
Ground roll	⑦ (ft)	1700	1630	1700	1700	1700	1830	
Total from 50 ft	⑥ (ft)	3320	3230	3320	3320	3320	3520	
Total from 50 ft	⑦ (ft)	2800	2750	2800	2800	2800	2980	

NOTES:

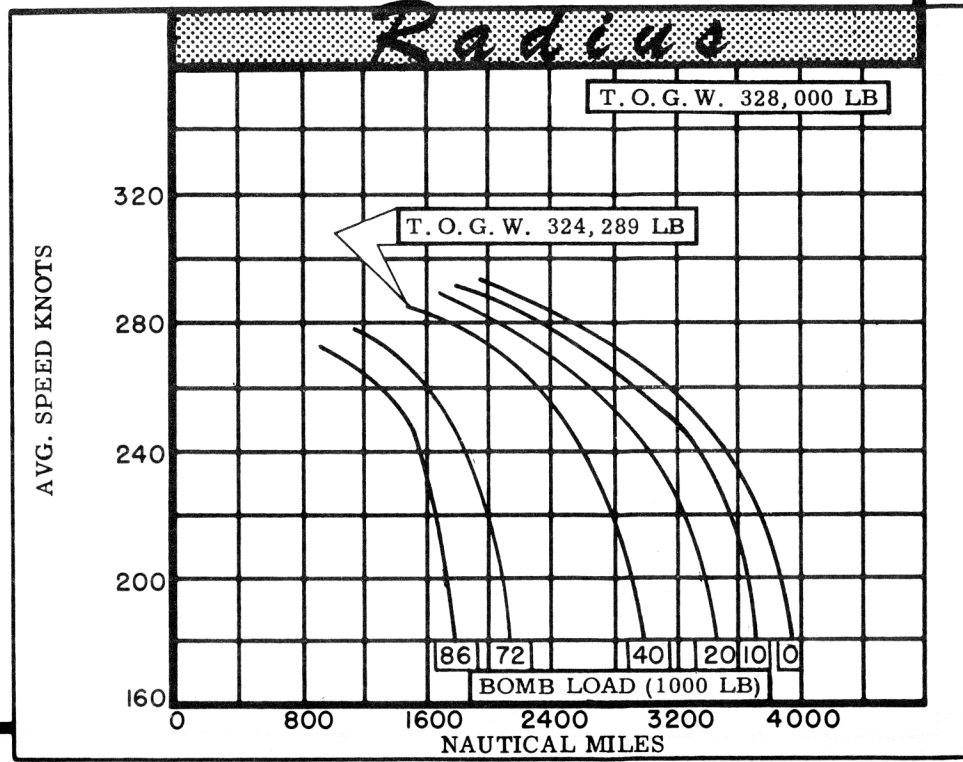
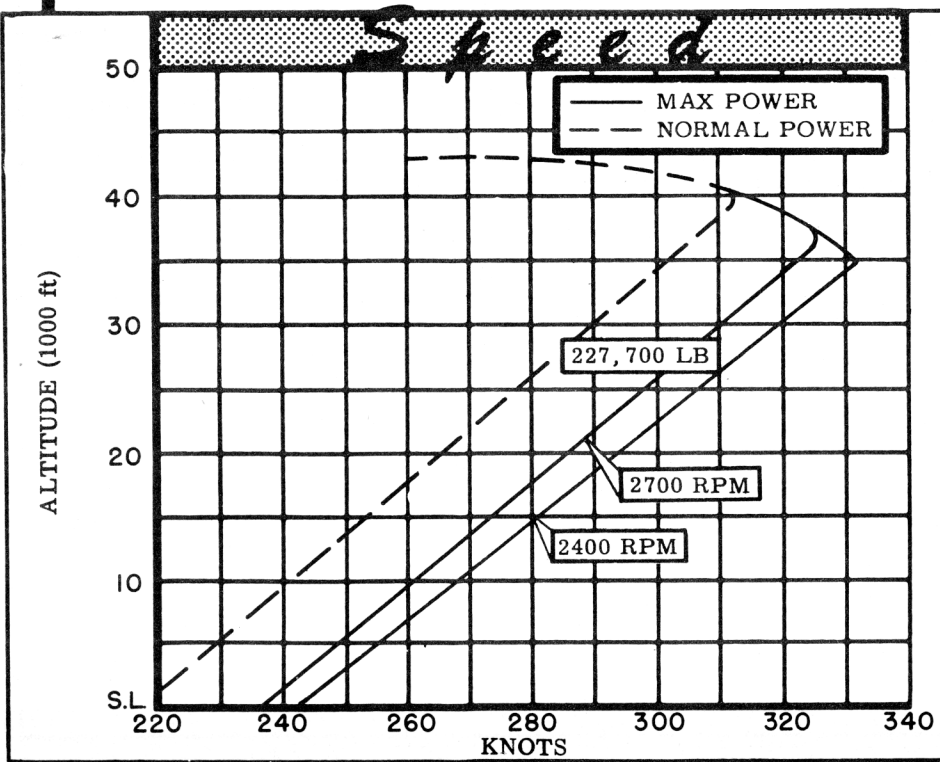
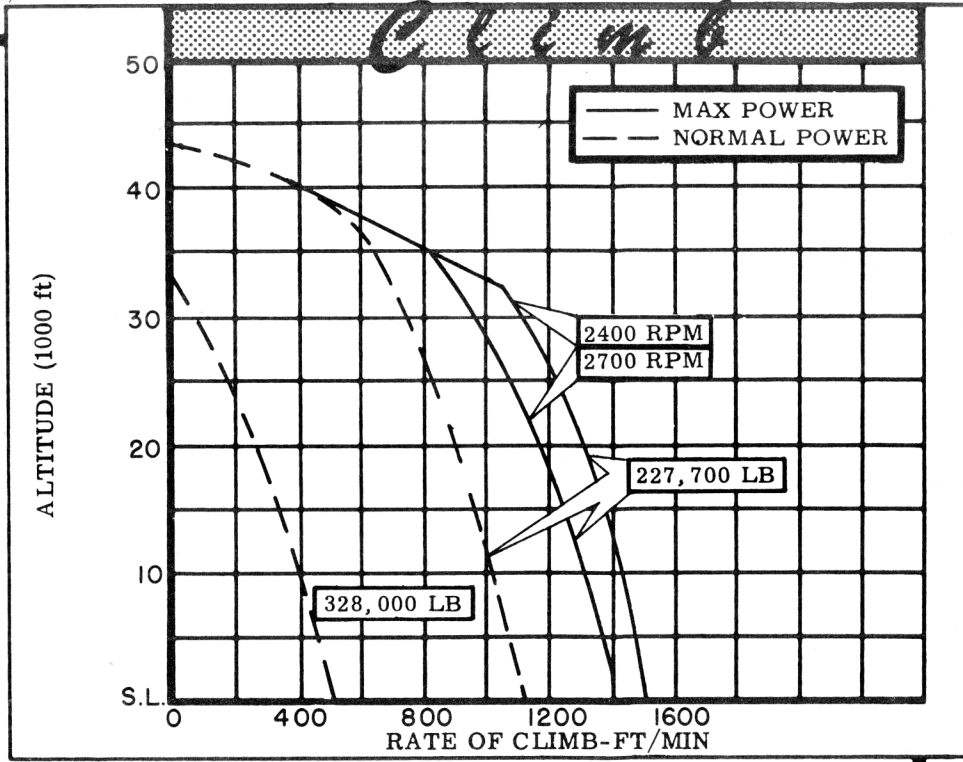
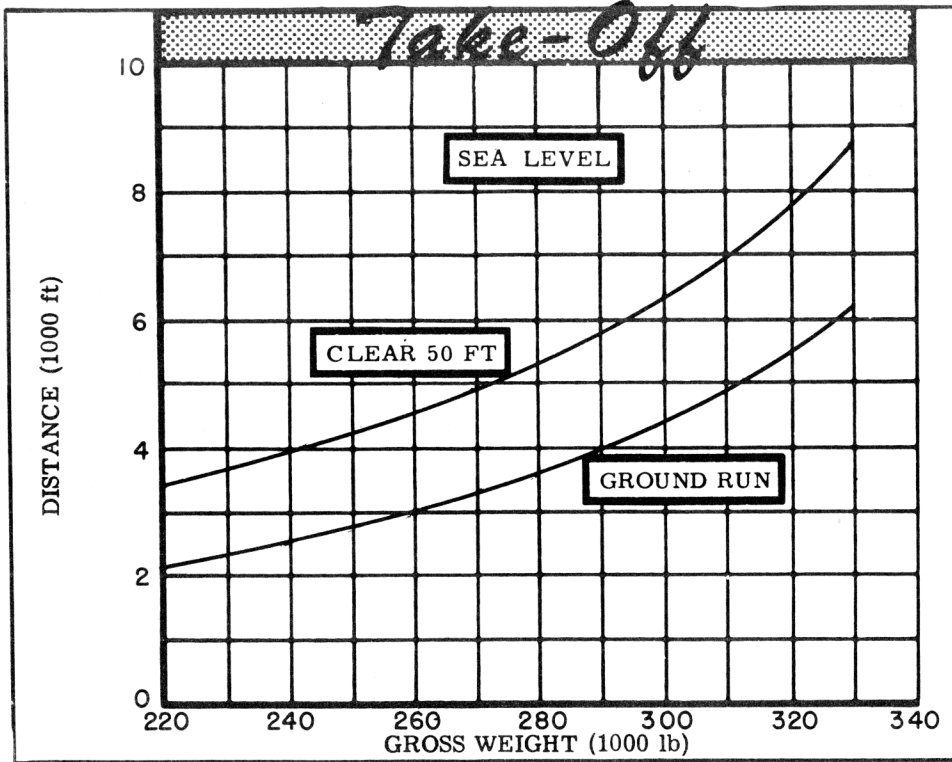
- ① Take-off power
- ② Max power
- ③ Normal power
- ④ Detailed descriptions of RADIUS & RANGE missions are given on page 6.

- ⑤ For Radius Mission if radius is shown
- ⑥ Brakes only
- ⑦ Brakes plus 6 propellers at reverse thrust
- ⑧ Where two speeds are shown thus; 186/266.5 the first is the average for the entire mission and the second is the average in the combat zone.

⑨ Based on 3250 BHP at 2700 RPM

PERFORMANCE BASIS:

- (a) Data source: Flight tests
- (b) Performance is based on powers shown on page 7



N O T E SFORMULA: RADIUS MISSION I

Start engines, warm-up, take-off, climb on course with normal power to 10,000 feet, cruise at long range speeds at altitudes for best range (10,000 feet minimum). Climb so as to arrive at 25,000 feet 30 minutes prior to target. Cruise long range speeds for 15 minutes, conduct 15 minute normal power bomb-run, drop bombs, conduct 5 minute evasive action plus 10 minutes escape at normal power. Return to base at altitudes for best range using long range cruise climb technique. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes evasive action at normal power fuel consumption and 5% initial fuel for landing and endurance reserve.

FORMULA: RANGE MISSION I

Same as outbound leg of Radius Mission I continued until 90% of initial fuel has been used and bombs are then dropped. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel for landing and endurance reserve.

FORMULA: RADIUS MISSION II

Same as Radius Mission I except for bomb load.

FORMULA: RANGE MISSION II

Same as Range Mission I except for bomb load.

FORMULA: RADIUS MISSION III & IV

Start engines, warm-up, take-off, climb on course with normal power to 10,000 feet, cruise at long range speeds at altitude for best range (10,000 feet minimum). Climb so as to arrive at 40,000 feet 500 (or 1000) nautical miles prior to target. Cruise long range speeds at 40,000 feet, conduct 15 minute normal power bomb-run, drop bombs, conduct 5 minute evasive action plus 10 minute escape at normal power. Cruise back 500 (or 1000) nautical miles from target at 40,000 feet at long range speeds. Return to base at altitudes for best range using cruise climb technique. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes evasive action at normal power fuel consumption and 5% initial

fuel for landing and endurance reserve.

FORMULA: RANGE MISSION III & IV

Same as outbound leg of Radius Mission continued until 90% of fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel for landing and endurance reserve.

FORMULA: RADIUS MISSION V

Start engines, warm-up, take-off, climb on course to 32,400 feet using normal power, cruise to target at altitude and powers for best speed, conduct 15 minute normal power bomb run to target, drop bombs, conduct 5 minute evasive action and 10 minute escape from target at normal power. Return to base using cruising altitude (approx. 40,000 feet) and powers for best speed. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off, 5 minutes evasive action at normal power fuel consumption plus 5% of initial fuel load for landing and endurance reserve.

FORMULA: RANGE MISSION V

Same as outbound leg of Radius Mission continued until 90% of fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel for landing and endurance reserve.

FORMULA: RANGE MISSION VI

Start engines, warm-up, take-off, climb on course with normal power to 10,000 feet, cruise at long range speeds at altitudes for best range (10,000 feet minimum) to point where 90% of initial fuel has been used. Range free allowances include 10 minutes normal power fuel consumption for warm-up and take-off plus 10% of initial fuel for landing and endurance reserve.

GENERAL DATA

- (a) For detailed planning refer to Tech Order AN 01-5EUB-1.

(continued)

N O T E SGENERAL DATA (continued)

(b) The B-36B may be field modified to carry a total of four bomb bay tanks; however, the present weight restriction of 328,000 pounds limits usage to 7393 gallons bomb bay fuel requiring three bomb bay tanks.

(c) For computing all radius and range missions the aircraft is flown at speeds corresponding to 99% of maximum miles per pounds at instantaneous gross weight and altitude. Where analysis indicates an improvement in miles per lb by using a cruising climb, the procedure has been utilized.

(d) Engine ratings shown on page 3 are guaranteed ratings. Power values used for performance calculations are as follows:

R-4360-41			
	BHP	RPM	ALT**
T. O:	*3500	2700	S. L.
Max:	3250	2700	34,500
	†3250	2400	34,500
	2650	2550	39,300
Nor:	2650	2550	39,300
	*Wet		
	†War emergency (Military power, 2400 rpm. high BMEP)		
	**With turbos		

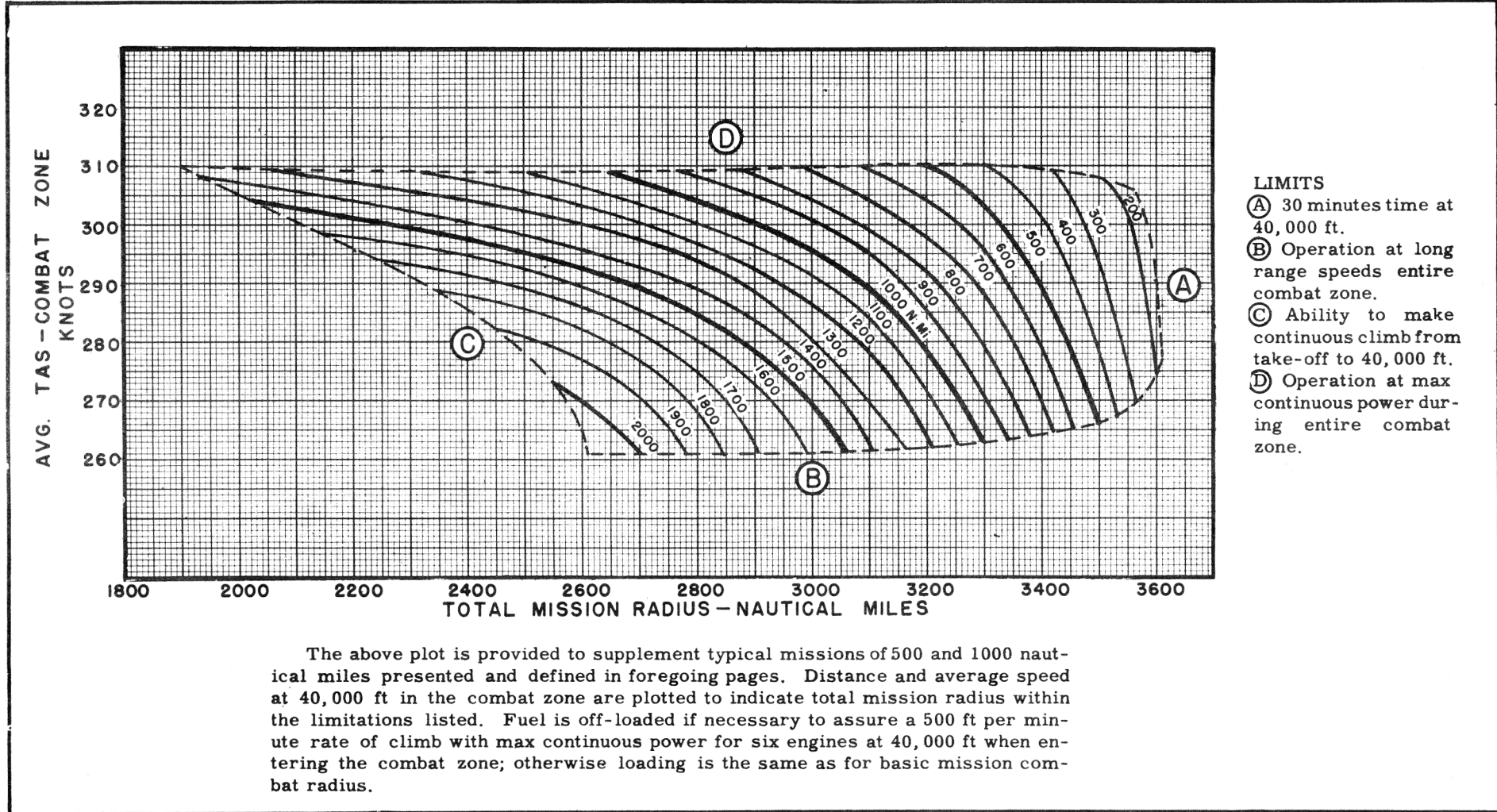
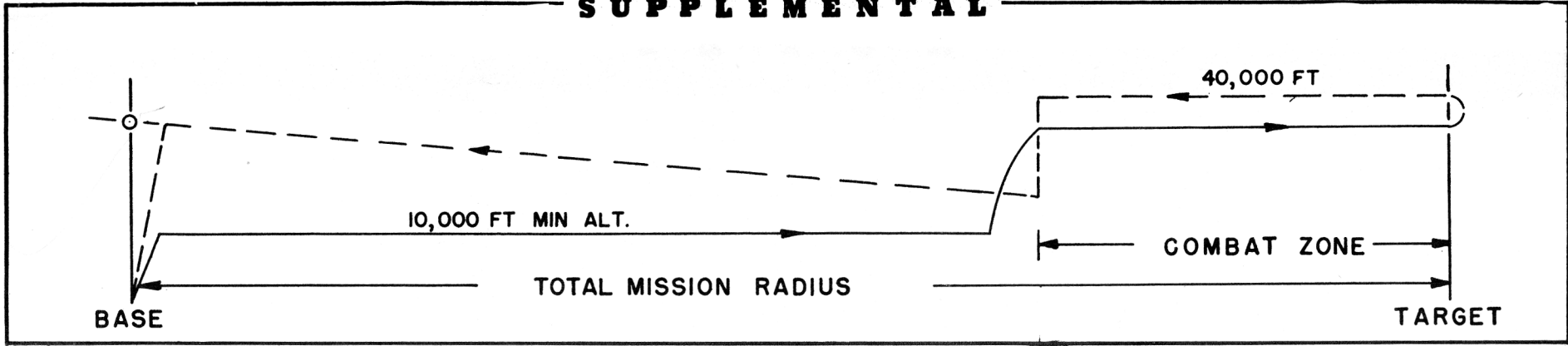
(e) ECM equipment consists of the following sets:

AN/APT-1, -4, -5A
AN/APR-4

AN/ARQ-8
AN/APA-38

(f) The following restriction is based on the strength of the landing gear: Max take-off gross weight equals 328,000 lb for B-36B aircraft with serial numbers 44-92068 thru -92070, 44-92076, 44,92082 thru -92087. All other B-36B's are limited to 278,000 lb gross weight for take-off except by special permission of AMC.

S U P P L E M E N T A L



- LIMITS**
- Ⓐ 30 minutes time at 40,000 ft.
 - Ⓑ Operation at long range speeds entire combat zone.
 - Ⓒ Ability to make continuous climb from take-off to 40,000 ft.
 - Ⓓ Operation at max continuous power during entire combat zone.

The above plot is provided to supplement typical missions of 500 and 1000 nautical miles presented and defined in foregoing pages. Distance and average speed at 40,000 ft in the combat zone are plotted to indicate total mission radius within the limitations listed. Fuel is off-loaded if necessary to assure a 500 ft per minute rate of climb with max continuous power for six engines at 40,000 ft when entering the combat zone; otherwise loading is the same as for basic mission combat radius.