

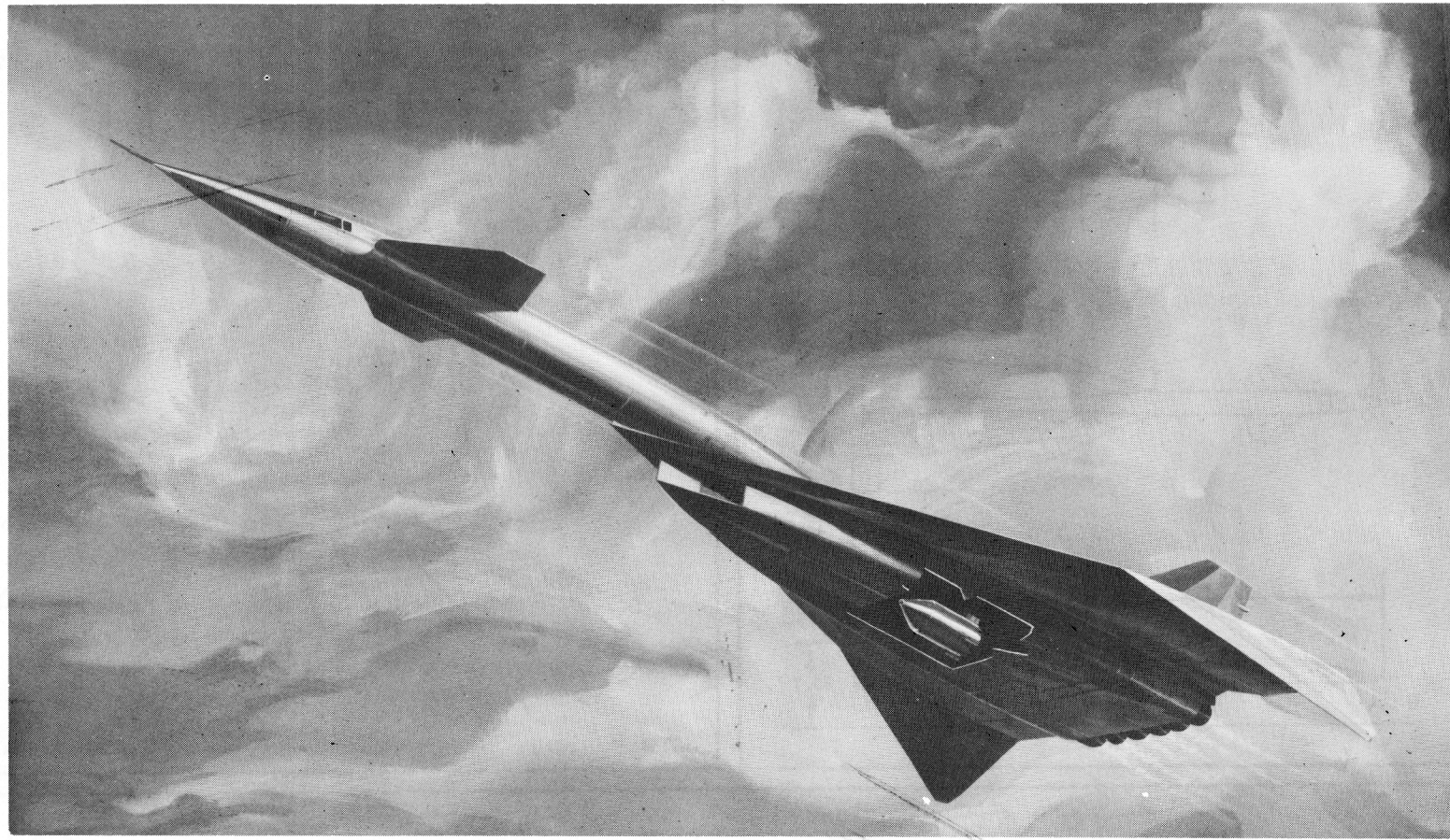
Unclassified

~~CONFIDENTIAL~~

SECRET

A-1
(x) B-70A char

MOCKUP



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

Standard Aircraft Characteristics

B-70

SIX J93-GE-3

VALKYRIE

GENERAL ELECTRIC

North American

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

Classification cancelled
or changed to *unclassified*

Classification cancelled
or changed to *unclassified*

DEC 59

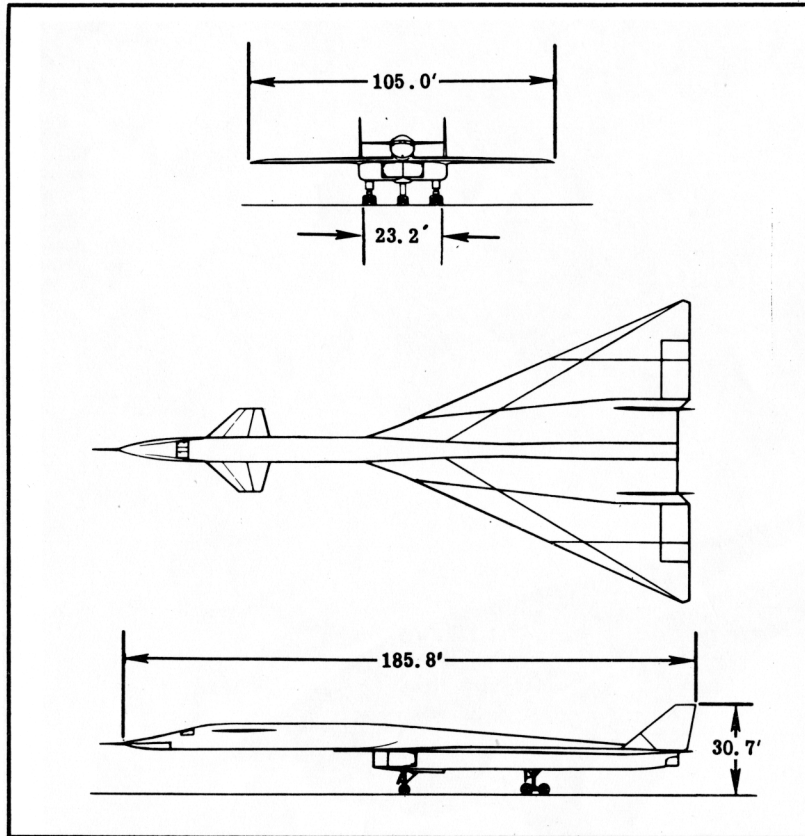
AUTH: ~~200 DIX 520.10~~
By *William M. White*
Signature and Grade

SECRET

AUTH: *170 dtd 16 mar 1977 pm chief, Info Sec. Div.*
By *S. Maj. David R. Tucker*
William M. White, GS-9, 3/29/77
Signature and Grade

CLASSIFICATION CANCELLED
(OR CHANGED TO *Confidential*)
BY AUTHORITY OF *DoD DIX 520.10*
(INDIVIDUAL OR WRITTEN AUTHORITY)
a. r. Johnston 29 Nov 67
BY (NAME & GRADE OF INDIVIDUAL MAKING CHANGE) (DATE)

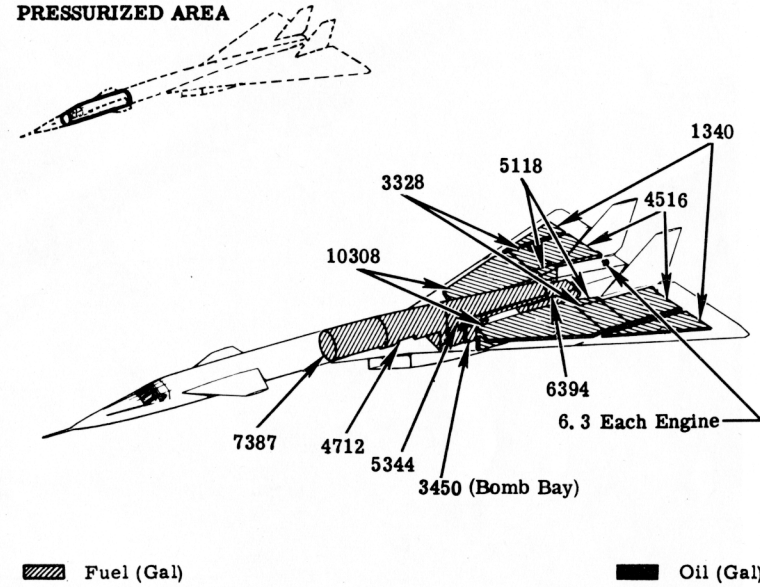
5th Ed addn #17



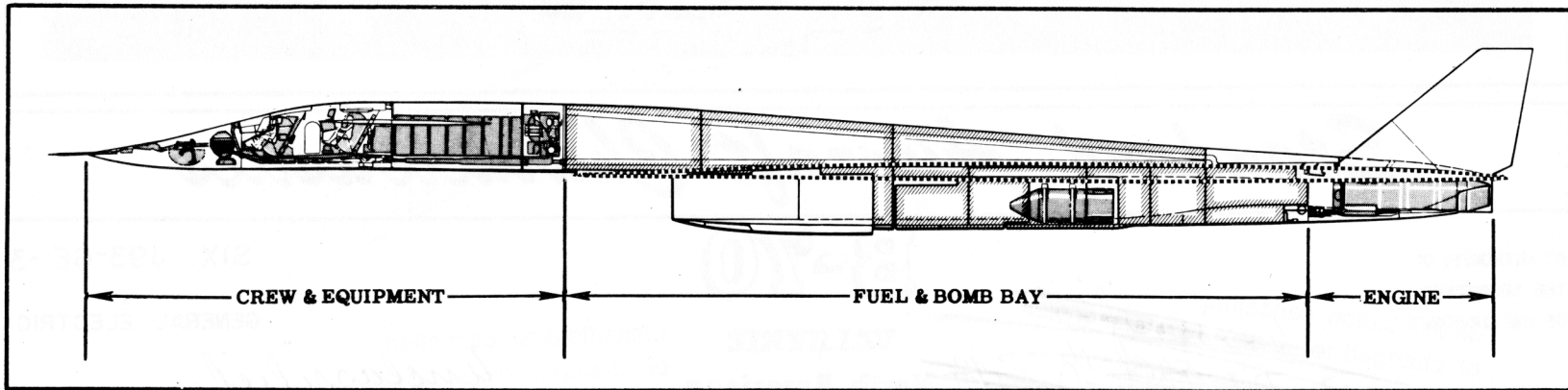
Wing Area 6298 sq ft
 Aspect Ratio 1.75
 M. A. C. 942.4 in.

Wing Section
 See Note "b" Page 7

PRESSURIZED AREA



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POWER PLANT

Nr & Model (6) J93-GE-3
Mfr General Electric
Engine Spec Nr R58AGT288G
Type Axial Turbo Jet
Length 232.9"
Diameter 52.6"
Weight (dry) 4767 lb
Tail Pipe . . Mech, Variable C/D
Augmentation Afterburner

ENGINE RATINGS

S. L. S.	LB	-	RPM	-	MIN
Max:	29,500	-	6825	-	cont
Mil:	20,900	-	6825	-	cont
Nor:	18,600	-	6825	-	cont

DIMENSIONS

Wing
Span 105.0'
Incidence (root) 0°
 (tip) -5.0°
Dihedral 0°
Sweepback (25% chord) . . 58.8°
Length 185.8'
Height 30.7'
Tread 23.2'

Mission and Description

Navy Equivalent: None Mfr's Model: NA-267

The principal mission of this aircraft is to destroy the military, logistic, industrial, economic, control and psychological strengths of the enemy.

Special features of this airplane are 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.

The crew of four consists of the pilot, co-pilot, bombardier-navigator and defense operator.

A Bombing and Navigation, Missile Guidance System (B & N & MG) is provided for the release of special stores and missiles.

An air defense system based on electronic countermeasures and chaff dispensing is employed.

Development

Design initiated	Nov 55
Date of contract	Dec 57
Mock-up	Mar 59
First Flight	(est) Jan 62
First Flight (XB-70)	(est) Dec 62

WEIGHTS

Loading	Lb	L. F.
Empty	188,326(E)	
Basic	189,862(E)	
Design	240,892	2.0
Combat	*272,236	2.0
Max T.O.	**554,609	2.0
Max in Flt	† 554,609	2.0
Max Landing . . .	‡ 283,510	

(E) Estimated
* For Basic Mission
** Limited by Mission
† By Aerial Refueling
‡ Limited by Structure

FUEL

Location	Nr. Tanks	Gal
Fuselage	5	28,955
Wing & Duct	8	19,492
Aux Armament Bay. 1		3,450
		51,897

Grade JP-6
Specification MIL-F-25656

OIL

Fuselage 6 38
Specification MIL-L-9236A

BOMBS

Nr		Weight
	Special Weapons	
1	*Class A	25,000
2	Class B	20,000
1	*Class B (FUFO).	15,000
2	Class C (FUFO).	17,000
4	Class D	8000
	Max Bomb Load	25,000

Alternate Loadings
2 ASM's, external plus 1 Class B
2 ASM's, external plus 4 Class D

* Space provisions only

ELECTRONICS

Bomb-Nav & Missile Guidance Sys.
Digital Computer Equipment
Interconnection Equipment
Control & Display Equipment
Radar Display Equipment
Stellar Inertial Equipment
Radar Sighting Equipment
Doppler Radar Equipment
Electronic Power Supply
Flight Control Subsystem Group
Primary Flight Control
Secondary Flight Control
Automatic Flight Control
Central Air Data
Auxiliary Gyro Platform
Flight & Engine Display

ELECTRONICS

Defensive Subsystem
Central Intelligence Control
Electromagnetic Countermeasure
Surveillance
Electromagnetic and Thermal
Thermal & Chaff Countermeasures
Penetration Aids
Active Defense
Mission & Traffic Control Subsys
Digital Data Terminal Equipment
Recorder
Approach and Landing
Radio Navigation Aids
Station Keeping & Rendezvous
Identification - A/A and A/G
Air Traffic Control Signalling

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Loading and Performance - Typical Mission

C O N D I T I O N S		JP-6 FUEL ONLY				
		BASIC MISSION I	DESIGN MISSION II	ALTERNATE MISSIONS		FERRY RANGE V
				REFUELED HIGH ALTITUDE III	REFUELED S. L. PENETRATION IV	
TAKE-OFF WEIGHT Fuel at 6.7 lb/gal (grade JP-6) Payload (bombs & IRCM) Wing loading Stall speed (power off) Take-off ground run at SL Take-off to clear 50 ft Rate of climb at SL Time: SL to 20,000 ft Time: SL to acceleration altitude Service ceiling (100 fpm)	(lb) (lb) (lb) (psf) (kn) (ft) (ft) (fpm) (min) (min) (ft)	554,609 347,710 10,900 88.0 147.5 7680 10,600 10,800 2.4 3.4 69,000	554,609 347,710 10,900 88.0 147.5 7680 10,600 10,800 2.4 3.4 69,000	554,609 347,710 10,900 88.0 147.5 7680 10,600 5800 5.2 8.0 29,100	554,609 347,710 10,900 88.0 147.5 7680 10,600 5800 5.2 8.0 29,100	543,709 347,710 None 86.3 146.0 7380 10,150 11,200 2.3 3.3 69,400
COMBAT RANGE Recovery distance Average cruise speed (subsonic/supersonic) Initial supersonic cruise altitude Final supersonic cruise altitude Refuel speed Total mission time	(n mi) (n mi) (kn/kn) (ft) (ft) (kn) (hr)	5309 1200 —/1721 65,000 76,100 — 3.18	6522 1200 —/1721 65,000 77,700 — 4.60	7826 1200 500/1721 65,000 77,700 500 6.73	5362 1181 551/1721 65,000 77,700 500 6.48	5461 — —/1721 65,000 76,100 — 3.27
COMBAT WEIGHT Combat altitude Combat speed Combat climb Combat ceiling (500 fpm) Service ceiling (100 fpm) Max rate of climb at SL Max speed at optimum altitude Basic speed at 35,000 ft	(lb) (ft) (kn) (fpm) (ft) (ft) (fpm) (kn/ft) (kn)	272,236 72,700 1721 19,100 83,300 83,500 24,550 1724/83,300 1089	240,892 74,900 1721 19,600 84,900 85,100 28,100 1731/85,100 1089	240,892 74,900 1721 19,600 84,900 85,100 28,100 1731/85,100 1089	264,712 SL 628 25,350 83,800 84,000 25,350 1727/84,000 1089	231,986 76,100 1721 19,000 86,000 86,300 29,250 1735/86,300 1089
LANDING WEIGHT Ground roll at SL Ground roll (auxiliary brake) Total from 50 ft Total from 50 ft (auxiliary brake) Stall speed (power off)	(lb) (ft) (ft) (ft) (ft) (kn)	231,986 6290 3590 7980 5300 95.0	204,342 5440 3160 7030 4750 89.0	204,342 5440 3160 7030 4750 89.0	204,342 5440 3160 7030 4750 89.0	231,986 6290 3590 7980 5300 95.0

NOTES

- ① - Maximum power
- ② Military power
- ③ Allows for weight reduction during ground operation and climb

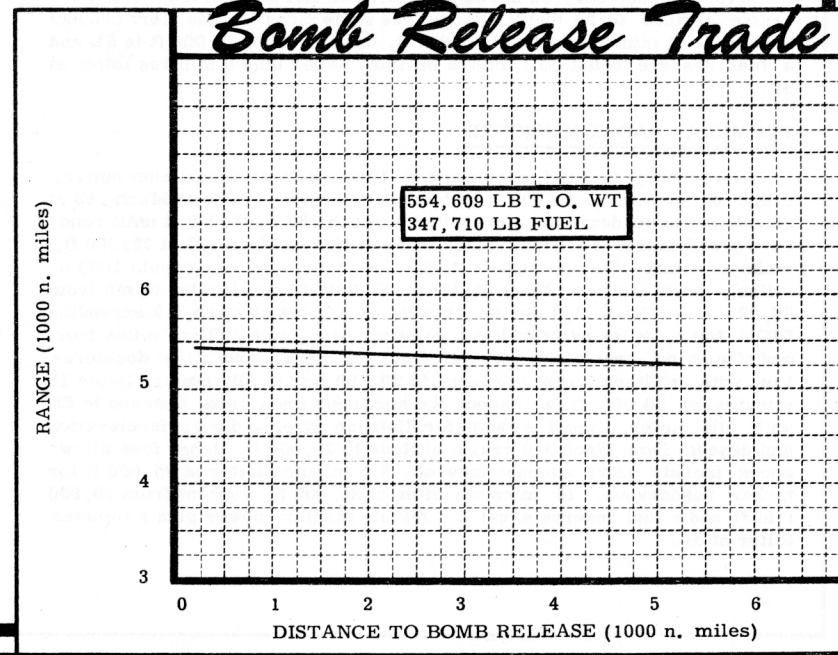
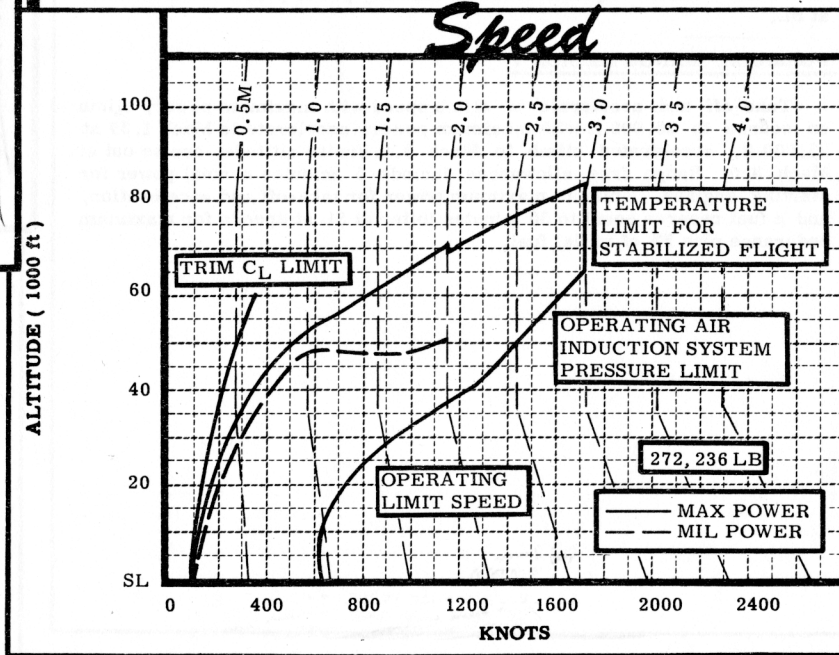
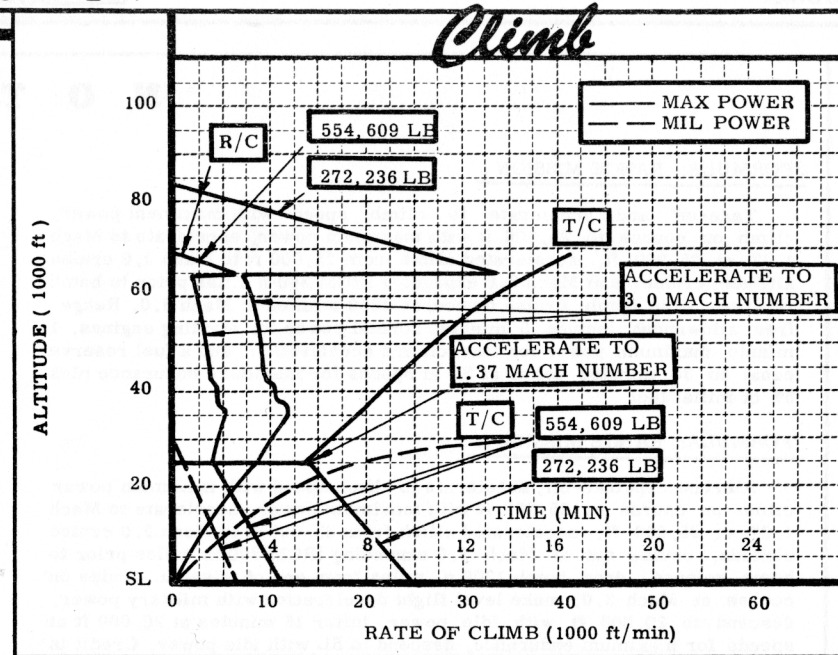
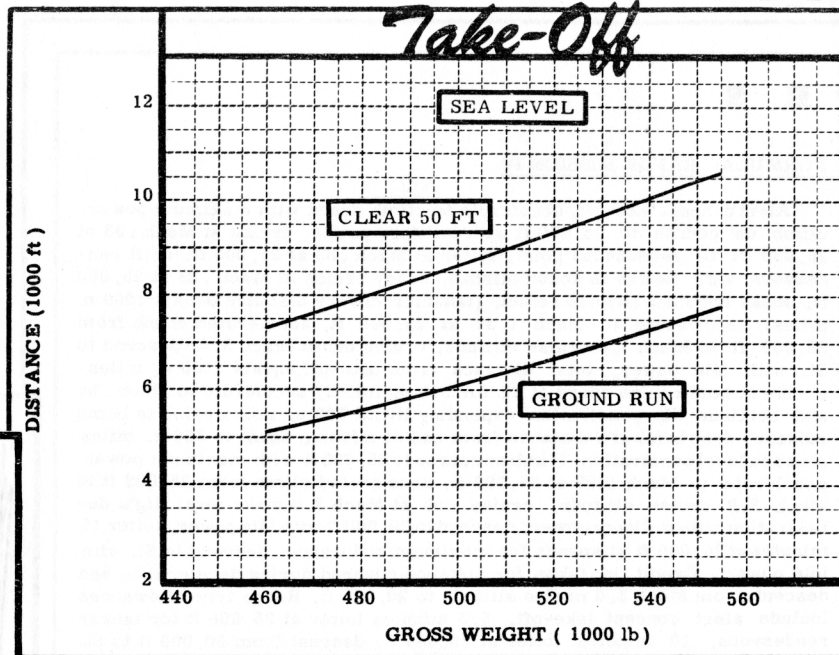
- ④ Detailed description of RANGE missions given on page 6
- ⑤ With drag chute

PERFORMANCE BASIS:

- (a) Data source: Estimated (Not substantiated by WADD)
- (b) Performance is based on powers on page 7
- (c) Fuel flow data used in computing BASIC and FERRY missions are increased 5%

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NOTES

FORMULA: RANGE MISSION I

Take-off and accelerate to climb speed with maximum power, climb on course to 25,000 ft with maximum power, accelerate to Mach 1.37 at 25,000 ft, accelerated climb from 25,000 ft to Mach 3.0 cruise altitude, cruise out at Mach 3.0 expending IRCM 300 n miles prior to bomb release, drop bomb, cruise on course 1200 n miles 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 SL 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 ft with maximum power, accelerate to Mach 1.37 at 25,000 ft, accelerated climb from 25,000 ft to Mach 3.0 cruise altitude, cruise out at Mach 3.0 expending IRCM 300 n. miles prior to bomb release, drop bomb 1200 n. miles from end of mission, cruise on course at Mach 3.0, make level flight deceleration with military power, descend to 20,000 ft with idle power, loiter 16 minutes at 20,000 ft at speeds for maximum endurance, descend to SL with idle power. Credit is taken for distance covered during deceleration and descent from Mach 3.0 cruise altitude to 20,000 ft. Range free allowances include alert concept take-off, 16 minutes loiter at 20,000 ft, descent from 20,000 ft to SL and a fuel reserve equal to 1 minute military power plus 9 minutes loiter at SL.

FORMULA: RANGE MISSION III

Alert concept take-off, accelerate to climb speed with maximum power, climb on course to 25,000 ft with military power, cruise at Mach .83 at 25,000 ft to rendezvous point, loiter at Mach .83 at 25,000 ft until rendezvous with tanker is accomplished, buddy cruise at Mach .83 at 25,000 ft, make constant altitude refuel (tanker recovery distance equals 1000 n. miles), accelerate to Mach 1.37 at 25,000 ft, accelerated climb from 25,000 ft to Mach 3.0 cruise altitude, cruise out at Mach 3.0 expending IRCM 300 n. miles prior to bomb release, drop bomb 1200 n. miles from end of mission, cruise on course at Mach 3.0, make level flight deceleration with military power, descend to 20,000 ft with idle power, loiter 16 minutes at 20,000 ft at speeds for maximum endurance, descend to SL with idle power. Credit is taken for distance covered during deceleration and descent from Mach 3.0 cruise altitude to 20,000 ft. Range free allowances include alert concept take-off, 5.3 minutes loiter at 25,000 ft for tanker rendezvous, 16 minutes loiter at 20,000 ft, descent from 20,000 ft to SL and a fuel reserve equal to 1 minute military power plus 9 minutes loiter at SL.

FORMULA: RANGE MISSION IV

Alert concept take-off, accelerate to climb speed with maximum power, climb on course to 25,000 ft with military power, cruise at Mach .83 at 25,000 ft to rendezvous point, loiter at Mach .83 at 25,000 ft. until rendezvous with tanker is accomplished, buddy cruise at Mach .83 at 25,000 ft, make constant altitude refuel, (tanker recovery distance equals 1000 n. miles), accelerate to Mach 1.37 at 25,000 ft, accelerated climb from 25,000 ft to Mach 3.0 cruise altitude, cruise out at Mach 3.0, descend to SL with idle power, total distance from take-off equals 3300 n. miles, cruise at best cruise speed at SL for 300 n. miles, accelerate to Mach .95 and continue SL penetration expending IRCM 300 n. miles prior to bomb release, drop bomb at a distance from end of mission equal to 300 n. miles plus sea level penetration, climb on course to 25,000 ft with maximum power, accelerate to Mach 1.37 at 25,000 ft, accelerated climb from 25,000 ft to Mach 3.0 cruise altitude, cruise out at Mach 3.0 make level flight deceleration with military power, descend to 20,000 ft with idle power, loiter 16 minutes at 20,000 ft at speeds for maximum endurance, descend to SL with idle power. Credit is taken for distance covered during deceleration and descent from Mach 3.0 cruise altitude to 20,000 ft. Range free allowances include alert concept take-off, 5.3 minutes loiter at 25,000 ft for tanker rendezvous, 16 minutes loiter at 20,000 ft, descent from 20,000 ft to SL and a fuel reserve equal to 1 minute military power plus 9 minutes loiter at SL.

FORMULA: RANGE MISSION V

Take-off and accelerate to climb speed with maximum power, climb on course to 25,000 ft with maximum power, accelerate to Mach 1.37 at 25,000 ft, accelerated climb to Mach 3.0 cruise altitude, cruise out 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 SL at speeds for maximum endurance plus 5% of initial fuel.

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AUGUST 1954

NOTES

GENERAL DATA:

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

(6) J93-GE-3		
S. L. Static	LB	RPM
Max:	26,723	6825
Mil:	18,963	6825
Nor:	17,021	6825

(b) Wing Section

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

Leading Edge Droop Deflection Angle:

In the Airstream -5.0°
Normal to Hingeline -13.0°
Sweepback of Droop Foldline 67.8°

PERFORMANCE BASIS:

North Americans Report No. NA-59-268-1, "Estimated Performance and Drag Substantiation Report for the B-70 Primary Air Vehicle, Contract AF33(600)-38669", dated 15 July 1959.

REVISION BASIS:

To reflect change from J93-GE-5 engines to J93-GE-3 engines. Air vehicle performance data are predicated on the J93-GE-5 engine. However, installation of the J93-GE-3 engines and the associated weight and fuel capacity changes will result in less than 1% variation from the quoted performance. Therefore, the performance data contained herein are representative of the B-70 Air Vehicle with the J93-GE-3 engines installed.

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