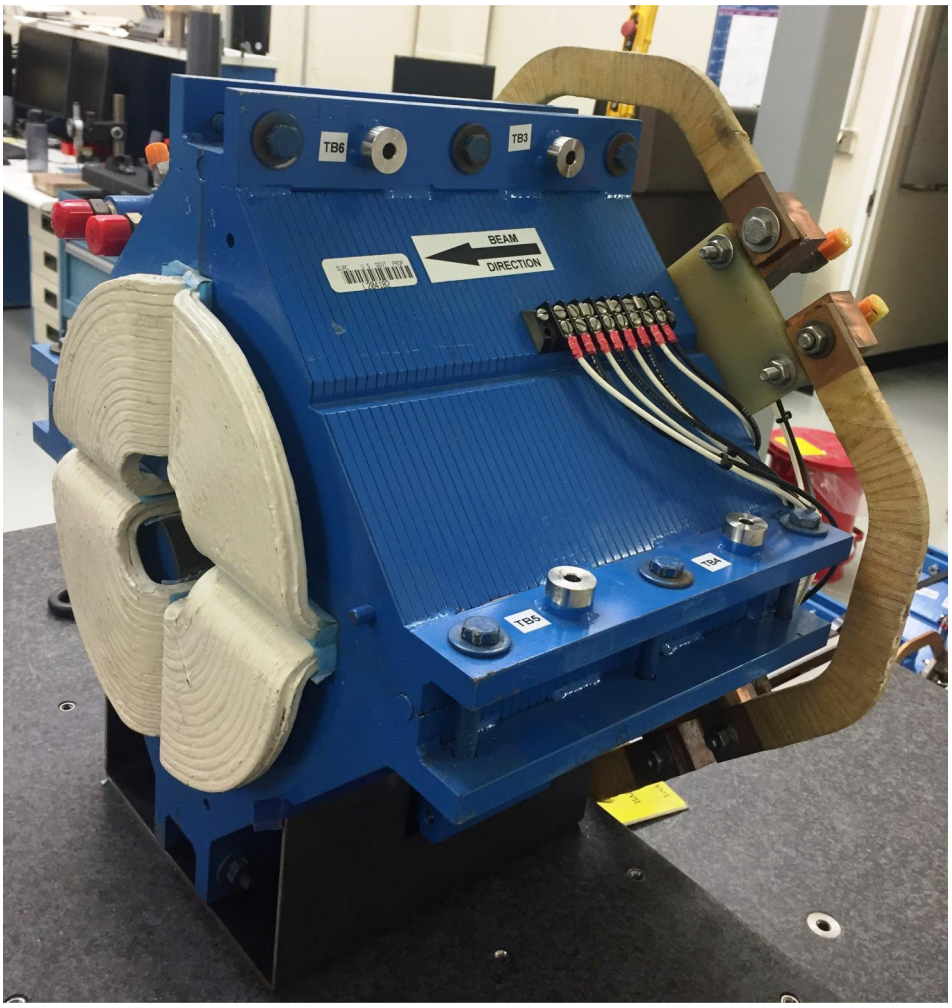
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4206
Mfg. S/N : #08

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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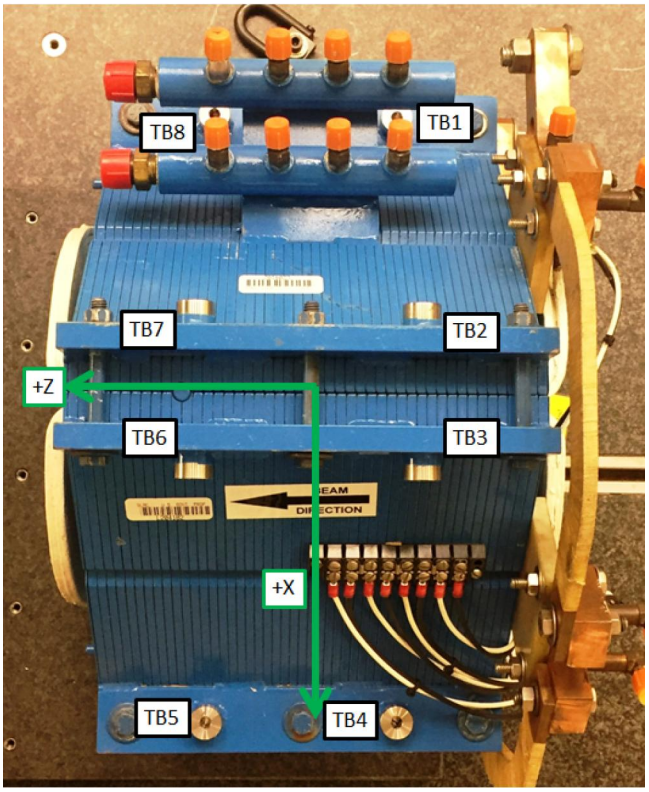
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0776	2.6855	-2.1676
TB 2	-2.6737	7.0676	-2.1734
TB 3	2.6759	7.0791	-2.1840
TB 4	7.0658	2.6807	-2.1823
TB 5	7.0639	2.6850	2.1462
TB 6	2.6814	7.0679	2.1768
TB 7	-2.6710	7.0590	2.1691
TB 8	-7.0600	2.6900	2.1902

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

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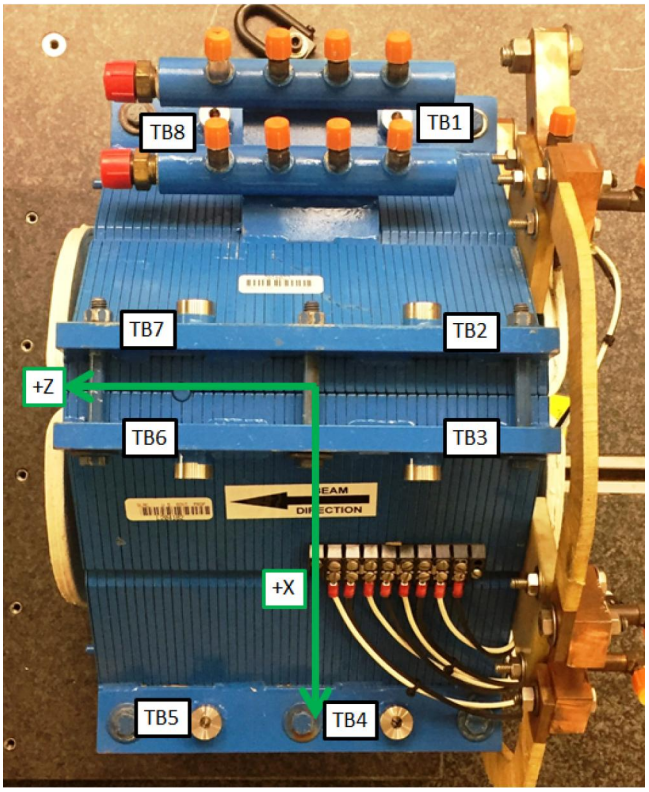
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0726	1.9988	-2.1683
TB 2	-1.9857	7.0666	-2.1750
TB 3	1.9843	7.0721	-2.1830
TB 4	7.0658	1.9932	-2.1812
TB 5	7.0663	1.9977	2.1478
TB 6	1.9930	7.0639	2.1769
TB 7	-1.9833	7.0595	2.1676
TB 8	-7.0573	2.0024	2.1907

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

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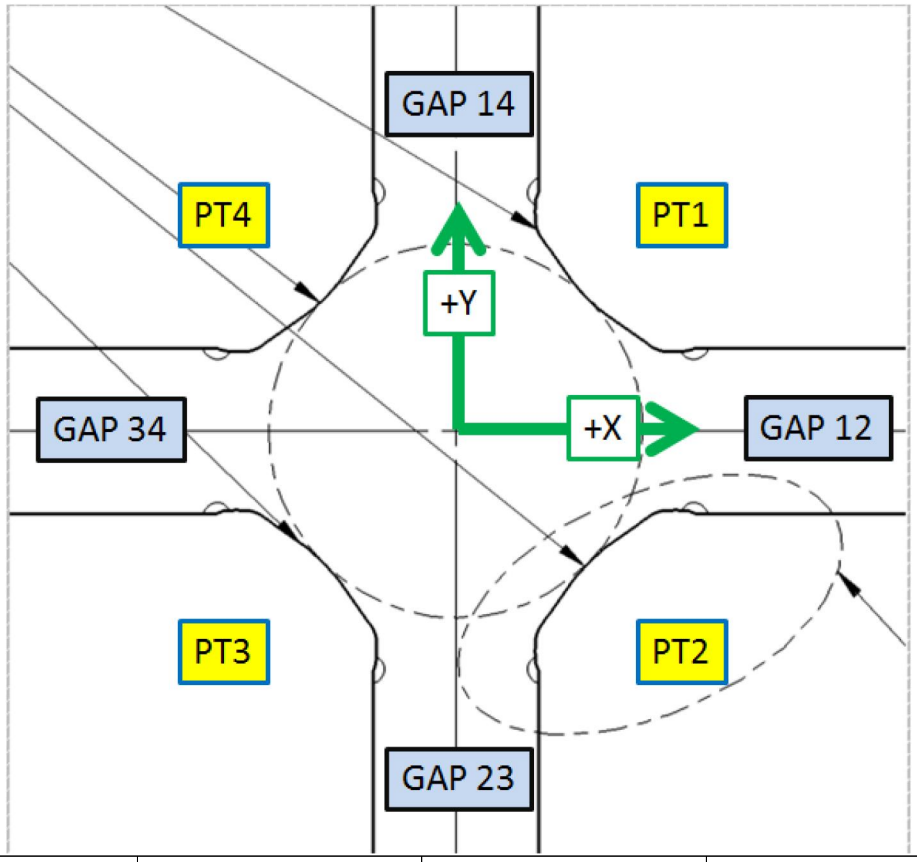
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02742	2.02712
PT Distance 2-4	2.026	2.02751	2.02858
Gap 1-2	0.8602	0.84542	0.84832
Gap 2-3	0.8602	0.87193	0.87181
Gap 3-4	0.8602	0.84662	0.84808
Gap 1-4	0.8602	0.87079	0.8695

Dimensions in Inch

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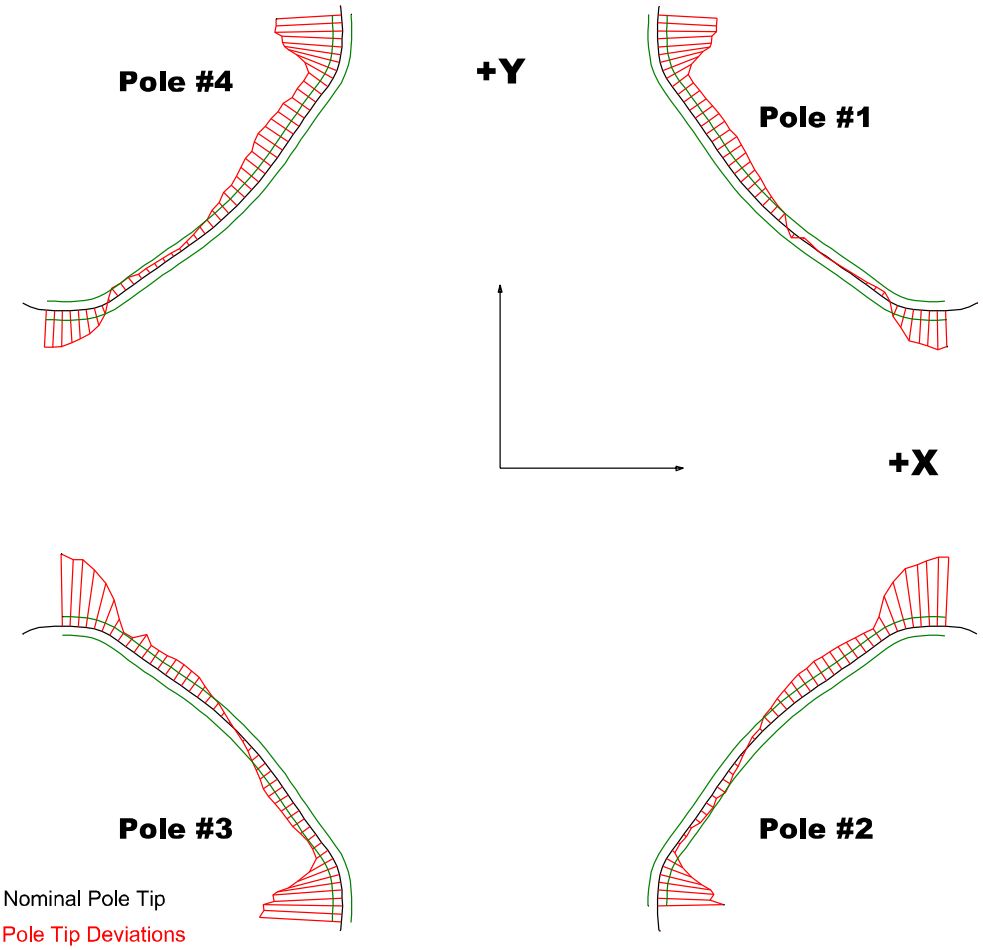
Composite Best-fit of Pole Tips, Downstream



Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00637	-0.00713	-0.00882	-0.00726
Max. Dev.	0.00419	0.00742	0.00771	0.00396

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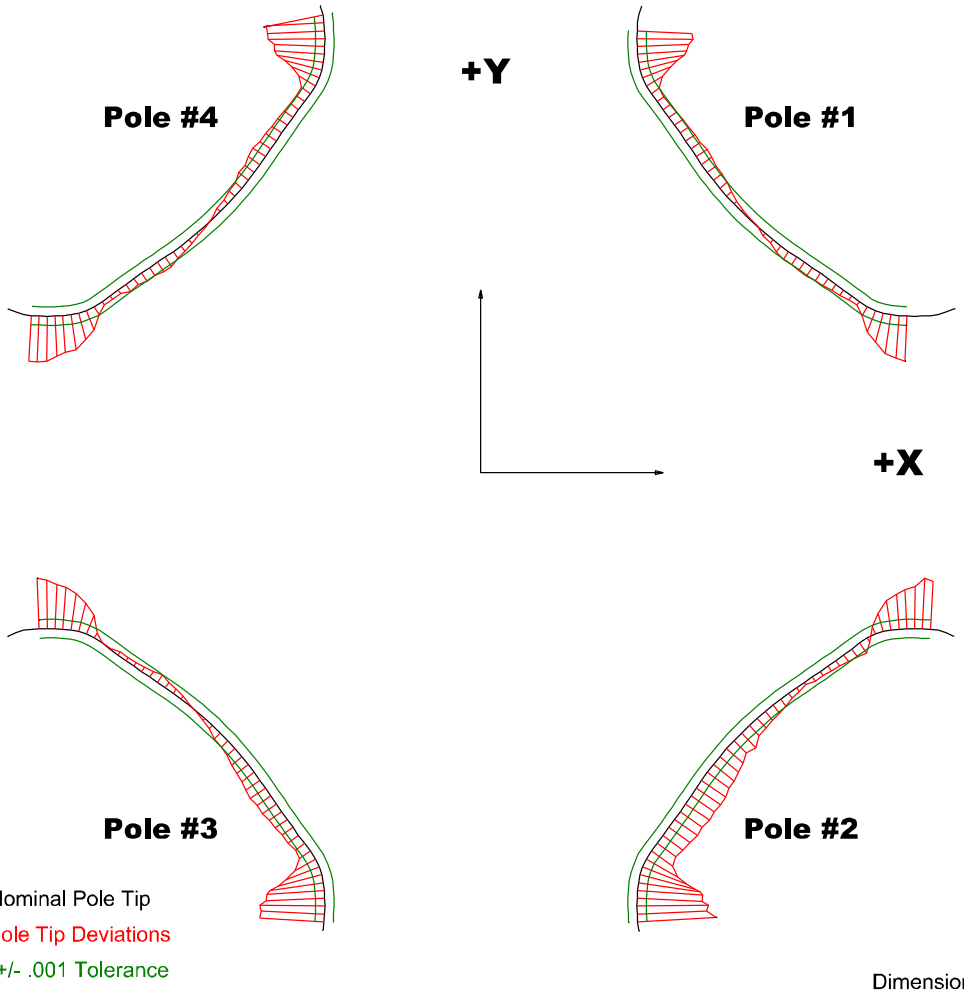
Composite Best-fit of Pole Tips, Upstream



Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00604	-0.0085	-0.00701	-0.00658
Max. Dev.	0.00493	0.00546	0.00548	0.00501

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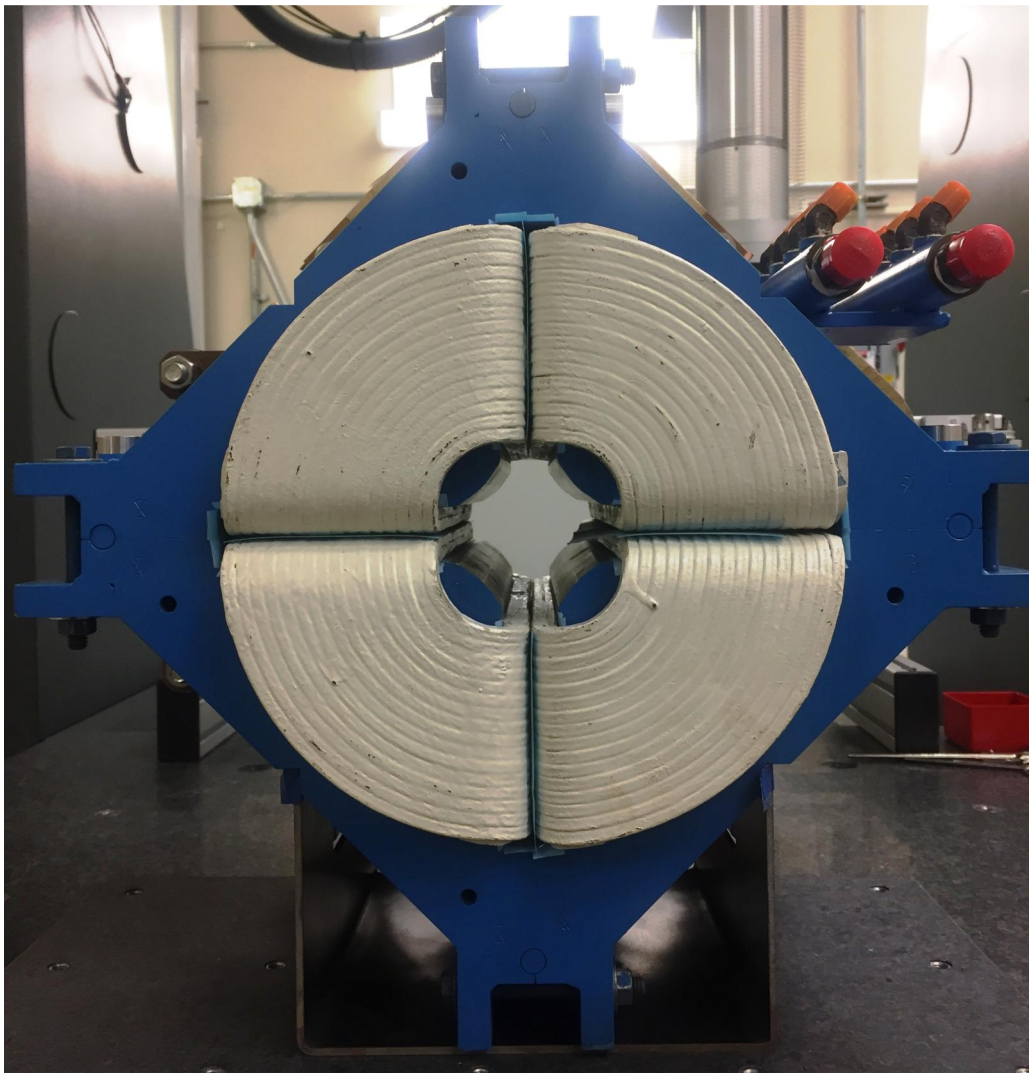
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.01959
Angle in Milliradians :	0.34195

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