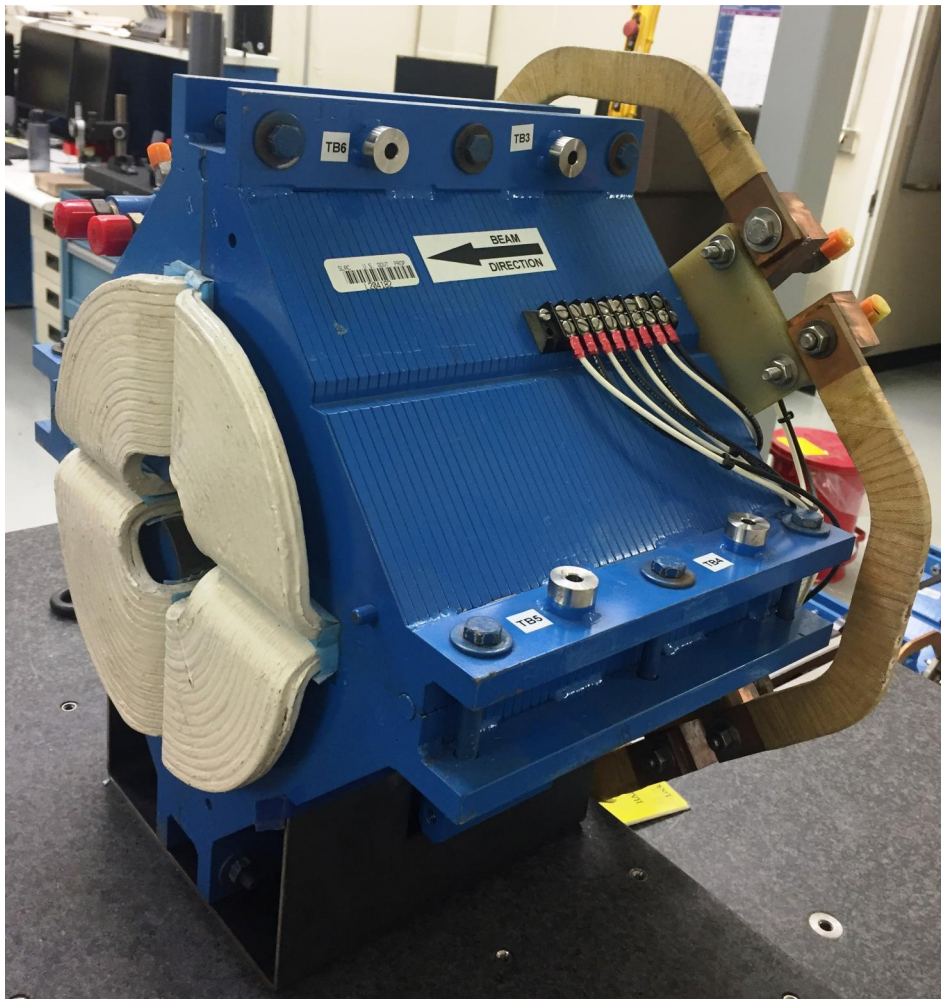


LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4185
Mfg. S/N : #10

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.

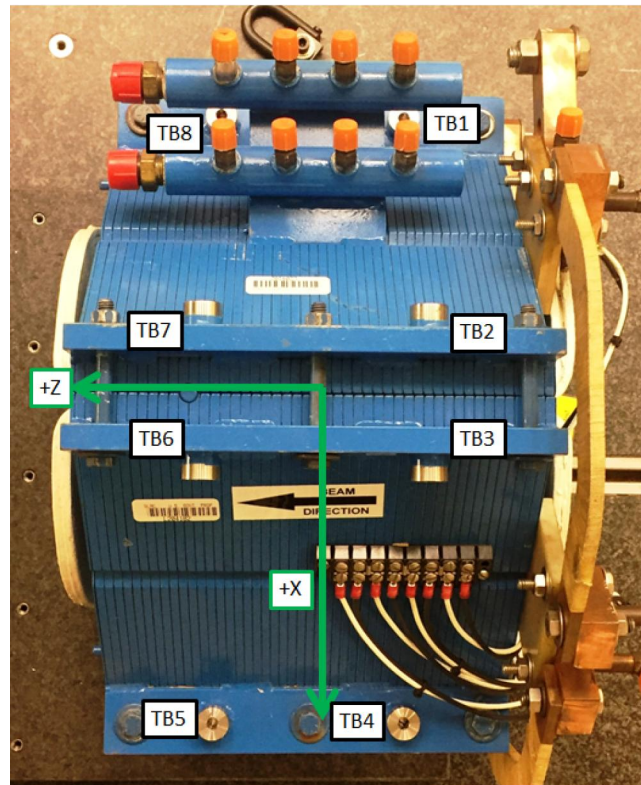
Coordinate Origins

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.

Barcode # : 4185

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Tooling Ball Locations



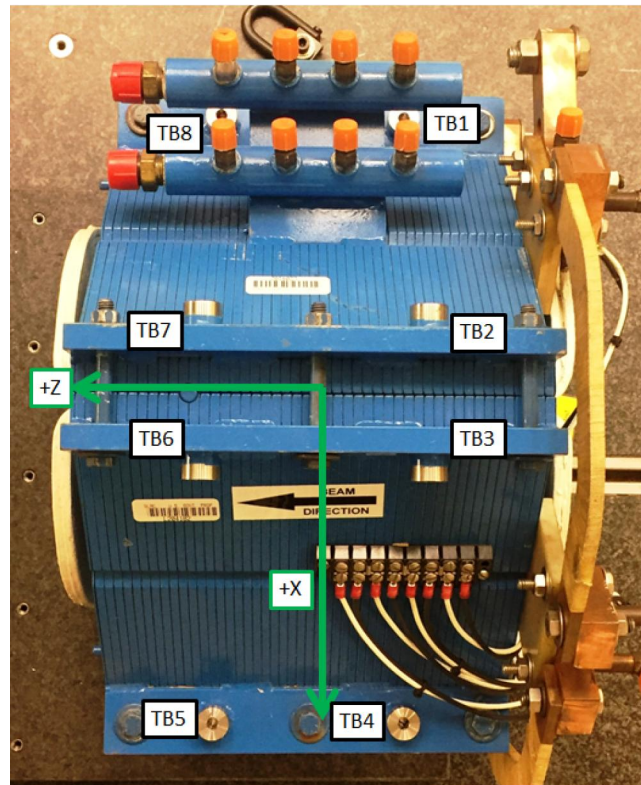
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0520	2.6777	-2.1479
TB 2	-2.6794	7.0474	-2.1681
TB 3	2.6762	7.0479	-2.1708
TB 4	7.0528	2.6741	-2.1829
TB 5	7.0669	2.6726	2.1523
TB 6	2.6859	7.0627	2.1719
TB 7	-2.6662	7.0616	2.1684
TB 8	-7.0304	2.6824	2.1748

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

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Tooling Ball Locations



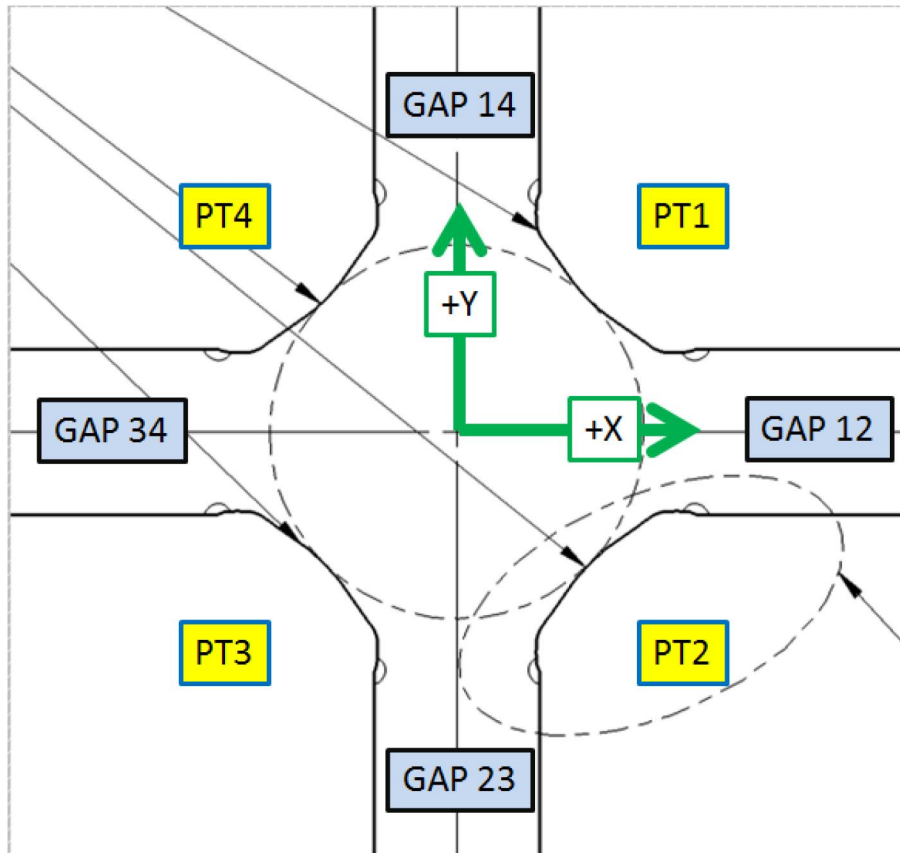
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0525	1.9901	-2.1489
TB 2	-1.9919	7.0496	-2.1713
TB 3	1.9881	7.0494	-2.1704
TB 4	7.0501	1.9867	-2.1843
TB 5	7.0624	1.9839	2.1519
TB 6	1.9958	7.0596	2.1720
TB 7	-1.9784	7.0615	2.1669
TB 8	-7.0329	1.9921	2.1768

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

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Pole Tip Gap Measurements



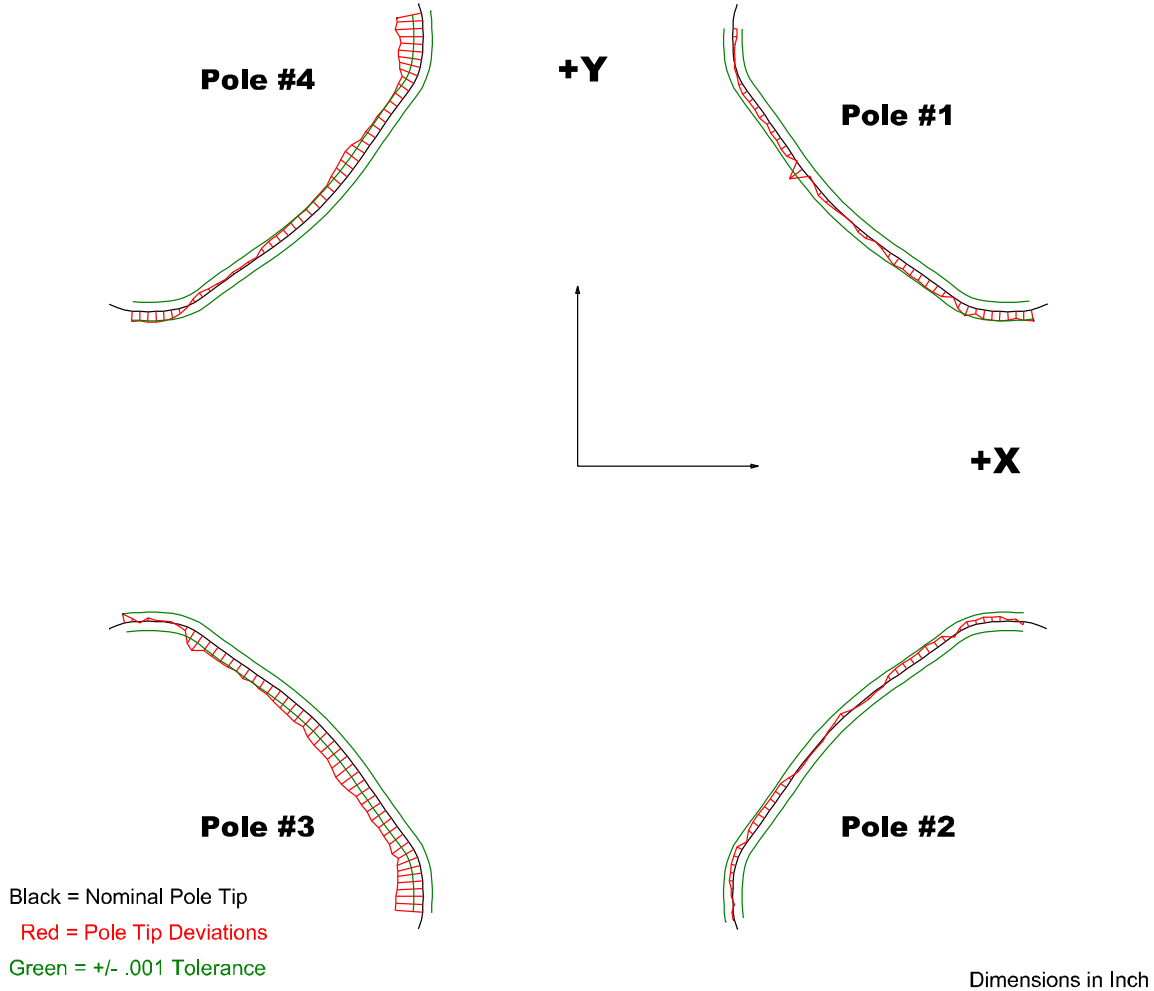
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02746	2.02886
PT Distance 2-4	2.026	2.02672	2.0278
Gap 1-2	0.8602	0.85735	0.8569
Gap 2-3	0.8602	0.86054	0.86265
Gap 3-4	0.8602	0.85639	0.85694
Gap 1-4	0.8602	0.8609	0.86107

Dimensions in Inch

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Composite Best-fit of Pole Tips, Downstream



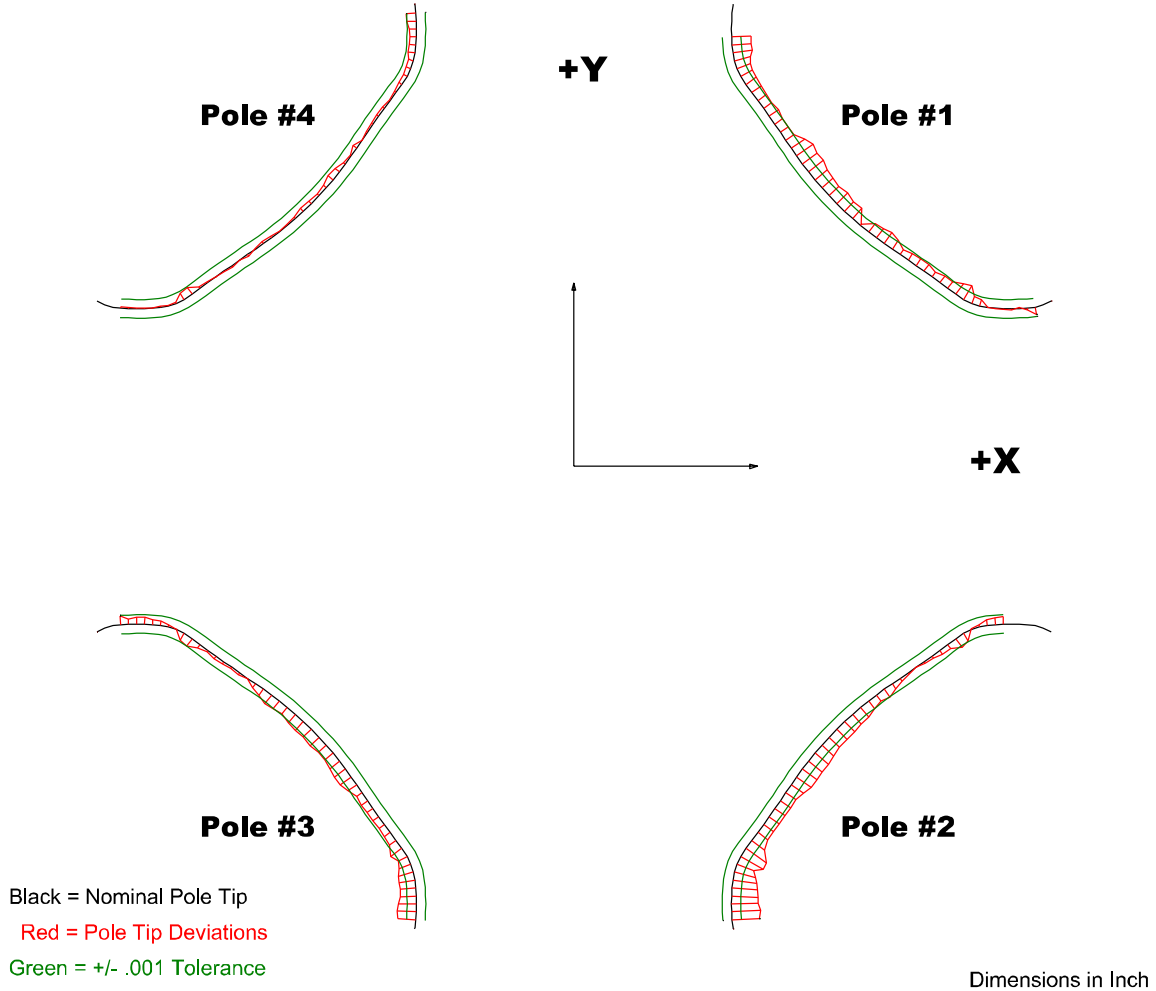
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00048	-0.00035	-0.00301	-0.003
Max. Dev.	0.00181	0.0009	0.00098	0.0012

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Mfg. S/N : #10

Composite Best-fit of Pole Tips, Upstream



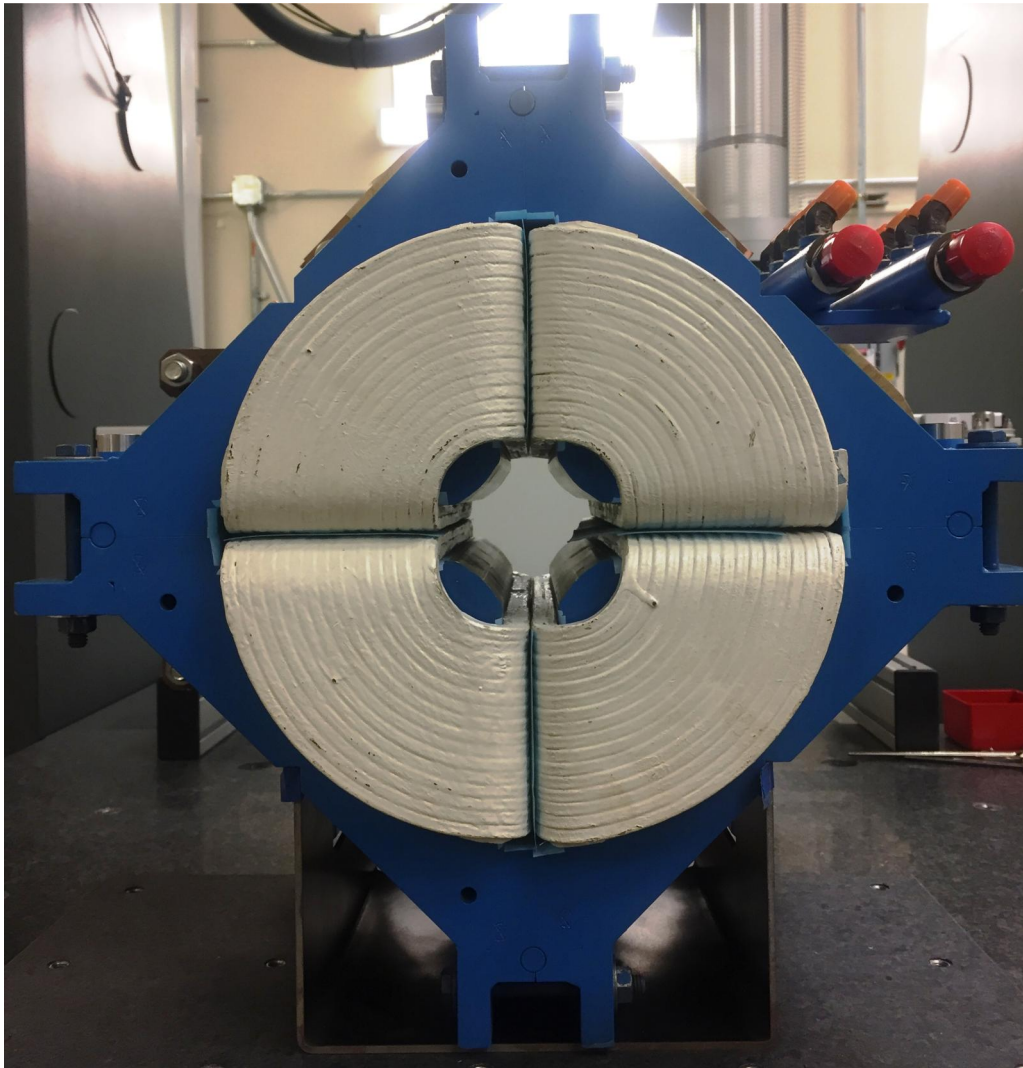
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00221	-0.00314	-0.00201	-0.00104
Max. Dev.	0.00076	0.00079	0.00091	0.00022

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Mfg. S/N : #10

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : -0.00518

Angle in Milliradians : -0.09045

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Mfg. S/N : #10