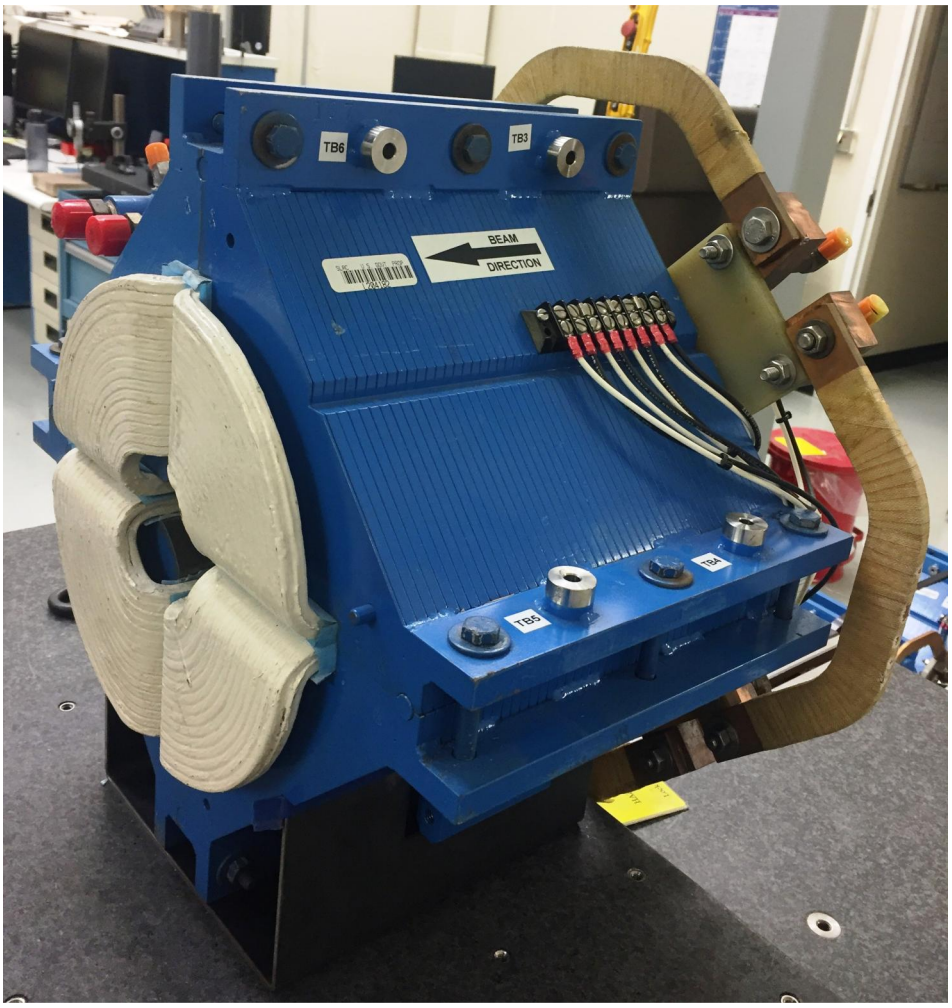
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4198
Mfg. S/N : #02

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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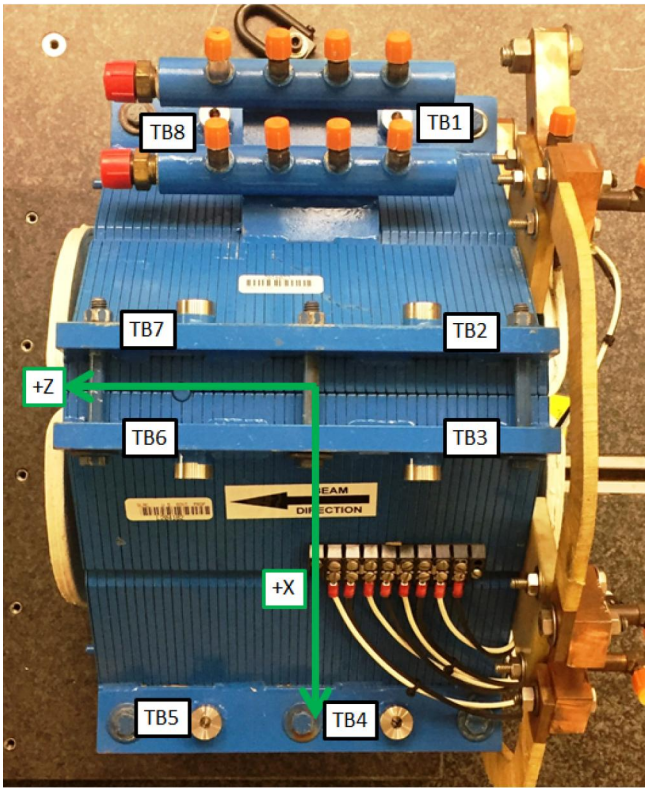
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0405	2.6875	-2.1463
TB 2	-2.6782	7.0509	-2.1687
TB 3	2.6739	7.0469	-2.1662
TB 4	7.0407	2.6718	-2.1759
TB 5	7.0649	2.6759	2.1455
TB 6	2.6801	7.0624	2.1591
TB 7	-2.6709	7.0515	2.1667
TB 8	-7.0388	2.6868	2.1827

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

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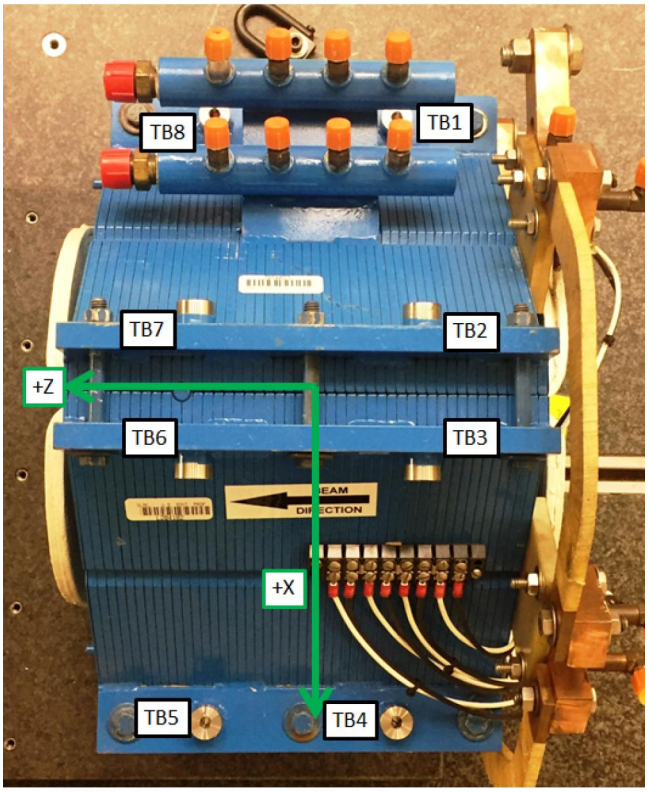
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0458	2.0141	-2.1467
TB 2	-1.9904	7.0510	-2.1709
TB 3	1.9856	7.0467	-2.1656
TB 4	7.0417	1.9839	-2.1761
TB 5	7.0614	1.9885	2.1481
TB 6	1.9922	7.0574	2.1597
TB 7	-1.9834	7.0503	2.1658
TB 8	-7.0435	1.9993	2.1818

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

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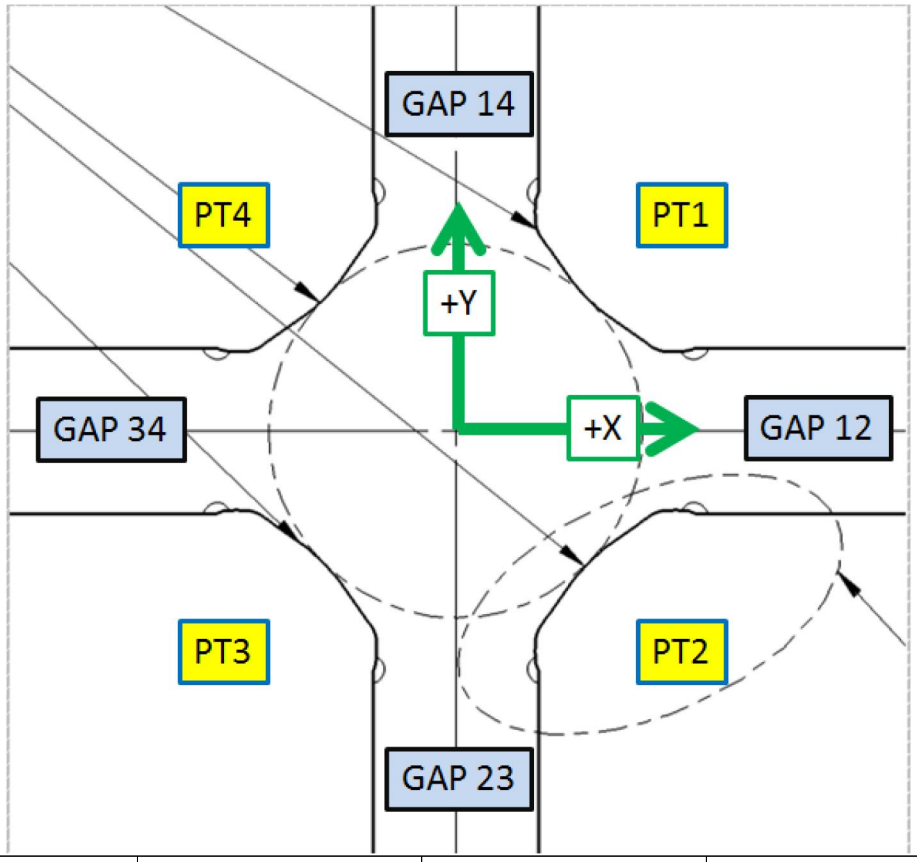
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02503	2.02583
PT Distance 2-4	2.026	2.02529	2.02505
Gap 1-2	0.8602	0.85533	0.85649
Gap 2-3	0.8602	0.85973	0.85992
Gap 3-4	0.8602	0.85594	0.85488
Gap 1-4	0.8602	0.8596	0.85988

Dimensions in Inch

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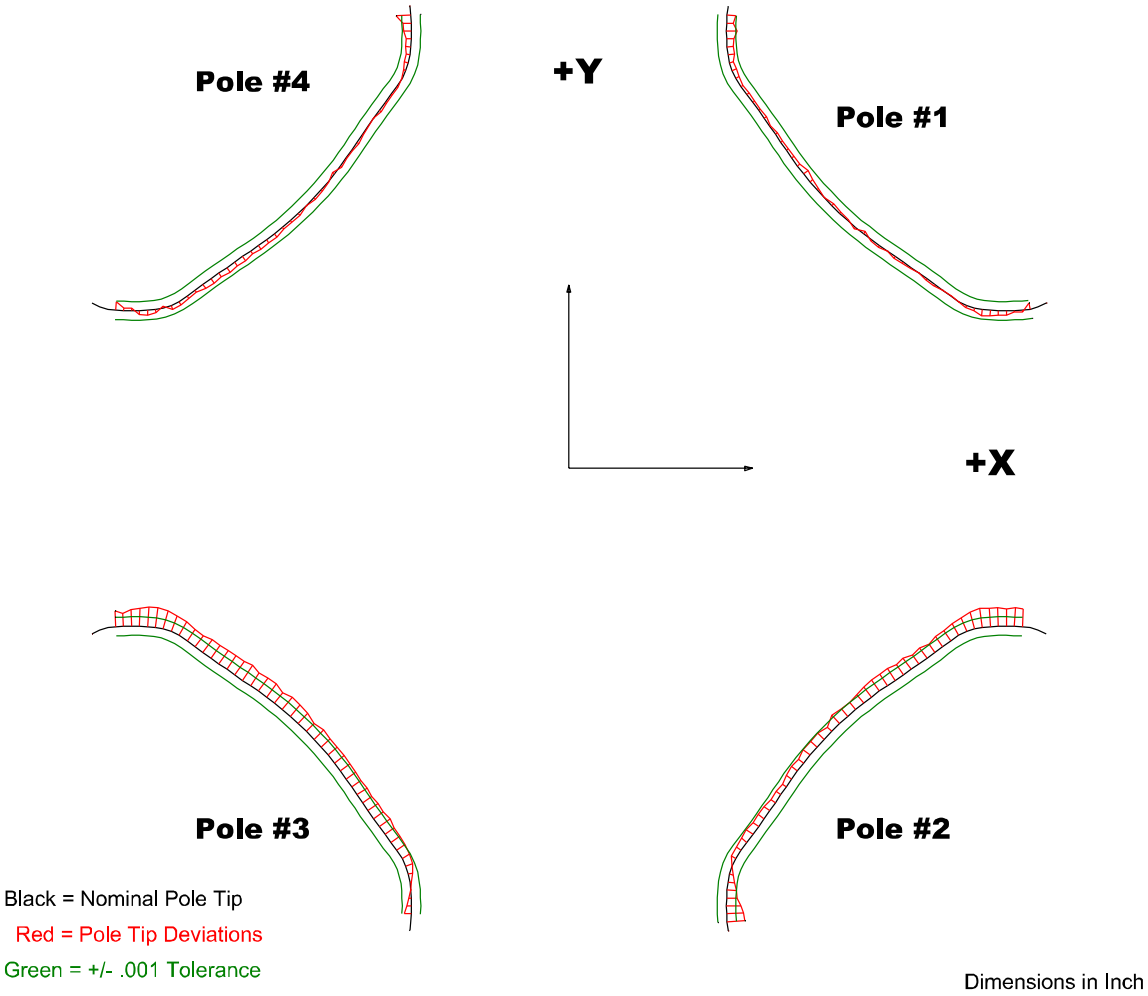
Composite Best-fit of Pole Tips, Downstream



Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00115	-0.00192	-0.00073	-0.00158
Max. Dev.	0.00068	0.0021	0.00211	0.00059

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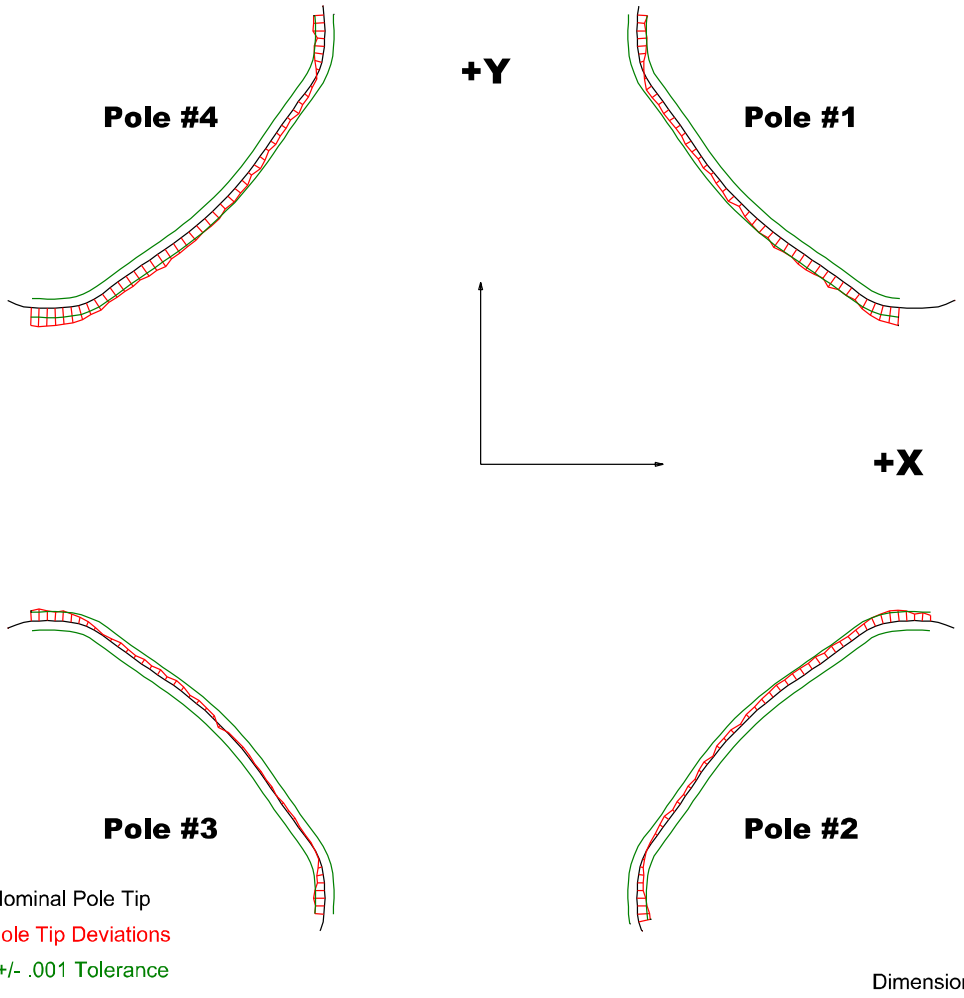
Composite Best-fit of Pole Tips, Upstream



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.	-0.0011	-0.00126	-0.00123	-0.00125
Max. Dev.	0.0019	0.00122	0.00129	0.00202

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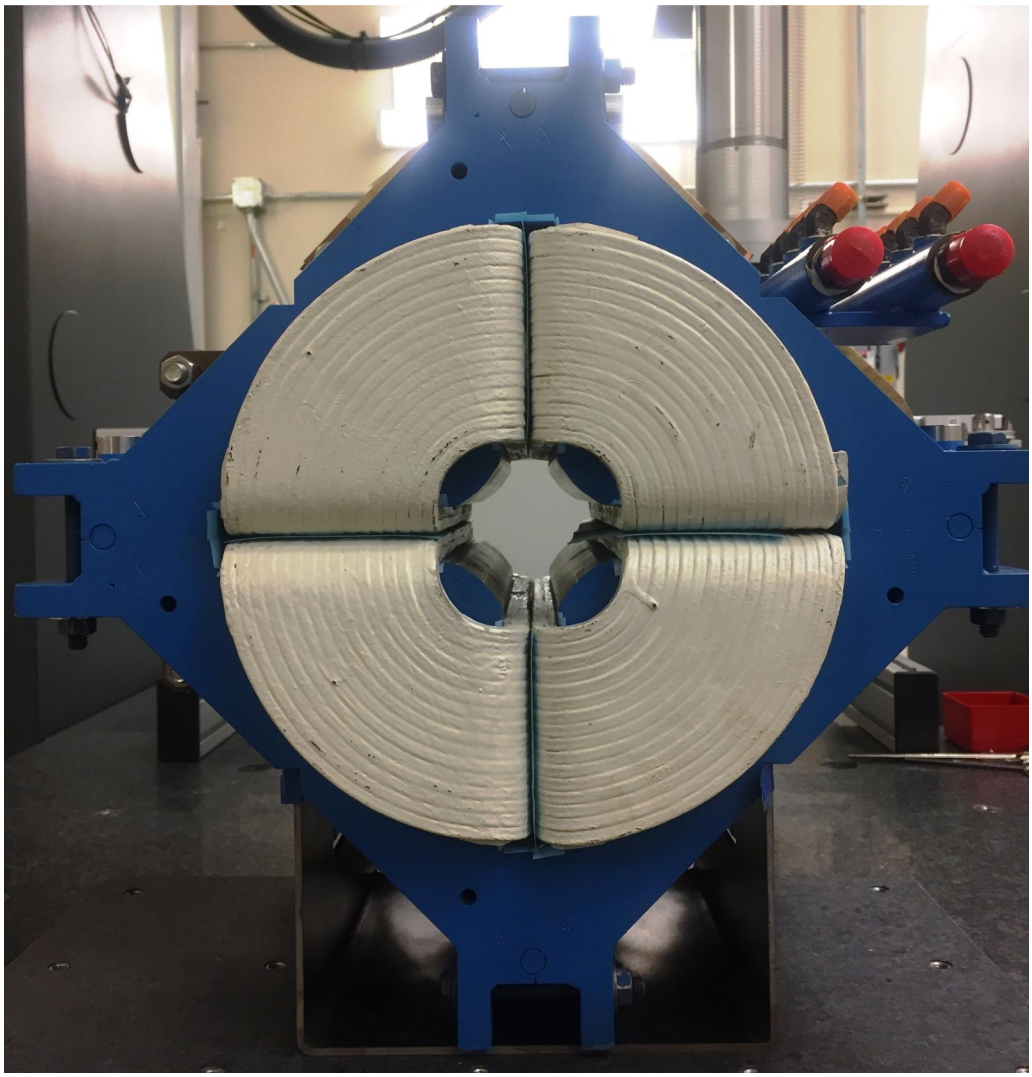
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.07399
Angle in Milliradians :	1.29138

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