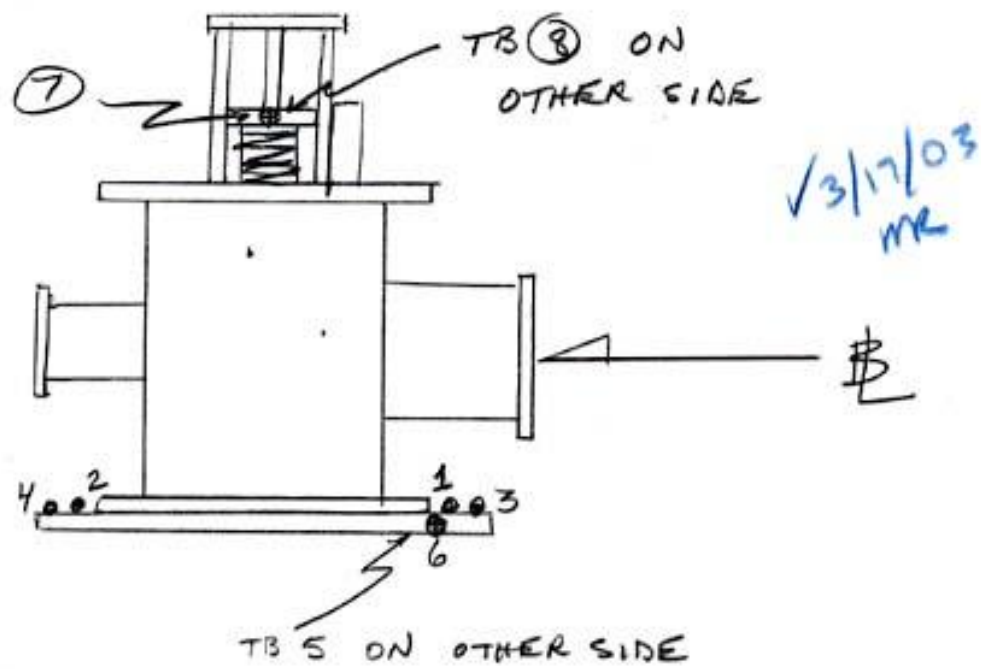
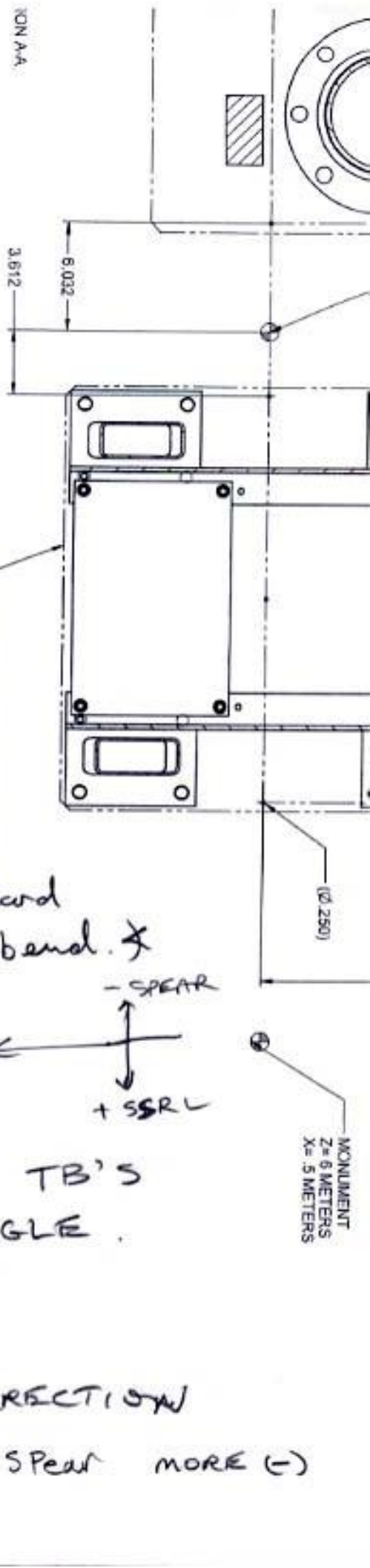


SSRL MOVEABLE MASK  $\Phi$  3

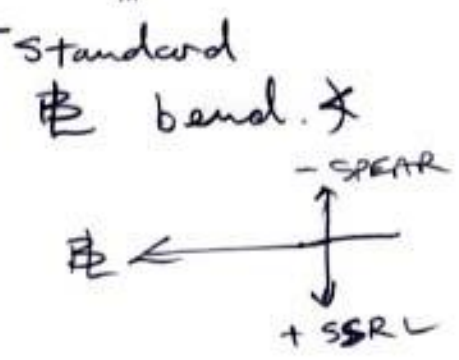


TB	X	Y	Z
1	-5.002 ✓	-5.685 ✓	-6.018 ✓
2	-5.008 ✓	-5.725 ✓	+3.974 ✓
3	+4.984 ✓	-5.675 ✓	-6.007 ✓
4	+4.966 ✓	-5.704 ✓	+3.982 ✓
5	-6.499 ✓	-7.195 ✓	-5.039 ✓
6	—	-7.180 ✓	—
7	+3.590 ✓	+17.470 ✓	+0.015 ✓
8	-3.618 ✓	+17.447 ✓	-0.041 ✓

MASK FIDUCIALIZED IN UP POSITION.  
 CENTER OF D/S FLANGE USED AS  
 $\Phi$  REFERENCE.



BEAM LINE	SOURCE POINT (X,Z)	ANGLE OF BEAM LINE CENTERLINE WITH RESPECT TO UPSTREAM ID STRAIGHT SECTION
1	-101.534, 3929.983	-16000 rad
2	-104.471, 3948.060	-162375 rad
3	-101.471, 3948.060	-162375 rad
8	-100.197, 3921.666	-15891 rad



MAY NEED TO CORRECT TB'S VALUES FOR YAW ANGLE.

$$\begin{array}{r}
 -.162375 \\
 -.16000 \\
 \hline
 -.002375 \text{ RAD CORRECTION} \\
 \text{TOWARDS SPEAR MORE (-)}
 \end{array}$$

DRAWING AND TOLERANCING IN ACCORDANCE WITH ANSI Y14.5M-1987  
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN DECIMALS TO 3 PLACES  
 SURFACE FINISH SHALL BE 32 RMS UNLESS OTHERWISE SPECIFIED  
 FRACTIONS 1/16" 1/32" 1/64" 3/16" 1/4" 3/8" 1/2" 5/8" 3/4" 7/8" 1" 1 1/4" 1 1/2" 1 3/4" 2" 2 1/4" 2 1/2" 3" 3 1/4" 3 1/2" 4" 4 1/4" 4 1/2" 5" 5 1/4" 5 1/2" 6" 6 1/4" 6 1/2" 7" 7 1/4" 7 1/2" 8" 8 1/4" 8 1/2" 9" 9 1/4" 9 1/2" 10" 10 1/4" 10 1/2" 11" 11 1/4" 11 1/2" 12" 12 1/4" 12 1/2" 13" 13 1/4" 13 1/2" 14" 14 1/4" 14 1/2" 15" 15 1/4" 15 1/2" 16" 16 1/4" 16 1/2" 17" 17 1/4" 17 1/2" 18" 18 1/4" 18 1/2" 19" 19 1/4" 19 1/2" 20" 20 1/4" 20 1/2" 21" 21 1/4" 21 1/2" 22" 22 1/4" 22 1/2" 23" 23 1/4" 23 1/2" 24" 24 1/4" 24 1/2" 25" 25 1/4" 25 1/2" 26" 26 1/4" 26 1/2" 27" 27 1/4" 27 1/2" 28" 28 1/4" 28 1/2" 29" 29 1/4" 29 1/2" 30" 30 1/4" 30 1/2" 31" 31 1/4" 31 1/2" 32" 32 1/4" 32 1/2" 33" 33 1/4" 33 1/2" 34" 34 1/4" 34 1/2" 35" 35 1/4" 35 1/2" 36" 36 1/4" 36 1/2" 37" 37 1/4" 37 1/2" 38" 38 1/4" 38 1/2" 39" 39 1/4" 39 1/2" 40" 40 1/4" 40 1/2" 41" 41 1/4" 41 1/2" 42" 42 1/4" 42 1/2" 43" 43 1/4" 43 1/2" 44" 44 1/4" 44 1/2" 45" 45 1/4" 45 1/2" 46" 46 1/4" 46 1/2" 47" 47 1/4" 47 1/2" 48" 48 1/4" 48 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U/S FL. H. 565 DIA  
D/S FL. 6.742 DIA

3/10/03  
L.G., F.G.

Acct # 93-1223-7

R-3 BEND LINE MOVEABLE MASK

Z) Buck - 1 IN : OF D/S FLANGE TO TAKE YAW OUT OF MASK

✓ 3/11/03  
ML

F.V. =  $\phi$   
N.E.V. =  $\phi$

1ST FAR = 9 - +1 = 10 ✓  
1ST NEAR = 9.106 +1 = 10.106 ✓

2ND FAR = 10 - +1 = 11 ✓  
2ND NEAR = 9.967 +1 = 10.967 ✓

S/R F. = 10.763 -1 ✓ = 9.763 ✓  
S/R N. = 10.763 -1 = 9.763 ✓

Shot copper side to side

+VE SIDE                      -VE SIDE

~~17.827~~  
~~17.918~~  
~~17.728~~  
~~17.754~~  
~~17.748~~  
~~17.757~~  
~~17.758~~  
17.753

~~17.678~~  
~~17.706~~  
~~17.795~~  
~~17.742~~  
~~17.758~~  
~~17.789~~  
~~17.759~~  
17.753

Thickness of  
Copper Avg. 1.010  
 $\div 2 = .505$   
SEE pg. 3      17.674 Avg. Va. 10  
LOS = + 18.179 ✓

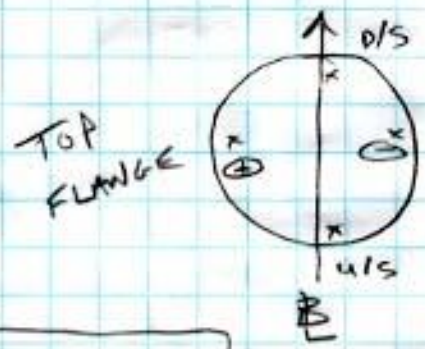
check

Tightened Top Flange

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
23.197	13.205	5.121	13.197	22.218
<u>1</u>	<u>1</u>	<u>19.065</u>	<u>1</u>	<u>1</u>
24.197 ✓	14.205 ✓	24.186 ✓	14.197 ✓	23.218 ✓
18.179	18.179	18.179	18.179	18.179
<u>-6.018</u> ✓	<u>+3.974</u> ✓	<u>-6.007</u> ✓	<u>+3.982</u> ✓	<u>-5.0-</u>

3/10/03 L.G., F.G.

1)



#3 MVERAGE MASK

u/s  
6.710

D/S  
6.406  
6.410

-VE  
6.415  
6.418

D/S Flange 6.740 Dia.

+VE  
6.415  
6.416

No pitch  
1,002" Roll

✓ 3/11/03  
MLC

u/s Flange Dia. 11.580

HIGH GUN

D/S Flange

TURTLE

u/s Flange

15.160  
3.370  
HI = 18.530 ✓

4.646  
57  
61.646 ✓  
18.530

FND 12.711

18.530  
5.790  
S/R 12.740 ✓  
12.711 (+2)

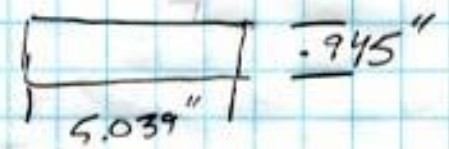
HIGH GUN

-43.116 ✓ EL. Below #

TURTLE ON LOW GUN

MASK OPENING

.945 ÷ 2 = .473 ✓  
43.116  
42.644 ✓  
40  
S/R 2.644 ✓



MASK OPENING

Gun @ 2  
S/R 3.589 ✓  
FND 3.596

Reading Bottom

Elevation 1.005

SET -1.001 ✓

Top

+0.007

+0.001 ✓

No Roll

#3 MOVABLE MASK

3/11/03  
FG., M.R.

TB'S  
57  
PIE TAKE  
CALC. 2)

shot copper top & bottom of opening of mask for PITCH

PITCH Top

	16.748
SET	16.671 ± 1
FT.	1
	17.671 ✓
over (1.5")	
<u>YAW</u>	<u>-ve</u>
(5")	16.672
or	1
	17.672 ✓

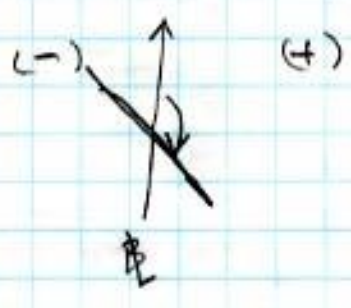
Bottom

	16.755
SET	16.674 ± 1
FT.	1
	17.674 ✓
	<u>+ve</u>
	16.678
	1
	17.678 ✓

3/11/03  
MR

Checking Yaw  
Removed part and put back together.

-ve	+ve
17.760	17.756
good ✓	



This is how the Mask (yaw) originally set; then the top flange was bolted down.

See pg. 7 for final yaw & pitch Results, shot UKS side of Mask

SSRL

3 MOVABLE MASK

(4) of 7  
10/11/03  
M.R. F.G.

y)

$$\begin{array}{r}
 \underline{1} \\
 23.215 \\
 \underline{18.530} \\
 24.215 \checkmark \\
 \underline{18.530} \\
 \boxed{-5.685} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{2} \\
 23.255 \\
 \underline{18.530} \\
 24.255 \checkmark \\
 \underline{18.530} \\
 \boxed{-5.725} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{3} \\
 11.677 \\
 \underline{12.528} \\
 24.205 \checkmark \\
 \underline{18.530} \\
 \boxed{-5.675} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{4} \\
 23.234 \\
 \underline{18.530} \\
 24.234 \checkmark \\
 \underline{18.530} \\
 \boxed{-5.704} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{5} \\
 24.725 \\
 \underline{18.530} \\
 25.725 \checkmark \\
 \underline{18.530} \\
 \boxed{-7.195} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{6} \\
 6.339 \\
 \underline{19.371} \\
 25.710 \checkmark \\
 \underline{18.530} \\
 \boxed{-7.180} \checkmark
 \end{array}$$

✓ 3/11/03  
m

$$\begin{array}{r}
 \text{Read} \\
 \text{Ft} \\
 \text{S/T} \\
 \text{Turtle}
 \end{array}
 \begin{array}{r}
 6.281 \\
 \underline{57} \\
 63.281 \checkmark \\
 \underline{43.116} \\
 20.165 \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{7} \\
 1.445 \\
 \underline{1.250} \\
 2.695 \checkmark \\
 \underline{20.165} \\
 \boxed{+17.470} \checkmark
 \end{array}$$

$$\begin{array}{r}
 \underline{8} \\
 1.468 \\
 \underline{1.250} \\
 2.718 \checkmark \\
 \underline{20.165} \\
 \boxed{+17.447} \checkmark
 \end{array}$$

# 3 MOVEABLE MASK

5 of 7

(X) USING WS & DIS FLANGE FOR BUCK-UP

FAR VALUE = 3.370  
NEAR VALUE = 5.790

DIS FLANGE 10.370  
WS FLANGE 10.395

1ST FAR = 7-  
1ST NEAR = 4.605

✓ 3/11/03  
MR

REF. BLADES @ 60,000  
10.540

2ND FAR = 8-  
2ND NEAR = 5.458

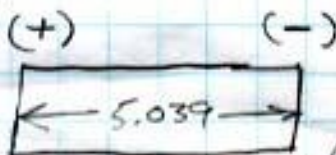
WIDTH = 5.037  
÷ 2 = 2.520

49.460  
2.520  
51.980

S/R FAR = 7.170  
S/R NEAR = 4.750

-VE SIDE -  
S/R ON BLADES  
51.980

LOS = 10.540



(+)

(-)

MIRING +.002  
(46.920)

Mic'D +.019  
(51.961) ADJUST  
5.039  
46.922 S/R (+)  
SIDE

check yaw (+)  
on mask 12.457  
(over 9") + 1 -

(-)  
12.469  
+ 1 -

Auto Collimated (Z)  
1.3 mR

check pitch (top)  
(over 5") 12.476

(bottom) 2.8 mR  
12.462

This way didn't work, move on!

# 3 MOVEABLE MASK

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## 2 BACK-IN

Far Value = 3.974 (TB 2)  
Near Value = 3.982 (TB 4)

✓ 3/11/03 MR

1ST Far = 23 - +1 = 24  
1ST Near = 23.364 + 1 = 24.364  
2ND Far = 24 - +1 = 25  
2ND Near = 24.184 + 1 = 25.184  
S/R Far = 26.067 - 1 = 25.067  
S/R Near = 26.059 - 1 = 25.059  
LOS = 30.041

2's on  
~~7~~      8  
29.026      29.082  
1            1  
30.026 ✓      30.082 ✓  
30.041      30.041  
+0.015 ✓      -0.041

Holding D/S Fl. For Line.

Blades @ 67.380

## u/s Flange

12.210      18.024  
5.790      5.790  
S/R 12.234 ✓  
FND 12.210      -24 ✓

## D/S Flange

14.654  
3.370  
18.024 ✓ = -LOS  
67.380  
49.356 ✓ = ⊕

## X) Auto Collimated

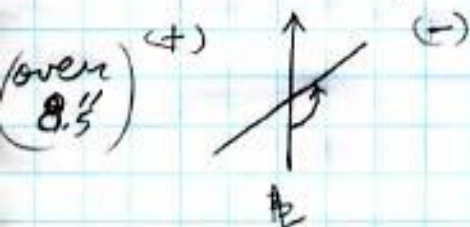
1	2	3	4	5	8
12.022	12.016	3.943	3.925	10.525	13.406
<u>1</u>	<u>1</u>	<u>19.065</u>	<u>19.065</u>	<u>1</u>	<u>1</u>
13.022 ✓	13.016 ✓	23.008 ✓	22.990 ✓	11.525 ✓	14.406 ✓
18.024	18.024	18.024	18.024	18.027	18.024
<u>-5.002</u>	<u>-5.008</u>	<u>+4.984</u> ✓	<u>+4.966</u> ✓	<u>-6.499</u> ✓	<u>-3.618</u> ✓
		<u>7</u>			
	DIST 7-8	7.708			
		<u>3.618</u>			
		4.090 - 5 =	<u>7</u>		
			<u>+3.590</u> ✓		

3/15/11/03  
M.R., F.G.

(7)  
of 7

2ND U/S END

AUTO COLLIMATION  
CHECK YAW



# 3 MOVEABLE MASK

(+)

17.766

$\frac{1}{18.766}$

(61)

± 25 mils

17.783

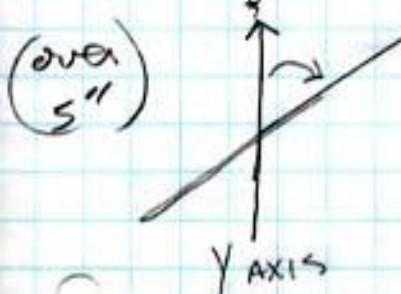
$\frac{1}{18.783}$

(86)

3/12/03

3/11/03  
mk (-)

CHECK PITCH



BOT

17.771

$\frac{1}{18.771}$

(71)

± 15 mils

TOP

17.785

$\frac{1}{18.785}$

(86)

3/12/03

Tightened Top Nut on Mask

check ROLL TOP OF MASK  
(+) (-)  
MIC'S +.054 +.050

Y) check Top Flange

U/S	D/S	(+)	(-)	TURBLE
8.059	8.055	8.062	8.069	3.532
8.055	8.055	8.061	8.071 ← (3/12/03)	$\frac{40}{43.532}$

Tanked Rolled .003 mils Mask Rolled .004  
Same direction.

$\frac{43.116}{43.116}$   
NET +.716  
.052  
POSITION OF MASK .468  
S/R .472

check X position of Mask

⊕ @ 49.356 on Blades (Pg. 6)  
 $\frac{2.520}{51.876}$  ✓ (-) side of Mask  
1/2 width

(-4)

Mic'D (+.010) → 51.866