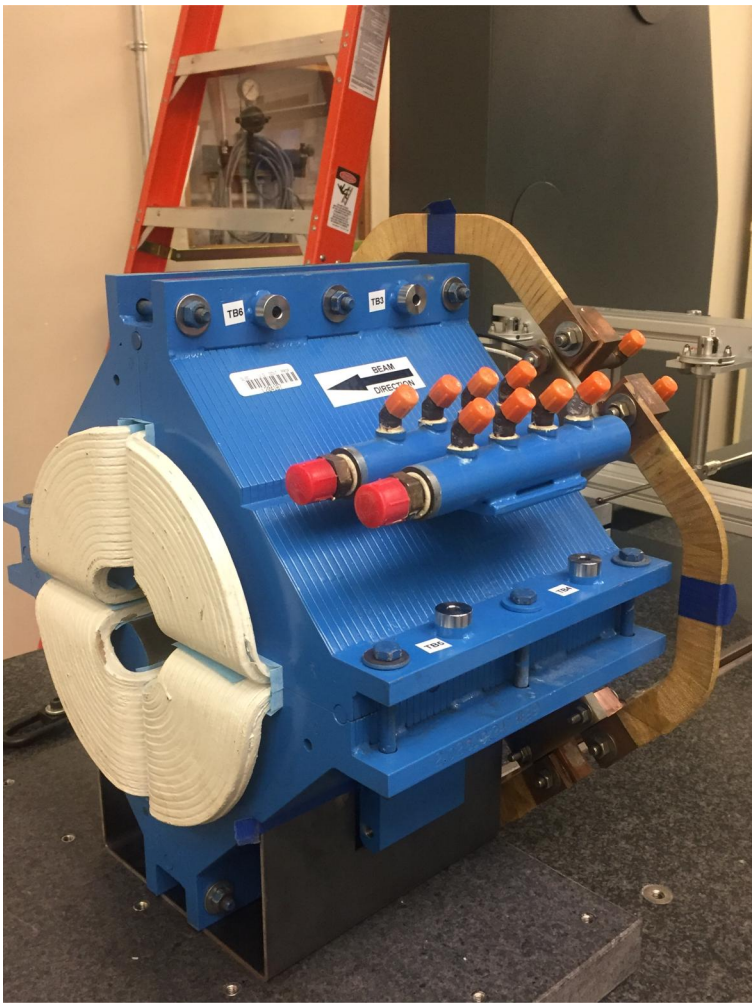
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4200
Mfg. S/N : #05

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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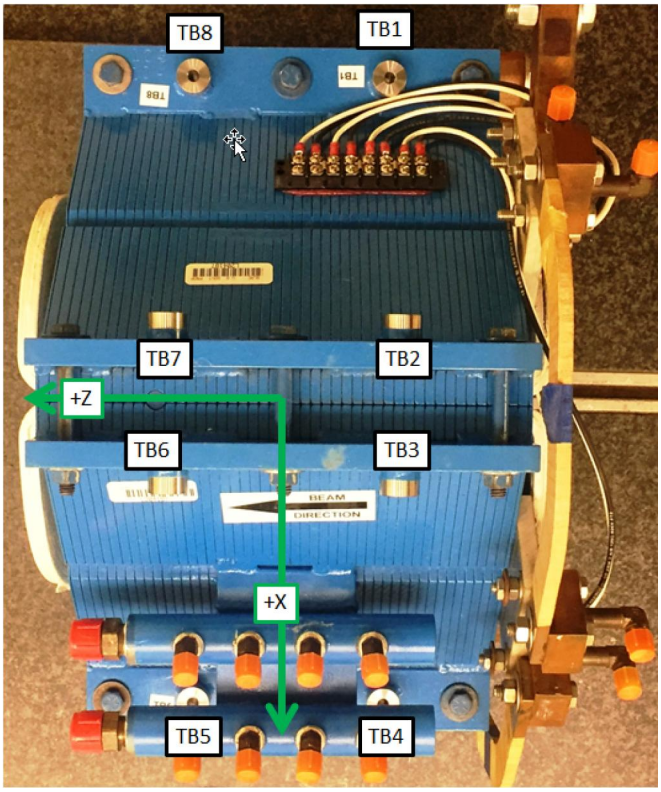
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0726	2.6881	-2.1486
TB 2	-2.6785	7.0654	-2.1568
TB 3	2.6820	7.0607	-2.1685
TB 4	7.0555	2.6873	-2.1730
TB 5	7.0582	2.6829	2.1378
TB 6	2.6880	7.0598	2.1601
TB 7	-2.6662	7.0637	2.1774
TB 8	-7.0542	2.6872	2.1763

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

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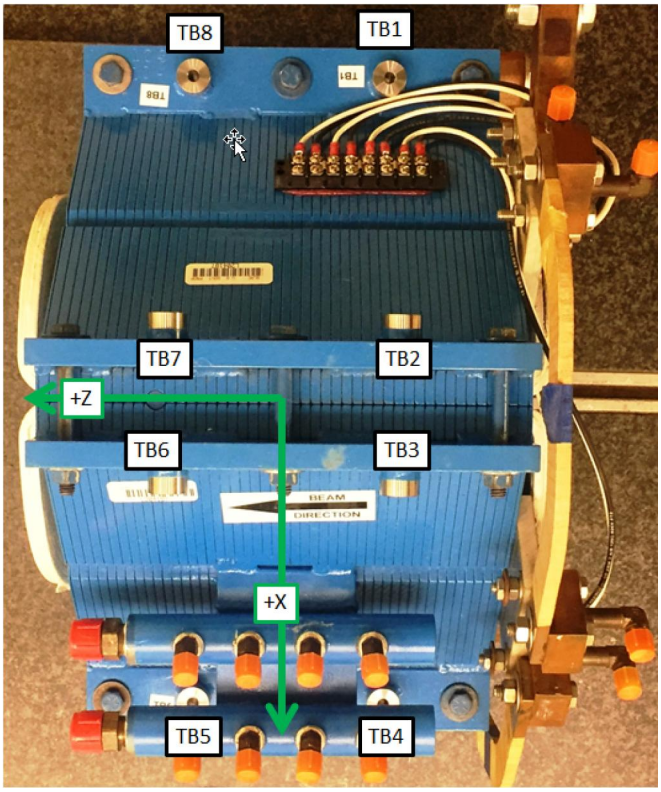
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0665	1.9962	-2.1477
TB 2	-1.9903	7.0625	-2.1595
TB 3	1.9943	7.0645	-2.1670
TB 4	7.0518	2.0002	-2.1729
TB 5	7.0556	1.9958	2.1376
TB 6	2.0012	7.0583	2.1787
TB 7	-1.9780	7.0697	2.1564
TB 8	-7.0499	1.9997	2.1762

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

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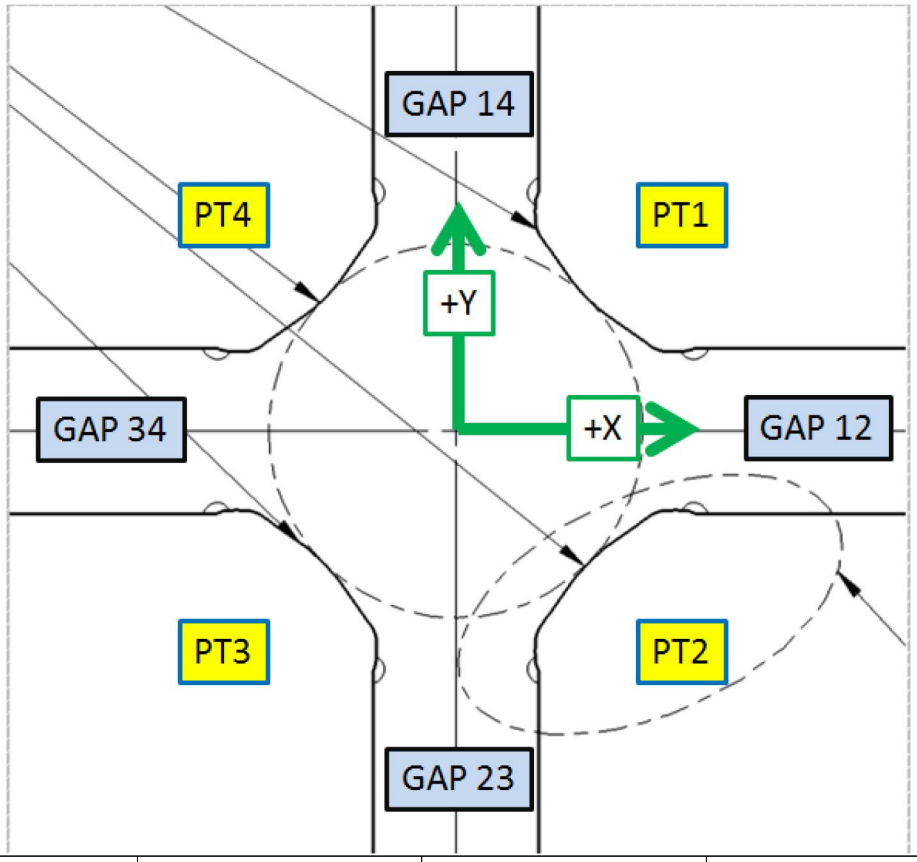
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02688	2.02872
PT Distance 2-4	2.026	2.02677	2.02859
Gap 1-2	0.8602	0.85715	0.8582
Gap 2-3	0.8602	0.85926	0.86208
Gap 3-4	0.8602	0.85756	0.85839
Gap 1-4	0.8602	0.85885	0.86008

Dimensions in Inch

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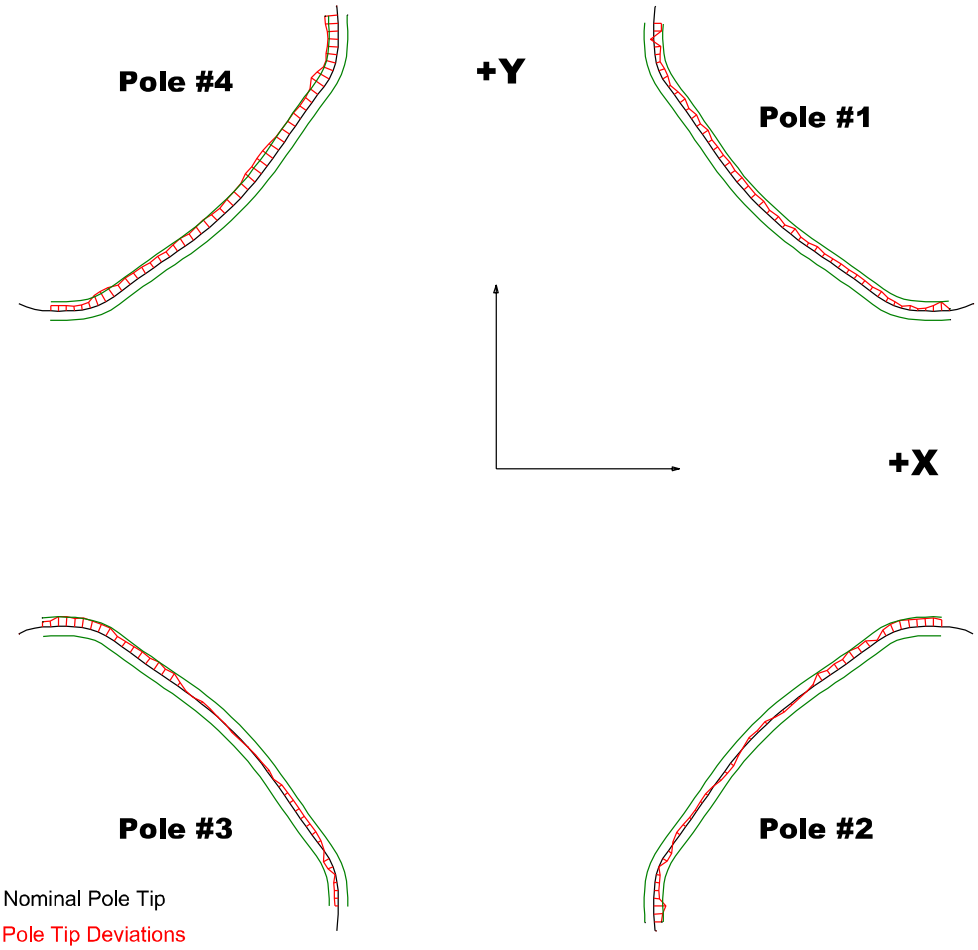
Composite Best-fit of Pole Tips, Downstream



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.	-0.00096	-0.00135	-0.00072	-0.00168
Max. Dev.	0.00033	0.00097	0.00106	-0.00046

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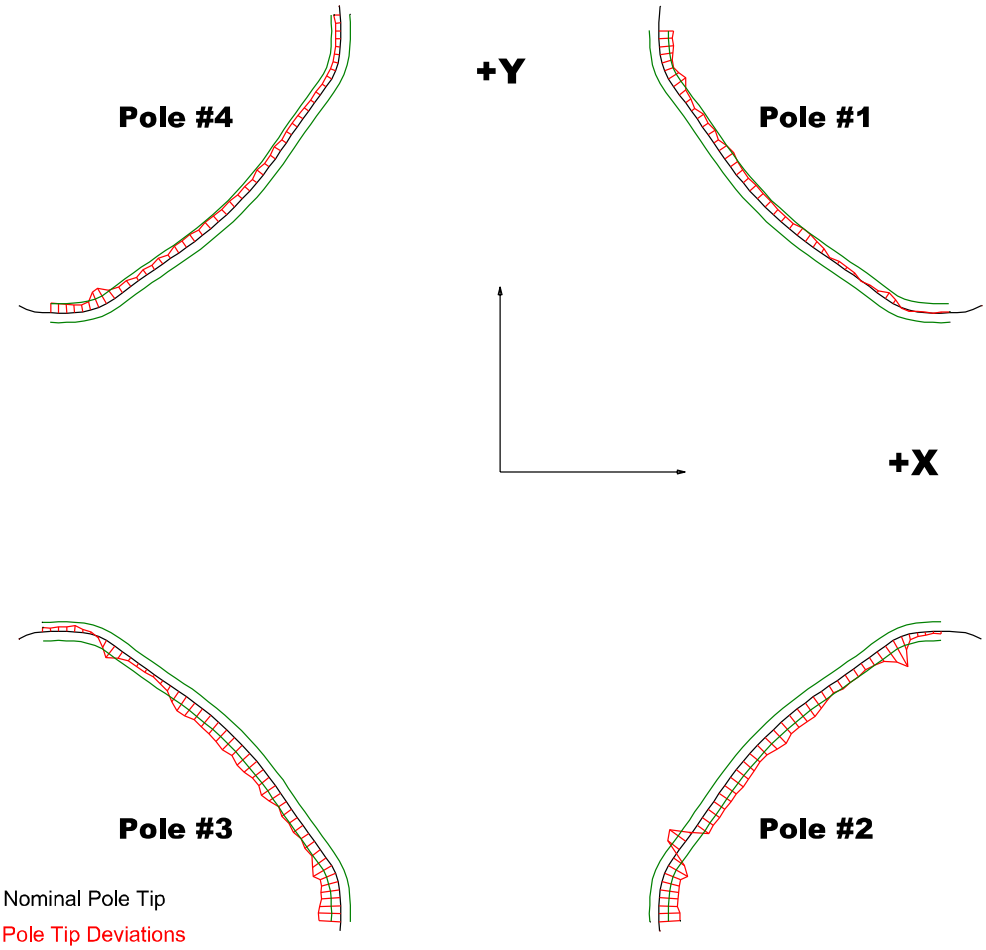
Composite Best-fit of Pole Tips, Upstream



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.	-0.0016	-0.00315	-0.00238	-0.0019
Max. Dev.	0.00014	0.0021	0.00067	-0.00043

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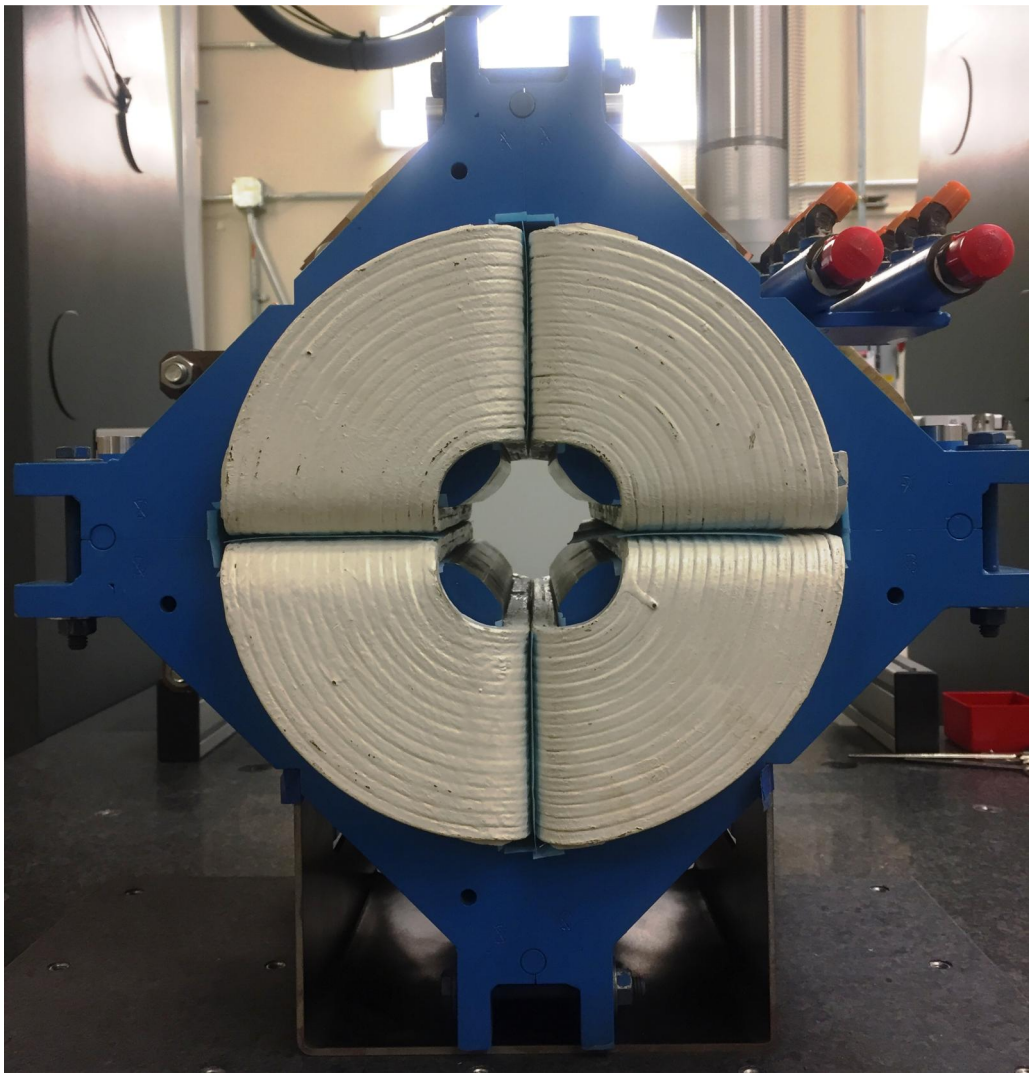
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.00391
Angle in Milliradians :	0.06821

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