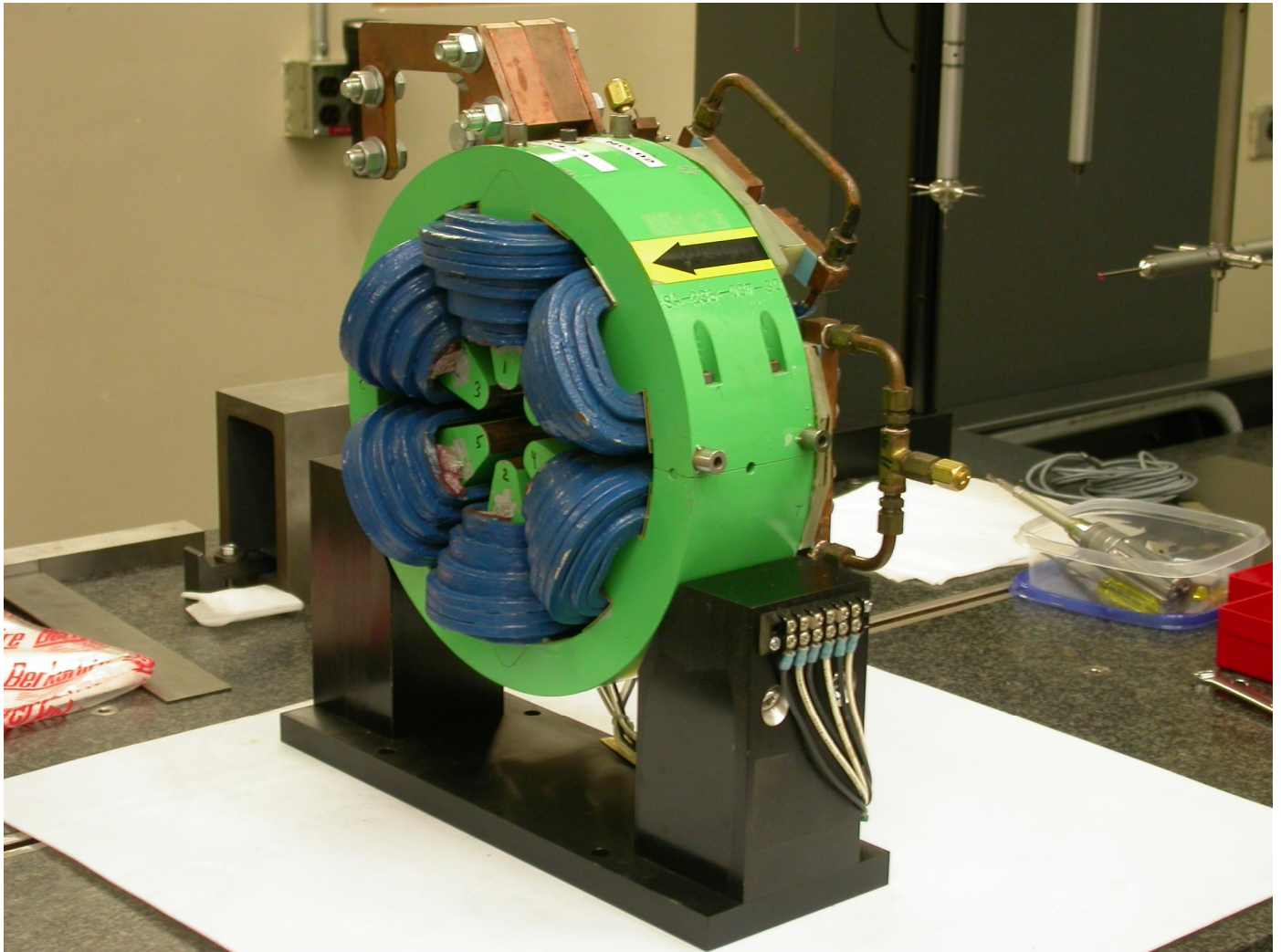




## AFT2 REFURBISHED SEXTUPOLE MAGNET FIDUCIALIZATION REPORT



Inspector: Keith Caban  
Responsible Engineer: Cherrill Spencer  
Date: Wednesday, August 20, 2008  
Work Order/Charge No.: 1111143  
Serial Number: 02  
URL of Fiducial Report: [http://www-group.slac.stanford.edu/met/Quality/FIDUCIAL\\_REPORTS/CHERRILL\\_SPENCER/AFT2-SEXTUPOLE-02.PDF](http://www-group.slac.stanford.edu/met/Quality/FIDUCIAL_REPORTS/CHERRILL_SPENCER/AFT2-SEXTUPOLE-02.PDF)

## Part Set-up – Coordinate System Set-up

### Spatial Alignment

- Geometric axis of the poles of the magnet using 6 scans of each sextupole pole tip on each side (Terminal and Non Terminal sides) creating 2 circles on the pole tips. One on each side where Positive Z is on the Terminal Side of the Magnet.

### Planar Alignment

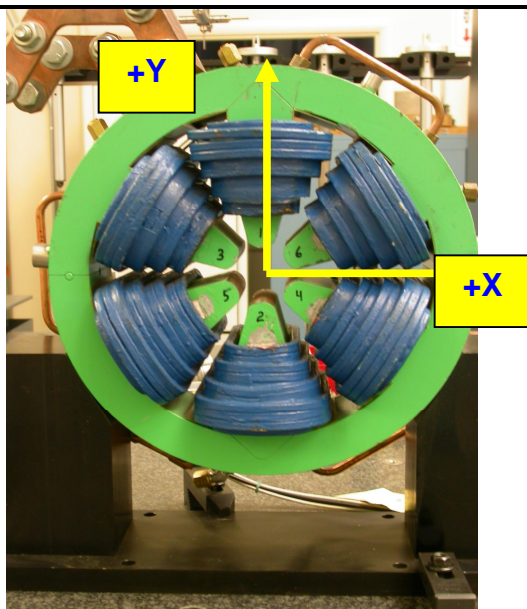
- Radial Pole tip #1's center and the geometric center of all poles to create an axis on the Terminal Side of the Magnet.

### “Z” Zero

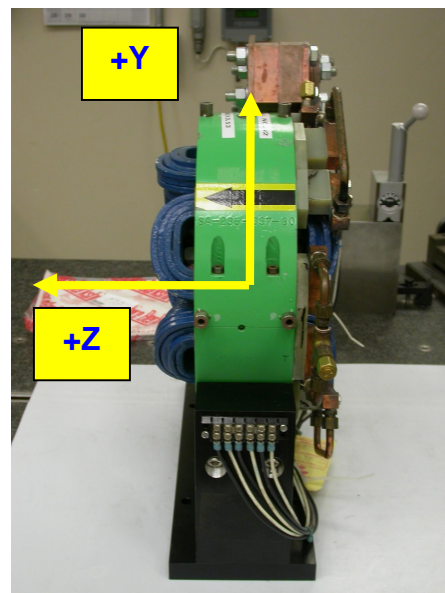
- Mid-plane of the magnet (middle of Terminal and Non Terminal ends).

### “X” & “Y” Zero

- Geometric axis of the poles of the magnet.



**Front View**  
(Looking from upstream side +Z)



**Side View**  
(looking from +X side)

## Tooling Ball Locations for SN 02

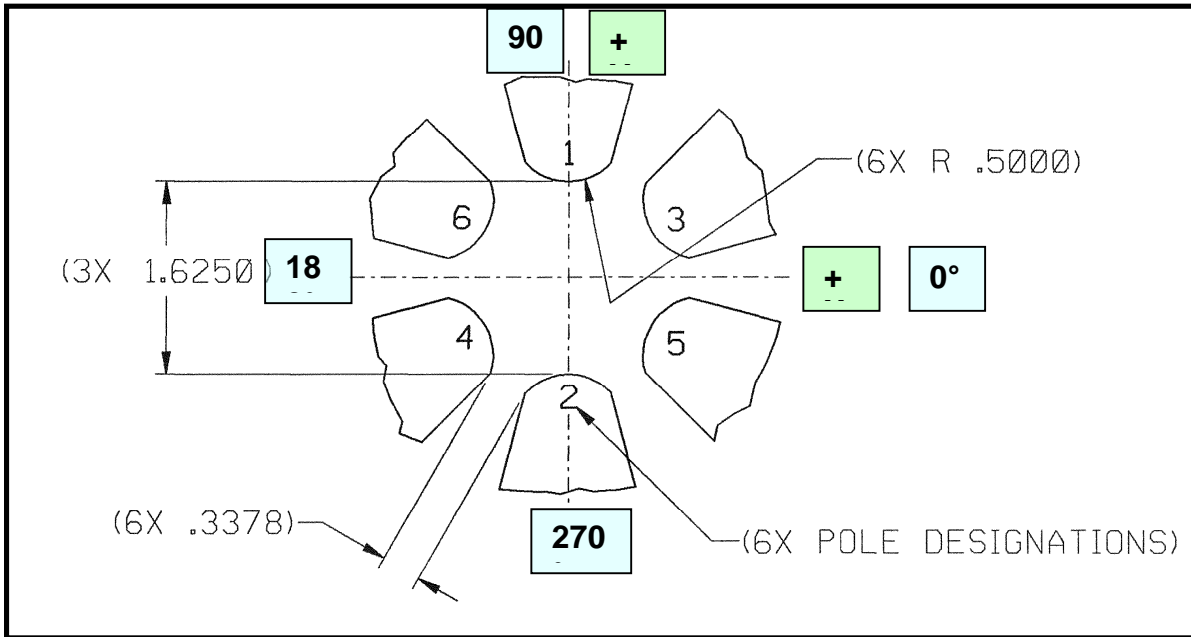
*Used Standard ½" Tooling Balls w/ 1" extension*

### Magnet CSY (stated above)

TB	FORM	DIA	X	Y	Z
1	0.00031	0.49364	7.68954	0.44290	1.50230
2	0.00021	0.49862	0.03979	7.70093	1.51019
3	0.00018	0.49855	0.01412	7.70304	-1.51232
4	0.00023	0.49817	7.68793	0.45463	-1.51476



Clocked to Pole 1

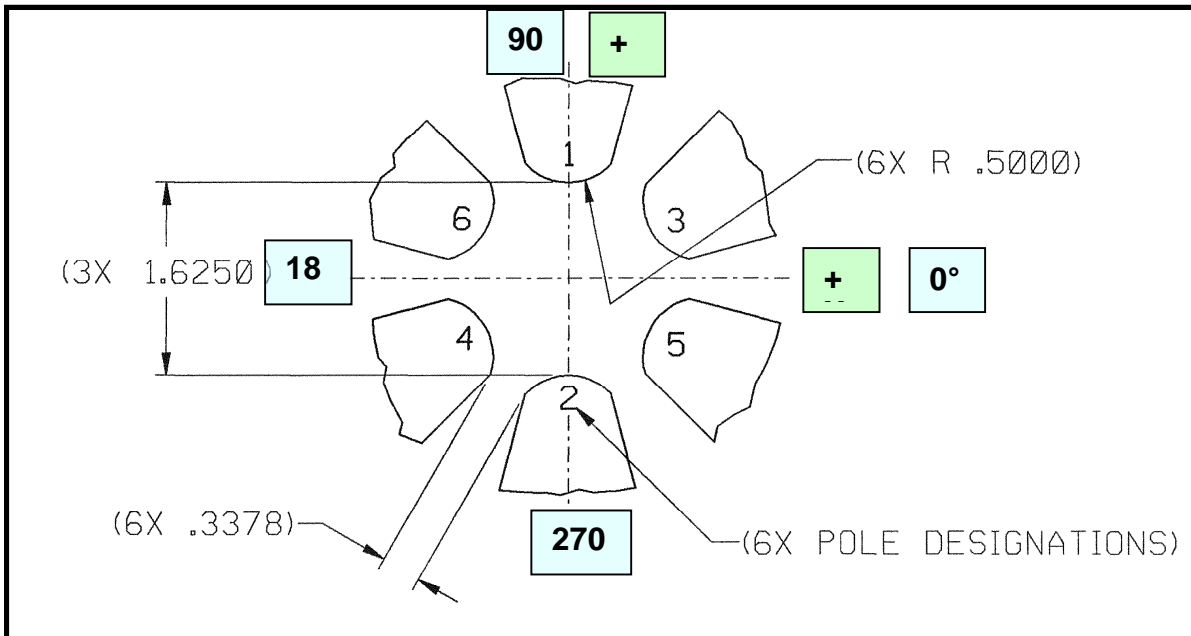


<b>Terminal Side</b>	<b>Radial Distance (0.8125)</b>	<b>Actual Angle of Pole w.r.t CSY</b>	<b>Deviation Angle to Pole (act-nom)</b>	<b>Radians</b>	<b>Micro Radians</b>	<b>Pole Tip Distance (1.625)</b>
Pole Tip 1	0.81098	89.99195	-0.00805	-0.00014	140	1.62236
Pole Tip 2	0.81094	270.27162	0.27162	0.00474	4741	1.62635
Pole Tip 3	0.81075	30.00680	0.00680	0.00012	119	1.62547
Pole Tip 4	0.81542	210.09029	0.09029	0.00158	1576	1.62547
Pole Tip 5	0.81471	330.20776	0.20776	0.00363	3626	1.62547
Pole Tip 6	0.81138	150.10550	0.10550	0.00184	1841	1.62547

<b>Non Terminal Side</b>	<b>Radial Distance (0.8125)</b>	<b>Actual Angle of Pole w.r.t CSY</b>	<b>Deviation Angle to Pole (act-nom)</b>	<b>Radians</b>	<b>Micro Radians</b>	<b>Pole Tip Distance (1.625)</b>
Pole Tip 1	0.81141	90.03487	0.03487	0.00061	609	1.62356
Pole Tip 2	0.81059	270.22009	0.22009	0.00384	3841	1.62666
Pole Tip 3	0.81109	30.01479	0.01479	0.00026	258	1.62647
Pole Tip 4	0.81607	210.10301	0.10301	0.00180	1798	1.62647
Pole Tip 5	0.81538	330.14457	0.14457	0.00252	2523	1.62647
Pole Tip 6	0.81174	150.13739	0.13739	0.00240	2398	1.62647

Gap Nominal (0.3378)	Terminal Side	Non Terminal Side
3-5	0.33619	0.33751
4-6	0.33644	0.33774

Clocked to Pole 3, rotated -30° nominally



Terminal Side	Radial Distance (0.8125)	Actual Angle of Pole w.r.t CSY	Deviation Angle to Pole (act-nom)	Radians	Micro Radians	Pole Tip Distance (1.625)
Pole Tip 1	0.81098	89.98515	-0.01485	-0.00026	259	1.62236
Pole Tip 2	0.81094	270.26483	0.26483	0.00462	4622	1.62635
Pole Tip 3	0.81075	30.00000	0.00000	0.00000	0	1.62547
Pole Tip 4	0.81542	210.08349	0.08349	0.00146	1457	1.62547
Pole Tip 5	0.81471	330.20096	0.20096	0.00351	3507	1.62547
Pole Tip 6	0.81138	150.09870	0.09870	0.00172	1723	1.62547

Non Terminal Side	Radial Distance (0.8125)	Actual Angle of Pole w.r.t CSY	Deviation Angle to Pole (act-nom)	Radians	Micro Radians	Pole Tip Distance (1.625)
Pole Tip 1	0.81141	90.02807	0.02807	0.00049	490	1.62356
Pole Tip 2	0.81059	270.21329	0.21329	0.00372	3723	1.62356

Pole Tip 3	0.81109	30.00799	0.00799	0.00014	139	1.62666
Pole Tip 4	0.81607	210.09621	0.09621	0.00168	1679	
Pole Tip 5	0.81538	330.13778	0.13778	0.00240	2405	1.62647
Pole Tip 6	0.81174	150.13060	0.13060	0.00228	2279	

<b>Gap Nominal (0.3378)</b>	<b>Terminal Side</b>	<b>Non Terminal Side</b>
3-5	0.33619	0.33751
4-6	0.33644	0.33774

