

LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-30
Barcode # : 4209
Mfg. S/N : MFG SN 03

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.

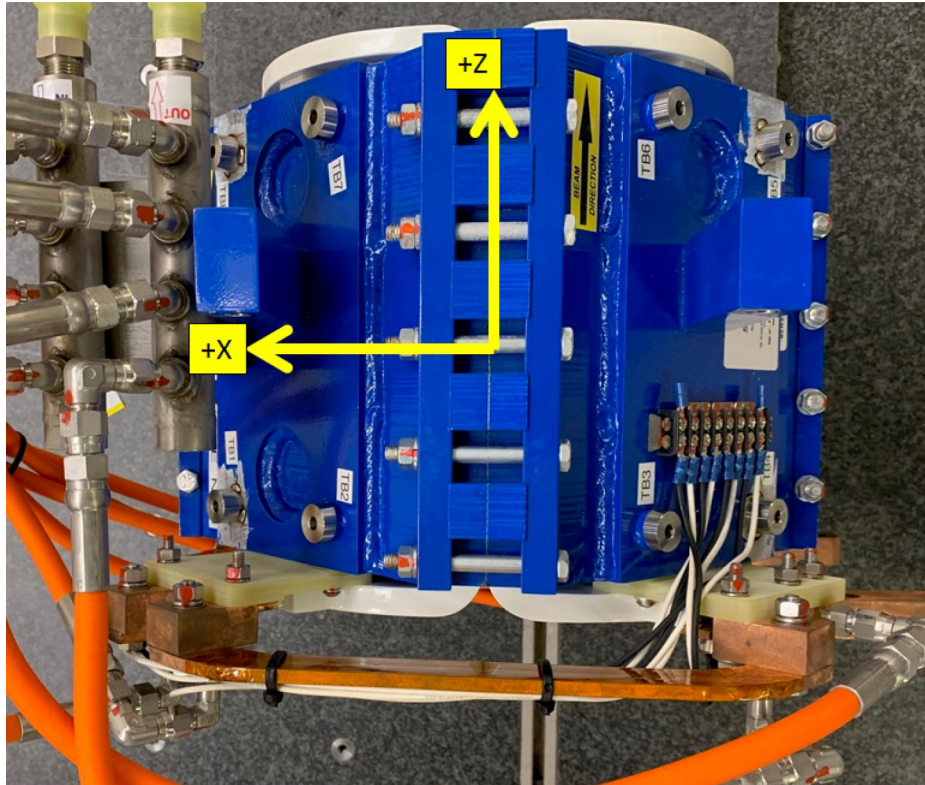
Coordinate Origins

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



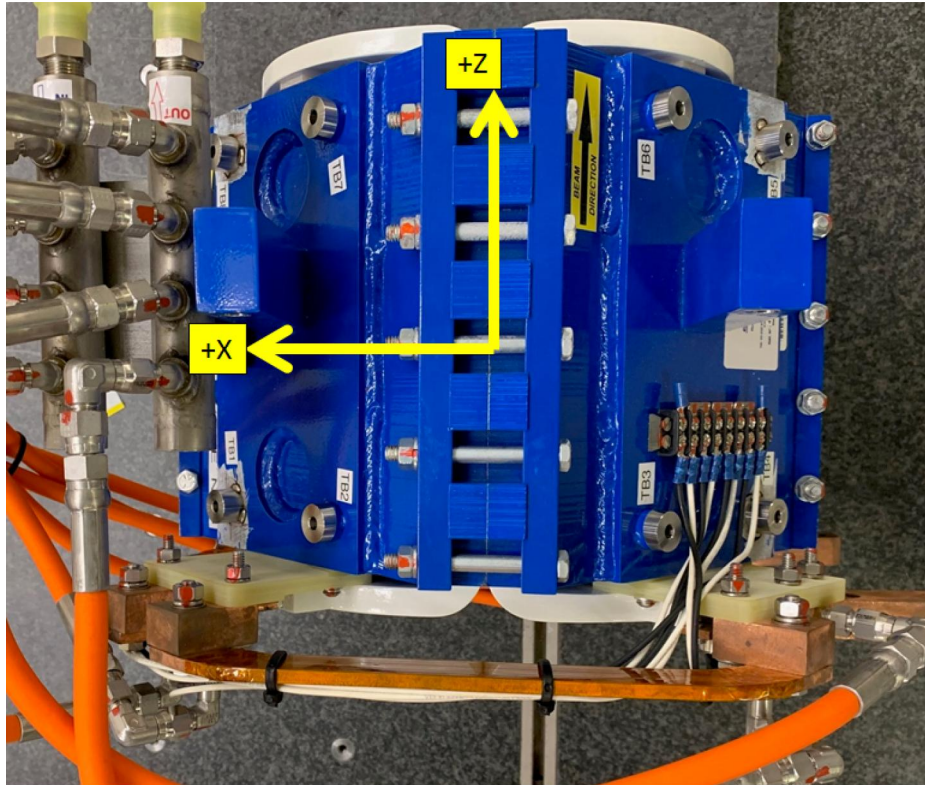
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	6.4938	4.0133	-3.7167
TB 2	3.9564	6.4809	-3.7446
TB 3	-3.9908	6.4602	-3.7459
TB 4	-6.5058	3.9784	-3.7483
TB 5	-6.4811	3.9821	3.7086
TB 6	-3.9867	6.4599	3.7432
TB 7	3.9577	6.4772	3.7347
TB 8	6.5298	3.9708	3.7157

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

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Tooling Ball Locations



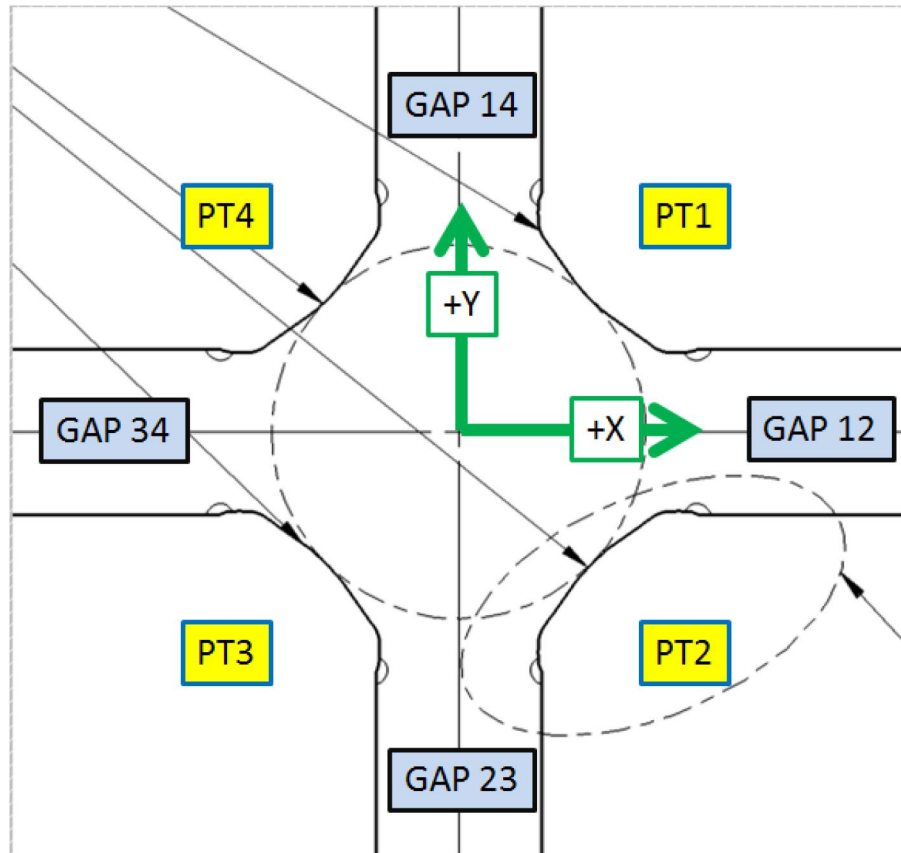
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	6.0092	3.5264	-3.7170
TB 2	3.4708	5.9939	-3.7447
TB 3	-3.5040	5.9744	-3.7454
TB 4	-6.0178	3.4943	-3.7530
TB 5	-5.9943	3.4969	3.7090
TB 6	-3.5003	5.9740	3.7437
TB 7	3.4718	5.9909	3.7337
TB 8	6.0439	3.4848	3.7170

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

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Pole Tip Gap Measurements



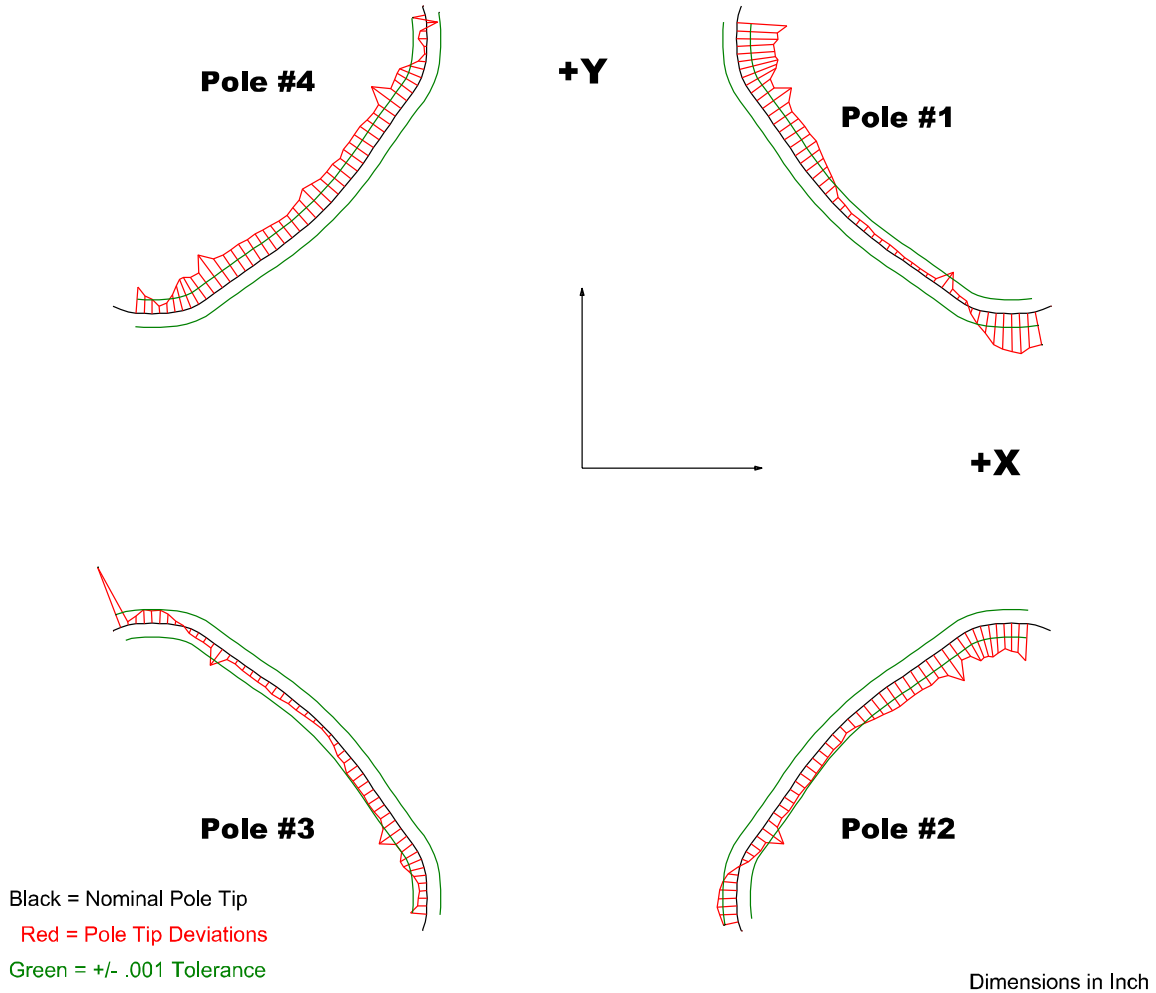
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02667	2.02895
PT Distance 2-4	2.026	2.02877	2.02744
Gap 1-2	0.8602	0.86121	0.85796
Gap 2-3	0.8602	0.85739	0.85804
Gap 3-4	0.8602	0.85803	0.85934
Gap 1-4	0.8602	0.86152	0.86117

Dimensions in Inch

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Composite Best-fit of Pole Tips, Downstream



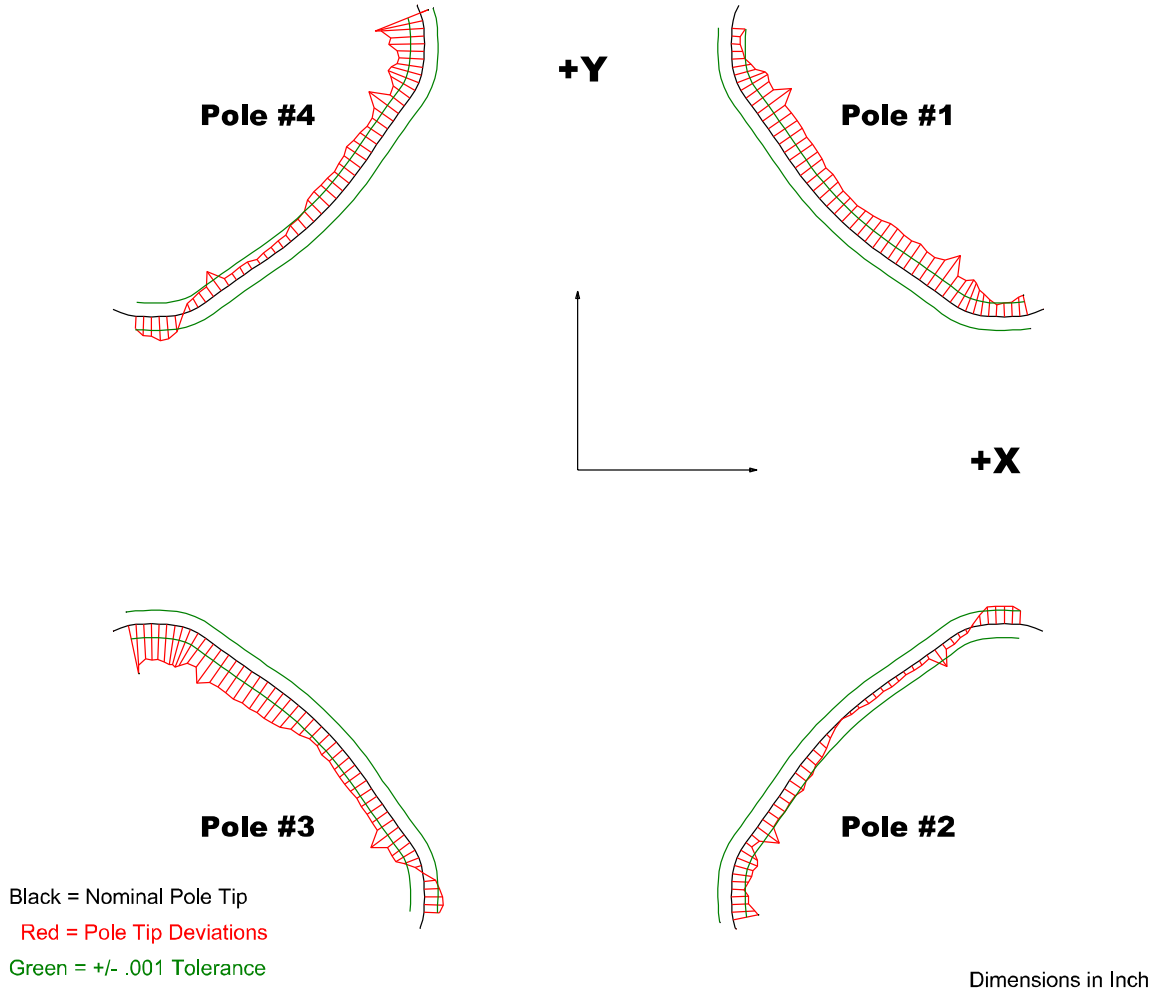
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00361	-0.00283	-0.00195	-0.00293
Max. Dev.	0.00292	0.00144	0.00466	0.00083

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Composite Best-fit of Pole Tips, Upstream



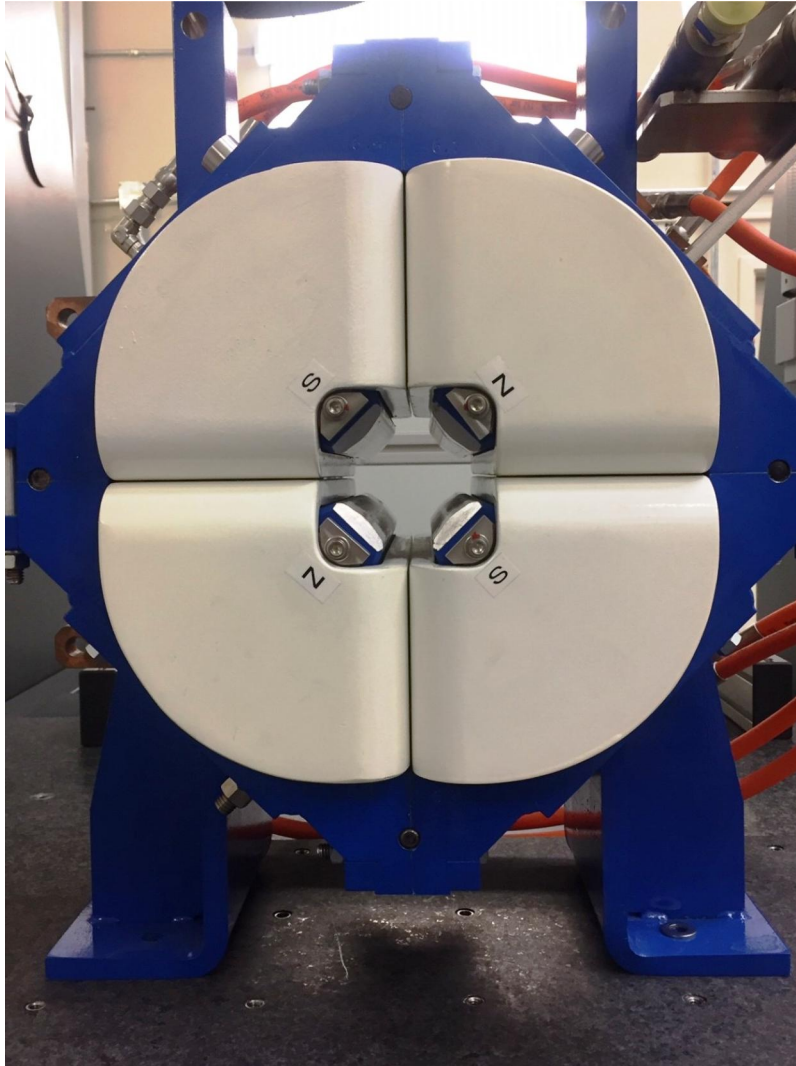
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00322	-0.00198	-0.00358	-0.00357
Max. Dev.	-0.0006	0.00133	0.0014	0.00177

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Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : -0.05297

Angle in Milliradians : -0.92458

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