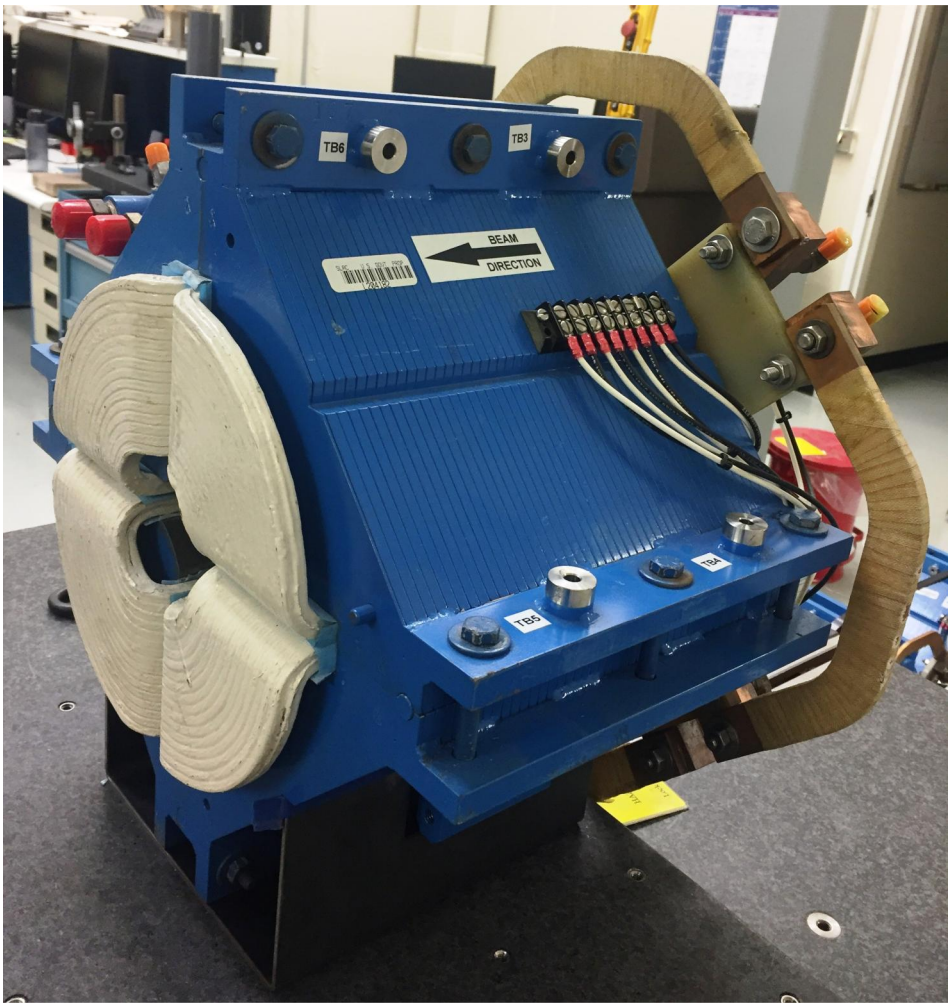
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4182
Mfg. S/N : #31

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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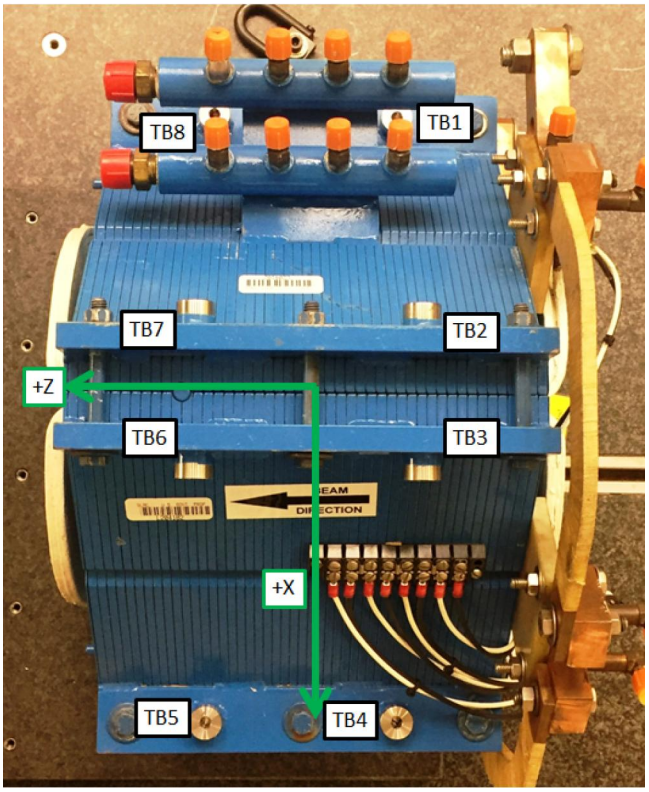
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0954	2.6488	-2.1687
TB 2	-2.7037	7.0200	-2.1596
TB 3	2.6662	7.0146	-2.1644
TB 4	7.0564	2.6437	-2.1868
TB 5	7.0575	2.6704	2.1735
TB 6	2.6674	7.0603	2.1713
TB 7	-2.6903	7.0529	2.1783
TB 8	-7.0775	2.6667	2.1830

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

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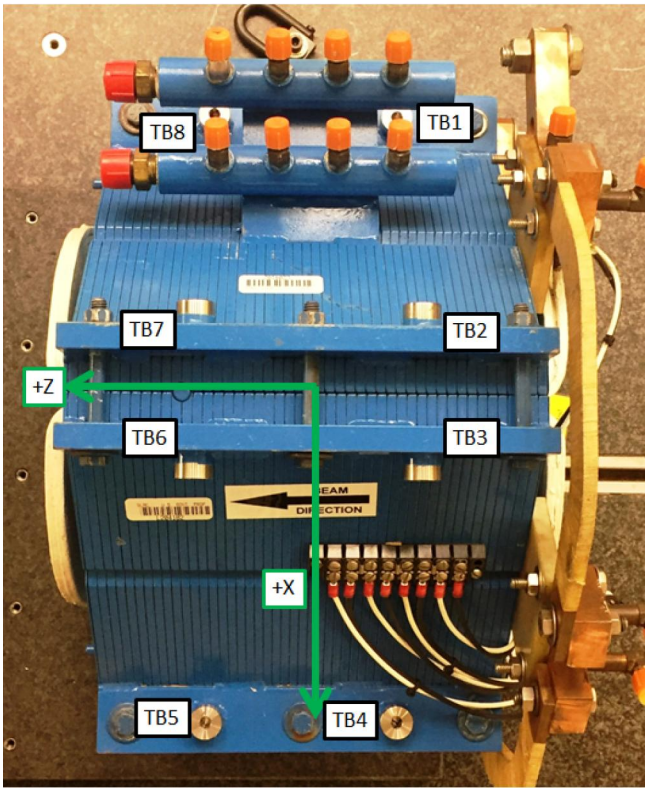
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0949	1.9618	-2.1646
TB 2	-2.0155	7.0207	-2.1614
TB 3	1.9780	7.0149	-2.1643
TB 4	7.0581	1.9562	-2.1818
TB 5	7.0581	1.9819	2.1740
TB 6	1.9793	7.0597	2.1698
TB 7	-2.0030	7.0551	2.1748
TB 8	-7.0780	1.9797	2.1837

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

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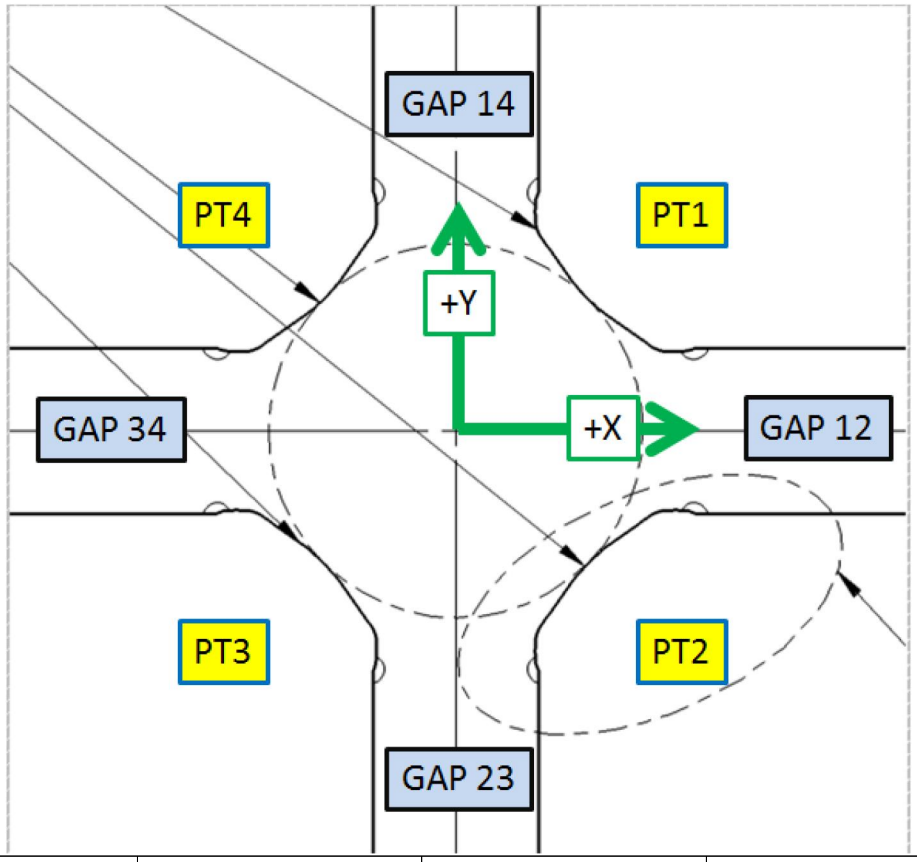
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02819	2.02795
PT Distance 2-4	2.026	2.02752	2.02994
Gap 1-2	0.8602	0.84437	0.85026
Gap 2-3	0.8602	0.87497	0.87565
Gap 3-4	0.8602	0.84419	0.84497
Gap 1-4	0.8602	0.87796	0.87981

Dimensions in Inch

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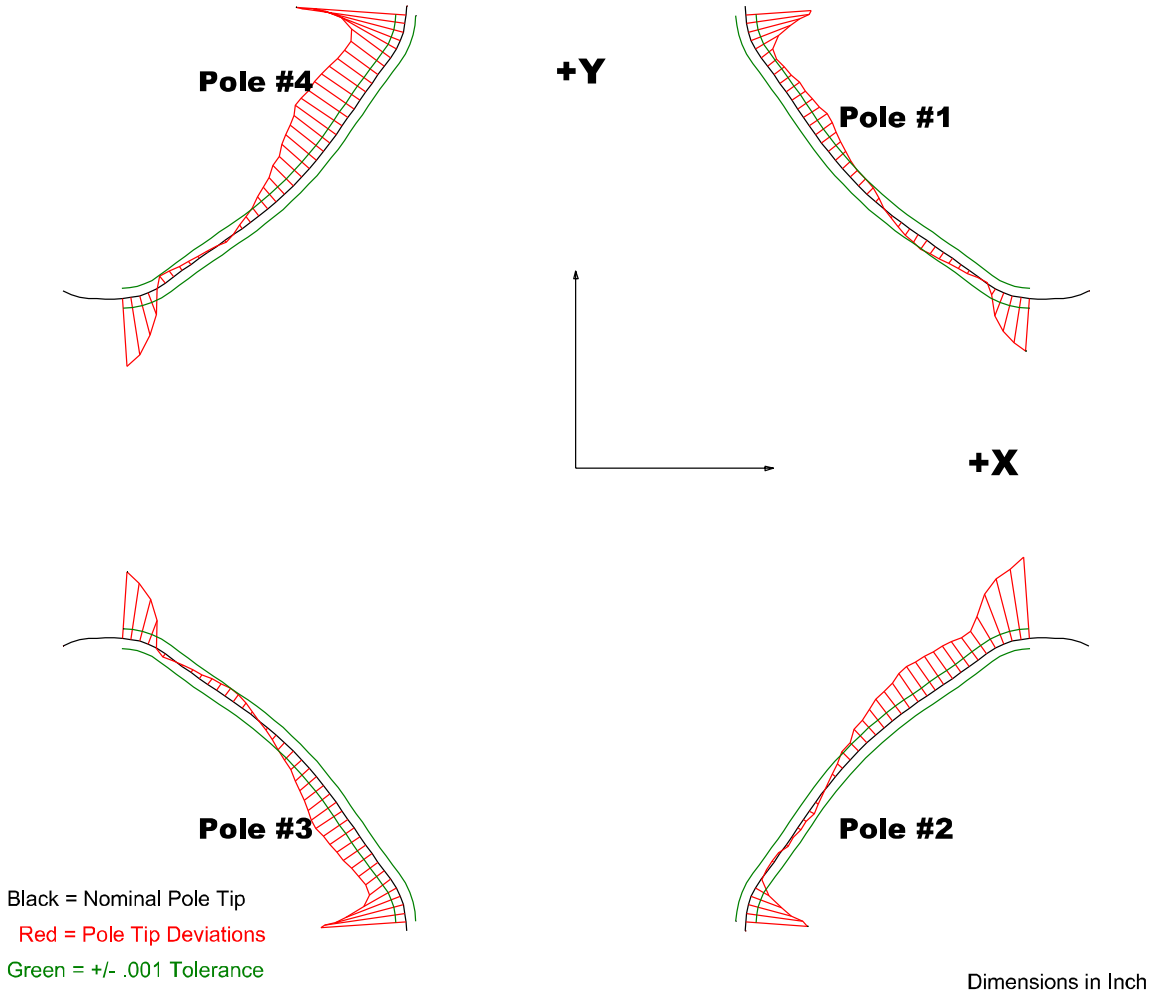
Composite Best-fit of Pole Tips, Downstream



Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00655	-0.00614	-0.00851	-0.01101
Max. Dev.	0.00529	0.00811	0.00667	0.00679

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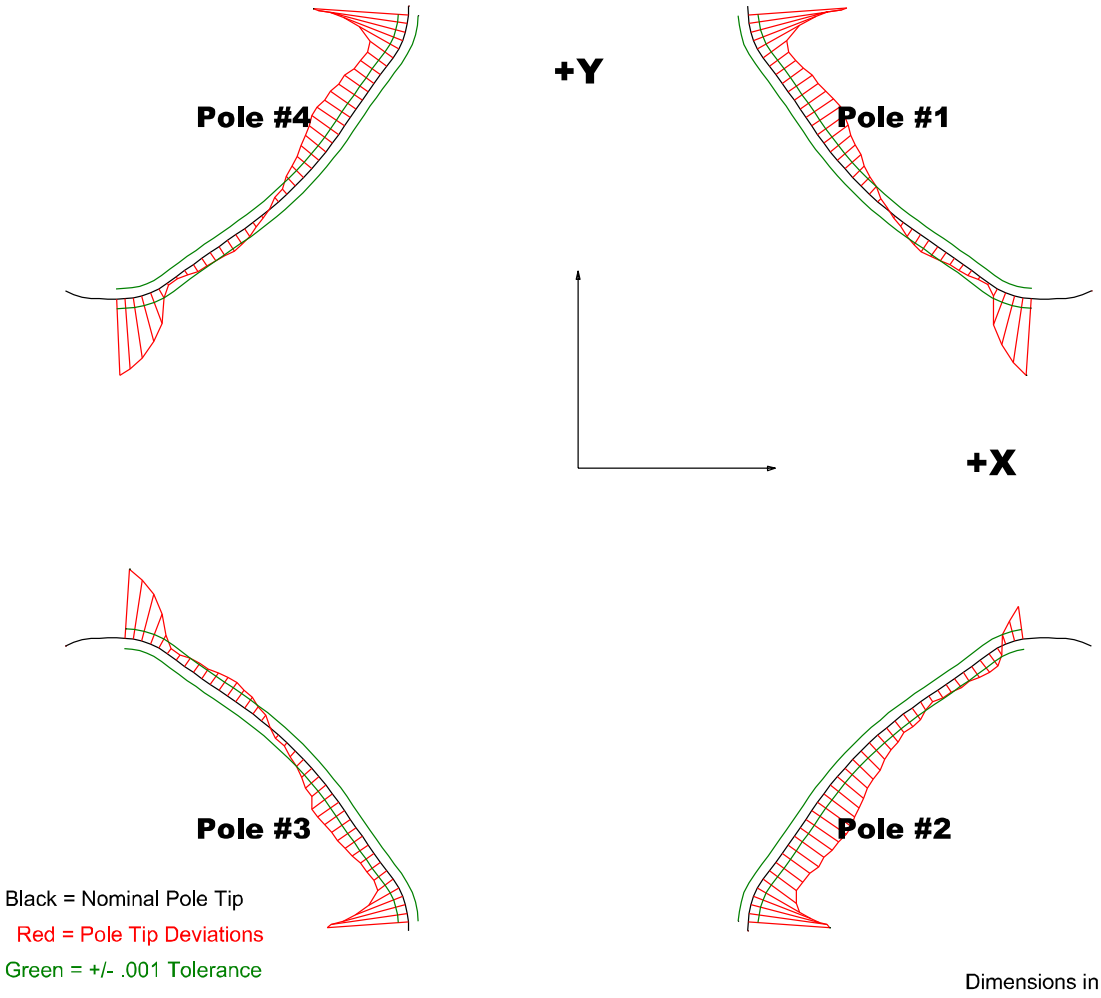
Composite Best-fit of Pole Tips, Upstream



Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00986	-0.00816	-0.00811	-0.00948
Max. Dev.	0.00768	0.00332	0.0069	0.00764

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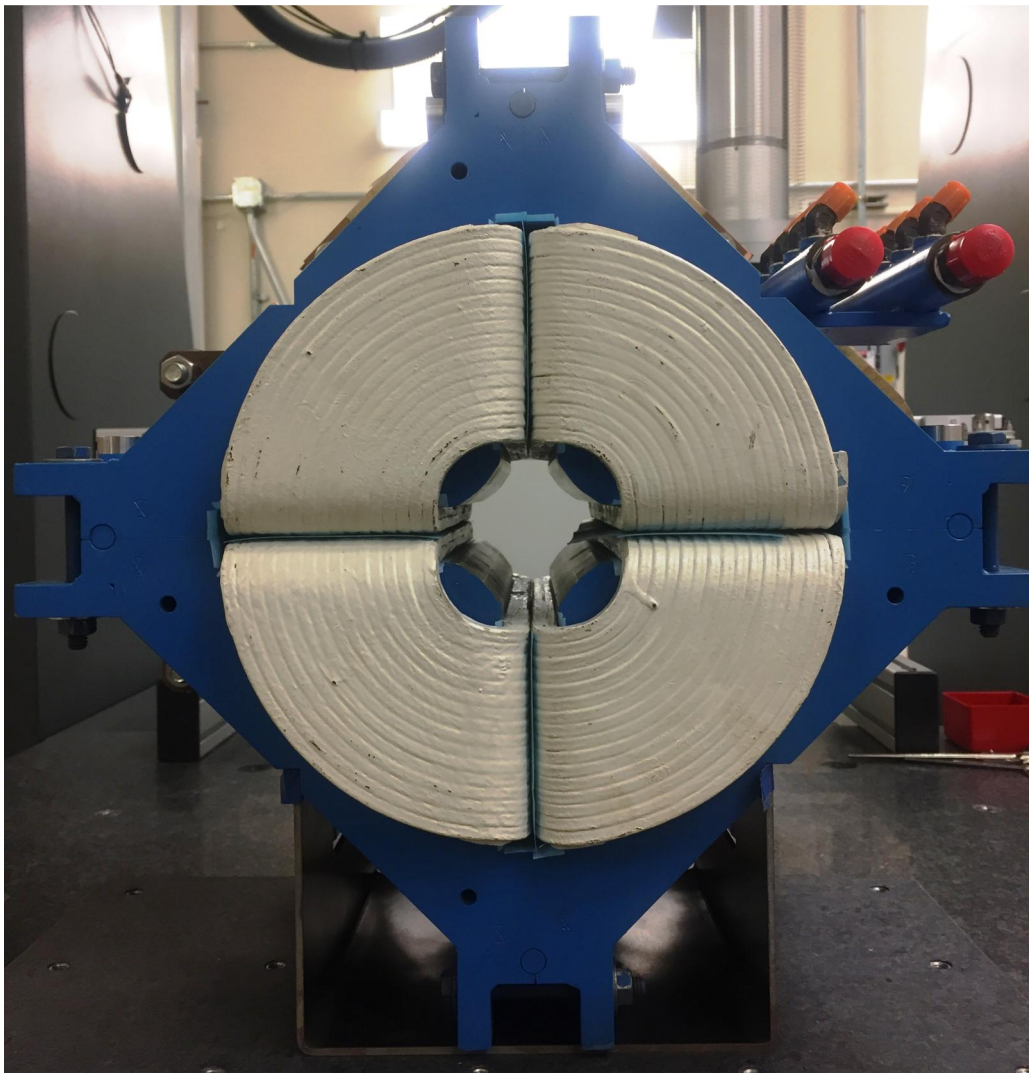
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.04560
Angle in Milliradians :	0.79583

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