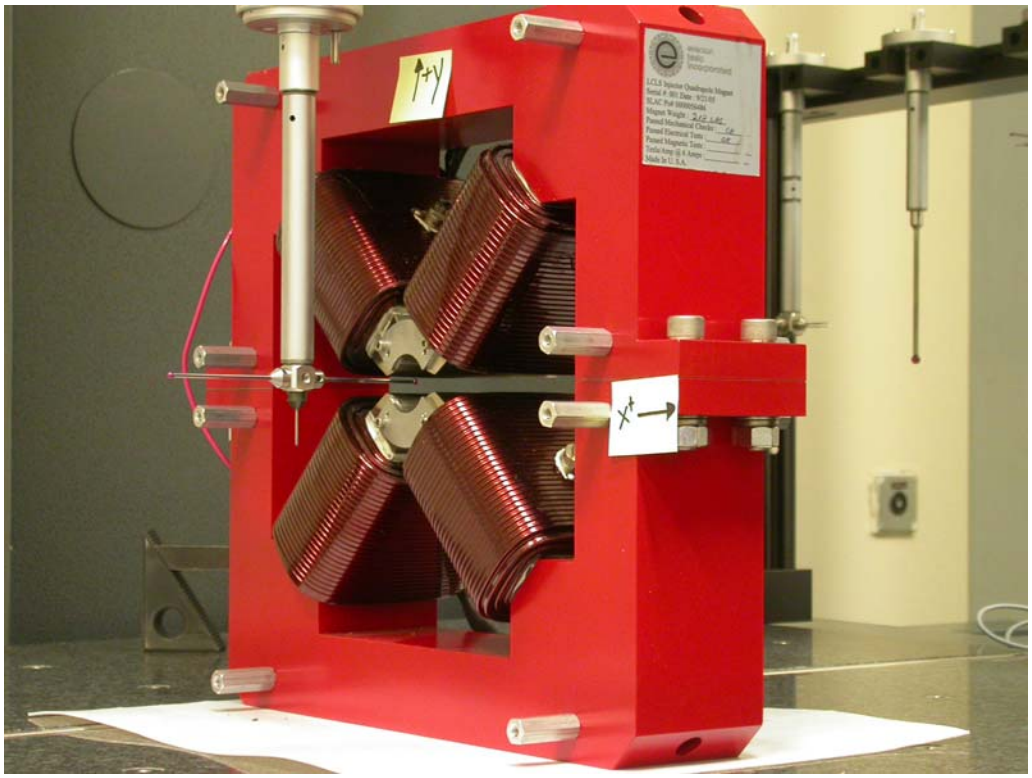
LCLS Injector Quadrupole Magnet
FIDUCIALIZATION REPORT



Inspector:	Keith Caban
Responsible Engineer:	Roger Carr
Date:	Monday, October 03, 2005
Work Order/Charge No.:	N/A
Serial Number	001

Part Set-up – Coordinate System Set-up

Planar Alignment

- Mid-Plane of the magnet

Spatial Alignment

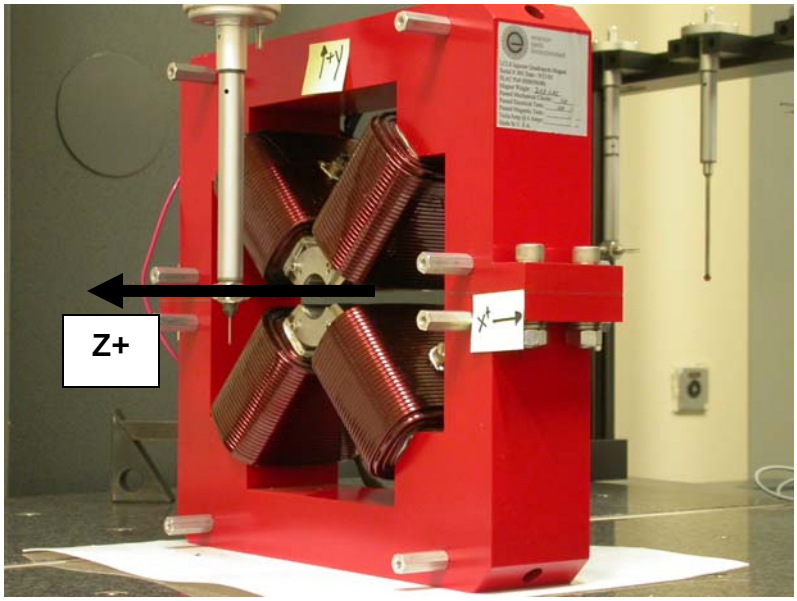
- A line on the top part of the magnet
    - +X goes towards (Magnet Info Label)

“Z” Zero

- Mid-Plane of the magnet

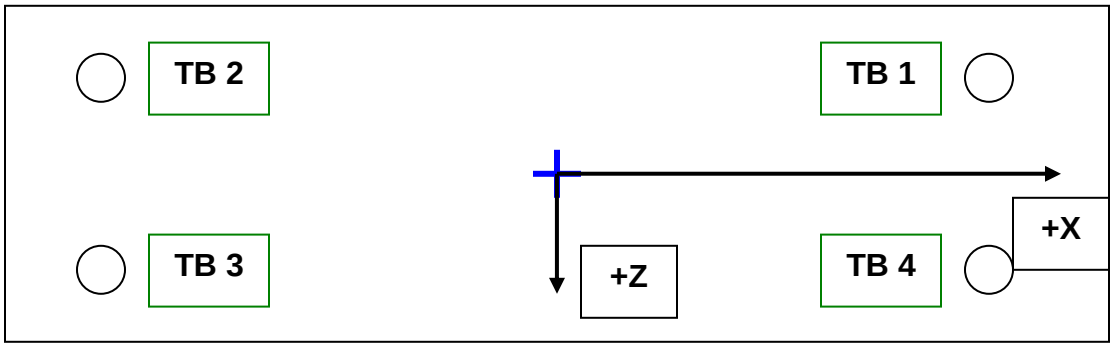
“X” & “Y” Zero

- On both ends
    - Tangent point of each radii (4 on each end, 8 total).
        - Create a line between diagonal tangent points creates 2 lines.
            - Intersect the lines.
                - Creates a point on each end.
- Create a line of these 2 end points
    - This is the “X” & “Y” Zero, and Beamline or” Z” Axis.



Tooling Ball Measurements/Locations

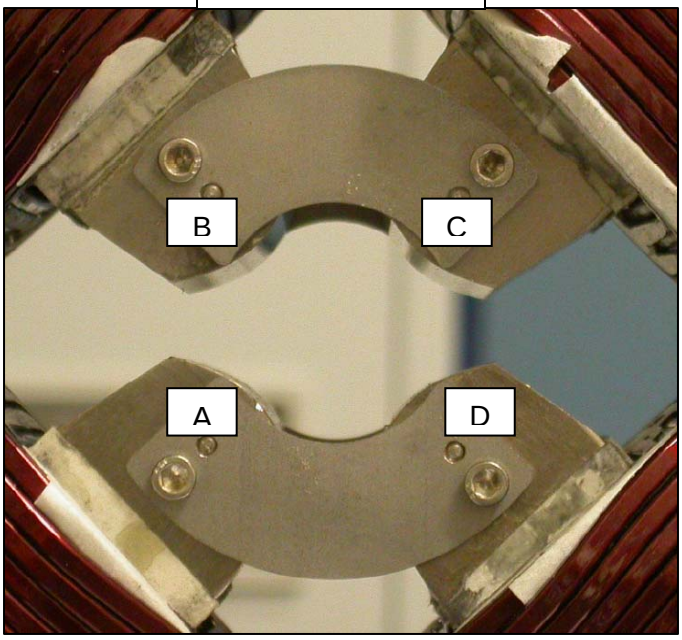
Top of magnet; view from “+Y”



Tooling Ball	FORM	DIAMETER	X	Y	Z
TB 1	0.00077	0.49549	6.50043	8.87843	-1.24861
TB 2	0.00045	0.49802	-6.49959	8.87643	-1.24936
TB 3	0.00049	0.49688	-6.50041	8.87714	1.25042
TB 4	0.00066	0.49616	6.50140	8.87805	1.25143

Additional Requested Measurements

View From +Z

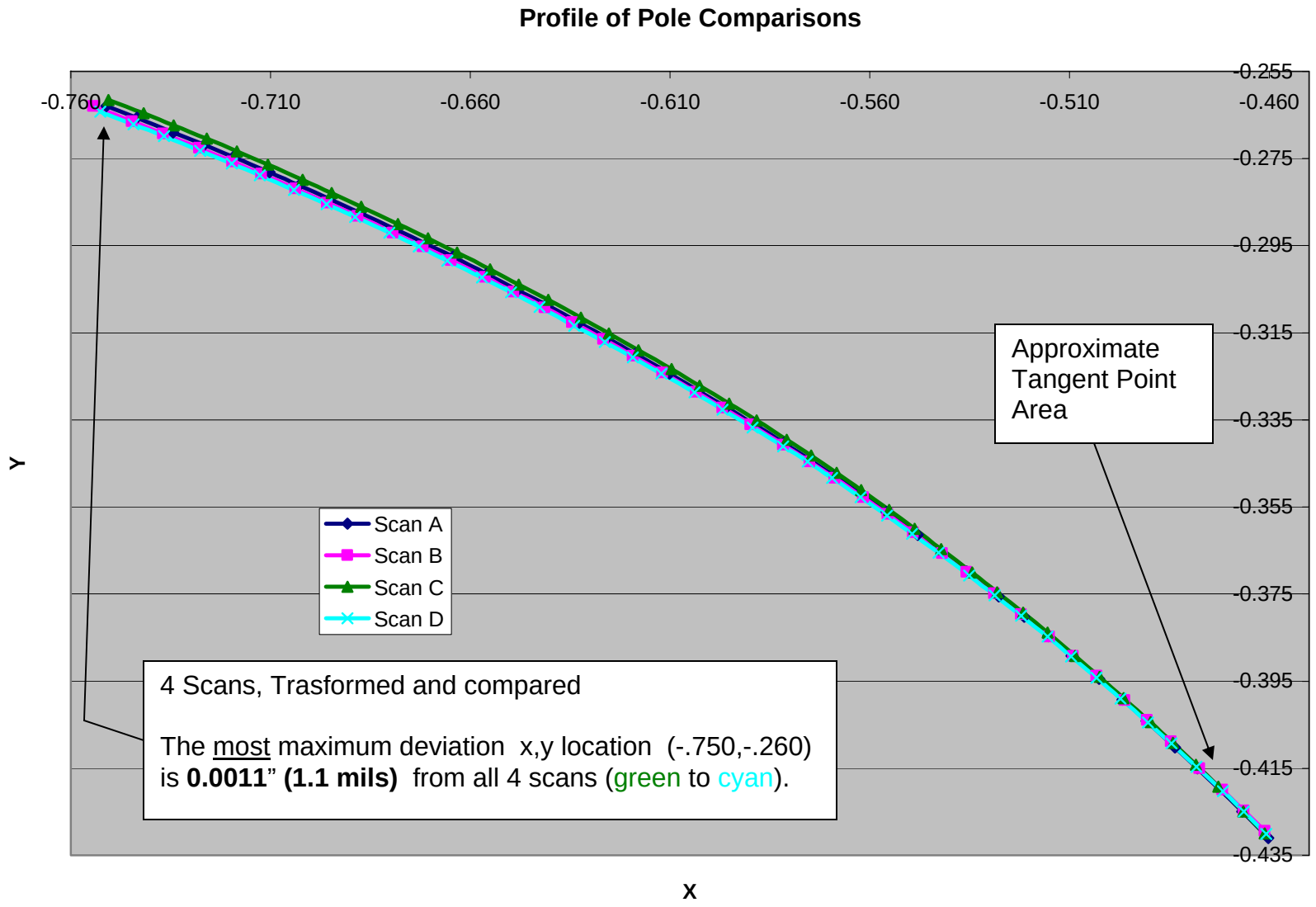


Tangent Point Straightness
- A. 0.00025
- B. 0.00021
- C. 0.00032
- D. 0.00049

Parallelism to Beamline
- A. 0.00114
- B. 0.00064
- C. 0.00129
- D. 0.00049

Distance of opposite Tangent Axis

A-C = 1.26016 (0.63009, 0.63007)
B-D = 1.25877 (0.62945, 0.62932)


Profile of Pole Comparisons
-0.760
-0.710
-0.660
-0.610
-0.560
-0.510
-0.460
-0.255
-0.275
-0.295
-0.315
-0.335
-0.355
-0.375
-0.395
-0.415
-0.435
Y
X
Scan A
Scan B
Scan C
Scan D
Approximate Tangent Point Area
4 Scans, Trasformed and compared
The most maximum deviation x,y location (-.750,-.260) is 0.0011" (1.1 mils) from all 4 scans (green to cyan).