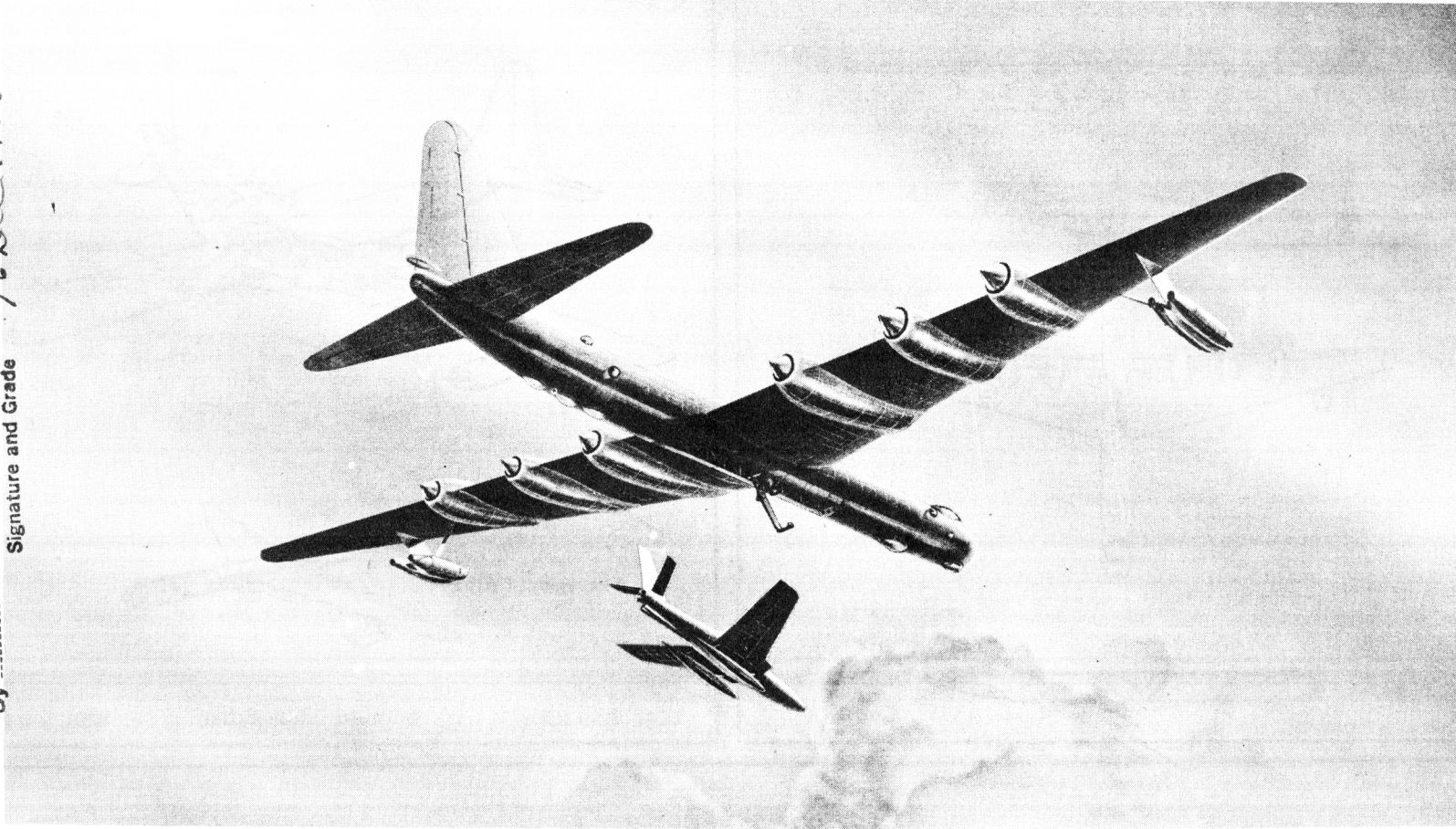


Classification cancelled

or changed to *Unclassified*

Guide
AUTH: *AF Sec AF 42 Security Class 1 Feb 64*
By *A. R. Somelborn* *1 April 64* *DoD Dir 5300.10*
Signature and Grade *16 Dec 1966*



Standard Aircraft Characteristics

BY AUTHORITY OF
COMMANDING GENERAL
WRIGHT AIR DEVELOPMENT CENTER
U. S. AIR FORCE

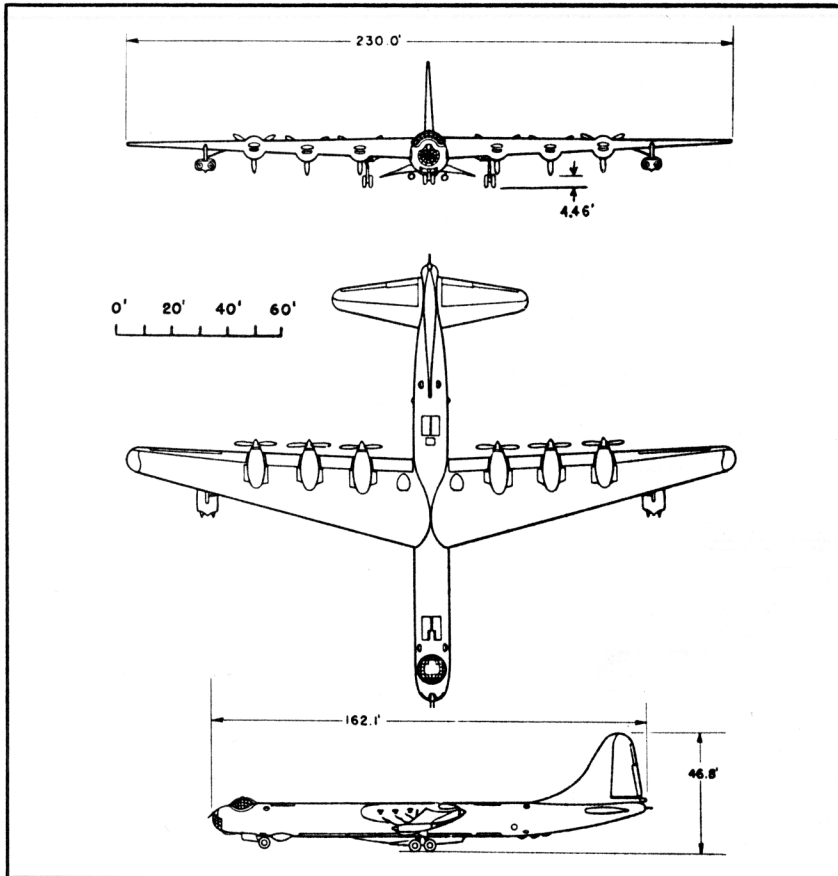
Consolidated RB-36F

Republic RF-84F

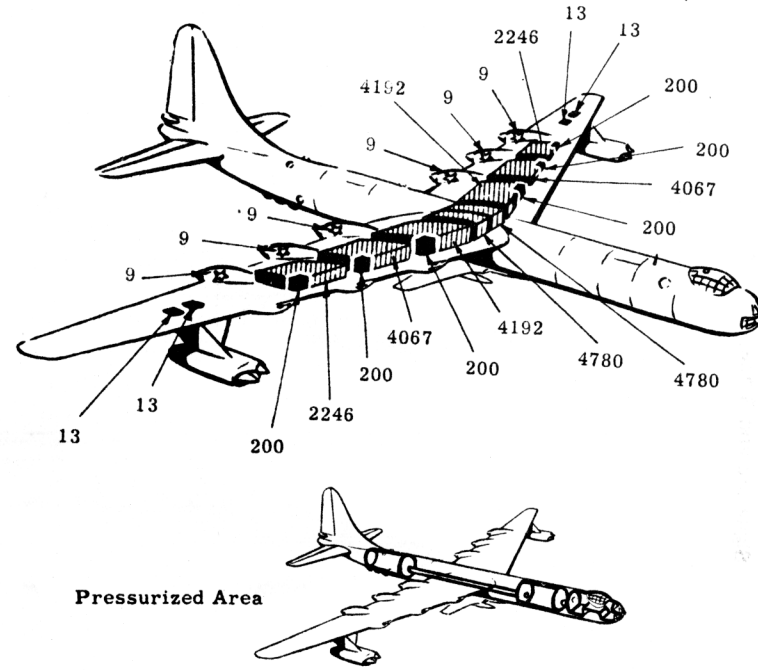
RB-36F { SIX R-4360-53
PRATT & WHITNEY
Plus
FOUR J47-GE-19

RF-84F { ONE YJ65-W-1
WRIGHT

RB-36F / RF-84F

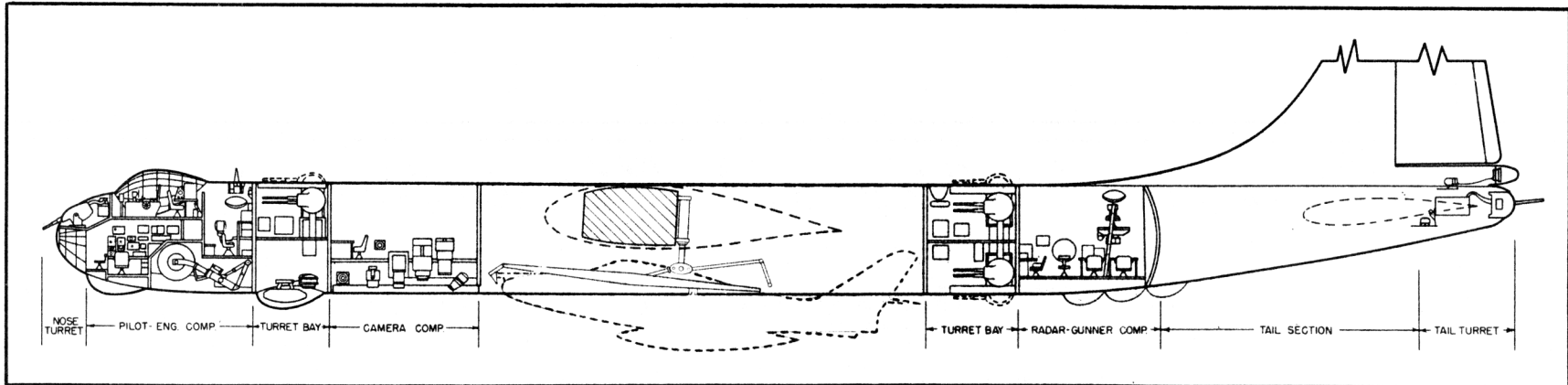


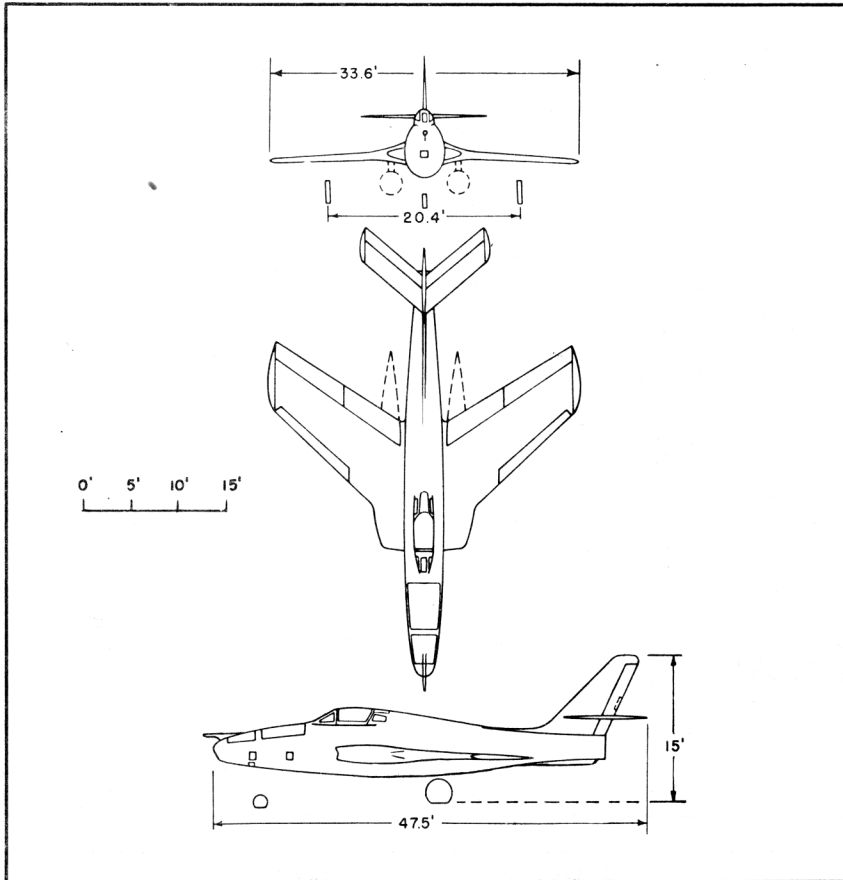
Wing Area	4772 sq ft	Wing Section	
Aspect Ratio	11.08	(root)	NACA 63, 4-422A
M. A. C.	280.7 in	(tip)	NACA 63, 4-517A
			A=1.0(modified)



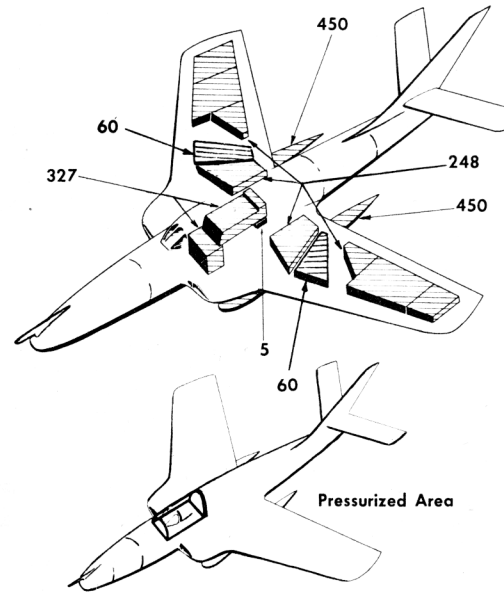
Pressurized Area

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

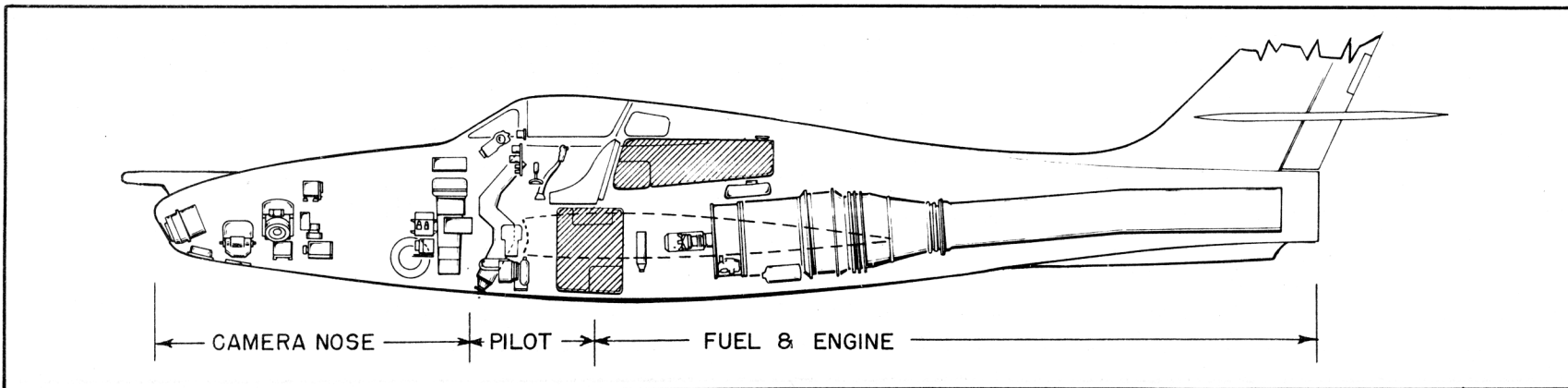




Wing Area 325 sq ft Wing Section NACA 64, A010
 Aspect Ratio 3.47 M. A. C. 120.45"



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



Mission and Description

Navy Equivalent: None

Mfr's Model: (RB-36F) 36
(RF-84F) AP-23T

The reconnaissance system presented in this analysis is a composite airplane consisting of an RB-36F carrier airplane and the RF-84F parasite airplane providing long range, high speed, B. D. A. reconnaissance.

The RF-84F is transported to and from the combat zone into which it flies alone. During the portion of the mission flown by the RF-84F, the carrier airplane loiters at the release point. Considerable versatility of this system is afforded by the fact that the carrier and the parasite need not operate from the same base. Mid-air pick-up of the RF-84F while en-route to the target area may be performed as well as on-the-ground hook-up prior to take-off.

The carrier airplane is a conventional RB-36F modified by addition of the mechanism necessary for stowing, releasing and retrieving the RF-84F. Principle items removed are flash bomb racks, shackles, releases and bomb bay fuel tank. Ferret ECM equipment is removed from the bomb bay and relocated in a more aft position. Defensive armament and cameras remain unchanged.

Development

Contract approved: 24 Feb 51
Prototype first flight (F-84E): (est) 1 Dec 51

POWER PLANTS

RB-36F	RF-84F
No. & Model (6) R-4360-53	No. & Model (1) YJ 65-W-1
Mfr Pratt & Whitney	Mfr Wright Aeronautical
Eng. Spec. No. A-7076-E	Eng. Spec. No. Wright Aero.
Turbo (2) BH-1	Bulletin 870H
Red. Gear Ratio 0.375	Type Axial
Prop. Mfr. Curtiss	Length 115.8"
Blade Design No. 1129-17C6-24	Diameter 39.26"
Prop. Type F. F., CS. Reverse	Weight 2600 lb
No. Blades/Prop Dia. 3/19'-1"	ATO
Augmentation Water/Alcohol Plus	No. & Type (1) YLR63-AJ-1
No. & Model (4) J47-GE-19	Mfr Aerojet
Eng. Spec. No. E-589	Weight 188 lb
Length 144"	Fuel JP-3
Diameter 39"	Oxidizer White Fuming Nitric Acid
Weight(dry) 2475 lb	

ENGINE RATINGS

RB-36F	RF-84F
BHP-RPM-ALT-MIN	S. L. Static LB - RPM - MIN
T. O: *3800-2800- S. L. - 5	Max: 7220 - 8300 - 5
Mil: *3800-2800-Turbo- 30	Mil: 7220 - 8300 - 30
Nor: 3500-2800-Turbo- 30	Nor: 6400 - 8000 - Cont
*Wet	ATO
Plus	Thrust 5000 lb
S. L. Static LB - RPM - MIN	(35 seconds duration)
Max: 5200 - 7950 - 5	
Mil: 5200 - 7950 - 30	
Nor: 4730 - 7630 - Cont	

WEIGHTS

RB-36F			RF-84F		
Loading	Lb	I. F.	Loading	Lb	L. F.
Empty	169,028(C)		Empty	} Not available	
Basic	174,354(C)		Basic		
Design	357,500	2.0	Design	19,000	9.33
Combat			Combat	20,200	
Max T. O.	*357,500	2.0	Max Launch	*25,511	
Max Land	*357,500	2.0		**23,565	
(C) Calculated			*Landing Gear Deleted		
*Limited by strength			**Landing Gear Installed		

FUEL

RB-36F			RF-84F		
Location	No. Tanks	Gal	Location	No. Tanks	Gal
Wg, outbd*	2	4492	Wing*	2	248
Wg, inbd	2	8384	Fus	2	327
Wg, ctr*	2	8134	Main wheel wells	2	120
Center Sect	2	9560	Wg, drop	2x450	
*Partially protected	Total	30,570		or 4x230	920
Grade		115/145		Total	1615
WATER ALCOHOL					
Eng. Nac	6	54	*s. s.		
OIL					
		Recip.			Jet
Cap. (gal)	1200				52
Grade	S-1120, W-1100				1010
**Max fuel when landing gear is carried; 1485 gal					
Grade JP-3					
OIL					
Capacity(gal) 5					
Grade 1010					

DIMENSIONS

RB-36F		RF-84F	
Wing		Wing	
Span	230.0'	Span	33.6'
Incidence (root)	3°	Incidence (root)	1°30'
(tip)	1°	(tip)	1°30'
Dihedral	2°	Cathedral	3°30'
Sweepback (LE)	15°5'30"	Sweepback (25% chord)	4°0'
Length	162.1'	Length	47.5'
Height	46.8'	Height	15.0'
Tread	46.0'	Tread	20.4'
Prop. Grd. Clearance	4.46'		

ELECTRONICS

RB-36F		RF-84F	
VHF Command	AN/ARC-3	VHF Command	AN/ARC-33
Liaison	AN/ARC-8		
Range Rec'ver	BC-453B	Navigation	AN/APN-81
Radio Compass	AN/ARN-6	Grd Position Indicator	A-1
Blind Approach	*RC-103D	Rendezvous Equipment	
Glide Path	AN/ARN-5B	Radio Compass	AN/ARN-6
IFF	AN/APX-6	IFF	AN/APX-6
Loran	AN/APN-9A		
Marker Beacon	AN/ARN-12		
Navigational Radar	AN/APQ-24		
Tail Warning Radar	AN/APG-32		
Interphone	USAF Combat		
Defensive ECM & Ferret ECM			
*AN/ARN-14 Alternate Set			

CAMERA EQUIP.

RB-36F			RF-84F		
No.	Type	Lens	No.	Type	Lens
1	K-22A, fwd oblique	12"	2	K-38, split vert.	36"
3	K-17C, trimetrogon	6"	3	K-17C, tri-met, (IMC)	6" or 12"
2	K-38, split vertical	24"	1	K-22, fwd, oblique	24"
2	K-22A, side oblique	12" or 24"	NIGHT		
5	K-38, multiple	36" or	3	K-46, tri-met	6" or 12"
5	K-40, multiple	48"	40	Photo Flash Cartridges	T-89
1	*T-11, vertical	6"	Universal Camera Control		
1	*K-37, vertical	12"	View Finder		
1	*K-22A, vertical	12" or 24"			
1	*K-17C, vertical	6", 12" or 24"			
*Alternate provisions					

GUNS

RB-36F				RF-84F			
No.	Size	Rds ea	Location	No.	Cal	Rds ea	Location
2	20mm	400	Fus, nose	4	.50	*100	Wings
4	20mm	600	Fus, up, fwd	Mark XVIII Gun Sight			
4	20mm	600	Fus, up, aft	*Space provisions for 200 rds/gun			
4	20mm	600	Fus, lwr, aft				
2	20mm	600	Fus, tail				

Loading and Performance - Typical Mission

C O N D I T I O N S			STRIPPED CARRIER		STANDARD CARRIER	
			HIGH ALTITUDE MISSION	LOW ALTITUDE MISSION	LOW ALTITUDE MISSION	HIGH ALTITUDE MISSION
			I	II	III	IV
TAKE-OFF WEIGHT	(lb)		357,500/25,511	357,500/25,511	357,500/25,511	357,500/25,511
Fuel at 6.0/6.5 lb/gal (grade 115/145/JP-3)	(lb)		157,330/10,367	157,330/10,367	142,724/10,367	142,724/10,367
Military load (cameras) RB-36F	(lb)		N. A.	N. A.	3309	3309
Military load (parasite)	(lb)		N. A.	N. A.	N. A.	N. A.
Wing loading	(lb/sq ft)		74.92/78.5	74.92/78.5	74.92/78.5	74.92/78.5
Stall speed(power off, landing configuration)	(kn)		105/133	105/133	105/133	105/133
Take-off ground run at SL	(ft)		4700/N. A.	4700/N. A.	4700/N. A.	4700/N. A.
Take-off to clear 50 ft	(ft)		5800/N. A.	5800/N. A.	5800/N. A.	5800/N. A.
Rate of climb at SL	① (fpm)		1015/4600	1015/4600	1015/4600	1015/4600
Service ceiling (100 fpm)	② (ft)		34,150/37,000	34,150/37,000	34,150/37,000	34,150/37,000
TOTAL COMBAT RADIUS	③ (n. mi.)		3,550	3,483	3,013	3,080
Carrier Radius	(n. mi.)		2,500	2,560	2,090	2,030
Parasite Radius	(n. mi.)		1,050	923	923	1,050
Initial Cruise Altitude - Carrier	(ft)		10,000	10,000	10,000	10,000
Initial Cruise Altitude - Parasite	(ft)		30,000	30,000	30,000	30,000
Average Speed - Carrier	(kn)		179	179	179	179
Average Speed - Parasite	(kn)		479	482	482	479
Total Mission Time	(hr)		32.32	32.47	27.67	27.52
COMBAT WEIGHT	④ (lb)		NA/20,200	NA/19,940	NA/19,940	NA/20,200
Combat altitude	(ft)		NA/35,000	NA/S. L.	NA/S. L.	NA/35,000
Combat speed	① (kn)		NA/517	NA/565	NA/565	NA/517
Combat climb	① (fpm)		NA/1300	NA/6200	NA/6200	NA/1300
Combat ceiling (500 fpm)	① (ft)		NA/39,500	NA/39,800	NA/39,800	NA/39,500
Service ceiling (100 fpm)	① (ft)		NA/41,800	NA/42,050	NA/42,050	NA/41,800
Max rate of climb at SL	① (fpm)		NA/6120	NA/6200	NA/6200	NA/6120
Max speed at S. L.	① (kn)		NA/565	NA/565	NA/565	NA/565
LANDING WEIGHT	(lb)		194,760/NA	194,760/NA	212,182/NA	212,182/NA
Ground roll at SL	(ft)		1850/NA	1850/NA	2000/NA	2000/NA
Total from 50 ft	(ft)		3150/NA	3150/NA	3,375/NA	3,375/NA

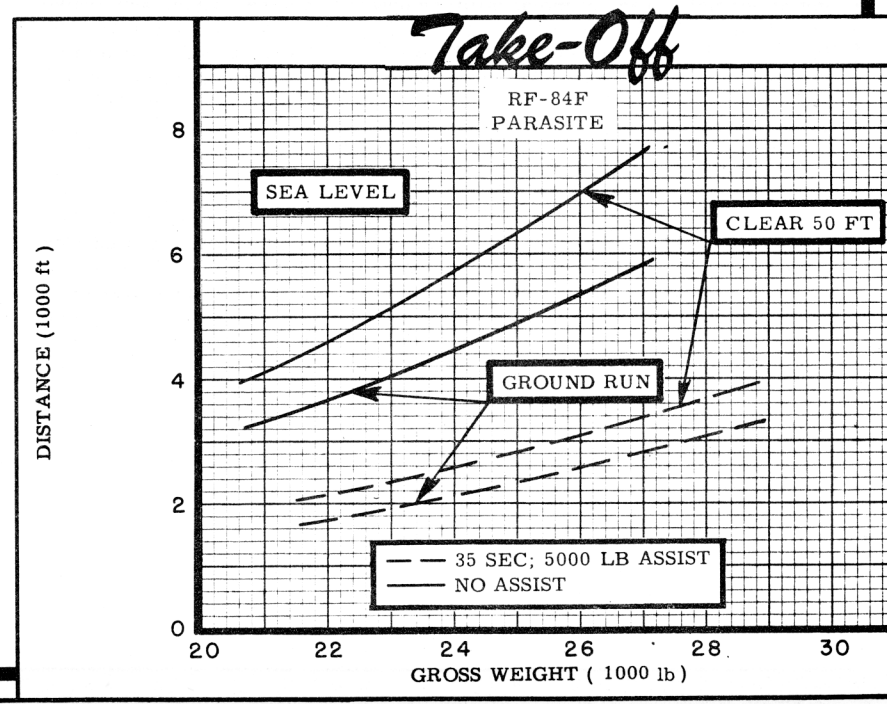
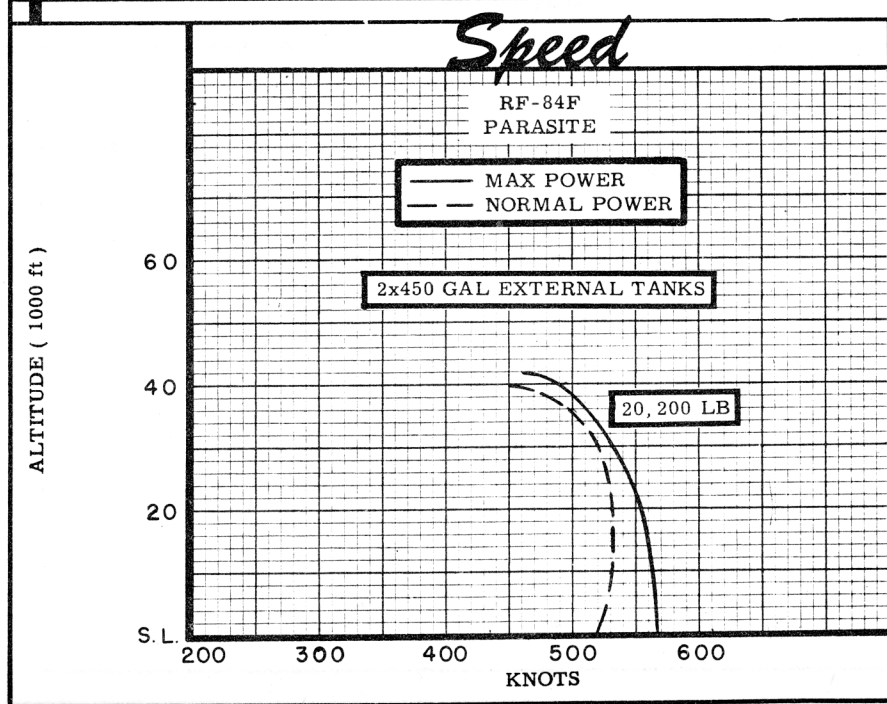
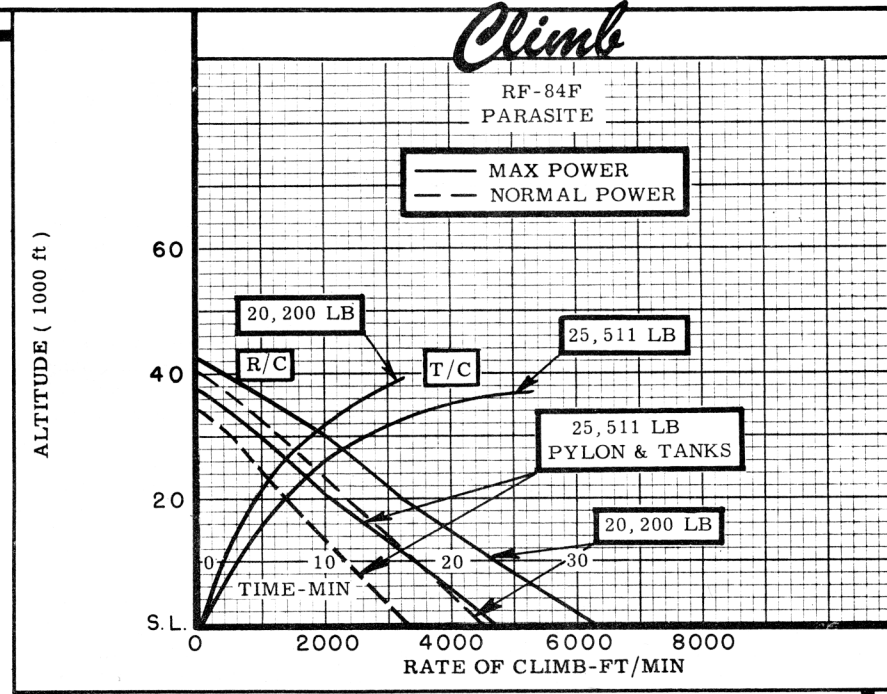
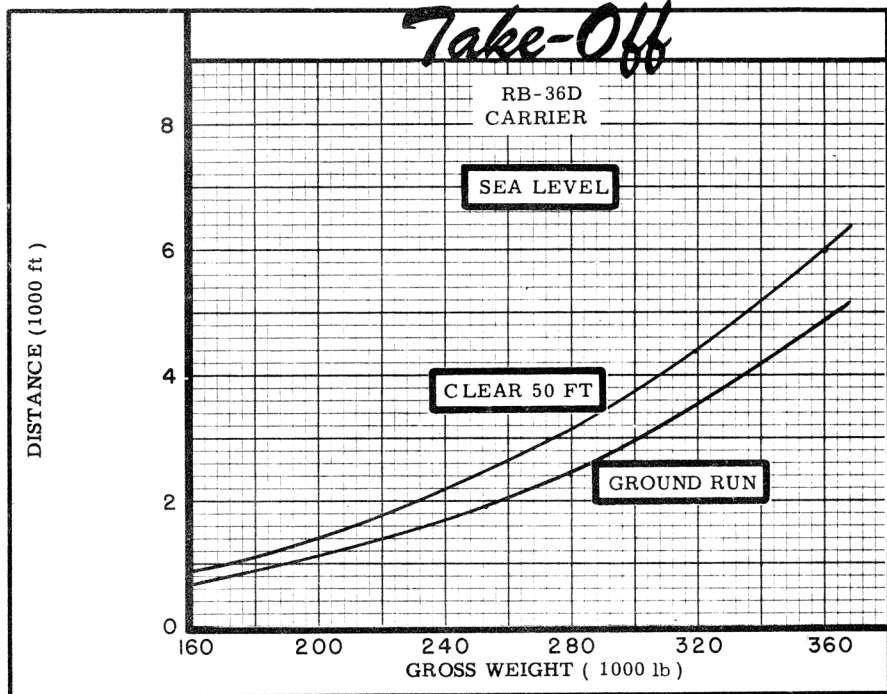
NOTES

- ① Max power
- ② Normal power
- ③ Detailed descriptions of RADIUS and RANGE missions are given on page 8.

- ④ Underwing tanks on parasite
N. A. - Not available

PERFORMANCE BASIS:

- (a) Data source: Contractor's estimates based on RB-36D(not substantiated by W.D.C).
- (b) Performance is based on powers shown on page 8.



NOTES

FORMULA: RADIUS MISSION I, II, III & IV (CARRIER)

Warm-up, take-off, climb on course to 10,000 feet, cruise at long range speeds and constant altitude to point of climb, climb to launch altitude (25,000 feet) and, following one minute for warm-up of parasite turbojet engine, launch parasite, loiter at altitude and area of launch, cruising at long range speeds during parasite mission plus 15 minutes for rendezvous, retrieve parasite, descend to best altitude for cruise-climbing at long range speed and return to home base. Jet engines are operated during take-off and climbs. Range free allowances include 10 minutes normal power fuel consumption for reciprocating engine plus 5 minutes normal power fuel consumption of J47-GE-19 engine for warm-up and take-off, plus loiter time at powers for long range cruise at launch altitude for reciprocating engines only, plus 5% initial fuel load for landing and endurance reserve.

FORMULA: RADIUS MISSION II & III (PARASITE)

After one minute maximum power warm-up of turbojet engine and immediate launching at 25,000 feet, climb on course to optimum altitude for cruise at long range speed, cruise to within 50 nautical miles of target and descend to sea level, conduct 50 nautical mile run in and run out over target at normal power, climb at military power to cruise altitude and cruise at optimum altitudes for long range speed to rendezvous point and descend to carrier altitude to be retrieved. Range free allowances include one minute maximum power warm-up immediately prior to launch plus 10% initial fuel load for descent, rendezvous, hook-up and reserve. Drop external tank when empty.

FORMULA: RADIUS MISSION I & IV (PARASITE)

After one minute maximum power warm-up of turbojet engine and immediate launching at 25,000 feet, climb on course to optimum altitude for cruise at long range speed, cruise to within 50 nautical miles of target and conduct 50 nautical miles run in and run out over target at normal power, return to rendezvous point at optimum altitudes for long range speeds and descend to carrier altitude to be retrieved. Range free allowances include one minute maximum power warm-up immediately prior to launch plus 10% initial fuel load for descent, rendezvous, hook-up and reserve. Drop ex-

ternal tanks when empty.

GENERAL DATA:

(a) Performance of carrier aircraft is based on RB-36D with R-4360-41 engines.

(b) Engine ratings for carrier engines R-4360-53 & J47-GE-19 shown on page 3 are manufacturer's guaranteed ratings. Power values used for performance calculations are as follows:

(6) R4360-41	
	BHP - RPM - ALT - MIN
T. O: (Wet)	3500 - 2700 - S. L. - 5
Max: (Mil)	3250 - 2700 - †34,500 - 30
Max: (W. E.)	3250 - 2400 - †34,500 - 15
Nor:	2650 - 2550 - †39,300 - Cont.
† With turbos	
(4) J47-GE-19	
	LB - RPM - MIN
S. L. Static	5200 - 7950 - 30
Max:	4730 - 7630 - Cont.
Nor:	

(c) Engine ratings for parasite engine YJ65-W-1 shown on page 3 are manufacturer's guaranteed ratings. Power values used for performance calculations are as follows:

(1) YJ65-W-1	
	LB - RPM - MIN
S. L. Static	*6400 - 8300 - 30
Max:	5900 - 8000 - Cont.
Nor:	
* Screen retracted	

SUPPLEMENTAL

MISSION PROFILES — STRIPPED CARRIER

