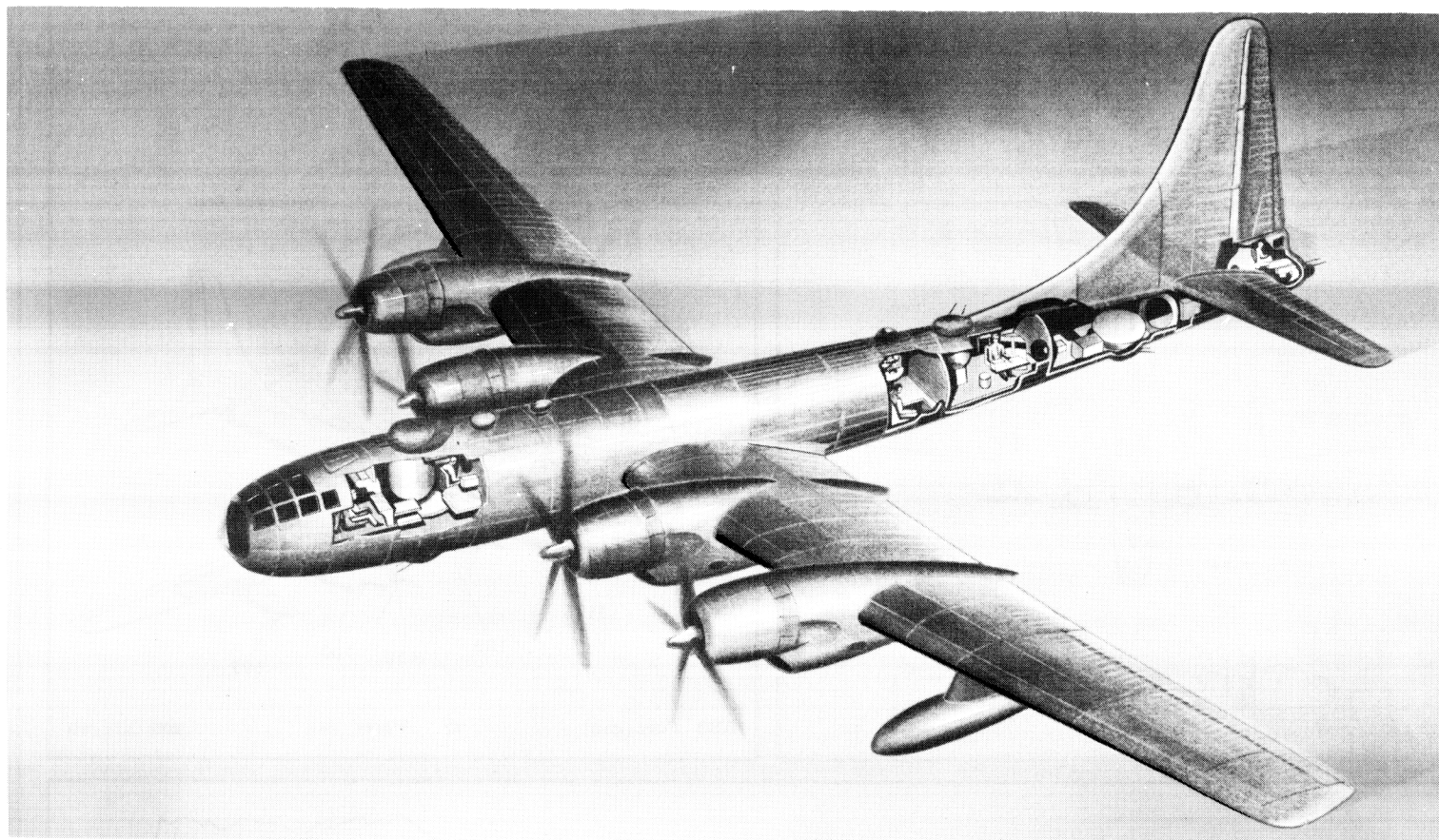


U N C L A S S I F I E D

A-1
B-50D/char.

SERVICE



Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

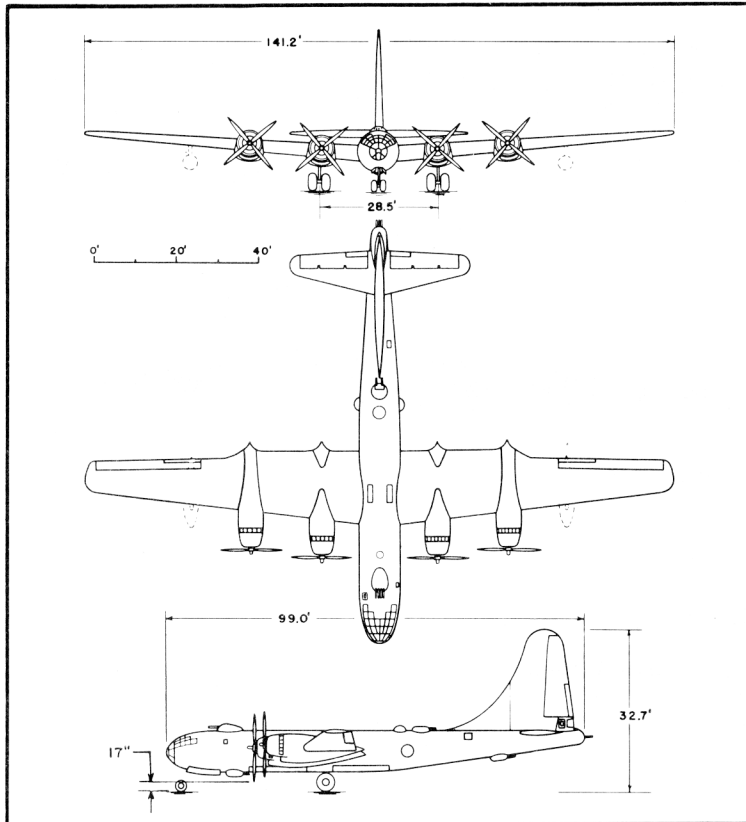
B-50D
SUPERFORTRESS
Boeing

FOUR R-4360-35
PRATT & WHITNEY

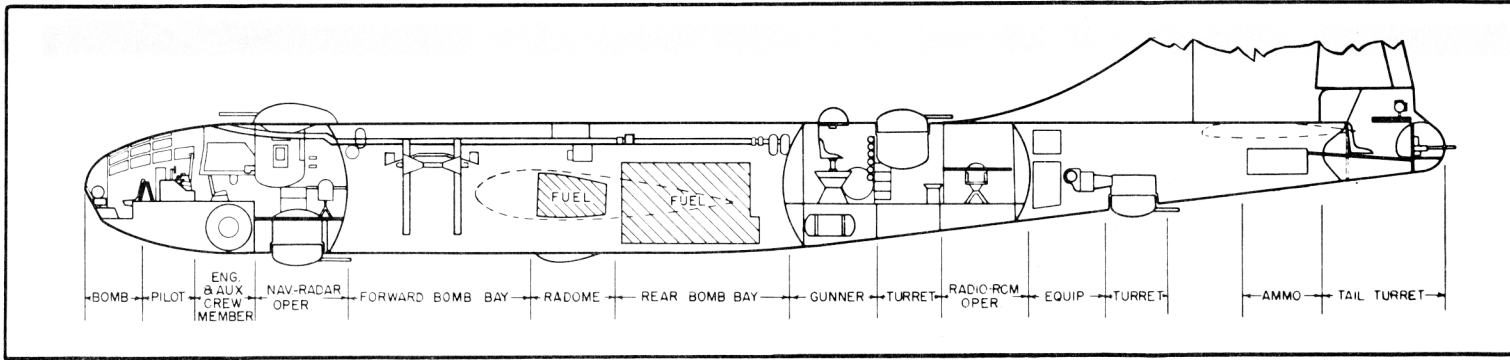
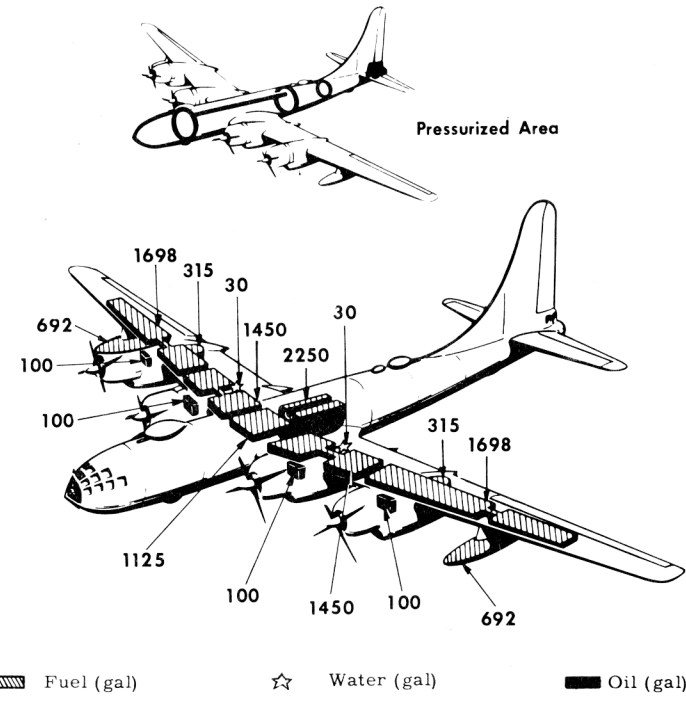
11 JULY 1952

U N C L A S S I F I E D

B-50D



Wing Area 1720 sq ft Wing Section Boeing 117
 Aspect Ratio 11.5 M. A. C. 154.4 in



POWER PLANT

No. & Model (4)R-4360-35
 Mfr Pratt & Whitney
 Engine Spec. No. A-7051-F
 Superch 1 stg, 1 spd
 Turbo Superch (1)CH-7-B1
 Turbo Mfr General Electric
 Red. Gear Ratio 0.375
 Prop Mfr Curtiss
 Blade Design No. 1052-20C4-30
 Prop Type CS, FF, Reverse
 No. Blades 4
 Prop Dia 16'8"
 Augmentation Water/Alcohol

ENGINE RATINGS

BHP - RPM - ALT - MIN

T. O: *3500 - 2700 - S. L. - 5
 3250 - 2700 - S. L. - 5
 Mil: *3500 - 2700 - Turbo- 30
 3250 - 2700 - Turbo- 30
 Nor: 2650 - 2550 - Turbo- Cont

* Wet

DIMENSIONS

Wing
 Span 141.2'
 Incidence (root) 4°
 Dihedral 4°29'
 Sweepback (LE) 7°1'
 Length 99.0'
 Height 32.7'
 Height (fin folded) 20.6'
 Tread 28.5'
 Prop. Grd Clearance 17"

Mission and Description

Navy Equivalent: None Mfr's Model: 345-9-6

The principal mission of the B-50D is the destruction by bombs of land or naval materiel objectives.

The normal crew consists of the pilot, co-pilot, engineer, radio-ECM operator, left side gunner, right side gunner, top gunner and tail gunner.

Cabin heating, ventilation and pressurization are incorporated for increased crew comfort on high altitude, long range missions.

The defensive armament consists of thirteen .50 caliber machine guns housed in five electrically-operated turrets which are remotely controlled from the sighting stations.

The B-50D is similar to the B-50A except for boom in-flight refueling equipment, increased fuel capacity, crew of 10 in lieu of 11, deletion of tail skid and other minor differences.

Development

First flight: May 49
 First acceptance: May 49
 Production completed: Dec 50

WEIGHTS

Loading	Lb	L. F.
Empty	80,609(C)	
Basic	84,714(A)	
Design	120,000	2.67
Combat	*121,850	
Max T. O(overload)	†73,000	2.00
Max T. O(normal)	‡158,250	
Max Land	‡160,000	

(A) Actual
 (C) Calculated
 * For Basic Mission
 † Limited by strength
 ‡ Limited by performance
 ‡ Limited by landing gear strength
 (See page 6, note a)

F U E L

Location	No. Tanks	Gal
Wgs, outbd*	2	3396
Wgs, inbd*	2	2900
Wg. ctr*	1	1125
Nac, skate *	2	630
Aft, bomb bay	1	2250
Wgs, ext	2	1384
	Total	11,685
Grade		115/145
Specification		MIL-F-5572

OIL

Nacelles 4 (tot) 400
 Grade W-1100;S-1120
 Specification MIL-0-6082
WATER/ALCOHOL
 Wgs, inbd 2 (tot) 60
 * Self-sealing

B O M B S

No.	Lb	Type
4	4000 (int.)	G. P.
2	4000 (ext.)	G. P.
8	2000	G. P.
12	1600	A. P.
12	1000	G. P.
40	500	G. P.

Max Bomb Load:
 Internal 20,000 lb
 External 8000 lb

G U N S

No.	Size	Rds. ea	Location
4	50	500	Up, fwd
2	50	500	Lwr, fwd
2	50	500	Up, aft
2	50	500	Lwr, aft
2	50	500	Tur, tail
1	50	380	Tur, tail

ELECTRONICS

Glide Path AN/ARN-5A
 VHF Command AN/ARC-3
 Interphone USAF Combat
 Range Recvr BC-453E
 Liaison AN/ARC-8
 Radio Compass AN/ARN-7
 Marker Beacon RC-193A
 IFF AN/APX-6
 Localizer RC-103A
 Special Radar AN/APQ-24
 Loran Radar AN/APN-9 or -9A
 Auto Bomb AN/ARW-9 and
 AN/ARW-10A
 Radio Altimeter SCR-718C
 ECM (See page 6, note a)
 Radar AN/APN-68
 Radio Set AN/APN-2B

Loading and Performance - Typical Mission

C O N D I T I O N S	BASIC MISSION	MAX BOMB	HIGH ALTITUDE	NORMAL WEIGHT	FERRY RANGE	
	I	II	III	IV	V	
TAKE-OFF WEIGHT (lb)	173,000	169,642	173,000	158,250	163,519	
Fuel at 6.0 lb/gal (grade 115/145) (lb)	69,615	56,634	69,615	54,865	70,134	
Payload (Bombs) (lb)	10,000	20,000	10,000	10,000	None	
Wing loading (lb/sq ft)	100.5	98.6	100.5	92.0	95.1	
Stall speed (power off) (kn)	119	118	119	114	116	
Take-off ground run at SL ① (ft)	6420	6040	6420	4960	5440	
Take-off to clear 50 ft ① (ft)	8025	7550	8025	6200	6800	
Rate of climb at SL ③ (fpm)	620	660	620	805	735	
Rate of climb at SL (one engine out) ② (fpm)	520	550	520	675	625	
Time: SL to 10,000 ft ③ (min)	18	16	18	13	14	
Time: SL to 20,000 ft ③ (min)	43	39	43	30	34	
Service ceiling (100 fpm) ③ (ft)	24,000	25,550	24,000	29,900	28,150	
Service ceiling (one engine out) ② (ft)	⑤	⑤	⑤	⑤	⑤	
COMBAT RANGE ④ (n. mi.)					5006	
COMBAT RADIUS ④ (n. mi.)	2082	1625	1840	1680		
Average speed (kn)	212	215	266	211	188	
Initial cruising altitude (ft)	5000	5000	25,000	5000	5000	
Target speed (kn)	320	317	325	326		
Target altitude (ft)	30,000	30,000	30,000	30,000		
Final cruising altitude (ft)	10,000	10,000	30,000	10,000	5000	
Total mission time (hr)	19.53	15.05	13.95	15.89	26.54	
COMBAT WEIGHT (lb)	121,850	115,700	119,900	116,050	97,700	
Combat altitude (ft)	30,000	30,000	30,000	30,000	5000	
Combat speed ② (kn)	343	346	344	345	279	
Combat climb ② (fpm)	1465	1630	1515	1620	2915	
Combat ceiling (500 fpm) ② (ft)	35,650	36,415	35,900	36,400	38,700	
Service ceiling (100 fpm) ③ (ft)	36,900	38,000	37,250	37,950	40,430	
Service ceiling (one engine out) ③ (ft)	31,600	34,400	32,400	34,350	41,600	
Max rate of climb at SL ② (fpm)	2200	2355	2240	2350	2875	
Max speed at optimum altitude ② (kn/ft)	343	346	344	345	354	
Basic speed at 25,000 ft (kn)	337	340	338	340	344	
LANDING WEIGHT (lb)	97,675	96,640	97,675	96,935	97,700	
Ground roll at SL (ft)	1710	1685	1710	1690	1710	
Total from 50 ft (ft)	3085	3060	3085	3070	3090	

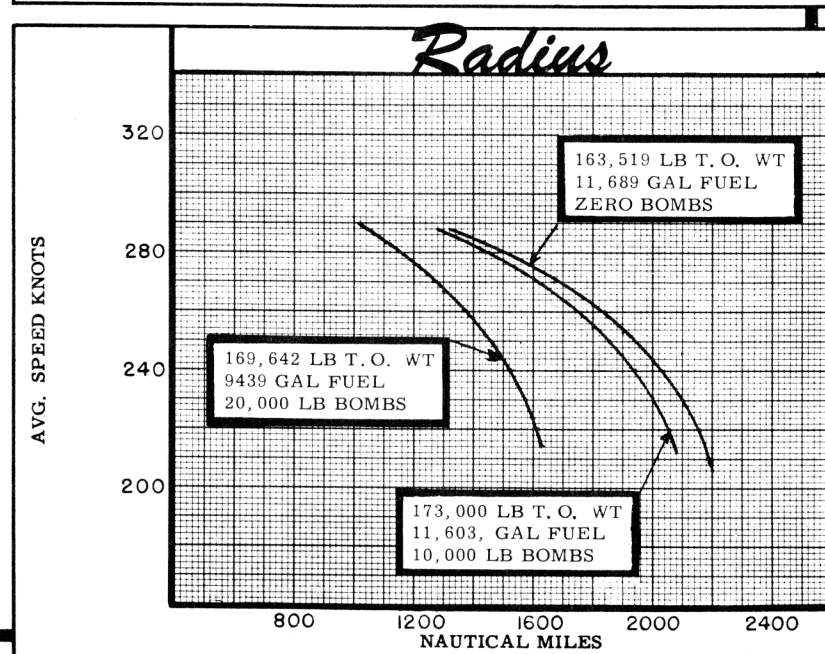
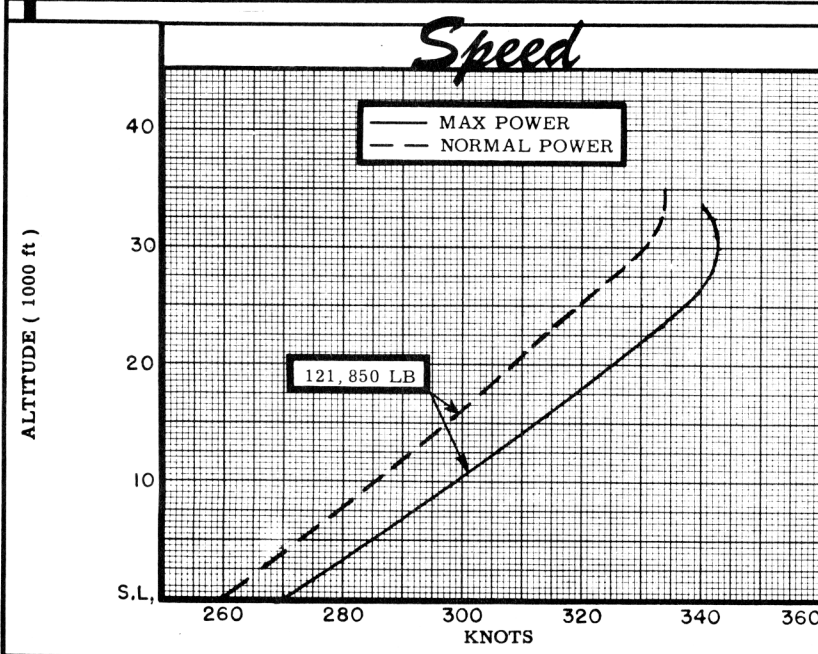
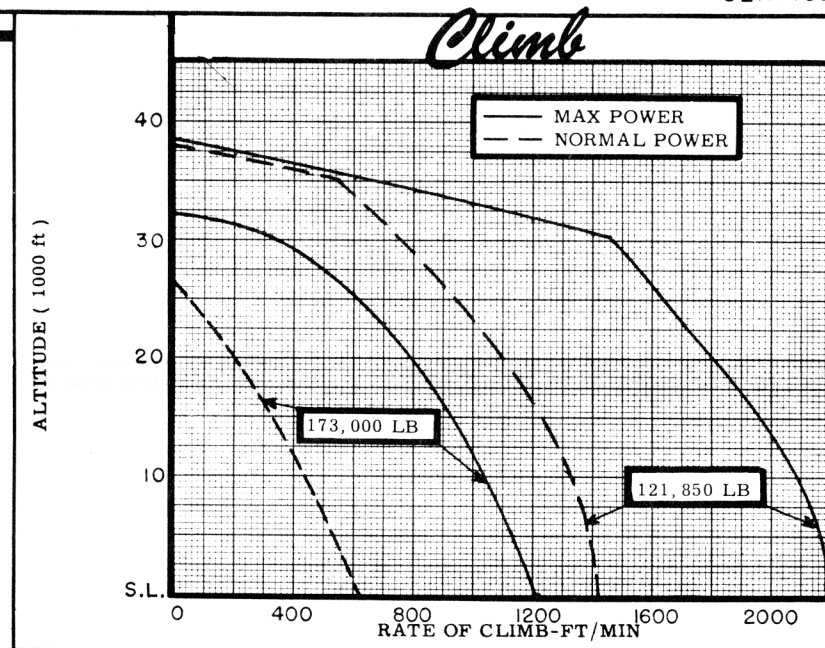
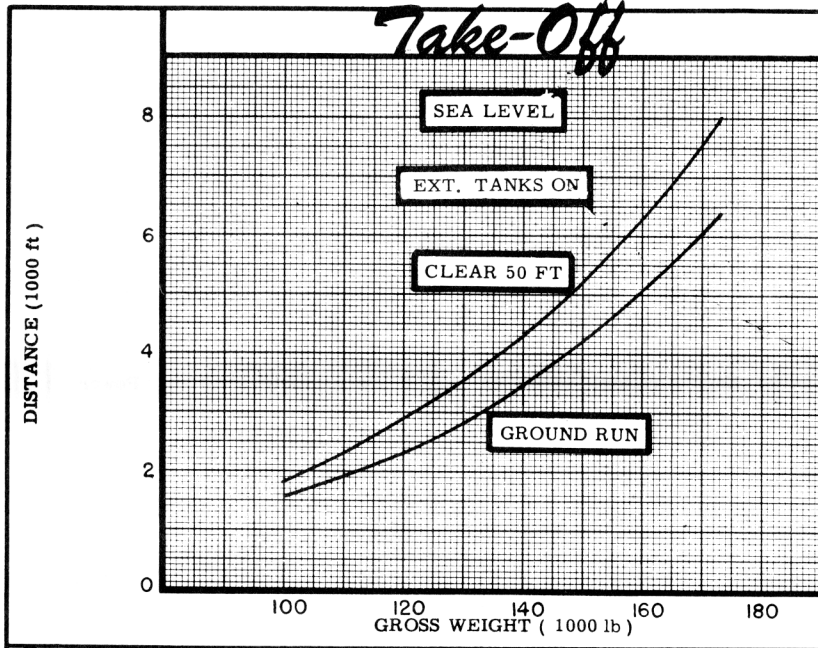
NOTES

- ① T. O. power
- ② Max power
- ③ Normal power

- ④ Detailed descriptions of RADIUS and RANGE missions given on page 6
- ⑤ No data

PERFORMANCE BASIS:

- (a) Data source: Flight test
- (b) Performance is based on powers shown on page 6



N O T E S

FORMULA: RADIUS MISSIONS I, II & IV

Warm-up, take-off, climb on course to 5000 ft at normal power, cruise at long range speeds at altitude for best range but not less than 5000 ft, climb on course to reach cruising ceiling 500 nautical miles from target, cruise in level flight to target, conduct 15 minutes normal power bomb run drop bomb when carried, conduct 2 minutes evasive action at combat altitude (no distance credit) and an eight minute run out from target area with normal power, cruise at long range speeds at combat altitude for 500 nautical miles, cruise back to base at long range speeds at not less than 5000 ft for best range. Range free allowances include 5 minutes normal power fuel consumption for warm-up and take-off, 2 minutes normal power evasive action, 5% initial fuel load for landing and endurance reserve plus fuel for 30 minutes maximum endurance at sea level.

FORMULA: RADIUS MISSION III

Same as Radius Mission I except initial climb is to 25,000 ft.

FORMULA: RANGE MISSION V

Warm-up, take-off, climb on course to 5000 ft at normal power, cruise at long range speeds at altitude for best range but not less than 5000 ft. Range free allowances include 5 minutes normal power fuel consumption for warm-up and take-off, 5% initial fuel load for landing reserve, plus 30 minutes fuel for long range speeds at sea level.

GENERAL DATA:

(a) This airplane makes good a flight and take-off limit load factor of 2 at a gross weight of 173,000 lb although the landing gear and supporting structure does not meet the ground handling requirements of ANC-2a as these requirements were set up subsequent to the design of this airplane. The B-50B specification maximum weight is 164,500 lb which is the present recommended maximum due to limited side load strength of main and nose gears and supporting structure which might become critical in aborted take-off.

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

(4) R-4360-35			
	BHP	RPM	ALT
T. O:	*3500	2700	S. L.
MAX:	*3500	2700	15,000**
	*3290	2700	30,500**
NOR:	2650	2550	30,000**
* Wet			
** Level flight critical altitude			

(c) For detailed planning refer to Tech Order AN 01-20ELA-1.

(d) Installation provisions for ECM equipment include the following sets:

- | | |
|-----------|----------|
| AN/APT-1 | AN/APR-4 |
| AN/APT-4 | AN/ARQ-8 |
| AN/APT-5A | |

~~RESTRICTED~~**SUPPLEMENTAL***Loading and Performance - Typical Mission*

C O N D I T I O N S		B A S I C M I S S I O N
TAKE-OFF WEIGHT	(lb)	173,000
Fuel at 6.0 lb/gal(grade 115/145)	(lb)	69,615
Military load (Bombs)	(lb)	10,000
Wing loading	(lb/sq ft)	100.5
Stall speed (power off, land. config.)	(kn)	119
Take-off ground run at SL	① (ft)	5050
Take-off to clear 50 ft	① (ft)	7050
Rate of climb at SL	③ (fpm)	623
Time: SL to 10,000 ft	③ (min)	18.0
Time: SL to 20,000 ft	③ (min)	43.0
Service ceiling (100 fpm)	③ (ft)	24,000
COMBAT RANGE	(n. mi.)	4258
Average speed	(kn)	206
Initial cruising altitude	(ft)	10,000
Final cruising altitude	(ft)	25,000
Total mission time	(hr)	20.80
COMBAT RADIUS	(n. mi.)	2246
Average speed	(kn)	225
Initial cruising altitude	(ft)	10,000
Bombing altitude	(ft)	25,000
Bomb run speed	③ (kn)	313
Final cruising altitude	(ft)	25,000
Total mission time	(hr)	20.22
COMBAT WEIGHT	④ (lb)	123,100
Combat altitude	(ft)	25,000
Combat speed	② (kn)	330
Combat climb	② (fpm)	1610
Combat ceiling (500 fpm)	② (ft)	35,500
Service ceiling (100 fpm)	③ (ft)	36,700
Service ceiling (one engine out)	③ (ft)	30,600
Max rate of climb at SL	② (fpm)	2165
Max speed at 30,500 ft	② (kn)	335
LANDING WEIGHT	(lb)	96,866
Ground roll at SL	(ft)	1300
Total from 50 ft	(ft)	2370

1. Military Specification MIL-C-5011A dated 5 November 1951 redefines the combat radius to ground rules coordinated by the major USAF Air Commands and the Bureau of Aeronautics, U. S. Navy. Although in most cases the mission radius is reduced, this was considered to be more realistic based on Mission Profiles and Allowances proven in actual operation.

2. The combat radius for MIL-C-5011A is different from that based on MIL-C-5011 in that:

- Run into and out from the target area for high altitude bomber is at higher altitudes rather than at a specified altitude. This altitude corresponds to the cruise ceiling at the start of the combat zone, 500 n. mi. prior to target for reciprocating aircraft.
- Reserves are changed from a constant percentage of initial fuel as in MIL-C-5011 to a value equal to 5% of initial fuel load plus fuel for a specified period of 30 minutes long range at sea level.
- Combat range values are not quoted in MIL-C-5011A.

3. Certain items of performance quoted for MIL-C-5011A are different from those based on MIL-C-5011 in that:

- Time to climb values consider the effects of weight reduction during ground operation and climb.
- Average cruising speed does not include time and distance in climbs or target operation at normal power.
- Combat altitude is the altitude at which the actual target run is conducted.
- Basic speed is the maximum level flight speed within all operating limitations at the combat weight and at a specified altitude. This basic speed is quoted as a means of direct comparison of aircraft of similar type.

NOTES

- ① Take-off power
 ② Max power
 ③ Normal power
 ④ For Radius Mission

PERFORMANCE BASIS:

(a) Data source: Flight Tests

11 JULY 1952

~~RESTRICTED~~

B-50D