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Standard Aircraft Characteristics

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

RB-36D

Consolidated-Vultee

SIX R-4360-41
PRATT & WHITNEY
AND
FOUR J47-GE-19
GENERAL ELECTRIC

POWER PLANT

No. & Model(6) R-4360-41
 Mfr Pratt & Whitney
 Spec No. A-7063-D
 Turbo (2) BH-1
 Turbo Mfr General Electric
 Red. Gear Ratio 0.375
 Prop. Mfr Curtiss
 Blade Design No. see page 8, note "f"
 Prop. Type CS, FF, Reverse
 No. Blades 3
 Prop. Dia 19'-0"
 Augmentation Water/alcohol plus
 No. & Model (4) J47-GE-19
 Mfr General Electric
 Spec No. E-589
 Type Axial
 Length 144"
 Diameter 39"
 Weight (dry) 2475 lb

ENGINE RATINGS

BHP - RPM - ALT - MIN
 T. O.: *3500 - 2700 - Turbo - 5
 3250 - 2700 - Turbo - 5
 Mil: *3500 - 2700 - Turbo - 30
 3250 - 2700 - Turbo - 30
 Nor: 2650 - 2550 - Turbo - Cont
 *Wet plus
 S. L. Static LB - RPM - MIN
 Max: 5200 - 7950 - 5
 Mil: 5200 - 7950 - 30
 Nor: 4730 - 7630 - Cont

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

Navy Equivalent: None Mfr Model: 36
 The RB-36D is a long range, high altitude, very heavy reconnaissance aircraft. The mission of the aircraft is all-purpose strategic reconnaissance, intelligence, bomb damage assessment, charting and day and night mapping. The crew of 18 consists of the pilot, co-pilot, flight engineer, photo-navigator, radar navigator, weather observer, radio-ECM operator, photographer-technician, three (3) ECM operators, APG-3 operator and six (6) relief crew gunners. Crew and camera compartments are pressurized, heated, and ventilated. A pressurized tunnel permits crew movement between the forward and aft pressurized compartments. A low pressure oxygen system is provided. Portable oxygen units are utilized in case of emergency or for crew movement in non-pressurized part of the aircraft. 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. Bombing-navigation is accomplished by APQ-24 radar.

Three CO₂ purging systems are provided; two for the wing tanks and one for the bomb bay tank. The aircraft has a single point refueling, manifold type fuel system. 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.

Development

All B-36B's are currently being modified and redesignated RB-36D's.
 Engineering acceptance inspection: Nov 49
 First flight (No. 85 production article): 14 Dec 49
 First acceptance: Jun 50

WEIGHTS

Loading Lb L. F.
 Empty 163,907(C)
 Basic 170,615(C)
 Design 357,500 2.00
 Combat *255,444
 Max T. O. †357,500 2.00
 Max Land †357,500 2.00
 (C) Calculated
 *For Basic Mission
 † Limited by strength
 For weights with pods removed, see page 8, note (c)

F U E L

Location No. Tanks Gal
 Wg, outbd* 2 4524
 Wg, ctr* 2 8168
 Wg, inbd* 2 8424
 Center sec 2 10,248
 Bomb bay** 1 3000
 *Partial s. s. Total † 34,364
 **s. s.
 Grade 115/145
 † See page 8, note (a)

OIL

Recip Jet
 Capacity (gal) 1200 52
 Grade S-1120; W-1100 1005
 FLUID INJECTION
 Eng Nac 6 54

G U N S

No.	Size	Rds ea	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

B O M B S

No.	Type
80 (max)	T-9E8 or T-86 Flash

C A M E R A S

No.	Type	Lens
1	K-22A, Fwd oblique	12"
3	K-17C, Tri metrogen	6"
2	K-38, Split vertical	24"
2	K-22A, Side oblique	24"
1	K-17C, Vertical	6"
5	K-40, Multiple	48"
1*	T-11, Vertical	6"
1*	K-37, Vertical	12"
1*	K-22A, Vertical	6", 12", or 24"
1*	K-17C, Vertical	6", 12", or 24"
5*	K-38, Multiple	36"

*Alternate provisions

ELECTRONICS

VHF Command AN/ARC-3
 Liaison AN/ARC-8
 Interphone USAF Combat
 Bomb. -Nav. Radar AN/APQ-24
 Loran AN/APN-9A
 Glide Path AN/ARN-5B
 Marker Beacon RC-193A
 Radio Compass AN/ARN-7A
 Range Receiver BC-453
 IFF AN/APX-6
 Blind Approach RC-103D
 Gun-Laying Radar ... AN/APG-3 or -32
 ECM see page 8, note (d)

Loading and Performance - Typical Mission

C O N D I T I O N S		BASIC MISSION	MAX BOMBS	40,000 FT ALT ZONE		MAX SPEED	FERRY RANGE	RB-36D PODS ATTACHED	
				500 N. MILES	1000 N. MILES				
		I	II	III	IV	V	VI		
TAKE-OFF WEIGHT	(lb)	357,500	357,500	357,500	357,500	357,500	357,500		
Fuel at 6.0 lb/gal (grade 115/145)	(lb)	170,736	157,015	170,756	170,736	170,736	176,879		
Military load (Flash bombs)	(lb)	2256	15,040	2256	2256	2256	None		
Military load (Cameras)	(lb)	3309	3309	3309	3309	3309	None		
Wing loading	(lb/sq ft)	74.92	74.92	74.92	74.92	74.92	74.92		
Stall speed (power off, land. config.)	(kn)	105	105	105	105	105	105		
Take-off ground run at SL	① (ft)	4520	4520	4520	4520	4520	4520		
Take-off to clear to ft	① (ft)	5630	5630	5630	5630	5630	5630		
Rate of climb at SL	③ (fpm)	1055	1055	1055	1055	1055	1055		
Time: SL to 10,000 ft	③ (min)	10.3	10.3	10.3	10.3	10.3	10.3		
Time: SL to 20,000 ft	③ (min)	23.5	23.5	23.5	23.5	23.5	23.5		
Service ceiling (100 fpm)	③ (ft)	36,600	36,600	36,600	36,600	36,600	36,600		
Service ceiling (one engine out)	② (ft)	35,600	35,600	35,600	35,600	35,600	35,600		
COMBAT RANGE	④ (n. mi.)	6450	5758	6159	5977	2631	6830		
Average speed	⑦ (kn)	177	175	175/246	177/254	329	177		
Initial cruising altitude	(ft)	10,000	10,000	10,000	10,000	31,000	10,000		
Final cruising altitude	(ft)	21,600	21,500	40,000	40,000	39,400	21,300		
Total mission time	(hr)	36.57	32.96	35.41	33.99	8.16	38.77		
COMBAT RADIUS	④ (n. mi.)	3240	2923	2970	2710	1400	—		
Average speed	⑦ (kn)	180	182	193/284	210/278	334	—		
Initial cruising altitude	(ft)	10,000	10,000	10,000	10,000	31,000	—		
Bombing altitude	(ft)	25,000	25,000	40,000	40,000	39,400	—		
Bomb run speed	③ (kn)	328	328	351	352	349	—		
Final cruising altitude	(ft)	21,800	21,750	21,800	21,800	39,400	—		
Total mission time	(hr)	36.25	32.35	31.00	26.10	8.65	—		
COMBAT WEIGHT	⑤ (lb)	255,444	249,460	252,780	250,330	263,644	198,309		
Combat altitude	(ft)	25,000	25,000	40,000	40,000	39,400	21,300		
Combat speed	② (kn)	344 ⑧	344 ⑧	360	361	359	322 ⑧		
Combat climb	② (fpm)	1640	1690	690	700	680	2490		
Combat ceiling (500 fpm)	② (ft)	41,350	41,750	41,550	41,700	40,775	44,550		
Service ceiling (100 fpm)	③ (ft)	43,950	44,200	44,050	44,150	43,500	47,350		
Service ceiling (one engine out)	③ (ft)	41,750	42,100	41,900	42,050	41,200	44,950		
Max rate of climb at SL	② (fpm)	2305	2380	2340	2370	2220	3120		
Max speed at 34,500 ft	② (kn)	370	371	370	371	369	377 ⑨		
LANDING WEIGHT	⑤ (lb)	193,045	193,297	193,045	193,045	193,045	198,309		
Ground roll at SL	⑥ (ft)	1825	1830	1825	1825	1825	1875		
Total from 50 ft	⑥ (ft)	3120	3125	3120	3120	3120	3190		

NOTES

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

- page 8.
- ⑤ For Radius Mission if radius is shown.
- ⑥ Brakes only
- ⑦ Where two speeds are shown thus: 193/284, the first is the average for the entire

mission; the second, the average for the combat zone.
PERFORMANCE BASIS:
 (a) Data source: Preliminary flight test

(b) Performance is based on powers shown on page 8.

SUPPLEMENTAL

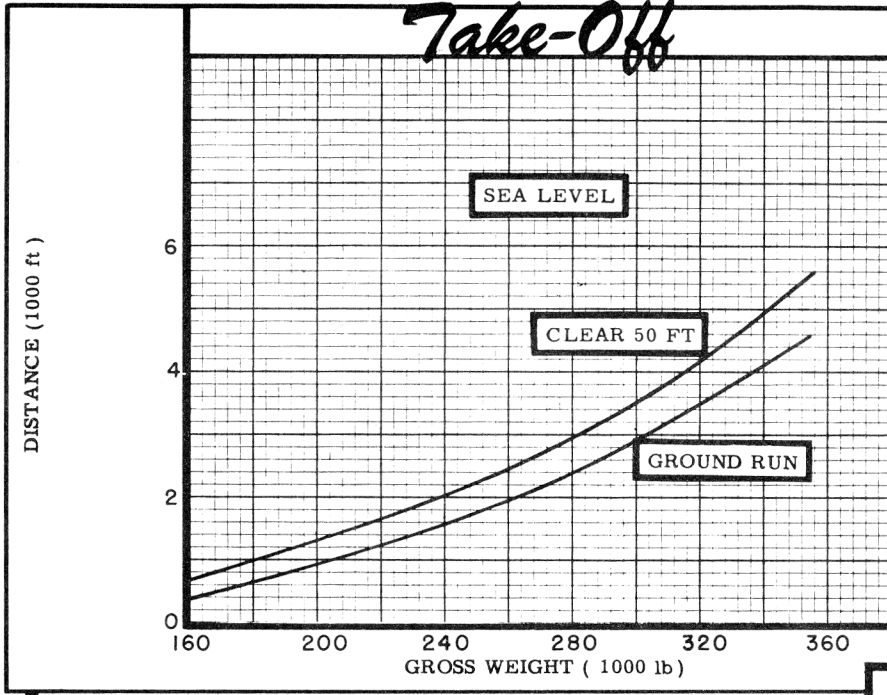
Loading and Performance — Typical Mission

C O N D I T I O N S	BASIC MISSION	MAX BOMBS	40,000 FT ALT ZONE		MAX SPEED	FERRY RANGE	RB-36D PODS REMOVED
			500 N. MILES	1000 N. MILES			
		II	III	IV	V	VI	
TAKE-OFF WEIGHT (lb)	327,500	327,500	327,500	327,500	327,500	327,500	
Fuel at 6.0 lb/gal (grade 115/145) (lb)	155,295	141,574	155,295	155,295	155,295	161,439	
Military load (Flash bombs) (lb)	2256	15,040	2256	2256	2256	None	
Military load (Cameras) (lb)	3309	3309	3309	3309	3309	None	
Wing loading (lb/sq ft)	68.63	68.63	68.63	68.63	68.63	68.63	
Stall speed (power off, land. config.) (kn)	100	100	100	100	100	100	
Take-off ground run at SL ① (ft)	5970	5970	5970	5970	5970	5970	
Take-off to clear 50 ft ① (ft)	8470	8470	8470	8470	8470	8470	
Rate of climb at SL ③ (fpm)	500	500	500	500	500	500	
Time: SL to 10,000 ft ③ (min)	22.1	22.1	22.1	22.1	22.1	22.1	
Time: SL to 20,000 ft ③ (min)	50.2	50.2	50.2	50.2	50.2	50.2	
Service ceiling (100 fpm) ③ (ft)	28,100	28,100	28,100	28,100	28,100	28,100	
Service ceiling (one engine out) ② (ft)	28,800	28,800	28,800	28,800	28,800	28,800	
COMBAT RANGE ④ (n. mi.)	6804	5976	6460	6320	3349	7200	
Average speed ⑦ (kn)	177	176	185/248	192/251	265	177	
Initial cruising altitude (ft)	10,000	10,000	10,000	10,000	32,500	10,000	
Final cruising altitude (ft)	20,800	19,000	40,000	40,000	39,400	21,300	
Total mission time (hr)	38.61	34.02	34.83	33.58	12.80	40.78	
COMBAT RADIUS ④ (n. mi.)	3522	3167	3260	3010	1753	—	
Average speed ⑦ (kn)	178	178	189/270	201/271	282	—	
Initial cruising altitude (ft)	10,000	10,000	10,000	10,000	32,300	—	
Bombing altitude (ft)	25,000	25,000	40,000	40,000	39,400	—	
Bomb run speed ③ (kn)	274	275	304	305	302	—	
Final cruising altitude (ft)	21,800	21,750	21,800	21,800	39,400	—	
Total mission time (hr)	31.85	35.77	34.84	31.16	12.68	—	
COMBAT WEIGHT ⑤ (lb)	237,483	231,480	234,500	232,200	243,130	182,205	
Combat altitude (ft)	25,000	25,000	40,000	40,000	39,400	21,300	
Combat speed ② (kn)	303	304	306	307	305	297	
Combat climb ② (fpm)	1120	1190	340	340	370	1800	
Combat ceiling (500 fpm) ② (ft)	38,150	38,620	38,370	38,560	37,620	41,970	
Service ceiling (100 fpm) ③ (ft)	41,620	41,900	41,750	41,850	41,320	44,100	
Service ceiling (one engine out) ③ (ft)	39,500	39,780	39,650	39,760	38,220	42,400	
Max rate of climb at SL ② (fpm)	1401	1401	1453	1450	1352	2000	
Max speed at 34,500 ft ② (kn)	325	326	326	326	326	336	
LANDING WEIGHT ⑤ (lb)	177,714	177,965	177,714	177,714	177,714	182,205	
Ground roll at SL ⑥ (ft)	1680	1685	1680	1680	1680	1725	
Total from 50 ft ⑥ (ft)	2925	2930	2925	2925	2925	2980	

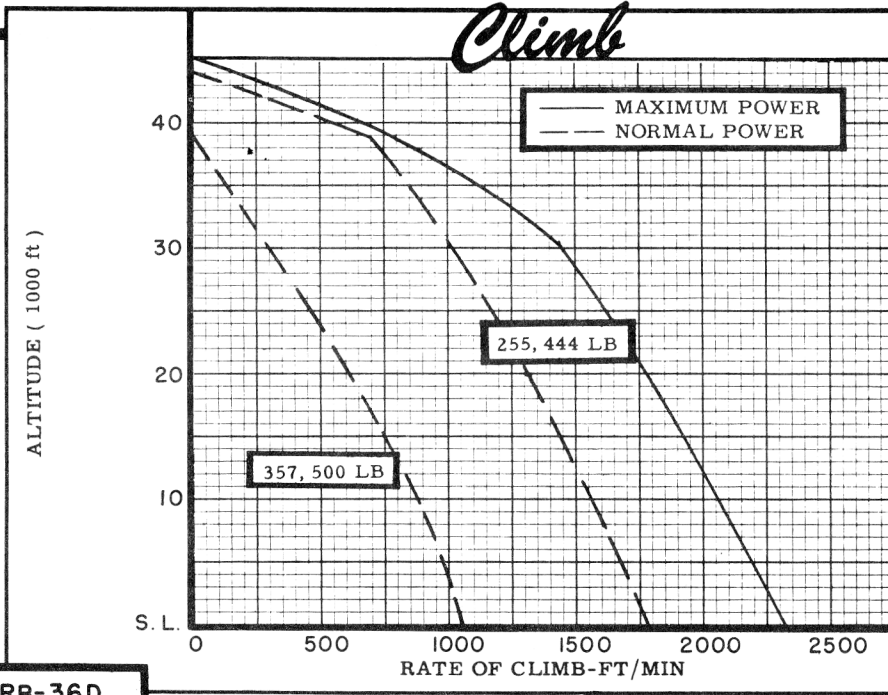
NOTES

① Take-off power page 8.
 ② Max power ⑤ For Radius Mission if radius is shown.
 ③ Normal power ⑥ Brakes only
 ④ Detailed descriptions of RADIUS and RANGE missions are given on 270, the first, is the average for the entire mission; and the second, the average for the combat zone.
 ⑦ Where two speeds are shown thus: 189/270, the first, is the average for the entire mission; and the second, the average for the combat zone.
 PERFORMANCE BASIS:
 (a) Data source: Preliminary flight test
 (b) Performance is based on powers shown on page 8.

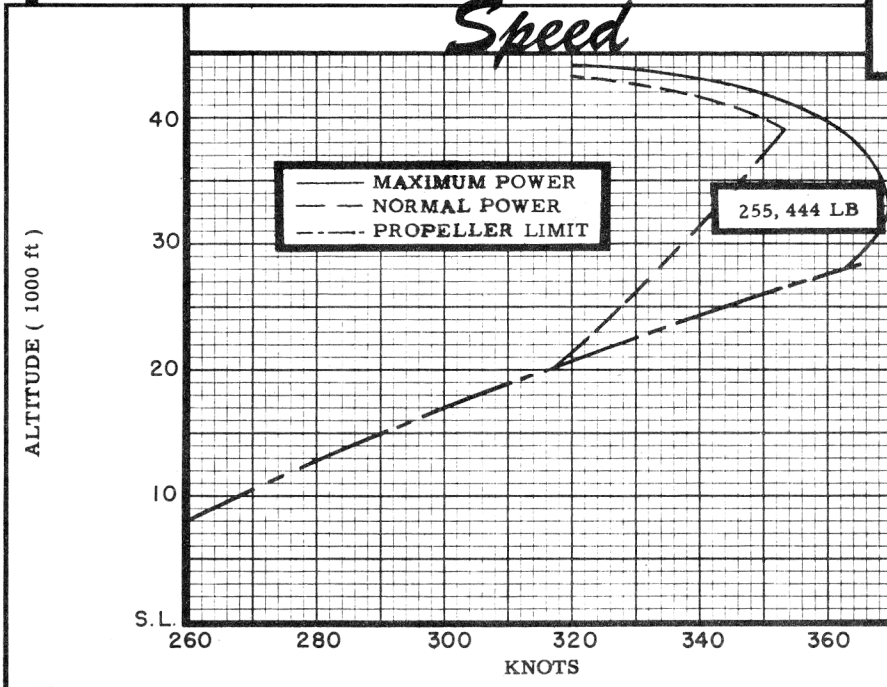
Take-Off



Climb

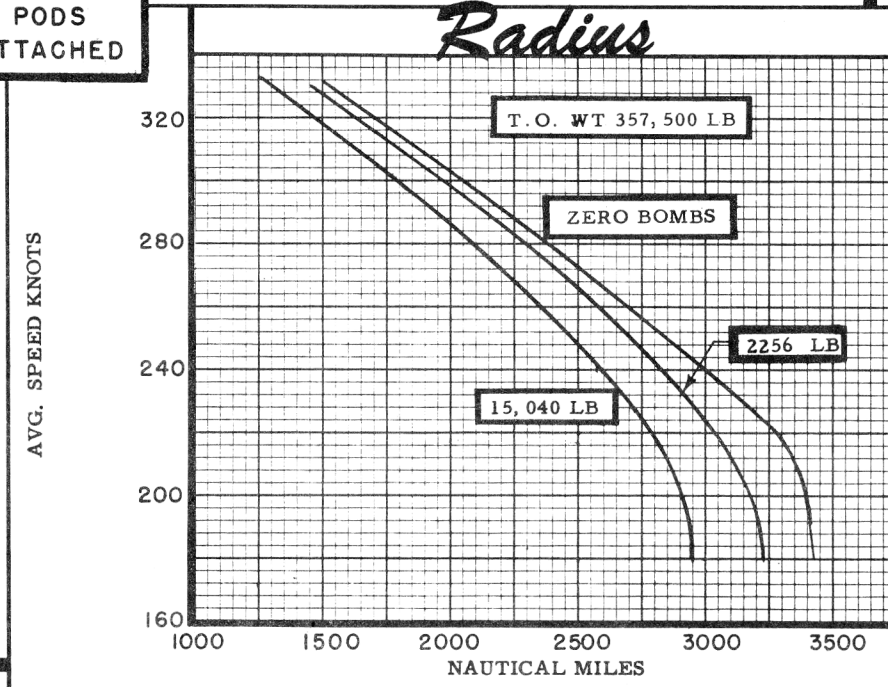


Speed

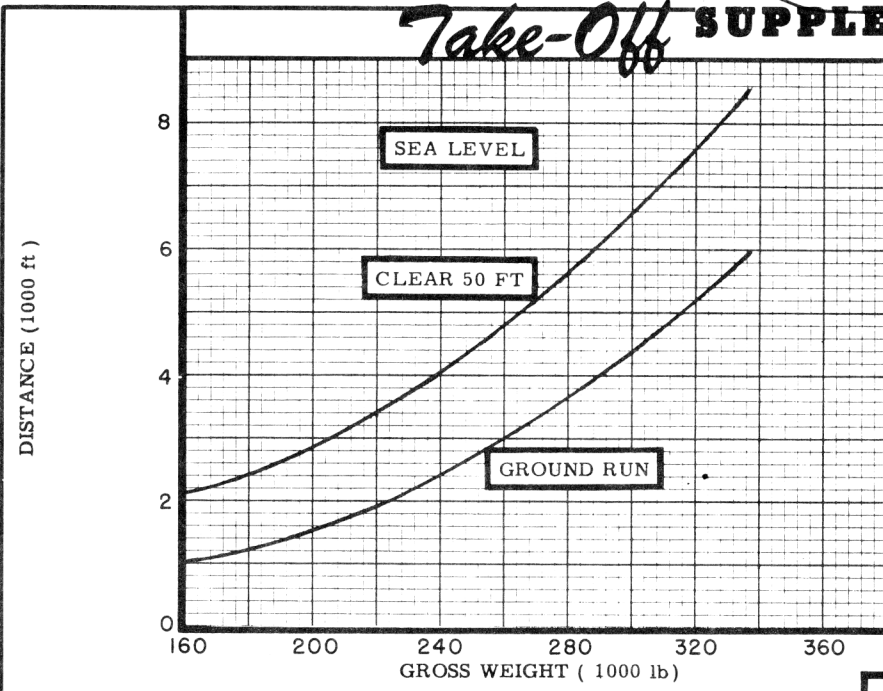


RB-36D
PODS
ATTACHED

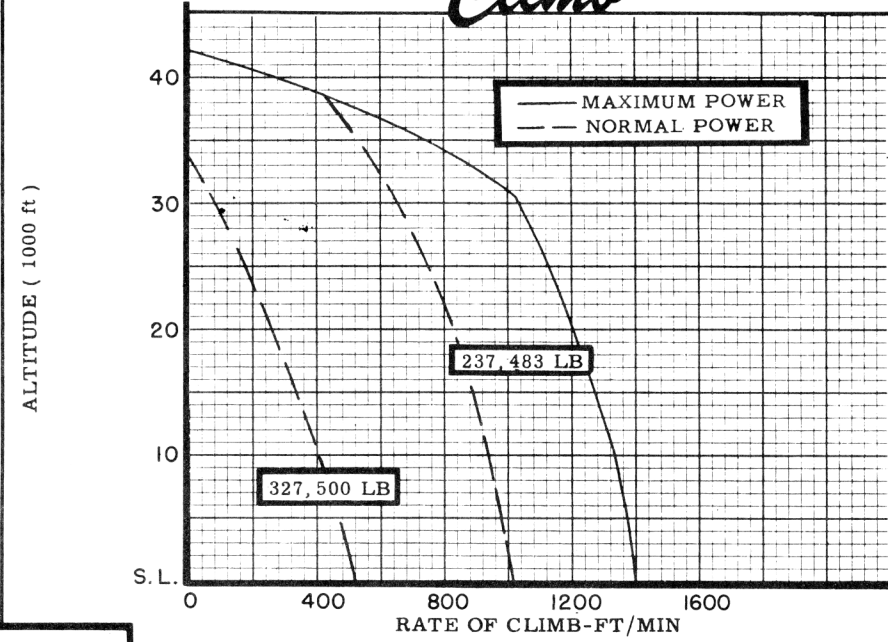
Radius



Take-Off SUPPLEMENTAL

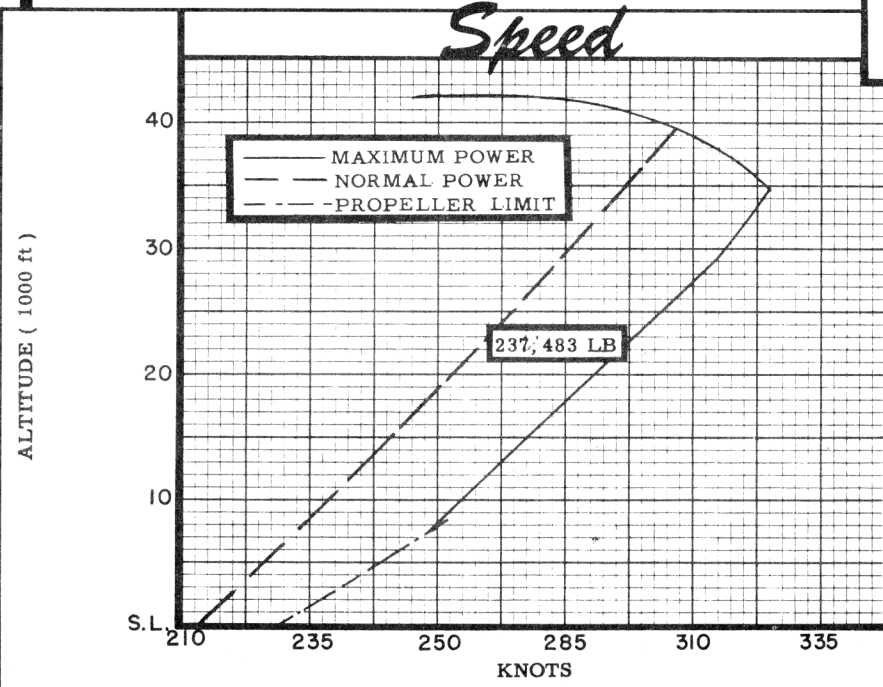


Climb

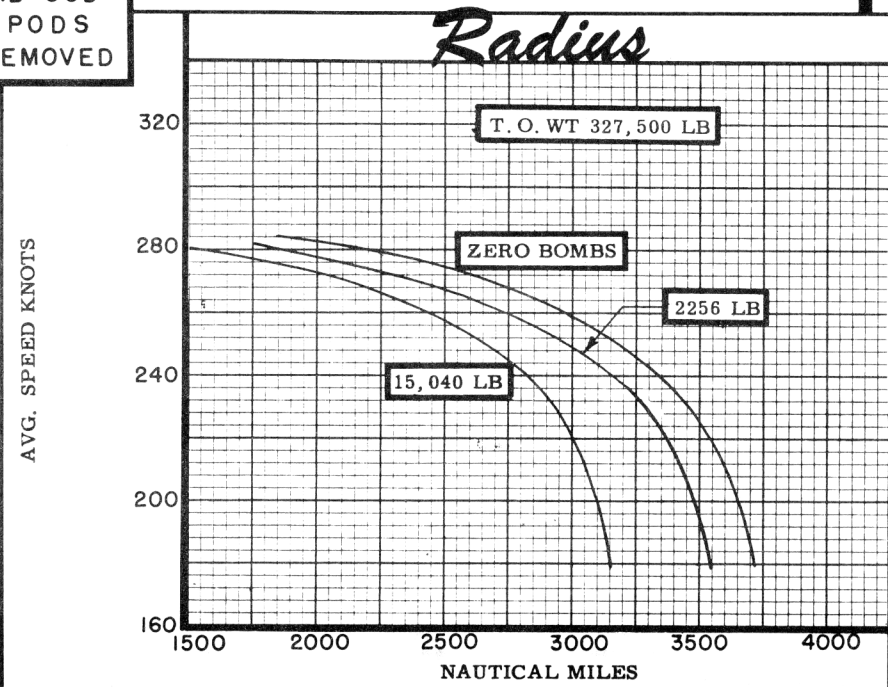


RB-36D
PODS
REMOVED

Speed



Radius



N O T E S

FORMULA: RADIUS MISSIONS I & II

Start engines, warm-up, take-off and climb on course using 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 at long range speeds for 15 minutes, conduct 15 minute bomb run at normal power, drop flash bombs, conduct 5 minutes evasive action and 10 minutes escape from target at normal power. Return to base at long range speeds, cruising at optimum altitude for mileage. Jet engines (if installed) are operating during take-off, climbs and during normal power operation in target area. Range free allowances include 10 minutes normal power fuel consumption for R-4360-41 plus 5 minutes normal power fuel consumption for J47-GE-19 (if installed) for warm-up and take-off, 5 minutes normal power fuel consumption for R-4360-41 and J47-GE-19 (if installed) for evasive action, plus 5% of initial fuel load for landing and endurance reserve.

FORMULA: RADIUS MISSIONS III & IV

Start engines, warm-up, take-off and climb on course using normal power to 10,000 feet, cruise at long range speeds at 10,000 feet altitude. Climb so as to arrive at 40,000 feet 400 or 1000 nautical miles prior to target. Cruise at long range speeds at 40,000 feet followed by 15 minutes bomb run at normal power, drop flash bombs, conduct 5 minutes, evasive action and 10 minutes escape from target at normal power. Cruise at long range speeds at 40,000 feet until 500 or 1000 nautical miles from target. Return to base at long range speeds and optimum altitude for mileage. Jet engines (if installed) are operative during take-off, all climbs, during normal power operation in target area and whenever operation gives better mileage-speed relationship than is obtainable with jet engines inoperative. Range free allowances are the same as for mission I & II.

FORMULA: RADIUS MISSION V

Start engines, warm-up and take-off, climb on course using normal power to altitude for optimum speed-range operation (approx 32,000 feet), cruise toward target at altitude and powers for optimum speed-range. Conduct 15 minutes normal power bomb run, drop flash bombs, conduct 5 minutes evasive action, plus 10 minute escape from target at normal power, return to base at powers and altitude for best speed-range operation. Jet engines are operative (if installed) during take-off, climb, during normal power operation in target area and whenever operation gives better mileage-speed relationship than is obtainable with jet engines inoperative. Range free allowances are the same as for Radius Missions I & II.

FORMULA: RANGE MISSIONS I, II, III, IV & V

Same as outbound leg of radius missions continued until 90% of initial fuel load has been consumed. Range free allowances include 10 minutes normal power fuel consumption for R-4360-41 plus 5 minutes normal power fuel consumption for J47-GE-19 (if installed) for warm-up and take-off, plus 10% of initial fuel load for landing and endurance reserve.

FORMULA: RANGE MISSION VI

Start engines, warm-up, take-off and climb on course to 10,000 feet using normal power, cruise at long range speeds at altitude for best range (minimum 10,000 feet) until 90% of fuel has been consumed. Jet engines (if installed) are used for take-off and climb. Range free allowances are the same as Range Missions I through V.

GENERAL DATA:

(a) Total fuel capacity is usable only for special loading with equipment removed from the aircraft.

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

R-4360-41		J47-GE-19	
BHP-RPM-ALT**-MIN		S. L. Static	LB - RPM - MIN
T. O:	*3500-2700-S. L. 5	T. O:	5200 - 7950 - 5
Max	{ Mil: 3250-2700-34,500-30	Max:	5200 - 7950 - 30
	{ W. E. 3250-2400-34,500-15	Nor:	4730 - 7630 - Cont
	{ Nor: 2650-2550-39,300-Cont		
Nor:	2650-2550-39,300-Cont		
	*Wet		
	**With turbos		

(c) Weights with pods removed are as follows:

Loading	Lb
Empty	149,497
Combat	237,483
Take-off	*327,500
	*Limited by performance

(continued)

N O T E S

GENERAL DATA (continued):

(d) ECM equipment consists of the following sets:

AN/APT-4	AN/APR-4	AN/ARQ-8
AN/APT-5A	AN/APT-1	AN/APA-38
AN/APA-64A	AN/APR-7	AN/APR-9
AN/APA-17	AN/APR-8	

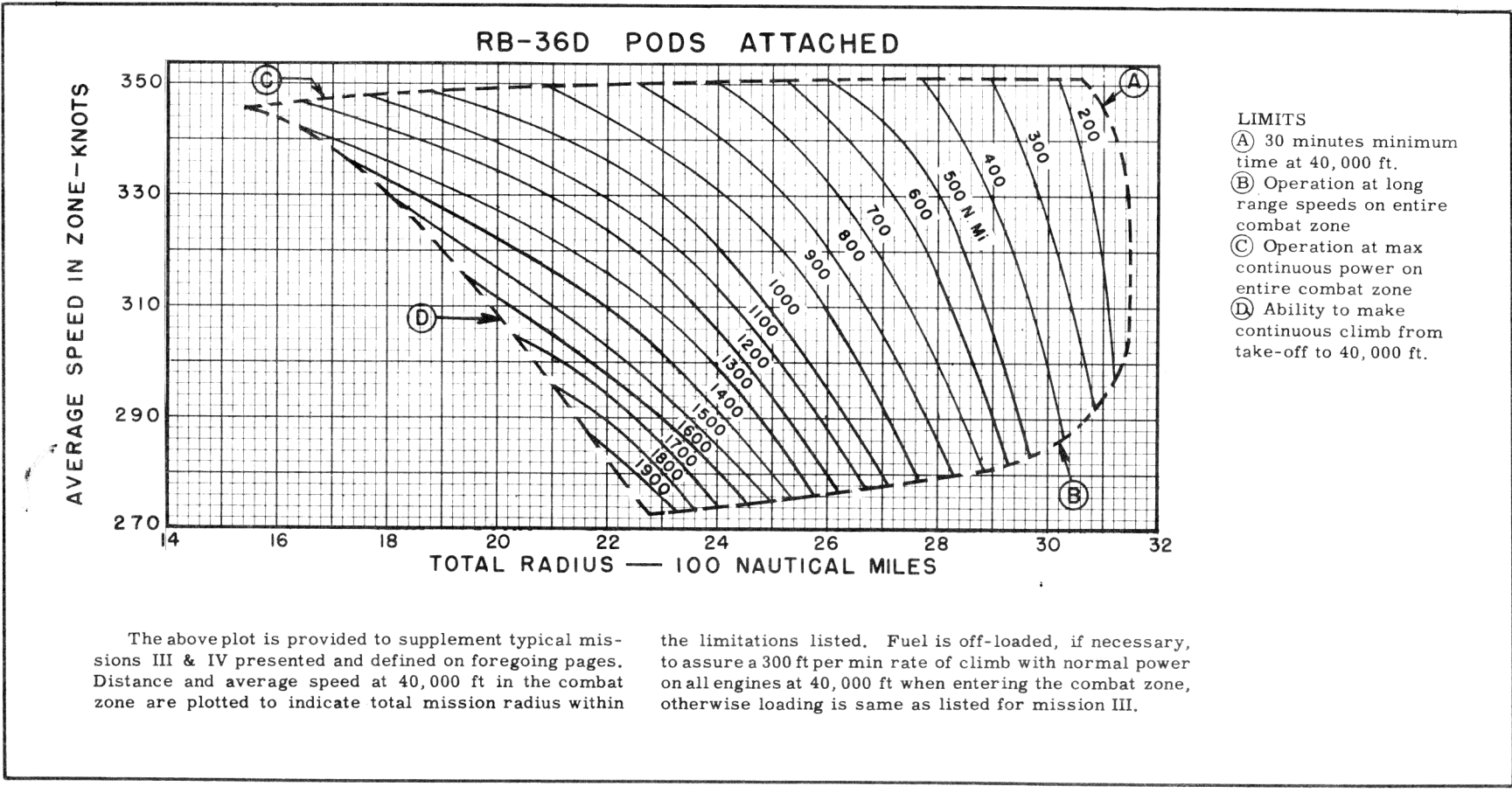
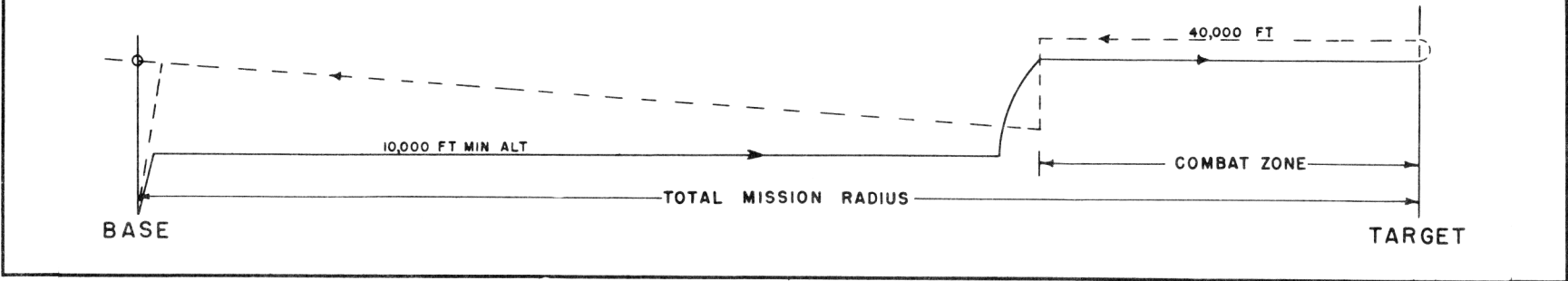
(e) For detailed planning refer to Technical Order AN-01-5EUD-1.

(f) The following variations of propeller blade designs are utilized in RB-36D aircraft:

(round tips)	(square tips)
1129-3C6-24	1129-11C6-24
1129-5C6-24	1129-17C6-24
1129-8C6-24	

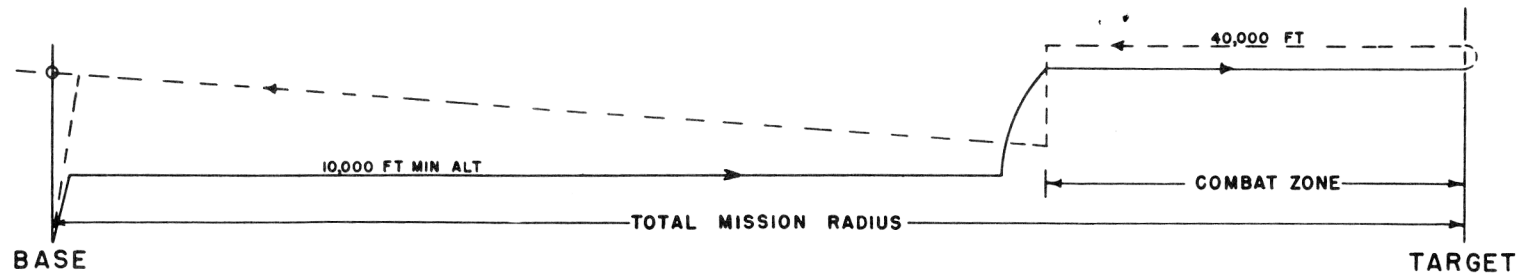
SUPPLEMENTAL

COMBAT ZONE MISSIONS

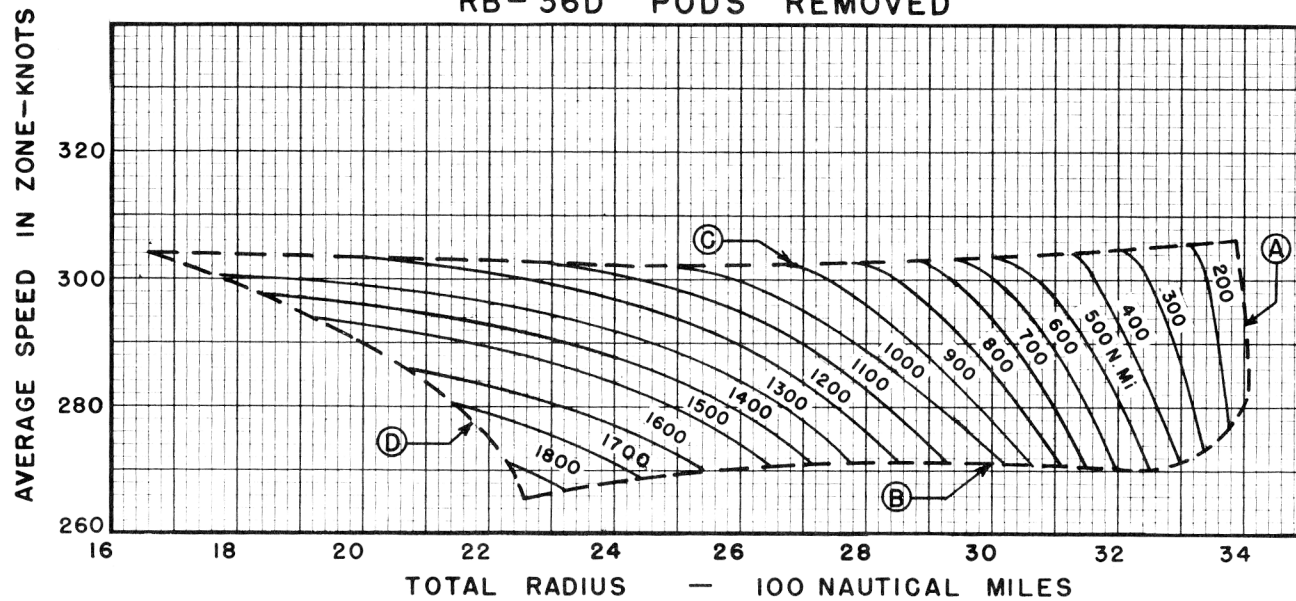


SUPPLEMENTAL

COMBAT ZONE MISSIONS



RB-36D PODS REMOVED



LIMITS

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

The above plot is provided to supplement typical missions III & IV presented and defined on 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 300 ft per min rate of climb with normal power on all engines at 40,000 ft when entering the combat zone, otherwise loading is same as listed for mission III.