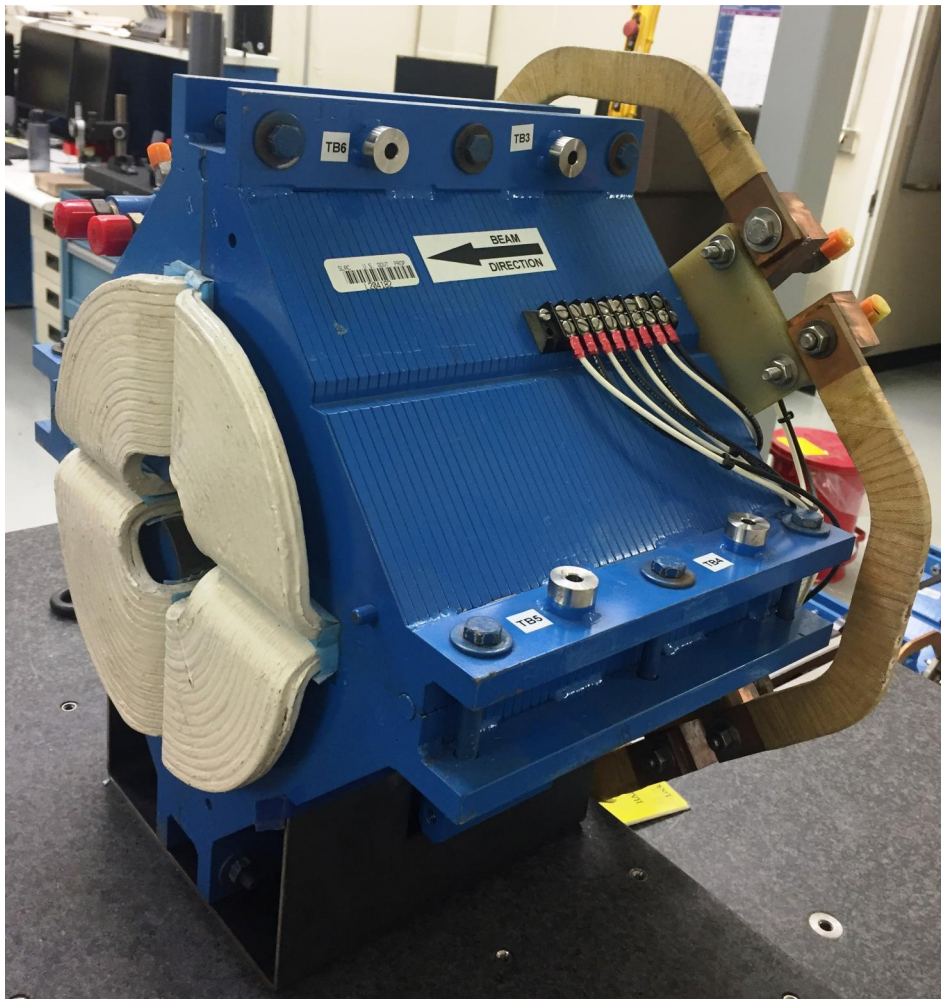


LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4189
Mfg. S/N : #19

Coordinate System Setup

Spatial Alignment

The Spatial Alignment of the magnet is created through a composite best-fit of the pole tips. Each pole tip scanned 0.150 inch inboard from the upstream magnet face and the downstream magnet face. A composite best-fit of the upstream poles and the downstream poles is made with the nominal pole tip shape and location. An axis is created through the two best-fit centerpoints. This axis is the spatial alignment of the magnet and defines the Z axis.

Planar Alignment

The Planar Alignment of the magnet is the created by averaging the rotations of the composite best-fits of the upstream pole tips and downstream pole tips. This direction defines the Y and X directions of the magnet.

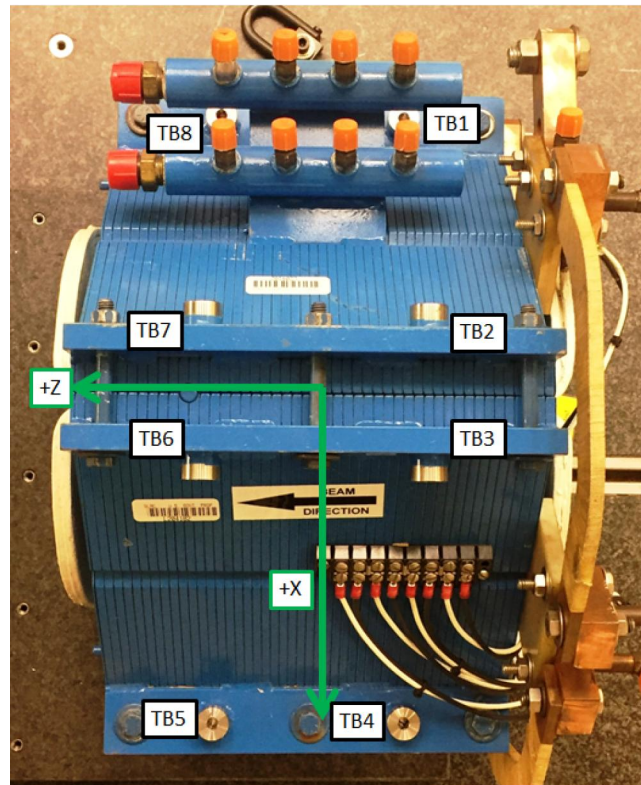
Coordinate Origins

The origins of the magnet coordinate system are as follows. The XY origin lies on the axis of spatial alignment. The Z origin is the intersection of the mid-plane between the upstream and downstream magnet faces and the Z axis.

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Tooling Ball Locations



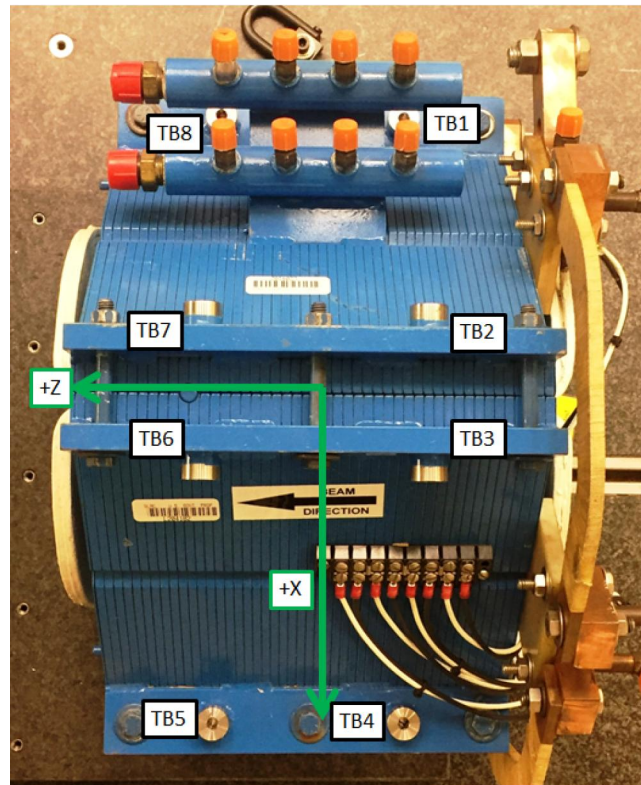
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0647	2.6905	-2.1521
TB 2	-2.6611	7.0836	-2.1679
TB 3	2.6875	7.0637	-2.1655
TB 4	7.0617	2.6778	-2.1533
TB 5	7.0521	2.6797	2.1630
TB 6	2.6831	7.0508	2.1705
TB 7	-2.6688	7.0571	2.1691
TB 8	-7.0575	2.6790	2.1793

Tooling Ball Locations are 1 inch above Tooling Ball Adapter Plane
Dimensions in Inch

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Tooling Ball Locations



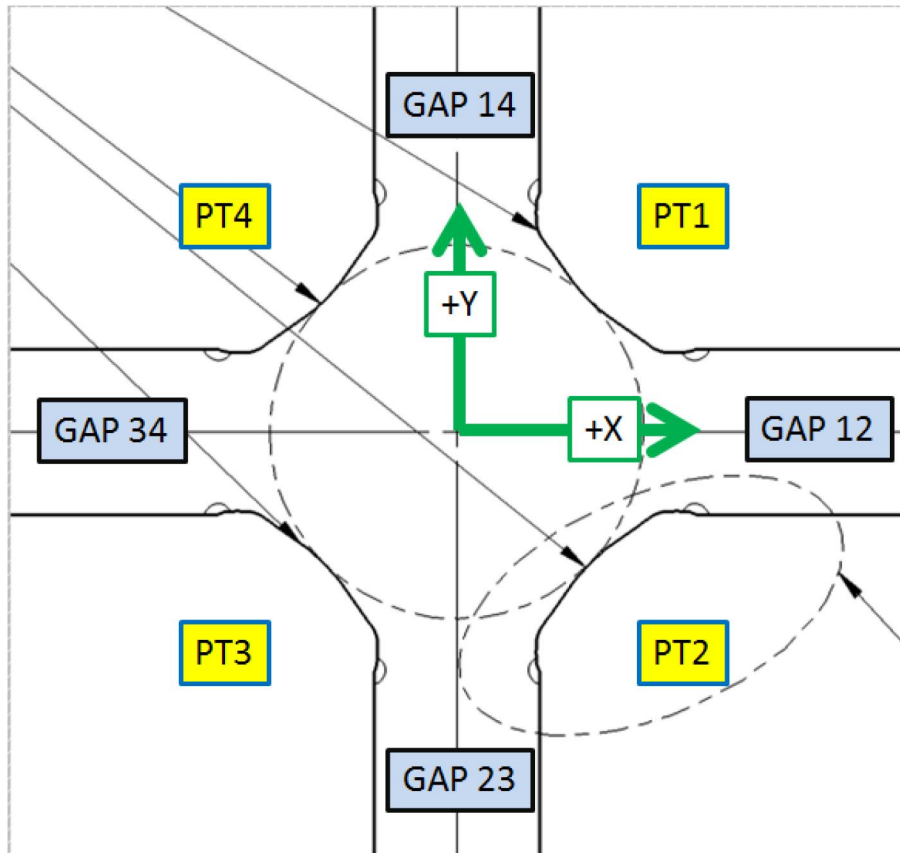
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0575	2.0030	-2.1558
TB 2	-1.9730	7.0783	-2.1679
TB 3	1.9993	7.0632	-2.1676
TB 4	7.0606	1.9904	-2.1532
TB 5	7.0517	1.9919	2.1654
TB 6	1.9956	7.0512	2.1717
TB 7	-1.9808	7.0545	2.1692
TB 8	-7.0542	1.9917	2.1789

Tooling Ball Locations are 5/16 inch above Tooling Ball Adapter Plane
Dimensions in Inch

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Pole Tip Gap Measurements



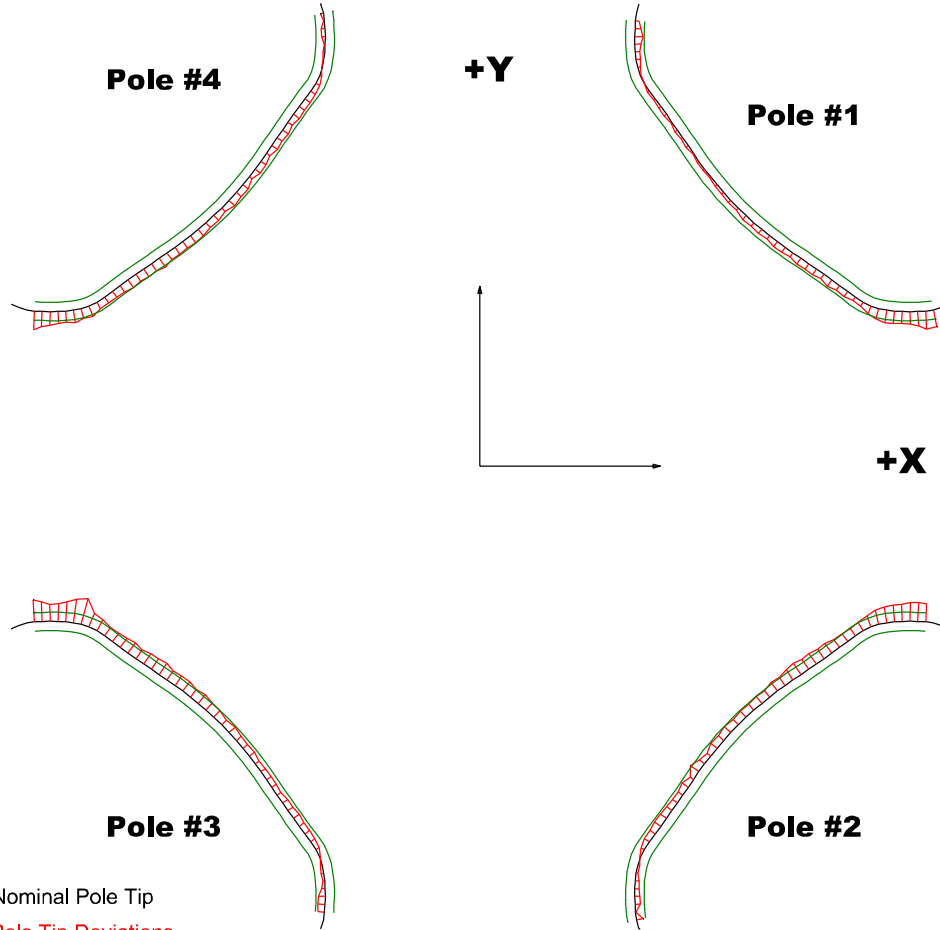
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02484	2.02501
PT Distance 2-4	2.026	2.02452	2.02502
Gap 1-2	0.8602	0.85385	0.85412
Gap 2-3	0.8602	0.85895	0.8595
Gap 3-4	0.8602	0.85466	0.85434
Gap 1-4	0.8602	0.859	0.86019

Dimensions in Inch

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Composite Best-fit of Pole Tips, Downstream



Black = Nominal Pole Tip
 Red = Pole Tip Deviations
 Green = +/- .001 Tolerance

Dimensions in Inch

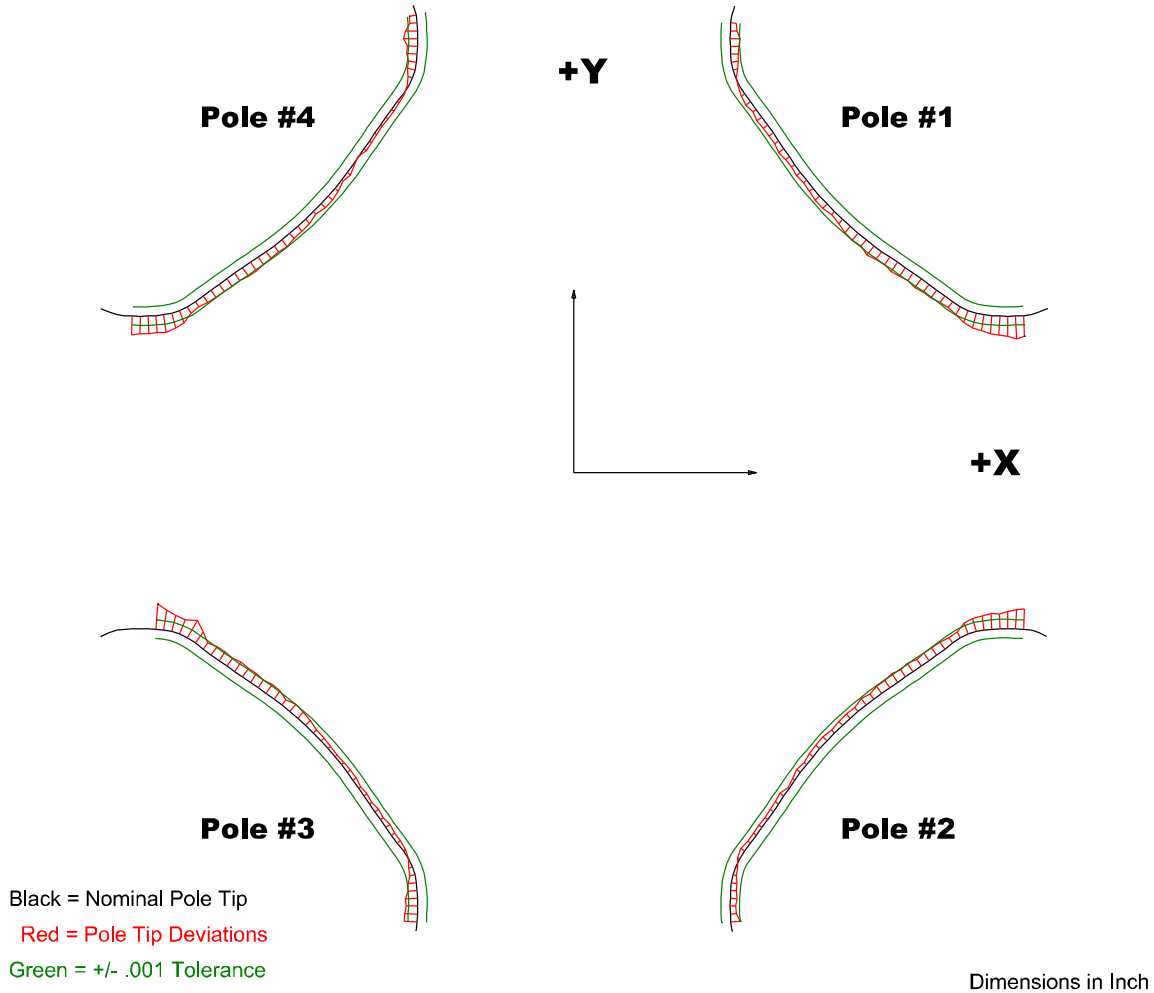
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00087	-0.00072	-0.00079	-0.00039
Max. Dev.	0.00196	0.00208	0.00286	0.00204

Barcode # : 4189

Mfg. S/N : #19

Composite Best-fit of Pole Tips, Upstream



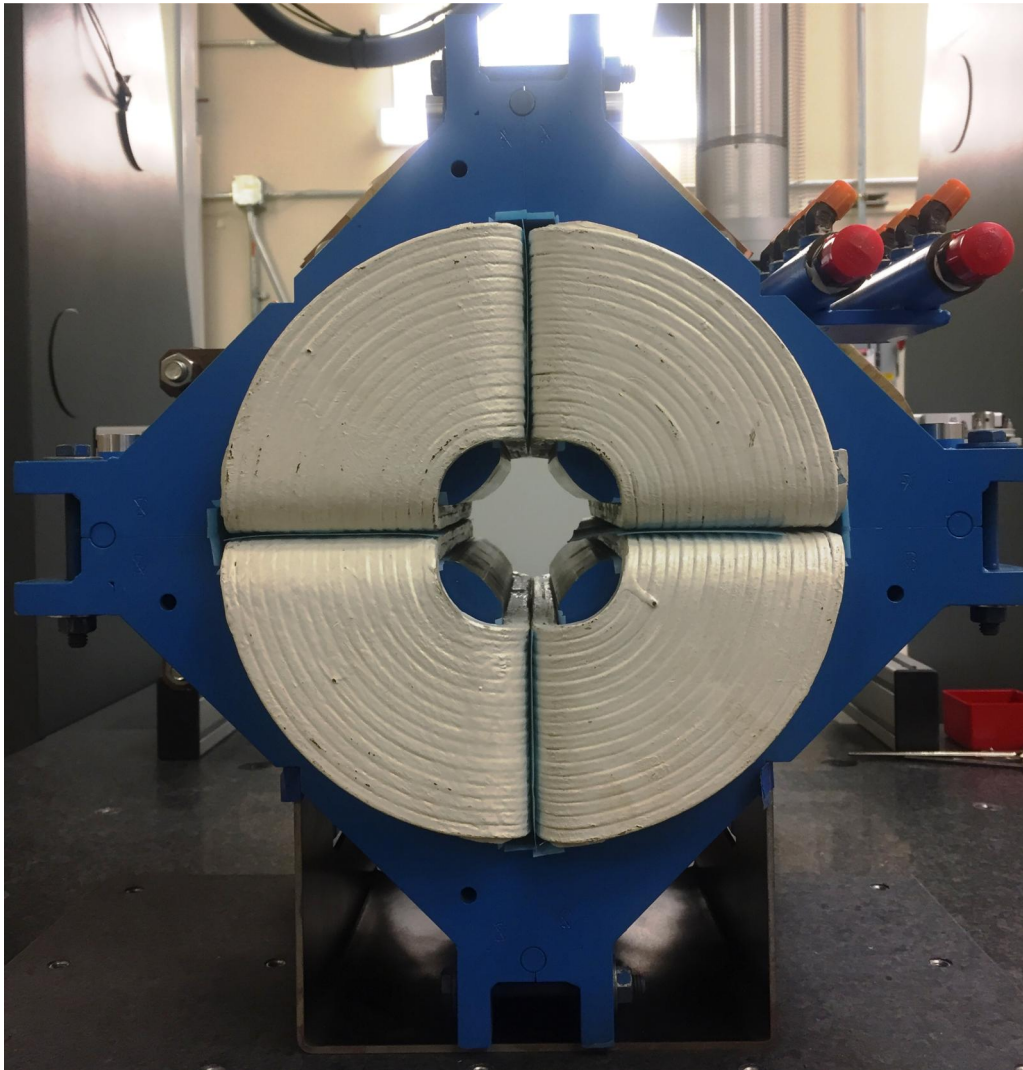
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00111	-0.001	-0.00141	-0.00153
Max. Dev.	0.00249	0.00219	0.00277	0.00208

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Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.07941
Angle in Milliradians : 1.38605

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