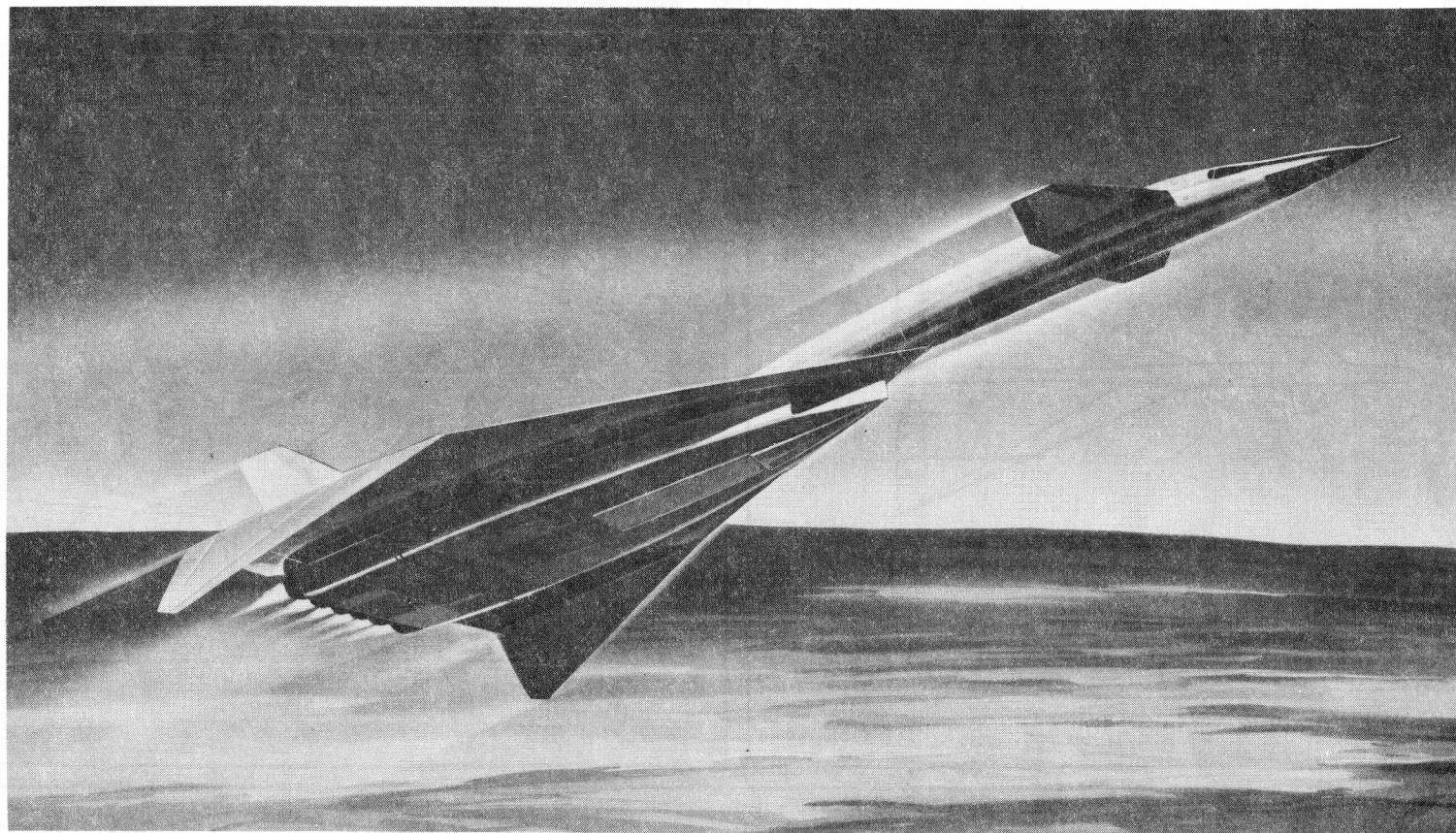


UNCLASSIFIED

A1
(X) B-70A/char
EXPERIMENTAL



Standard Aircraft Characteristics

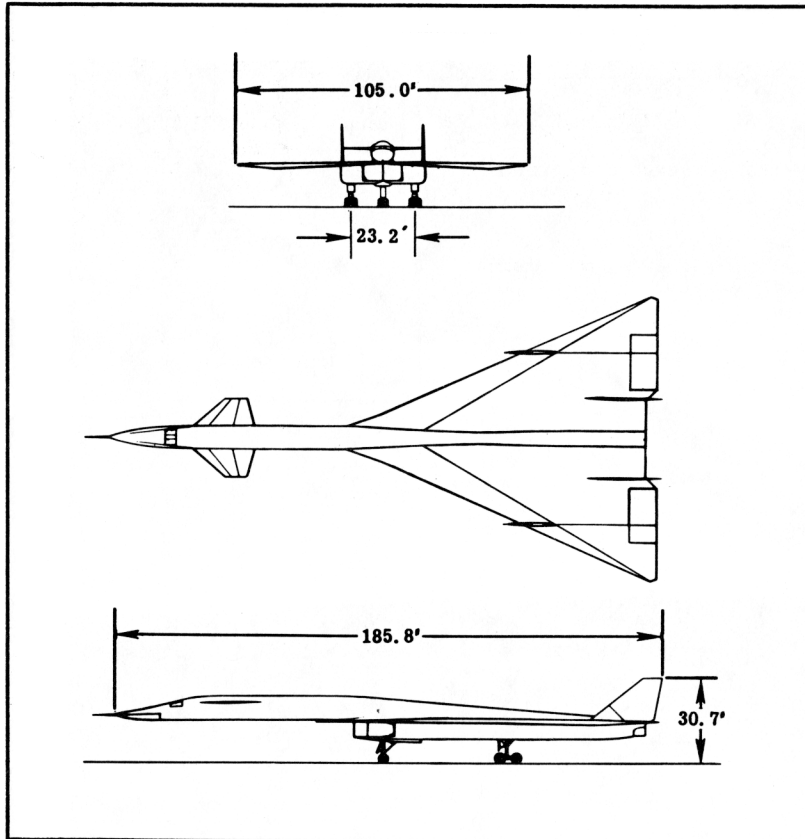
BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

XB-70A

Valkyrie

NORTH AMERICAN

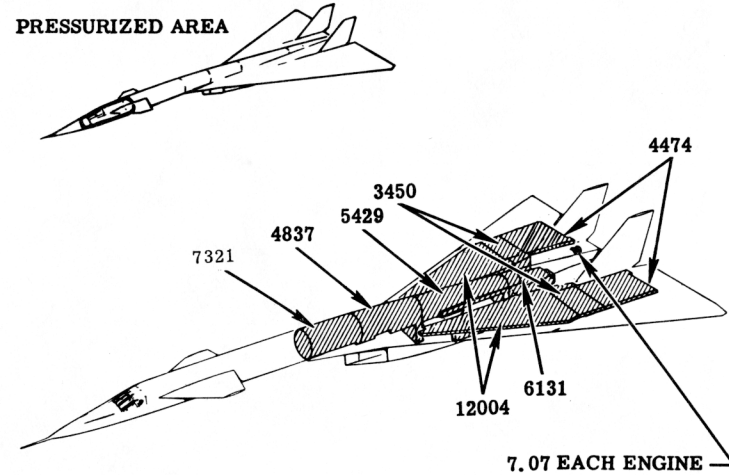
SIX YJ93-GE-3
GENERAL ELECTRIC



WING AREA.....6297 SQ FT
ASPECT RATIO.....1.75
M. A. C.942.4 IN.

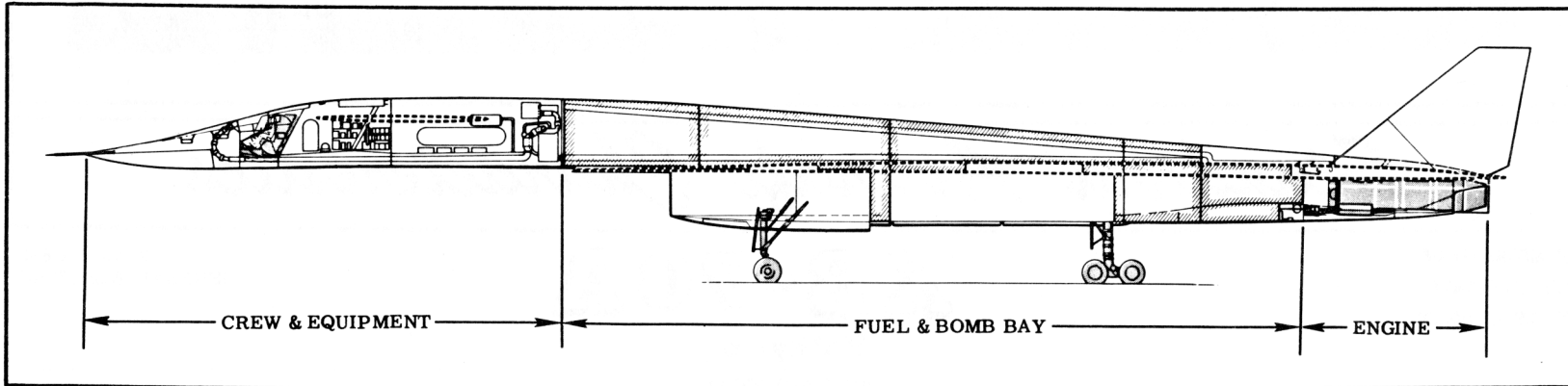
WING SECTION
SEE NOTE "b" PAGE 6

PRESSURIZED AREA



Fuel (Gal)

Oil (Gal)



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) 5220 Lb
 Tail Pipe . . . Mech, Variable C/D
 Augmentation Afterburner

*E757F dated 5-25-61
 Amendment Nr 1 dated 1-15-63

ENGINE RATINGS

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

DIMENSIONS

Wing
 Span 105.0'
 Incidence (root) 0°
 (tip) -3.0°
 Dihedral 0°
 Sweepback (25% chord) . . . 58.0°
 Length 185.8'
 Height 30.7'
 Tread 23.2'

Mission and Description

Navy Equivalent: None Mfr's Model: NA-278

The primary purpose of the Air Vehicle is to demonstrate airworthiness in a sustained Mach 3 high altitude environment.

Special features of the Air Vehicle 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 consists of the pilot and co-pilot.

Development

Design initiated Nov 55
 Date of contract Dec 57
 Mock-up Mar 59
 First flight, Air Vehicle Nr 1 Sep 64
 Air Vehicle Nr 2 destroyed in crash Jun 66
 Project transferred to NASA Mar 67

WEIGHTS

Loading	Lb	L.F.
Empty	231,215 (A)	
Basic	241,047 (A)	
Design	534,792	2.0
Combat	*341,096	2.0
Max T.O.	**521,056	
Max landing	+296,292	

(A) Actual
 * For basic mission
 ** Limited by mission
 + Limited by structure

FUEL

Location	Nr Tanks	Gal.
Fuselage	5	23,718
Wing and duct	6	19,928
Total		43,646
Grades	JP-5 or JP-6	
Specifications	MIL-L-5624/ MIL-F-26656A	

OIL

Fuselage 6 42.4
 Specification MIL-L-9236B

BOMBS

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

*Space provisions only

ELECTRONICS

UHF Command AN/ARC-90
 Intercom System AN/AIC-18
 TACAN AN/ARN-65
 ILS AN/ARN-58
 IFF Transponder AN/APX-46
 Bomb Nav Subsystem AN/ASQ-28

Loading and Performance - Typical Mission

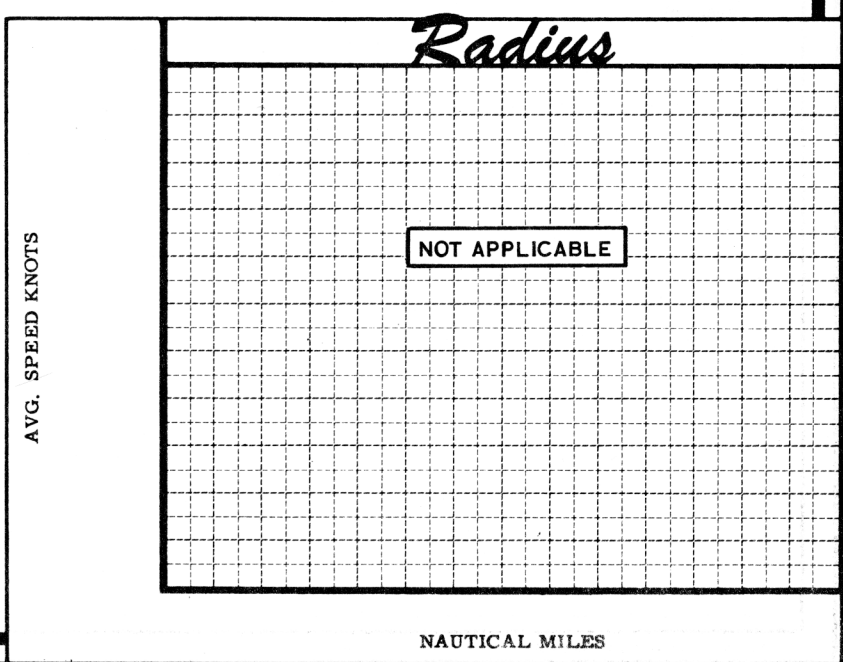
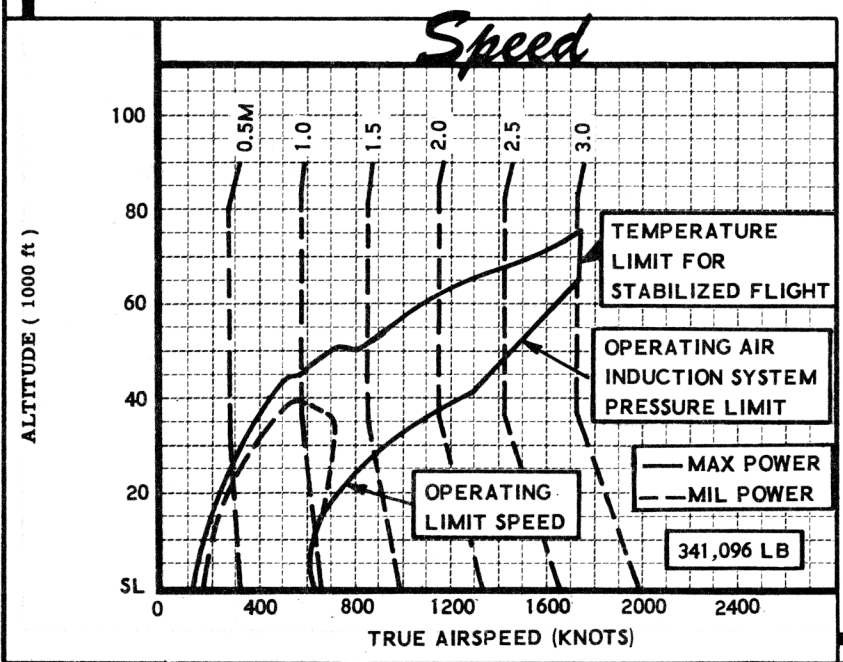
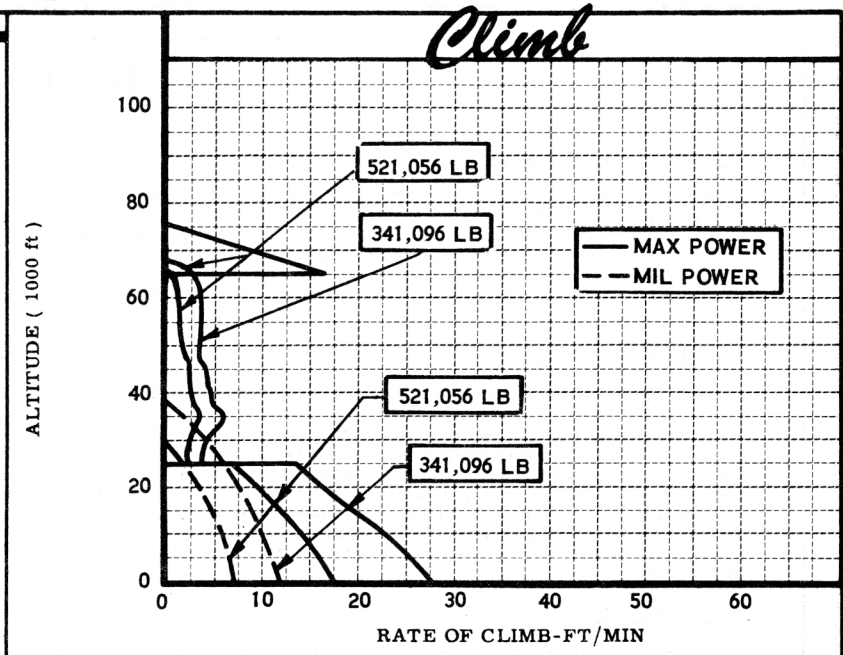
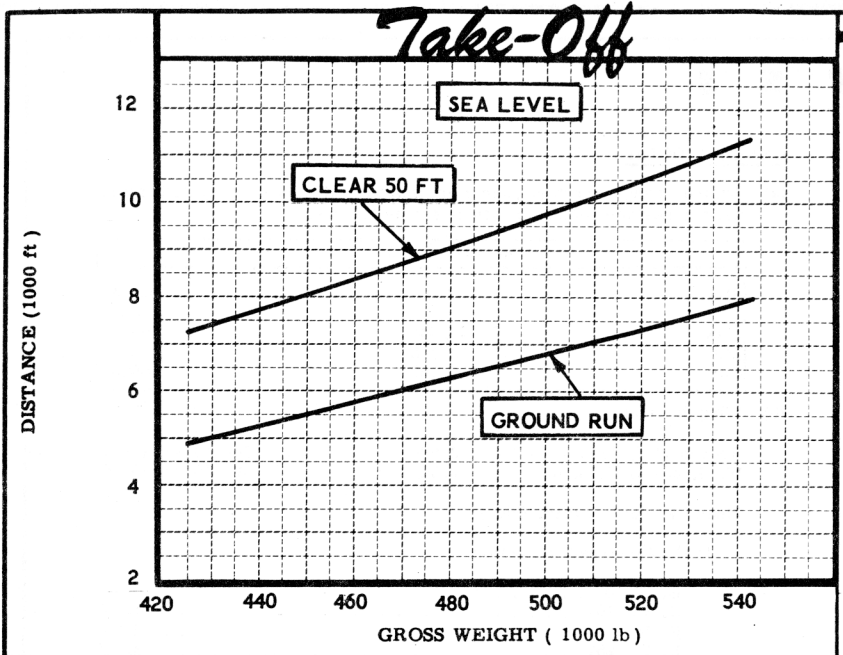
C O N D I T I O N S		BASIC MISSION I	DESIGN MISSION II	FERRY MISSION III
TAKEOFF WEIGHT	(lb)	521,056	521,056	521,056
Fuel at 6.55 lb/gal (grade JP-6)	(lb)	273,063	273,063	273,063
Payload	(lb)	*	*	None
Wing loading	(psf)	82.7	82.7	8.27
Minimum usable flying speed	(kn)	160.5	160.5	160.5
Takeoff speed	(kn)	203.4	203.4	203.4
Takeoff ground run at SL ①	(ft)	7400	7400	7400
Takeoff to clear 50 ft ①	(ft)	10,550	10,550	10,550
Rate of climb at SL	(fpm)	7170 ②	7170 ②	7170 ②
Time: SL to 20,000 ft ③	(min)	3.57 ②	3.52 ②	3.57 ②
Time: SL to acceleration altitude ③	(min)	5.45 ②	5.36 ②	5.45 ②
Service ceiling (100 fpm)	(ft)	28,100 ②	28,100 ②	28,100 ②
COMBAT RANGE ④	(n mi)	2969	3726	2969
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	72,500	71,800
Total mission time	(hr)	1.87	3.0	1.87
COMBAT WEIGHT	(lb)	341,096	309,590	284,396
Combat altitude	(ft)	68,200	70,200	71,800
Combat speed ①	(kn)	1721	1721	1721
Combat climb ①	(fpm)	11,660	11,660	11,670
Combat ceiling (500 fpm) ①	(ft)	75,250	77,100	78,750
Service ceiling (100 fpm) ①	(ft)	75,500	77,350	79,000
Max rate of climb at SL ①	(fpm)	27,450	30,380	33,000
Max speed at optimum altitude ①	(kn/ft)	1721/75,550	1721/77,400	1721/79,050
Basic speed at 35,000 ft ①	(kn)	1089	1089	1089
LANDING WEIGHT	(lb)	284,396	256,073	284,396
Ground roll at SL	(ft)	6380	5820	6380
Ground roll (auxiliary brake) ⑤	(ft)	4430	4030	4430
Total from 50 ft	(ft)	8110	7480	8110
Total from 50 ft (auxiliary brake) ⑤	(ft)	6180	5690	6180
Minimum usable flying speed	(kn)	118.2	112.3	118.2
Touchdown speed	(kn)	160.0	151.8	160.0

NOTES

- * Space provisions only
- 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
- ⑥ Changes to performance data with use of JP-5 fuel are negligible

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%.



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 military 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 military 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 declassification from confidential (Air Vehicle Nr 1 in Air Force Museum)

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	23,385	6825
Mil	16,215	6825
Nor	15,160	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. 0 0.15°
 B. P. 107 4.40°
 B. P. 153 2.75°
 B. P. 257 2.60°
 B. P. 367 - Tip 0.00°