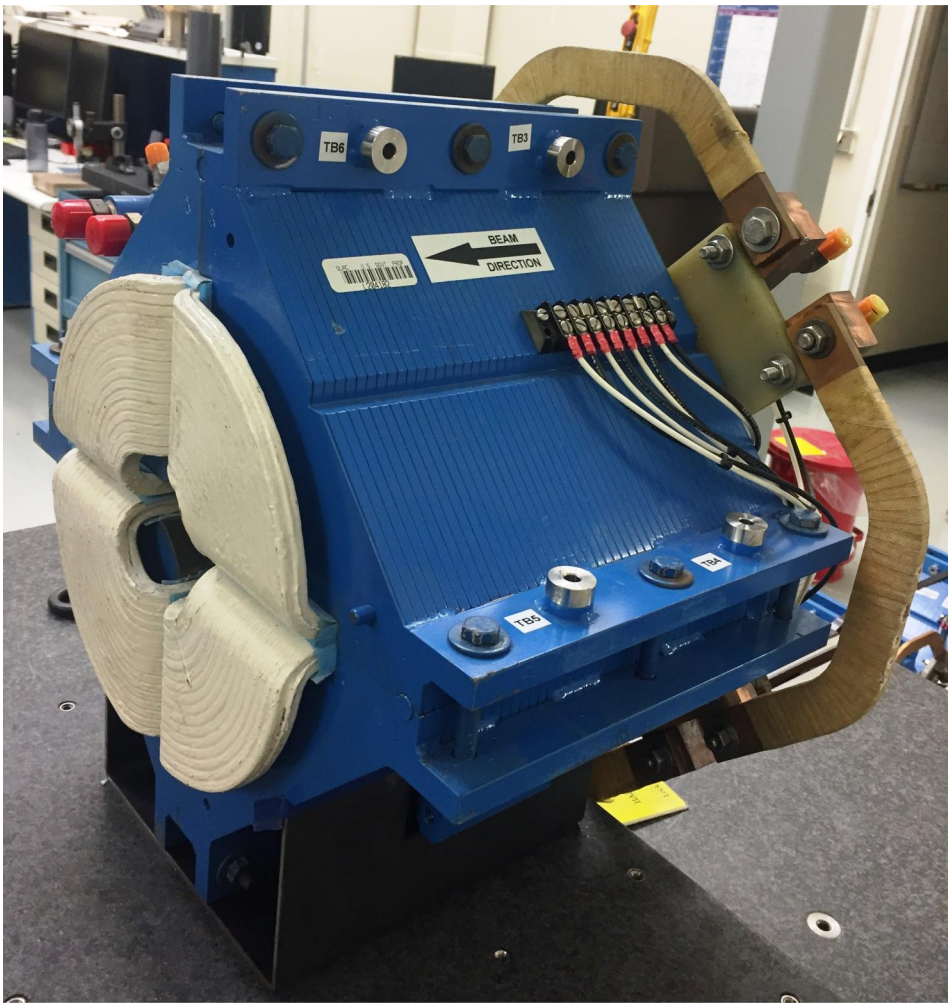
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4202
Mfg. S/N : #22

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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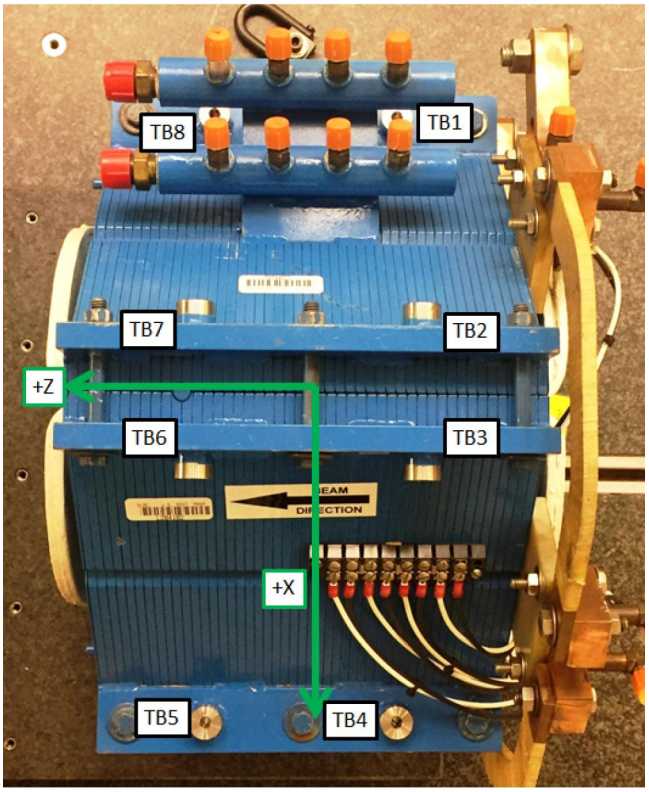
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0651	2.6685	-2.1517
TB 2	-2.6875	7.0509	-2.1712
TB 3	2.6595	7.0499	-2.1705
TB 4	7.0470	2.6744	-2.1885
TB 5	7.0438	2.6820	2.1474
TB 6	2.6655	7.0530	2.1633
TB 7	-2.6870	7.0548	2.1666
TB 8	-7.0563	2.6683	2.1939

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

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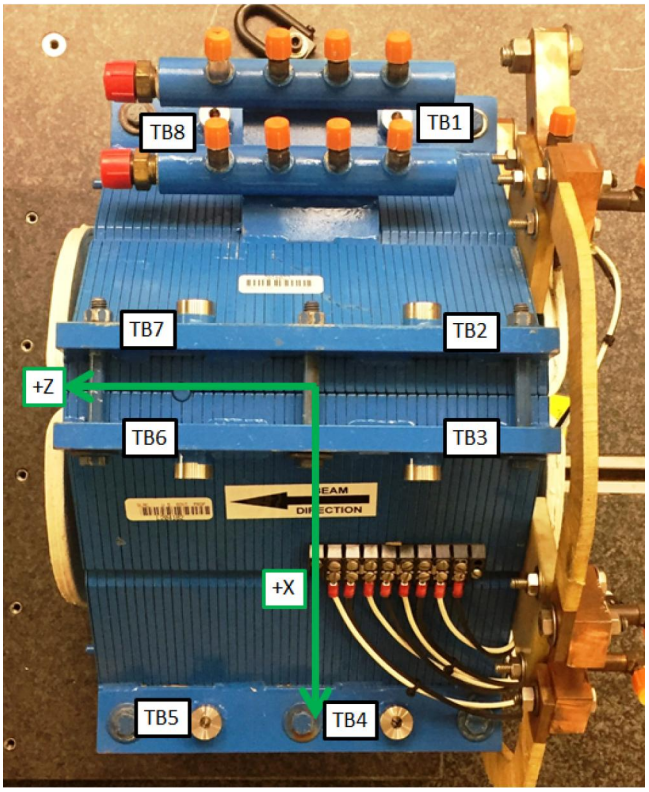
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0622	1.9814	-2.1523
TB 2	-1.9999	7.0538	-2.1712
TB 3	1.9713	7.0480	-2.1703
TB 4	7.0429	1.9868	-2.1867
TB 5	7.0427	1.9947	2.1469
TB 6	1.9770	7.0513	2.1631
TB 7	-1.9997	7.0556	2.1666
TB 8	-7.0560	1.9813	2.1924

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

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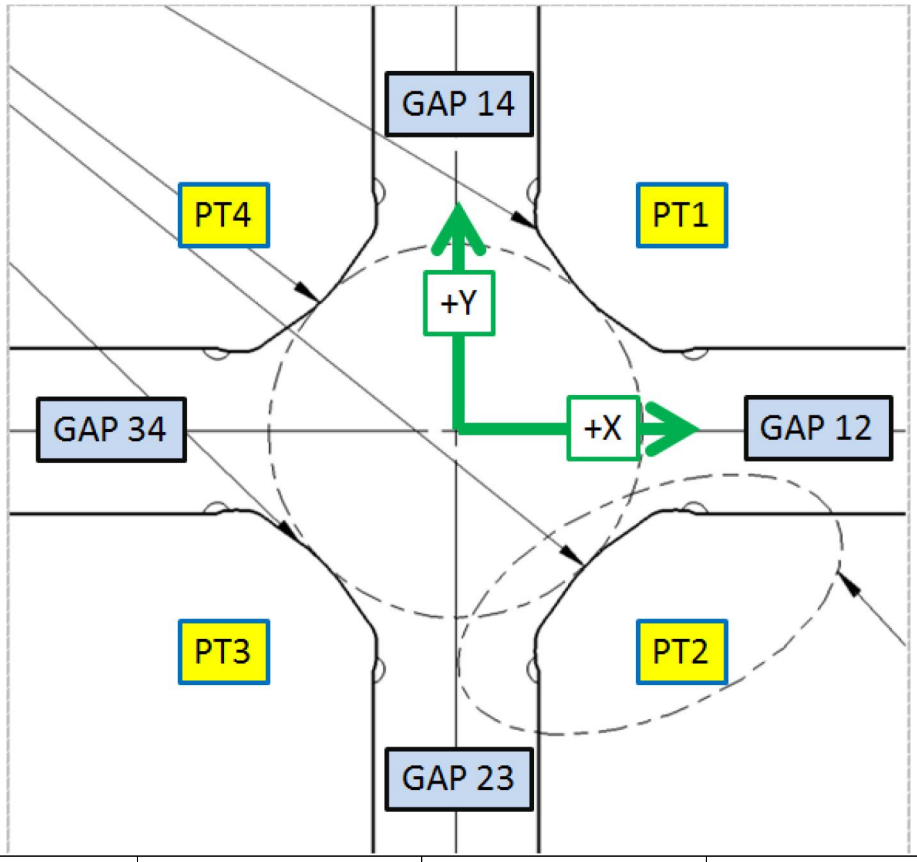
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02367	2.02496
PT Distance 2-4	2.026	2.02728	2.02628
Gap 1-2	0.8602	0.85525	0.85531
Gap 2-3	0.8602	0.85966	0.86158
Gap 3-4	0.8602	0.85599	0.85485
Gap 1-4	0.8602	0.85867	0.86044

Dimensions in Inch

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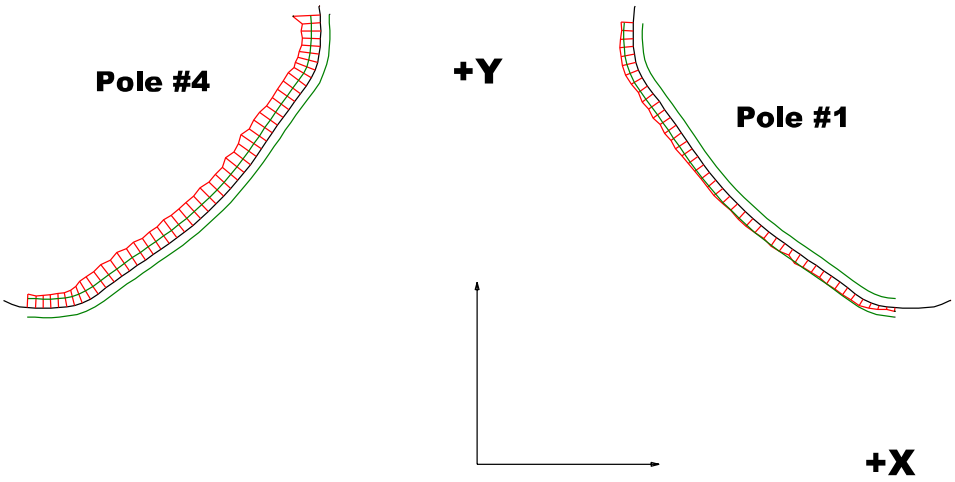
Composite Best-fit of Pole Tips, Downstream



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.	0.00024	-0.00032	-0.00165	-0.00294
Max. Dev.	0.00158	0.00203	0.00388	-0.00133

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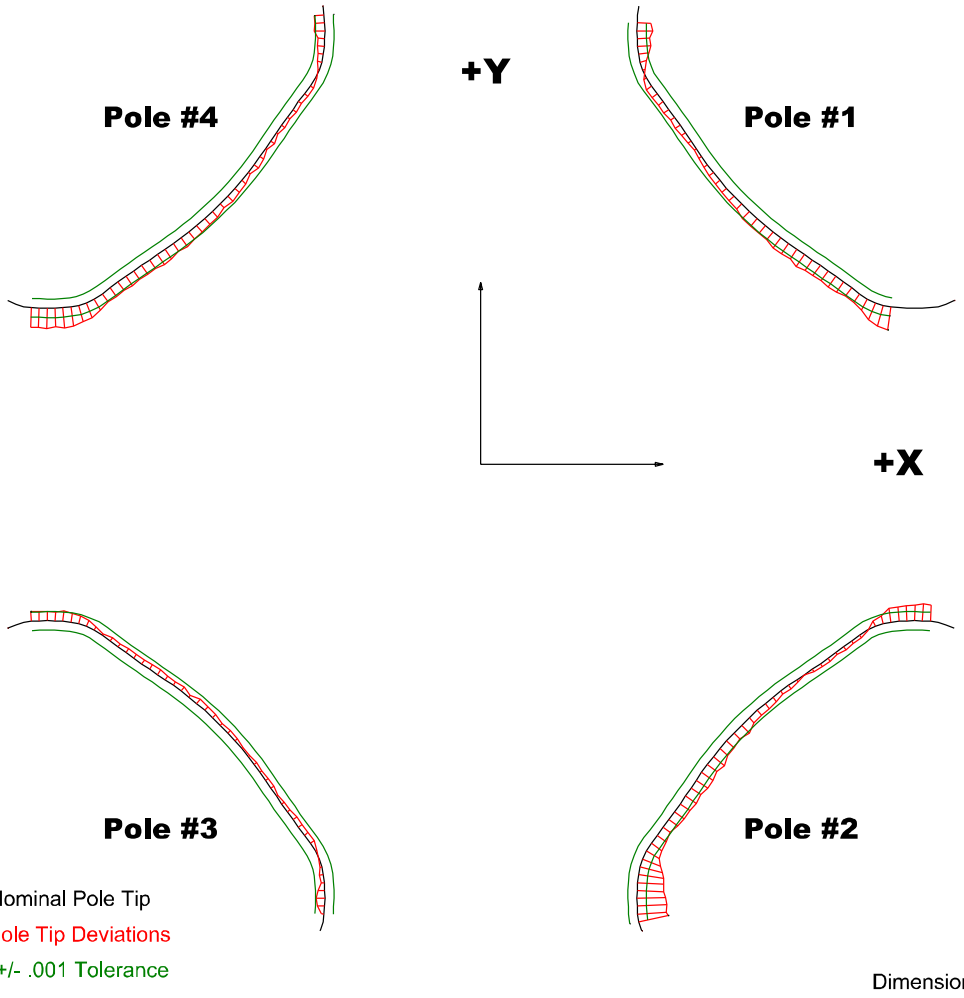
Composite Best-fit of Pole Tips, Upstream



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.	-0.00168	-0.00327	-0.00092	-0.00114
Max. Dev.	0.00252	0.00186	0.00116	0.00223

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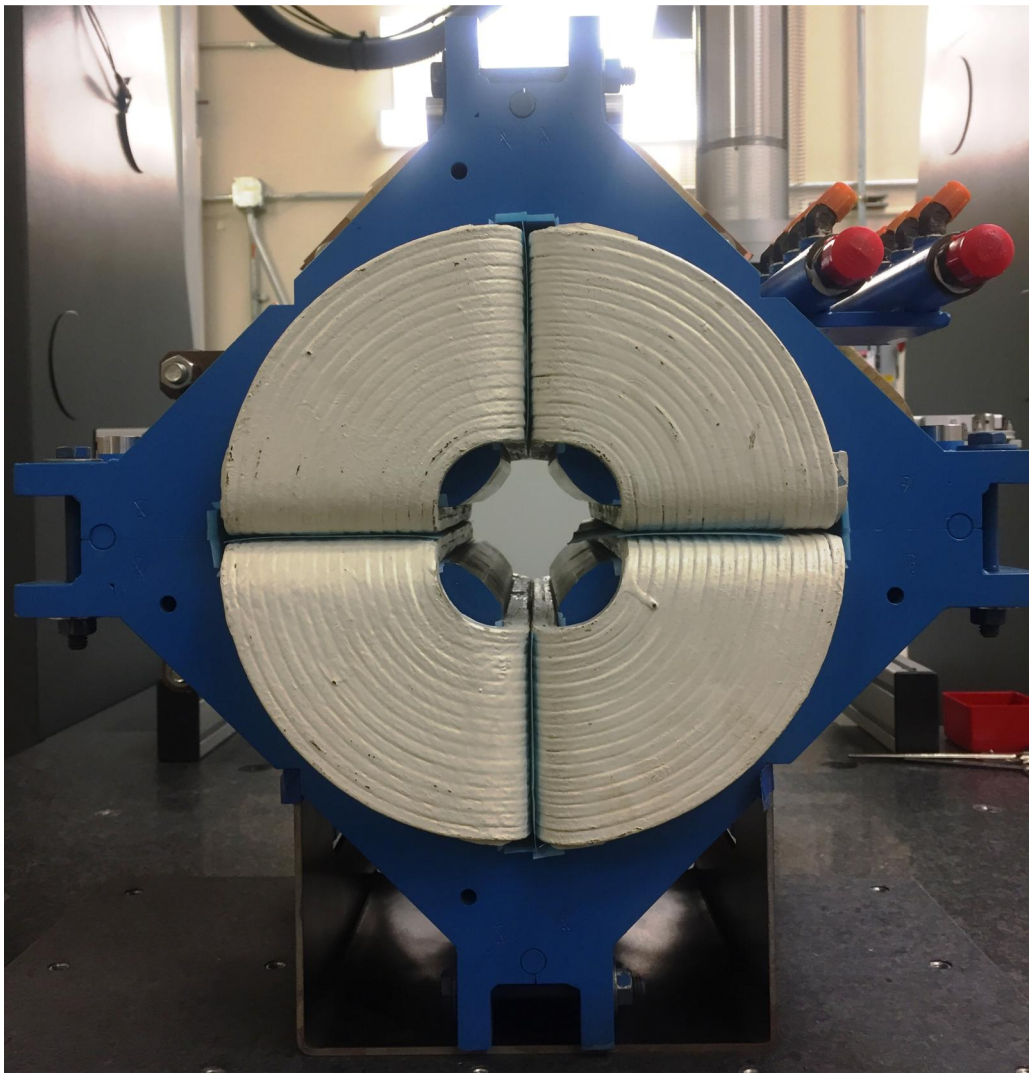
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	-0.01145
Angle in Milliradians :	-0.19992

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