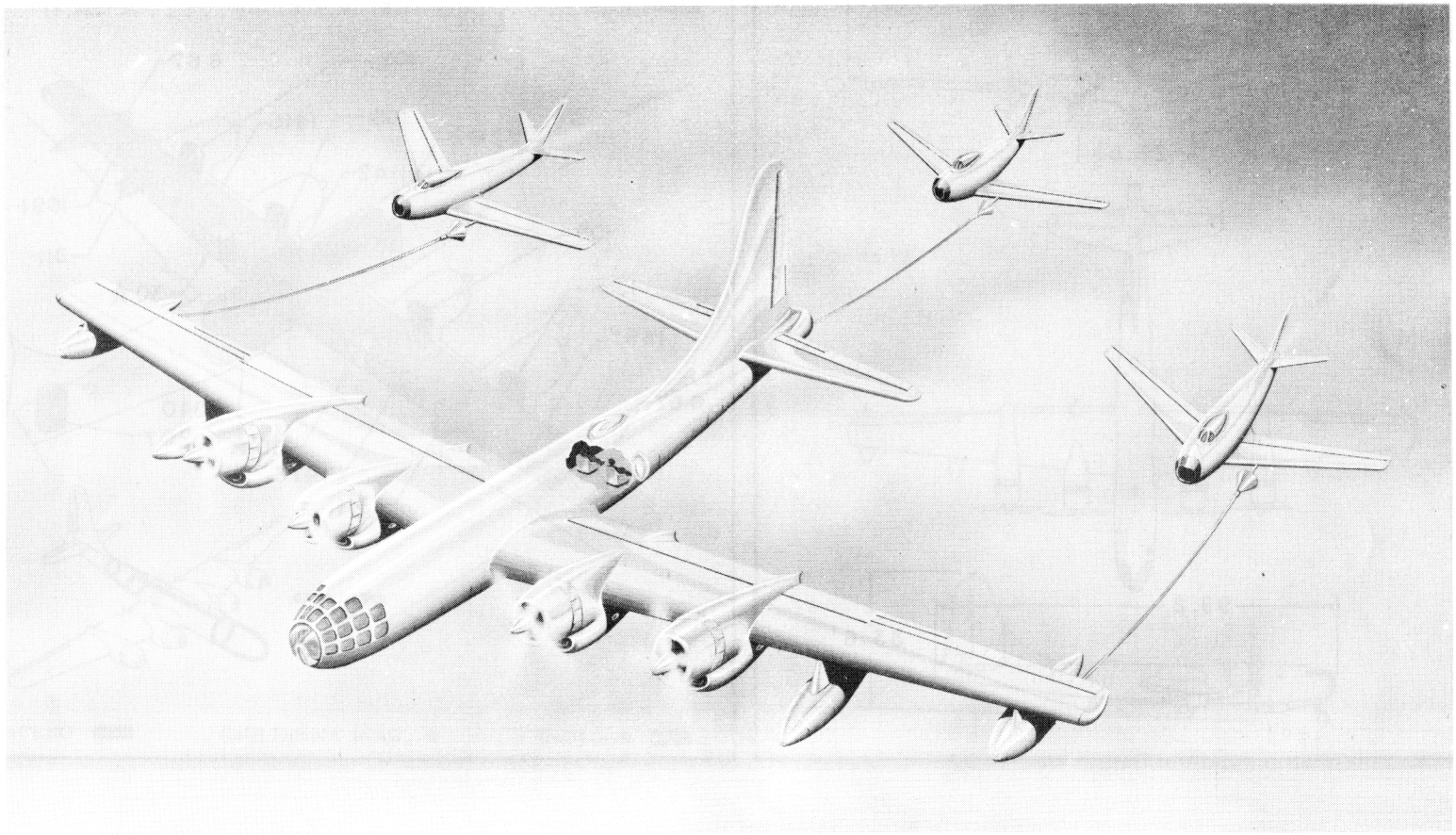
A-1
(KB-50)CHAR

SERVICE



Standard Aircraft Characteristics

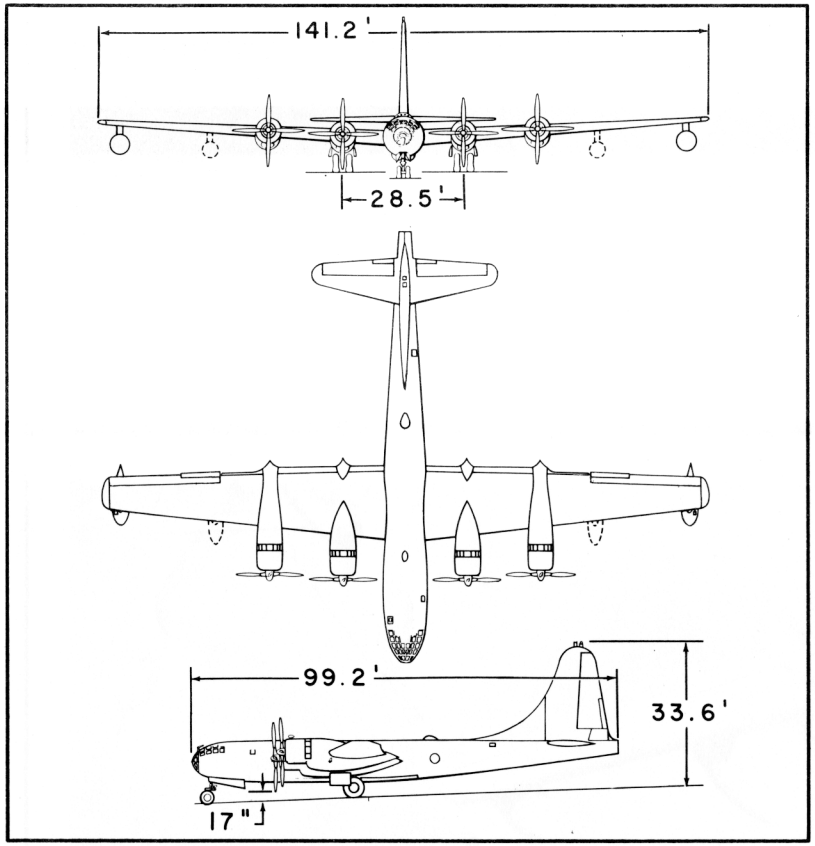
BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

KB-50

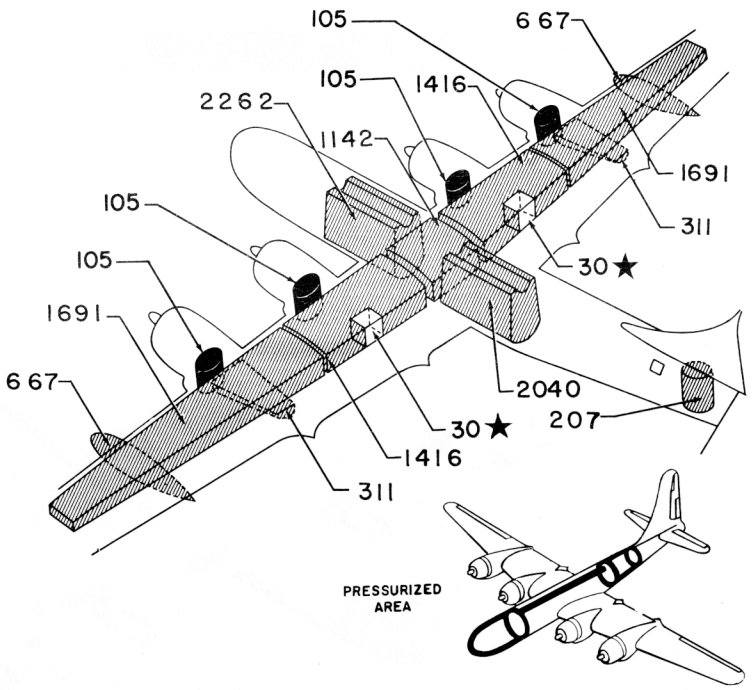
Boeing (Hayes Aircraft)

FOUR R-4360-35

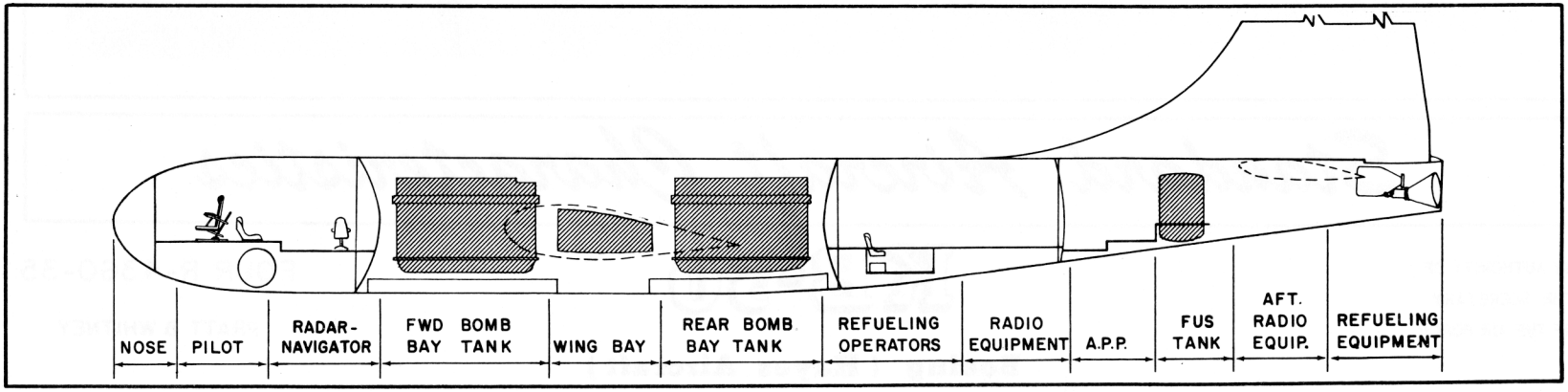
PRATT & WHITNEY



Wing Area . . . . . 1720 sq ft. Wing Section . . . . . Boeing 117
Aspect Ratio . . . . . 11.5 M.A.C. . . . . 154.41"



▨ Fuel (Gal) ★ Water Alcohol (Gal) ■ Oil (Gal)



POWER PLANT

Nr & Model . . . . (4) R-4360-35
Mfr . . . . . Pratt & Whitney
Engine Spec Nr 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 Nr . . 1052-20C4-30
Prop Types Elect. . CS, FF, Rev'r.
Nr 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

Mission and Description

Navy Equivalent: None Mfr's Model: ----

This principal mission of the KB-50 airplane is the simultaneous aerial refueling of three fighter type aircraft by the probe and drogue method.

The airplane is equipped with A-12B-1 refueling reels installed in pylon mounted pods near each wing tip and in the aft tail section of the fuselage. The two refueling operator's control stations are located in the aft pressurized section at the side blisters.

Two jettisonable bomb bay fuel tanks are equipped with an automatic CG control system.

The fuel system has a capability of transferring 287 gallons per minute at 50 psi drogue pressure to each of three receivers simultaneously. Transfer volume can be increased to 327 gallons per minute per receiver when low pressure drop fuel systems are utilized.

The fuel jettison system is capable of discharging 1075 gallons per minute through an outlet in the tail of the airplane.

Other features incorporated in the airplane, are heating, ventilating and pressurization, two single-point, refueling receptacles, one for servicing all tanks carrying JP-4 fuel and one for servicing all tanks carrying gasoline.

Development

In the modification of B-50 aircraft to the KB-50 configuration all defensive armament is removed: the fuselage aft tail section is completely replaced; the outer wing panels are extensively reinforced for overall strength.

First Flight . . . . . Dec 55
First Acceptance . . . . . Jan 56
Production Completion (134 aircraft) . . . . . Aug 57 (est)

WEIGHTS

Loading	Lb	L. F.
Empty	85,401(C)	
Basic	90,270(C)	
Design . . .	173,000	2.0
Combat . .	*107,511	2.0
Max T. O.	**173,000	2.0
Max Land	**160,000	

(C) Calculated
* For Basic Mission
** Limited by strength

FUEL

Location	Nr Tanks	Gal
Wg, outbd* . . .	2	3382
Wg, inbd*	2	2832
Fus, aft	1	207
	Total	6421
Grade		115/145
Specification		MIL-F-5572
	plus	
Wg, drop	2	1334
Wg, ctr*	1	1142
Nacelle, outbd* . .	2	622
Bomb Bay, fwd . .	1	2262
Bomb Bay, aft . .	1	2040
	Total	7400
Grade		115/145
Specification		MIL-F-5572
	or	
Grade		JP-4
Specification . . .		MIL-F-5624

OIL

Nacelles	4	(Tot) 420
Grade		1100
Specification		MIL-L-6082

WATER/ALCOHOL

Wg, inbd	2	(Tot) 60

*Self-Sealing

DIMENSIONS

Wing
Span . . . . . 141.2'
Incidence (root) . . . . . 4°
Dihedral . . . . . 4°29'
Sweepback (LE) . . . . . 7°1'
Length . . . . . 99.2'
Height . . . . . 33.6'
Height (fin folded) . . . . . 20.6'
Tread . . . . . 28.5'
Prop Grd Clearance . . . . . 17"

PERSONNEL

Crew (normal) 6
Pilot
Co-Pilot
Engineer
Radar-Navigator
Refueling Operators (2)

REFUEL EQUIP.

(3) Type A-12B-1 Flight Refueling Reels
Type MA-2 Reception Coupling
27 1/2" Dia. Drogue
65' Approx. usable length of hose

ELECTRONICS

UHF Command	AN/ARC-27A
VHF Command	AN/ARC-36
UHF Direction Finder .	AN/ARA-25
Radio Compass	AN/ARN-6
Marker Beacon	AN/ARN-12
Omni Range	AN/ARN-14
Glide Path	AN/ARN-18
Dist. Measuring Equip.	AN/ARN-21
Interphone	AN/AIC-10
Loran	AN/APN-70
Radar	AN/APS-23A
IFF Transponder . . .	AN/APX-25
IFF Interr. Responder.	AN/APX-29
Radar Altimeter	SCR-718C
Radio Range Rec'v'r . . .	BC-453B
HF Transceiver . .	Collins 618 S-1
Emergency Keyer . . .	AN/ARA-26

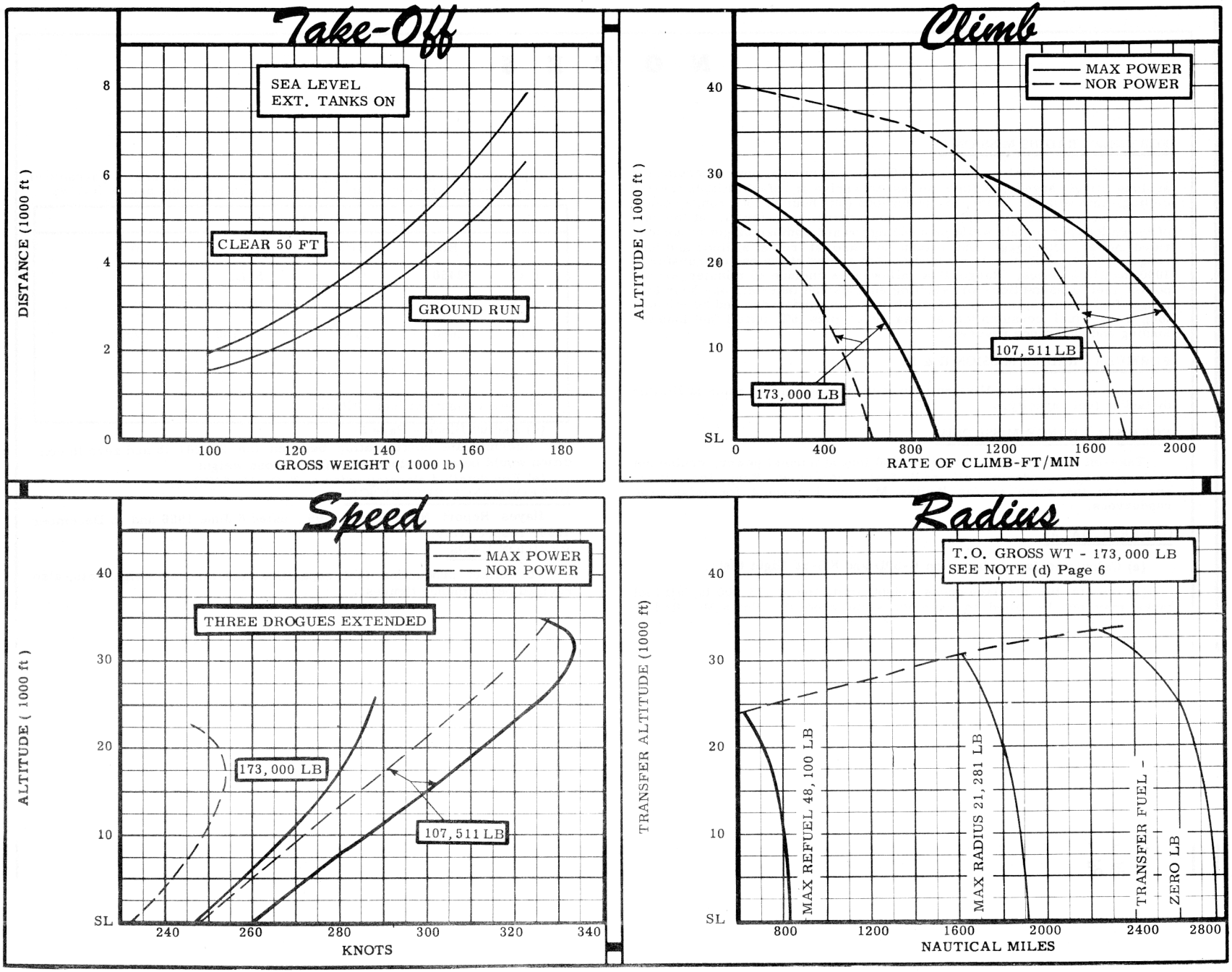
Loading and Performance—Typical Mission

CONDITIONS			BASIC MISSION I	MAX REFUEL II	MAX RADIUS III	FERRY RANGE IV
TAKE-OFF WEIGHT		(lb)	173,000	173,000	173,000	173,000
Fuel at 6.0 lb/gal (Grade 115/145)		(lb)	39,336	29,980	56,799	78,080
Payload (Transfer fuel @ 6.5 lb/gal)		(lb)	38,744	48,100	21,281	
Wing loading		(lb/sq ft)	100.5	100.5	100.5	100.5
Stall Speed (power off)		(kn)	114	114	114	114
Take-0ff ground run at S.L.	①	(ft)	6350	6350	6350	6350
Take-off to clear 50 ft	①	(ft)	7940	7940	7940	7940
Rate of climb at S.L.	③	(fpm)	608	608	608	608
Rate of climb at S.L. (one engine out)	②	(fpm)	500	500	500	500
Time: S L to 10,000 ft	③	(min)	19	19	19	19
Time: SL to 20,000 ft	③	(min)	45	45	45	45
Service ceiling (100 fpm)	③	(ft)	23,250	23,250	23,250	23,250
Service ceiling (one engine out)	②	(ft)	12,600	12,600	12,600	12,600
COMBAT RANGE	④	(n. mi)	———	———	———	5668
COMBAT RADIUS	④	(n. mi)	1000	629	1610	———
Average cruising speed		(kn)	209	229	232	193
Initial cruising altitude		(ft)	5000	5000	5000	5000
Refuel speed	③	(kn)	302	297	305	———
Refuel altitude		(ft)	26,500	24,000	30,500	———
Final cruising altitude		(ft)	26,500	24,000	30,500	5000
Total mission time		(hr)	10.8	7.0	15.1	29.7
COMBAT WEIGHT		(lb)	107,511	103,105	115,100	99,530
Combat altitude		(ft)	26,500	24,000	30,500	5000
Combat speed	② ⑥	(kn)	344(327)	344(326)	348(330)	288
Combat climb	②	(fpm)	1410	1620	830	2390
Combat ceiling (500 fpm)	②	(ft)	34,000	34,300	33,000	34,600
Service ceiling (100 fpm)	③	(ft)	39,800	40,300	39,070	40,750
Service ceiling (one engine out)	③	(ft)	34,900	36,400	32,150	37,500
Max rate of climb at SL	②	(fpm)	2210	2320	1980	2430
Max speed at 30,600 ft	② ⑥	(kn)	351(334)	353(337)	348(330)	354
Basic speed at 5000 ft	②	(kn)	287	288	286	288
LANDING WEIGHT		(lb)	97,812	97,313	98,610	99,530
Ground roll at SL		(ft)	2155	2150	2175	2190
Ground roll (auxiliary brake)	⑤	(ft)	1050	1045	1075	1100
Total from 50 ft		(ft)	2910	2900	2940	2960
Total from 50 ft (auxiliary brake)	⑤	(ft)	1785	1778	1827	1870

NOTES

① Take-off power
② Maximum power
③ Normal power
④ Detailed description of Radius and Range missions given on page 6.
⑤ With full reverse thrust on all 4 engines.
⑥ Values in parenthesis indicate performance with hoses and drogues in extended position.

PERFORMANCE BASIS:
(a) Data Source: Calculated data based on AF flight test of B-50D and KB-50 aircraft.
(b) Performance is based on powers shown on page 6.


Take-Off
SEA LEVEL
EXT. TANKS ON
CLEAR 50 FT
GROUND RUN
DISTANCE (1000 ft)
0
2
4
6
8
100
120
140
160
180
GROSS WEIGHT (1000 lb)
Climb
MAX POWER
NOR POWER
107,511 LB
173,000 LB
ALTITUDE (1000 ft)
SL
10
20
30
40
0
400
800
1200
1600
2000
RATE OF CLIMB-FT/MIN
Speed
MAX POWER
NOR POWER
THREE DROGUES EXTENDED
173,000 LB
107,511 LB
ALTITUDE (1000 ft)
SL
10
20
30
40
240
260
280
300
320
340
KNOTS
Radius
T.O. GROSS WT - 173,000 LB
SEE NOTE (d) Page 6
TRANSFER ALTITUDE (1000 ft)
MAX REFUEL 48,100 LB
MAX RADIUS 21,281 LB
TRANSFER FUEL - ZERO LB
SL
10
20
30
40
800
1200
1600
2000
2400
2800
NAUTICAL MILES

NOTES

FORMULA: RADIUS MISSION I

Take-off and climb on course to 5000 feet at normal power, cruise out at long range speeds. Climb so as to arrive at refuel altitude (cruise ceiling) immediately prior to rendezvous (one hour at long range speeds for rendezvous and hook-up, no distance credit), transfer fuel at the rate of 980 gallons per minute while proceeding toward bomber target at normal rated power, disengage and return to base at refuel altitude and long range speeds. Mission is planned so that radius at the end of transfer is 1000 nautical miles. Range free allowances include 10 minutes normal power fuel consumption for starting engines and take-off, one hour long range fuel consumption at refuel altitude for rendezvous and 30 minutes long range fuel consumption at sea level plus 5% initial fuel load for landing and endurance reserve.

FORMULA: RADIUS MISSION II & III

Same as for Radius Mission I, except that the refuel radius is limited by tanker fuel capacity.

FORMULA: RANGE MISSION IV

Take-off and climb on course to 5000 feet at normal power, cruise out at long range speeds until all usable fuel is consumed. Range free allowances are the same as for Radius Mission I, except for omission of rendezvous.

GENERAL DATA:

(a) Calculated data is based on B-50D and KB-50 flight tests.

(b) Due to the airplane gross weight limitation of 173,000 lb, all fuel tanks may not be filled to capacity simultaneously. For a Max Radius Mission, JP-4 fuel load in the bomb bay tanks is reduced. For a Max Transfer Fuel Mission gasoline load in the wing tanks is reduced.

(c) Engine ratings shown on page 3 are engine manufacturer's guaranteed ratings. Power values used in performance calculations are as follows:

(4) R-4360-35				
	BHP	RPM	ALT	MIN
T.O.	*3450	2700	S.L.	5
MAX	3175	2700	** 30,600	30
NOR:	2650	2550	** 36,700	Cont

* Wet

** Level flight critical altitude

(d) Radius Block - Page 5

Any intermediate configuration between the 21,281 lb and zero lb condition would be at less than 173,000 lb gross weight.

(e) For detailed planning refer to T.O. 1B-50(K)-1.

PERFORMANCE REFERENCE:

Hayes Report Nr 142 and 199, dated 6 June 1956 and 15 December 1956, respectively.

REVISION BASIS:

To reflect production fuel capacities and aircraft weight data; also revised performance figures.