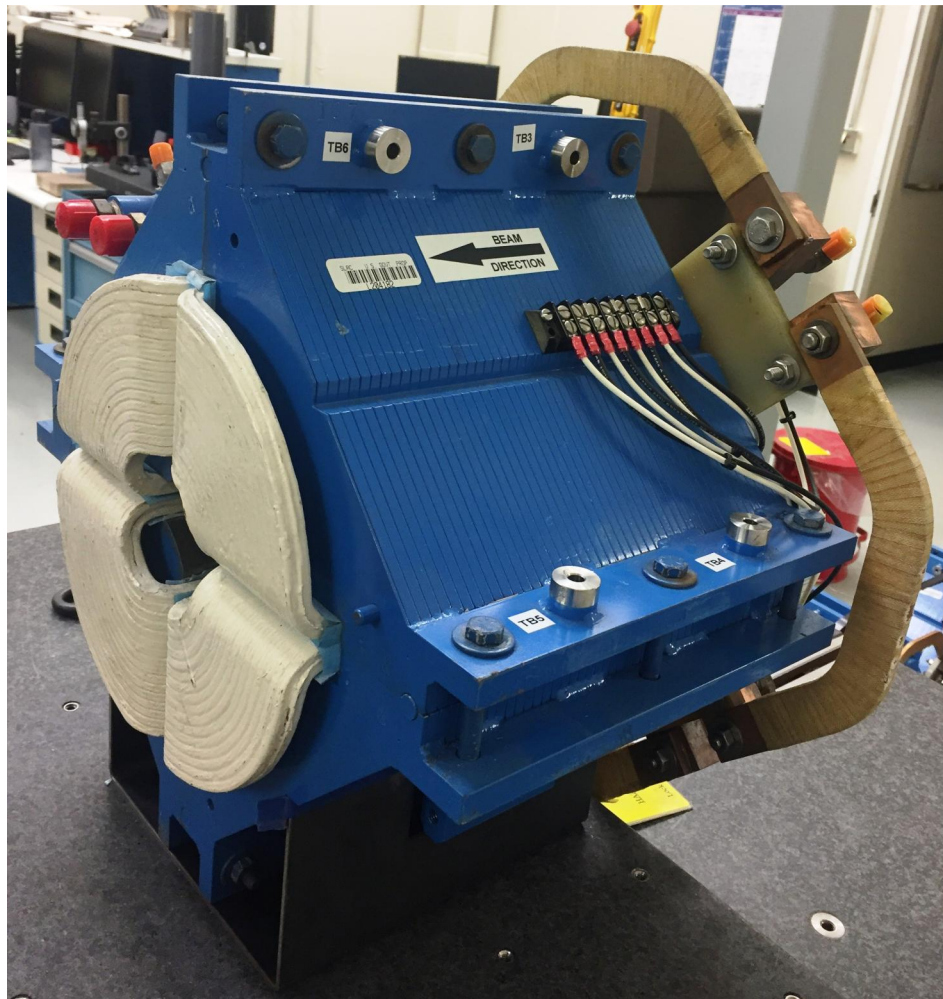


LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4197
Mfg. S/N : #28

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.

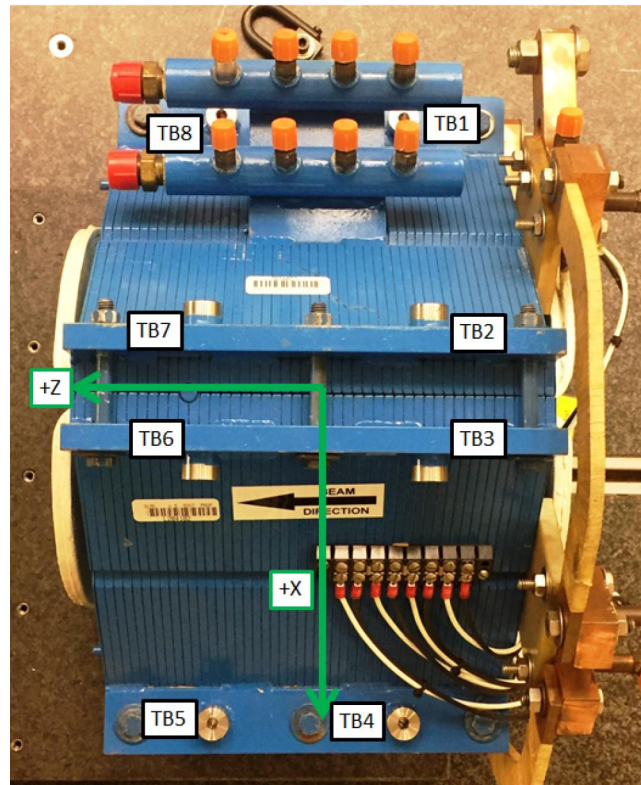
Coordinate Origins

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



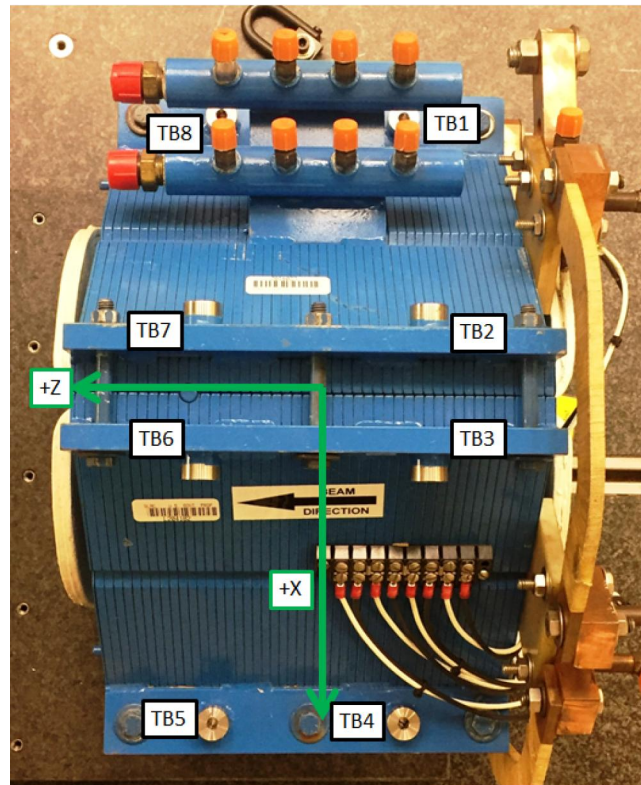
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0634	2.6755	-2.1527
TB 2	-2.6846	7.0485	-2.1454
TB 3	2.6778	7.0424	-2.1692
TB 4	7.0404	2.6716	-2.1935
TB 5	7.0594	2.6720	2.1472
TB 6	2.6808	7.0585	2.1577
TB 7	-2.6715	7.0533	2.1606
TB 8	-7.0567	2.6714	2.1842

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

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Tooling Ball Locations



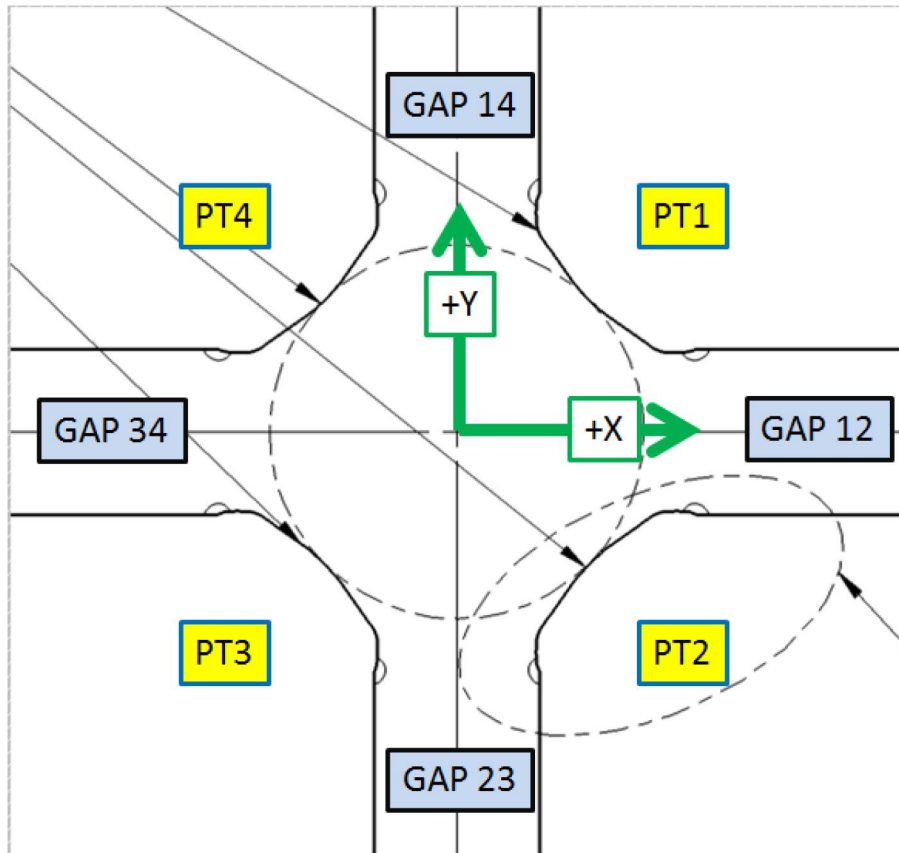
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0632	1.9887	-2.1529
TB 2	-1.9971	7.0490	-2.1492
TB 3	1.9903	7.0424	-2.1676
TB 4	7.0399	1.9833	-2.1930
TB 5	7.0583	1.9843	2.1488
TB 6	1.9931	7.0568	2.1588
TB 7	-1.9835	7.0547	2.1585
TB 8	-7.0545	1.9843	2.1818

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

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Pole Tip Gap Measurements



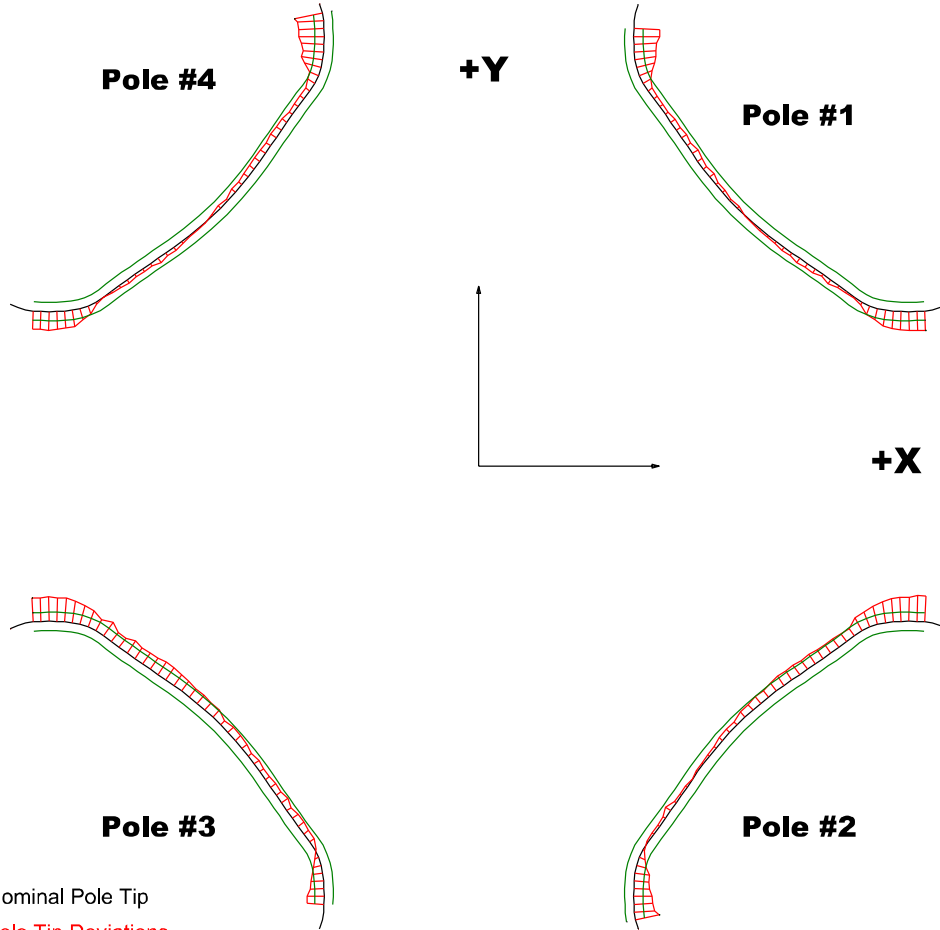
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02556	2.02479
PT Distance 2-4	2.026	2.02558	2.02481
Gap 1-2	0.8602	0.85331	0.85424
Gap 2-3	0.8602	0.8615	0.85993
Gap 3-4	0.8602	0.8532	0.85586
Gap 1-4	0.8602	0.86319	0.85979

Dimensions in Inch

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Mfg. S/N : #28

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

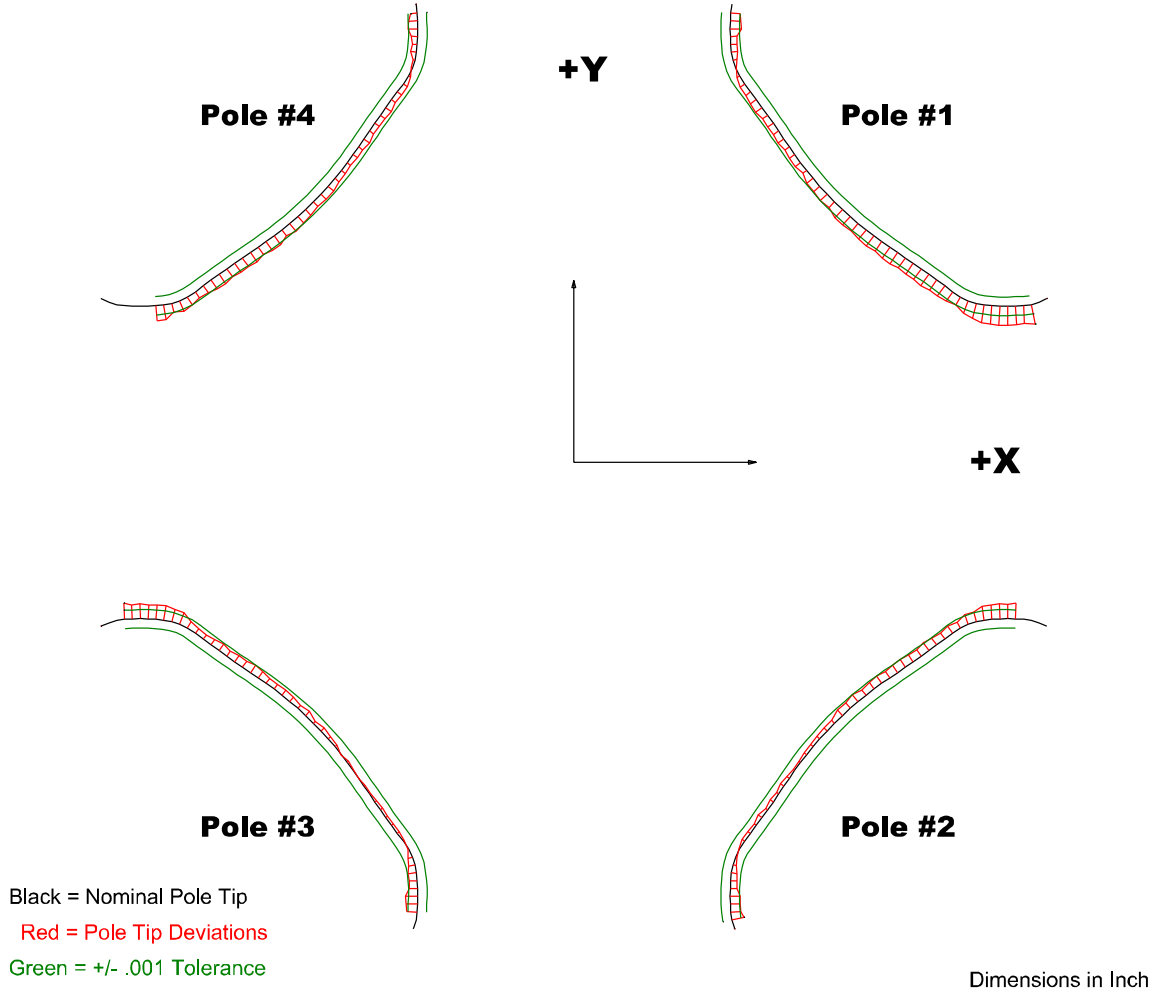
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00284	-0.00268	-0.00186	-0.00313
Max. Dev.	0.00213	0.00283	0.00265	0.00206

Barcode # : 4197

Mfg. S/N : #28

Composite Best-fit of Pole Tips, Upstream



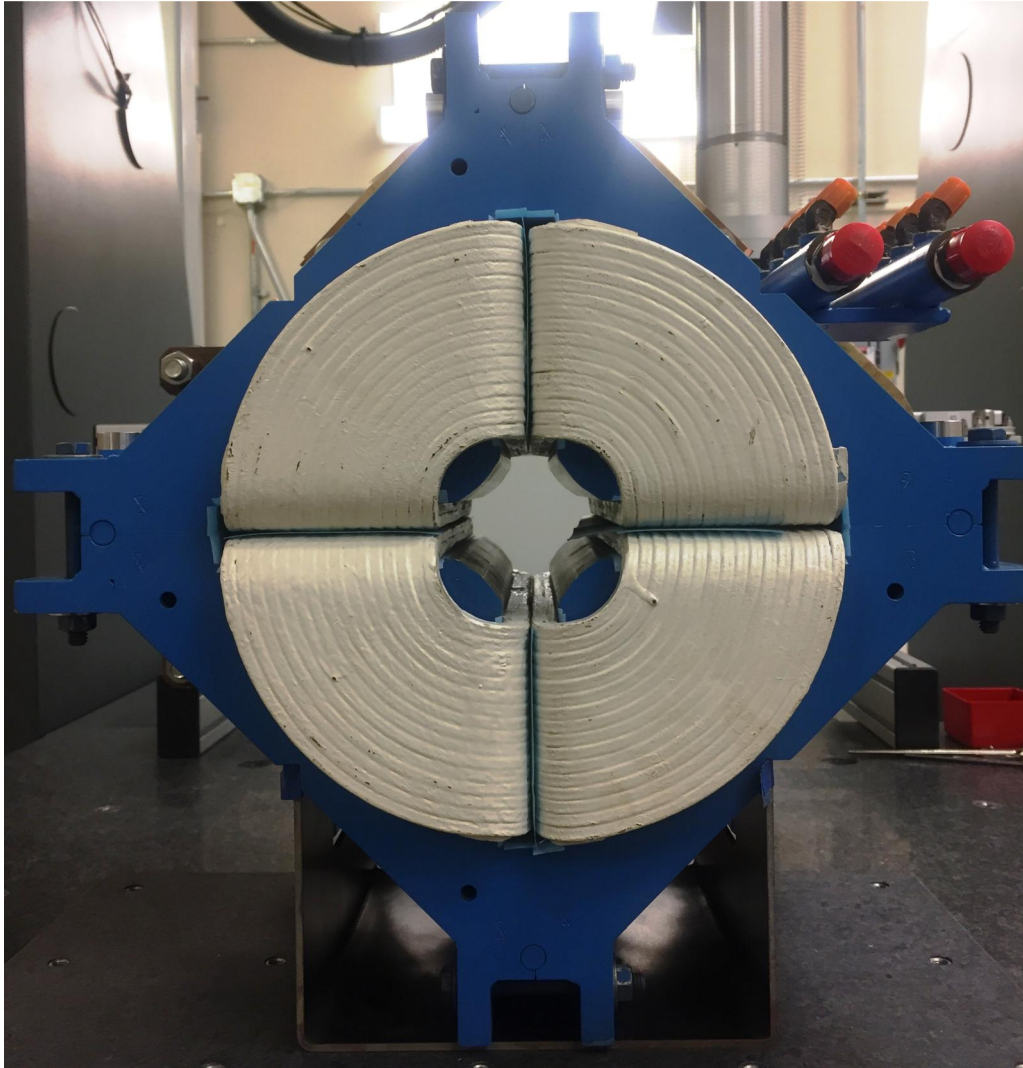
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00122	-0.00136	-0.00138	-0.00106
Max. Dev.	0.00213	0.0017	0.00177	0.00165

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Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.03597
Angle in Milliradians : 0.62773

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