~~CONFIDENTIAL~~

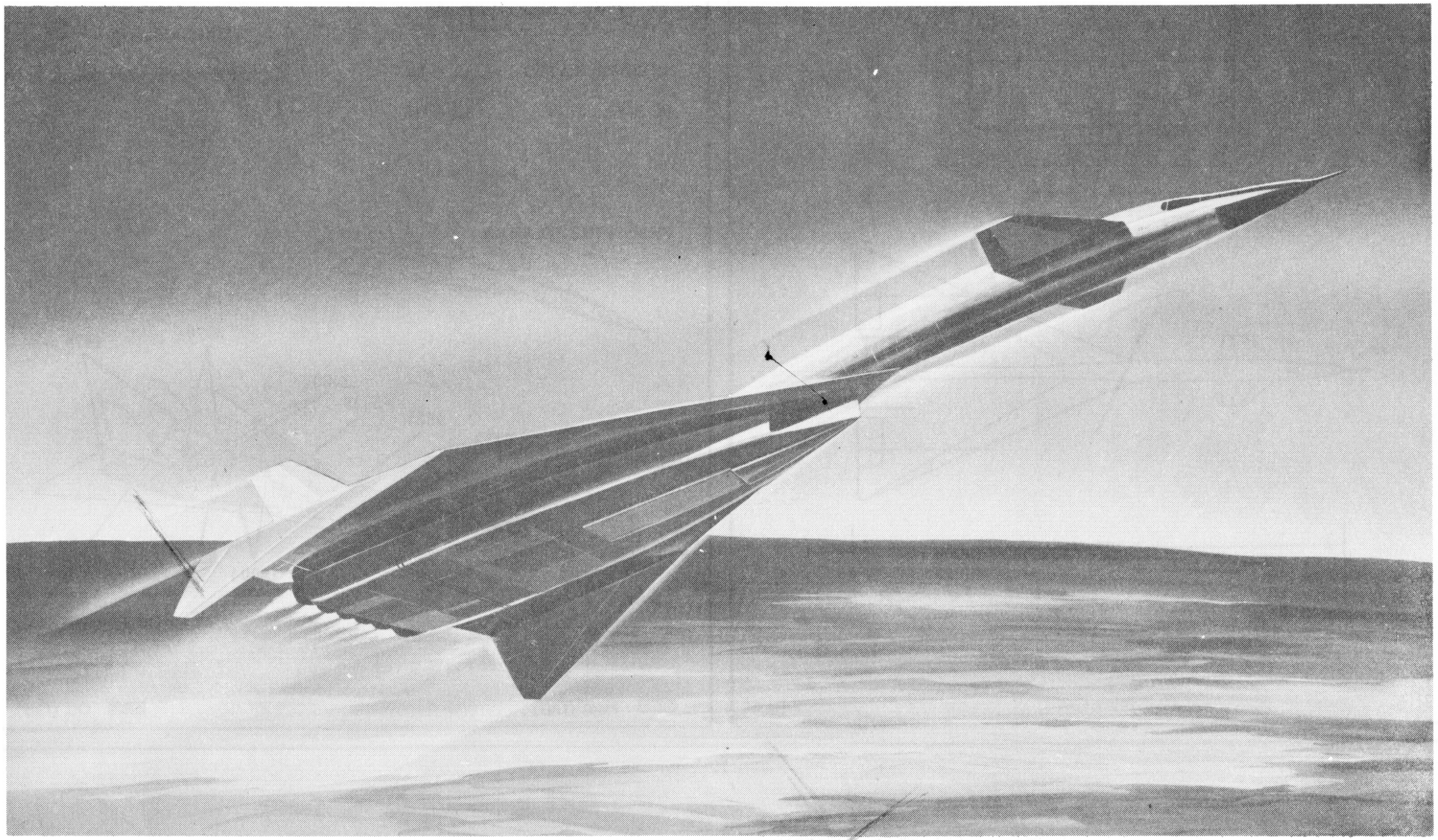
~~SECRET~~

EXPERIMENTAL

Classification cancelled or changed to Unclassified
AUTH
By
Signature and Grade

~~RESTRICTED DATA~~
~~ATOMIC ENERGY ACT 1954~~

EXCLUDED FROM AUTOMATIC REGRADING; DOD DIR 5200.10 DOES NOT APPLY



Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

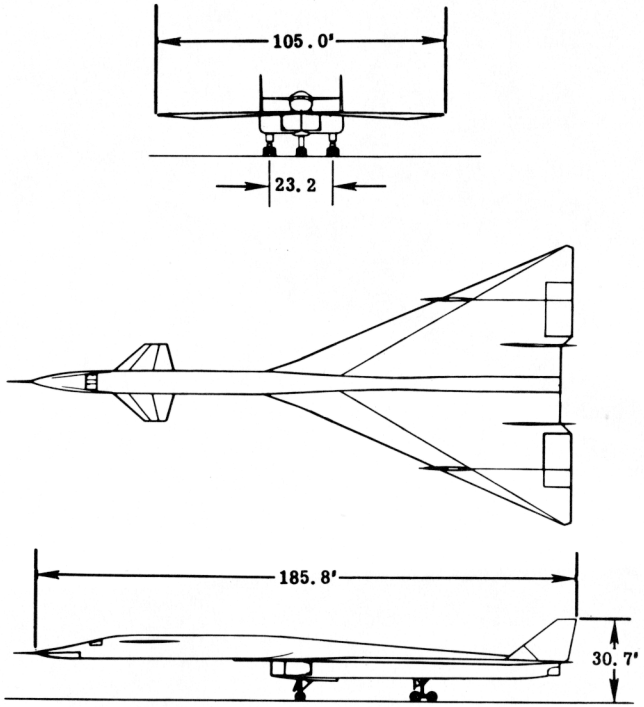
XB-70

VALKYRIE

North American

SIX YJ93-GE-3
GENERAL ELECTRIC

57WC-4984



WING AREA..... 6297 SQ FT

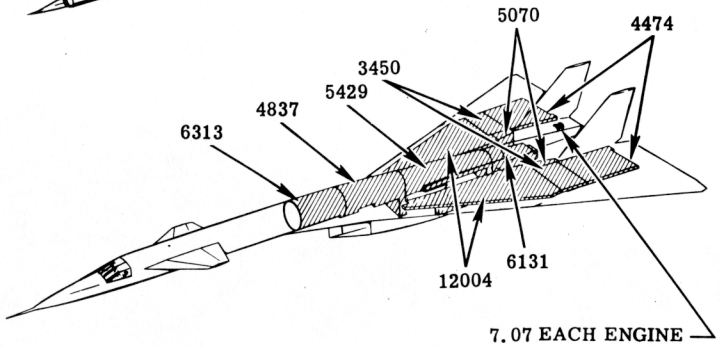
ASPECT RATIO..... 1.75

M. A. C. .....942.4 IN.

WING SECTION

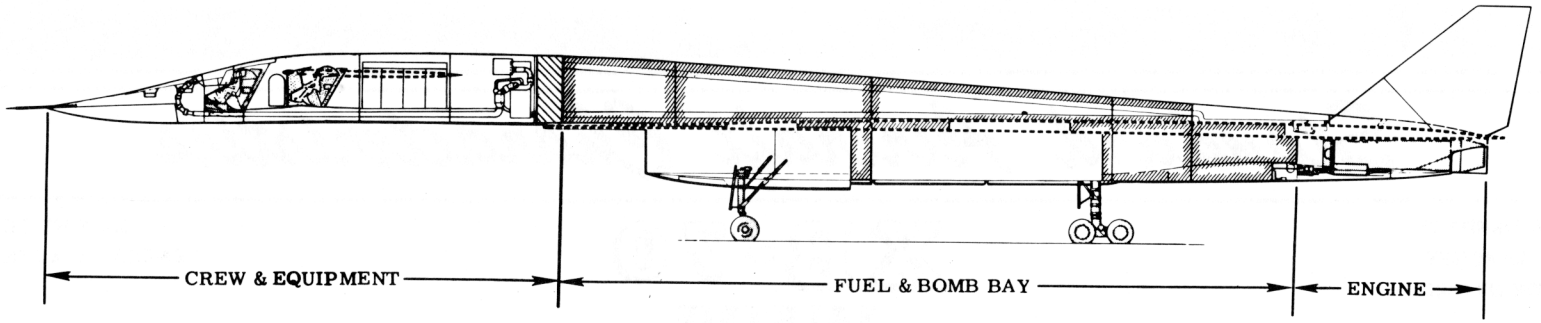
SEE NOTE "b" PAGE 6

PRESSURIZED AREA



Fuel (Gal)

Oil (Gal)



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POWER PLANT

Nr and Model	(6)YJ93-GE-3
Mfr	General Electric
Engine Spec Nr	E757F
Type	Axial Turbo Jet
Length	236.3"
Diameter	54.15"
Weight (dry)	5084 Lb
Tail Pipe	Mech, Variable C/D
Augmentation	Afterburner

ENGINE RATINGS

SLS	LB	-	RPM	-	MIN
Max	28,000	-	6825	-	Cont
Mil	19,900	-	6825	-	Cont
Nor	17,700	-	6825	-	Cont

Mission and Description

Navy Equivalent: None

Mfr's Model: NA-278

The primary purpose of this Air Vehicle is to demonstrate the technical feasibility of the B-70 configuration and the functional operation of a prototype bombing-navigation system in a sustained Mach 3 high altitude environment.

Special features include selective placement of wing, body and inlet duct for obtaining high lift-to-drag ratios, a canard configuration, variable area inlet with mechanically controlled convergent-divergent nozzle, and airframe construction of steel and titanium. A bombing and navigation system is provided for release of test weapons and navigational demonstration.

The crew consists of a pilot, co-pilot, bombing-navigation operator, and flight observer.

Development

Design initiated	Nov 55
Date of contract	Dec 57
Mock-up	Mar 59
First flight	(est) Dec 62

WEIGHTS

Loading	Lb	L.F.
Empty	206,684 (E)	
Basic	212,608 (E)	
Design	534,792	2.0
Combat	*305,967	2.0
Max T.O.	**542,029	
Max in flt	534,792	2.0
Max landing	+296,292	

(E) Estimated
* For basic mission
** Limited by mission
\+ Limited by structure

FUEL

Location	Nr Tanks	Gal
Fuselage	5	27,780
Wing and duct	6	19,928
		47,708

Grade	JP-6
Specification	MIL-F-25656A

OIL

Fuselage	6	42.4
Specification		MIL-L-9236B

DIMENSIONS

Wing	
Span	105.0'
Incidence (root)	0°
(tip)	-3.0°
Dihedral	0°
Sweepback (25% chord)	58.8°
Length	185.8'
Height	30.7'
Tread	23.2'

BOMBS

Nr		Weight
	Special Weapons*	
1	Class A	25,000
2	Class B	20,000

*Space provisions only

ELECTRONICS

Glide path-localizer marker beacon receivers, AN/ARN-58

IFF transponder, AN/APX-46

UHF command radio set, AN/ARC-50

Intercommunications set, AN/AIC-18

Tactical aid to navigation (TACAN), AN/ARN-65

Flight control system

Bomb nav subsystem, AN/ASQ-28

Loading and Performance—Typical Mission

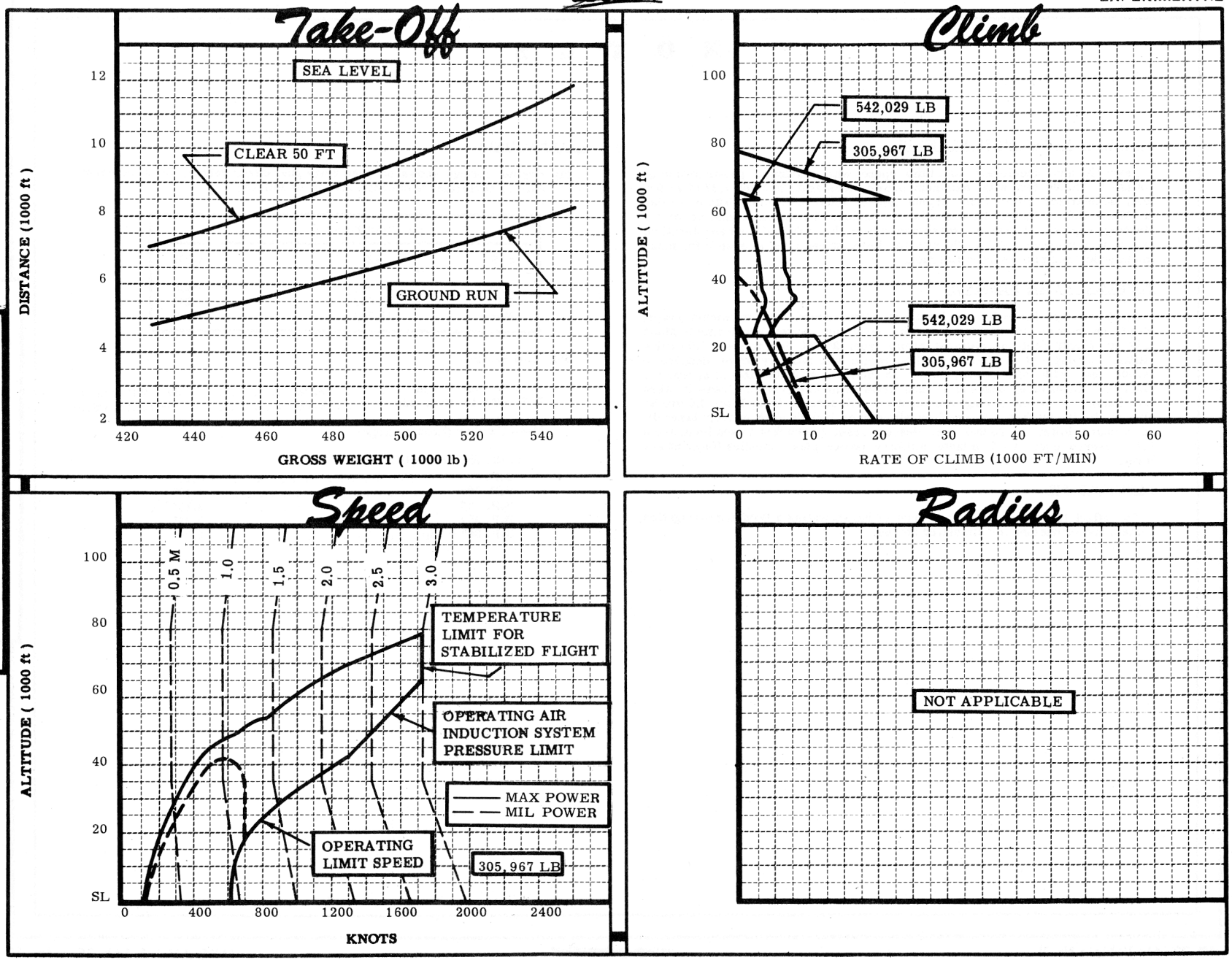
CONDITIONS			BASIC MISSION I	DESIGN MISSION II	FERRY MISSION III		
TAKEOFF WEIGHT		(lb)	542,029	542,029	542,029		
Fuel at 6.7 lb/gal (grade JP-6)		(lb)	319,644	319,644	319,644		
Payload		(lb)	*	*	*		
Wing loading		(psf)	86.1	86.1	86.1		
Minimum speed		(kn)	163.3	163.3	163.3		
Takeoff speed		(kn)	207.5	207.5	207.5		
Takeoff ground run at SL	①	(ft)	7,940	7,940	7,940		
Takeoff to clear 50 ft	①	(ft)	11,400	11,400	11,400		
Rate of climb at SL		(fpm)	19,600 ①	19,600 ①	19,600 ①		
Time: SL to 20,000 ft	②	(min)	2.57①	2.57①	2.57①		
Time: SL to acceleration altitude	②	(min)	3.57①	3.57①	3.57①		
Service ceiling (100 fpm)		(ft)	66,750 ①	66,750 ①	66,750 ①		
COMBAT RANGE	③	(n mi)	4038	5010	4038		
Recovery distance		(n mi)	1200	1200	——		
Average cruise speed (subsonic/supersonic)		(kn/kn)	——/1721	——/1721	——/1721		
Initial supersonic cruise altitude		(ft)	65,000	65,000	65,000		
Final supersonic cruise altitude		(ft)	71,800	72,700	71,800		
Refuel speed		(kn)	——	——	——		
Total mission time		(hr)	2.47	3.73	2.47		
COMBAT WEIGHT		(lb)	305,967	274,557	257,367		
Combat altitude	①	(ft)	68,700	70,700	71,800		
Combat speed	①	(kn)	1721	1721	1721		
Combat climb	①	(fpm)	16,000	16,700	17,200		
Combat ceiling (500 fpm)	①	(ft)	78,450	80,700	82,000		
Service ceiling (100 fpm)	①	(ft)	78,700	80,950	82,250		
Max rate of climb at SL	①	(fpm)	29,900	33,300	35,600		
Max speed at optimum altitude	①	(kn/ft)	1721/78,750	1721/81,000	1721/82,300		
Basic speed at 35,000 ft	①	(kn)	1089	1089	1089		
LANDING WEIGHT		(lb)	257,367	229,367	257,367		
Ground roll at SL		(ft)	5850	5300	5850		
Ground roll (auxiliary brake)	④	(ft)	4060	3650	4060		
Total from 50 ft		(ft)	7510	6880	7510		
Total from 50 ft (auxiliary brake)	④	(ft)	5710	5210	5710		
Minimum speed		(kn)	112.6	106.1	112.6		
Touchdown speed		(kn)	152.2	144.3	152.2		

NOTES

* Space provisions only
① Maximum power
② Allows for weight reduction during ground operation and climb
③ Detailed description of RANGE missions given on page 6
④ With drag chute

PERFORMANCE BASIS:
(a) Data source: Estimated
(b) Performance is based on powers shown on page 6
(c) Fuel flow data used in computing BASIC and FERRY missions are increased 5%.

RESTRICTED DATA
ATOMIC ENERGY ACT 1954



N O T E S

FORMULA: RANGE MISSION I AND III

Take-off and accelerate to climb speed with maximum power, climb on course to 25,000 feet with maximum power, accelerate to Mach 1.37 at 25,000 feet, accelerated climb from 25,000 feet to Mach 3.0 cruise altitude, cruise at Mach 3.0. Range free allowances include 5 minutes normal power for starting engines, 1 minute maximum power for take-off and acceleration, and a fuel reserve equal to 30 minutes loiter at sea level at speeds for maximum endurance plus 5% of initial fuel.

FORMULA: RANGE MISSION II

Alert concept take-off, accelerate to climb speed with maximum power, climb on course to 25,000 feet with maximum power, accelerate to Mach 1.37 at 25,000 feet, accelerated climb from 25,000 feet to Mach 3.0 cruise altitude, cruise out at Mach 3.0. Decelerate with military power, descend to 20,000 feet with idle power, loiter 16 minutes at 20,000 feet at speeds for maximum endurance, descend to sea level with idle power. Credit is taken for distance covered during deceleration and descent from Mach 3.0 cruise altitude to 20,000 feet. Range free allowances include alert concept take-off, 16 minutes loiter at 20,000 feet, descent from 20,000 feet to sea level and a fuel reserve equal to 1 minute military power plus 9 minutes loiter at sea level.

REVISION BASIS:

To reflect the effect on performance of incorporating a Bombing-Navigation System and provisions for simulated stores.

GENERAL DATA:

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

(6) YJ93-GE-3		
SLS	LB	RPM
Max	24,520	6825
Mil	17,542	6825
Nor	15,714	6825

(b) Wing Section:

Root to W.S. 186 . . . . . 2.0% . . . . . 30-.70 Hex (Mod)
W.S. 460 to W.S. 630 . . . . 2.5% . . . . . 30-.70 Hex (Mod)

Mean Camber (Leading Edge)

In the Airstream Direction

B.P. O . . . . . 0.15°
B.P. 107 . . . . . 4.40°
B.P. 153 . . . . . 3.15°
B.P. 257 . . . . . 2.33°
B.P. 367 - Tip . . . . . 0.00°

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