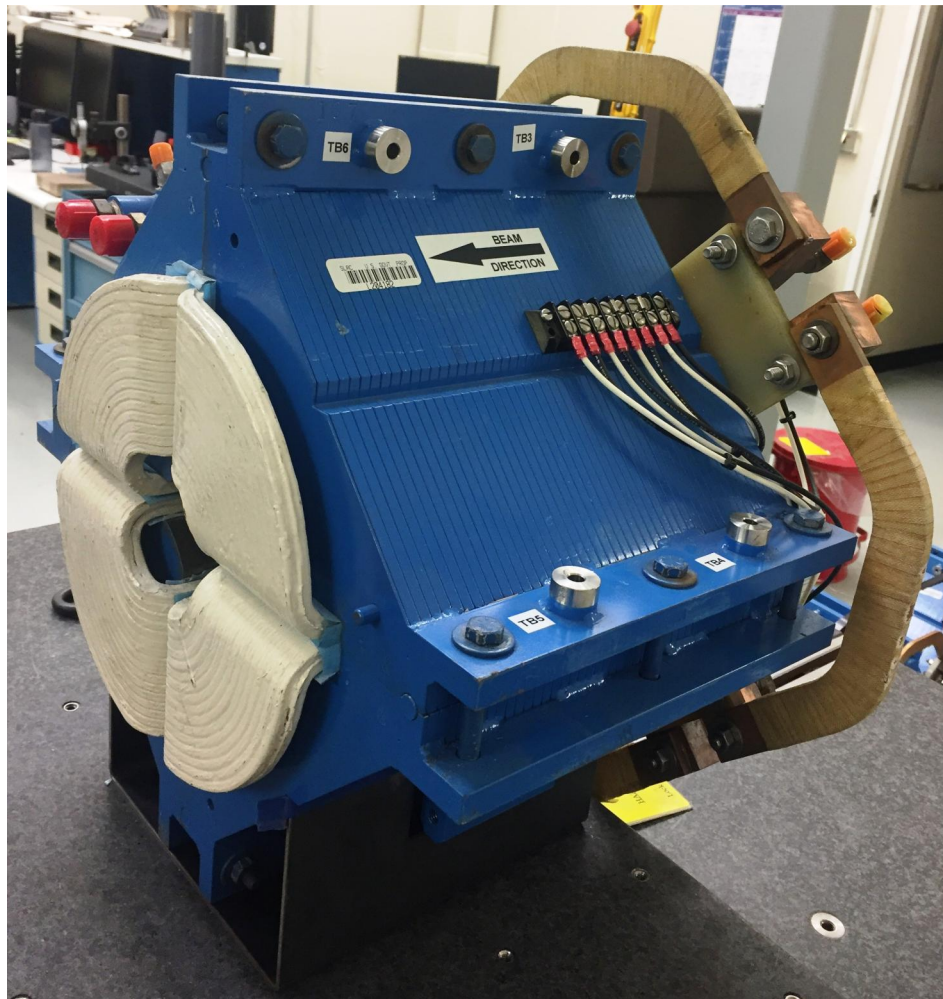


LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4193
Mfg. S/N : #21

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.

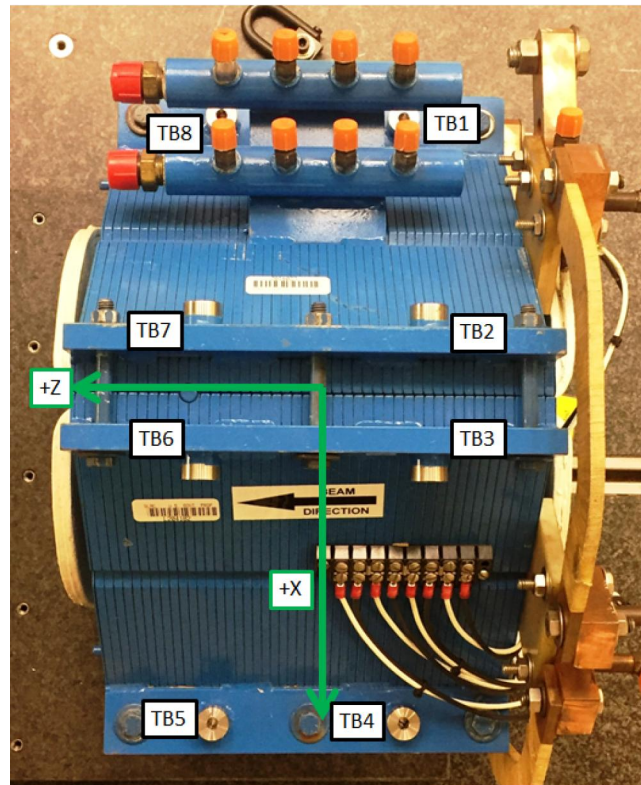
Coordinate Origins

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



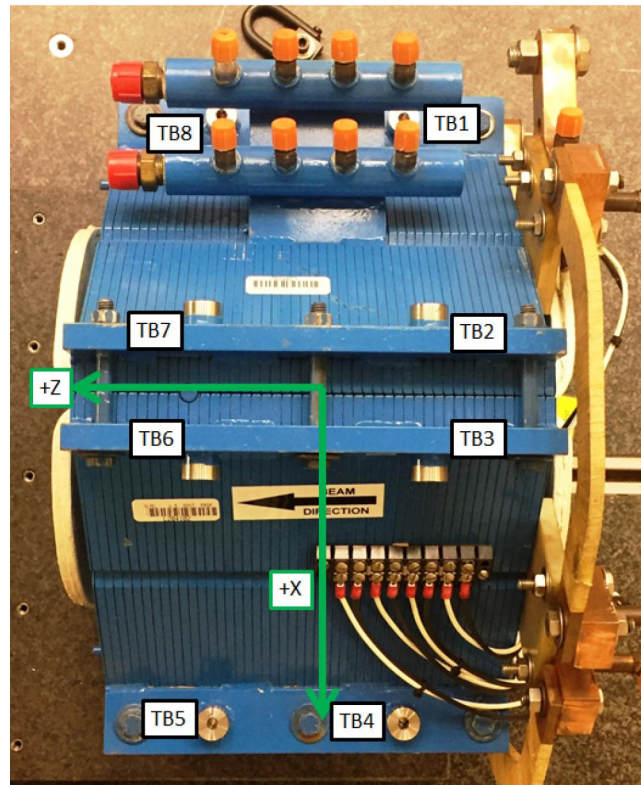
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0654	2.6580	-2.1538
TB 2	-2.6767	7.0449	-2.1657
TB 3	2.6656	7.0388	-2.1758
TB 4	7.0432	2.6552	-2.1879
TB 5	7.0710	2.6695	2.1322
TB 6	2.6746	7.0534	2.1581
TB 7	-2.6689	7.0520	2.1633
TB 8	-7.0469	2.6663	2.1753

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

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Tooling Ball Locations



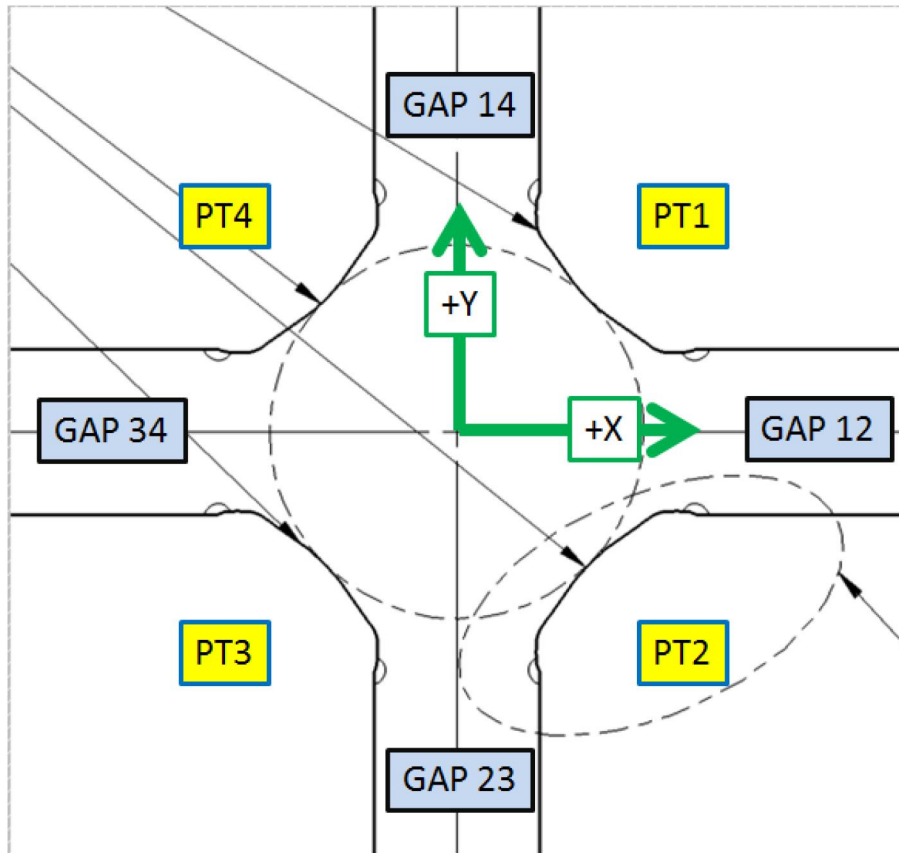
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0644	1.9712	-2.1537
TB 2	-1.9891	7.0429	-2.1687
TB 3	1.9771	7.0374	-2.1746
TB 4	7.0429	1.9678	-2.1856
TB 5	7.0683	1.9816	2.1358
TB 6	1.9870	7.0506	2.1607
TB 7	-1.9814	7.0514	2.1633
TB 8	-7.0439	1.9796	2.1766

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

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Pole Tip Gap Measurements



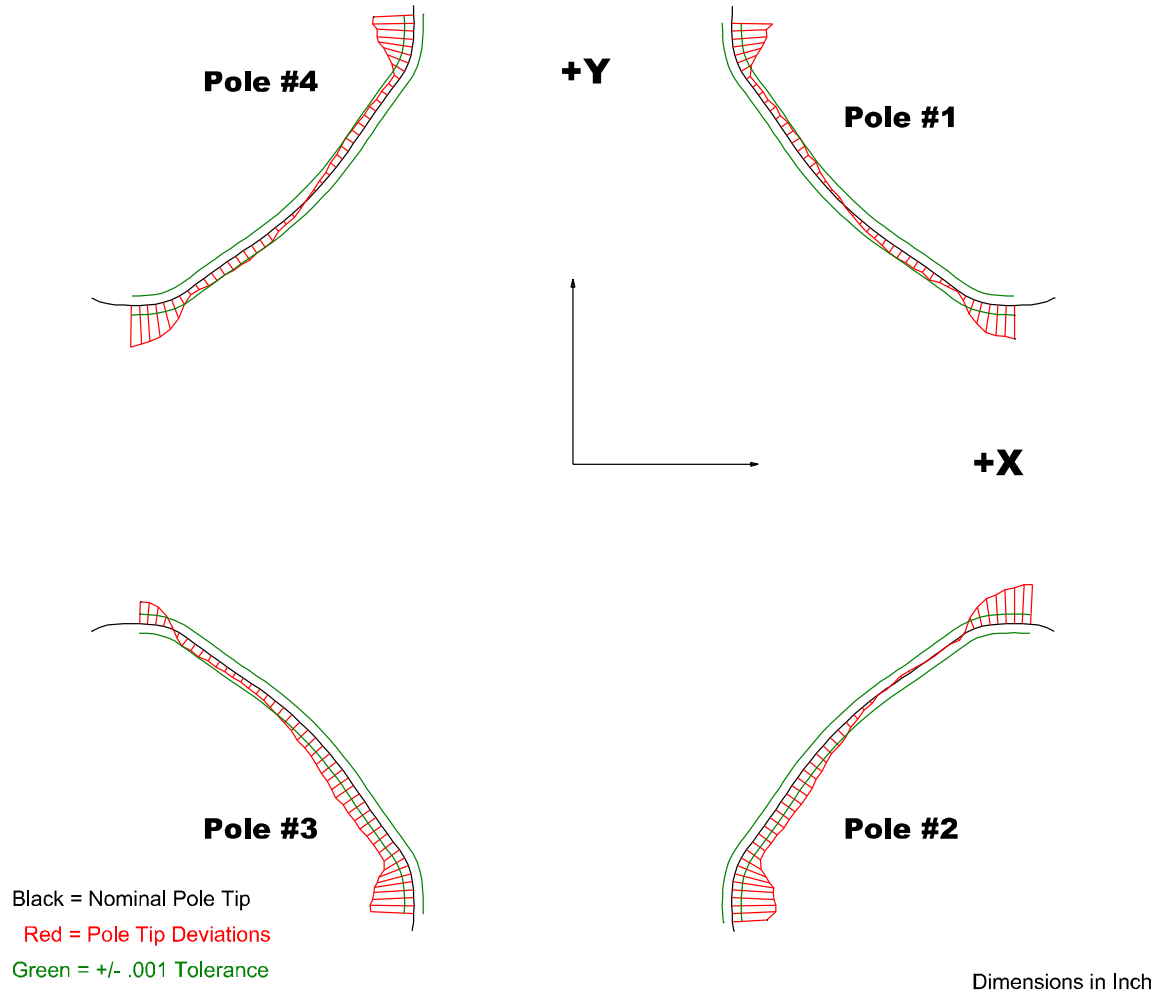
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02773	2.02546
PT Distance 2-4	2.026	2.02719	2.02551
Gap 1-2	0.8602	0.84994	0.84949
Gap 2-3	0.8602	0.86305	0.86488
Gap 3-4	0.8602	0.85105	0.84881
Gap 1-4	0.8602	0.86625	0.86492

Dimensions in Inch

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Composite Best-fit of Pole Tips, Downstream



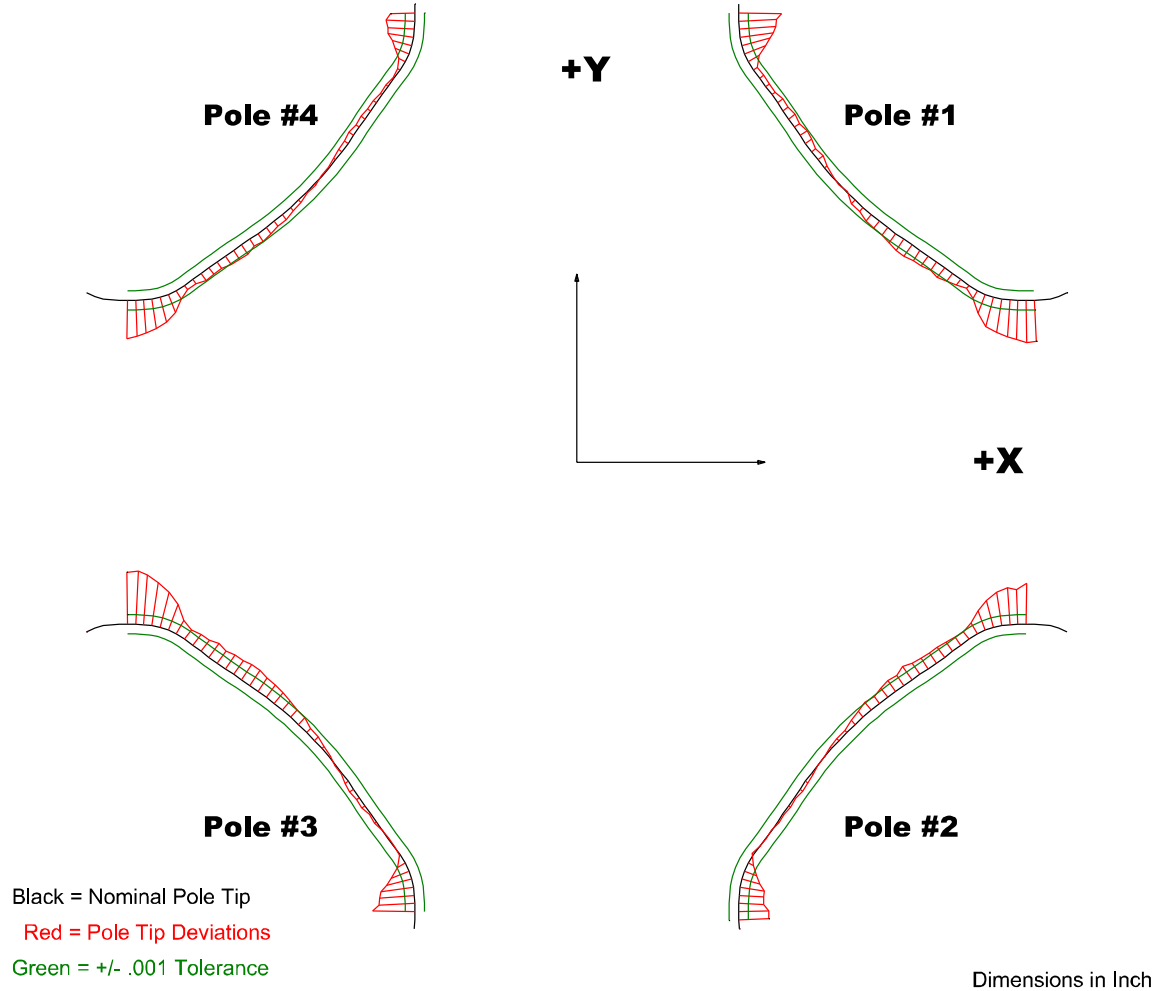
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00436	-0.00467	-0.00465	-0.00437
Max. Dev.	0.00354	0.0042	0.00232	0.00444

Barcode # : 4193

Mfg. S/N : #21

Composite Best-fit of Pole Tips, Upstream



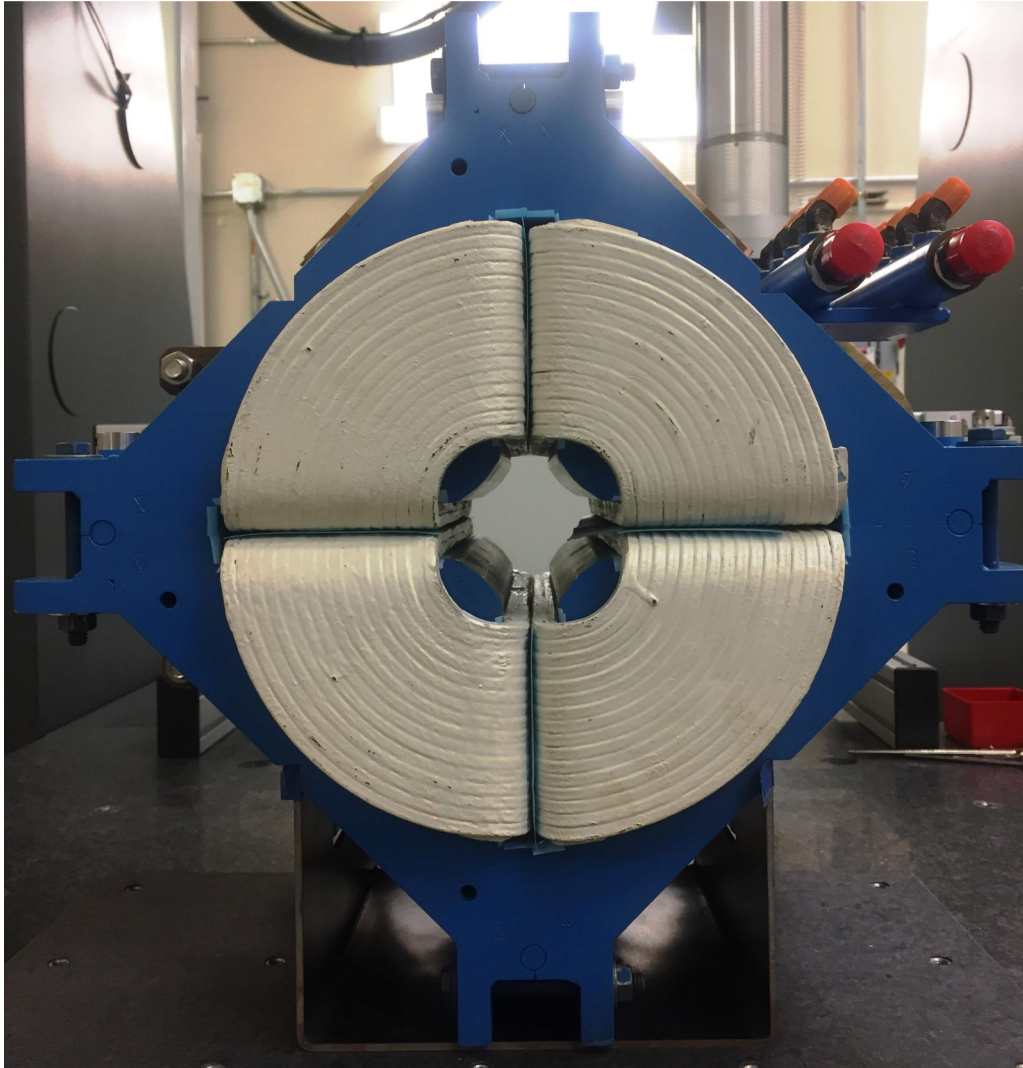
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00449	-0.00317	-0.00444	-0.00304
Max. Dev.	0.00439	0.00425	0.00556	0.00396

Barcode # : 4193

Mfg. S/N : #21

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.03327
Angle in Milliradians : 0.58068

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