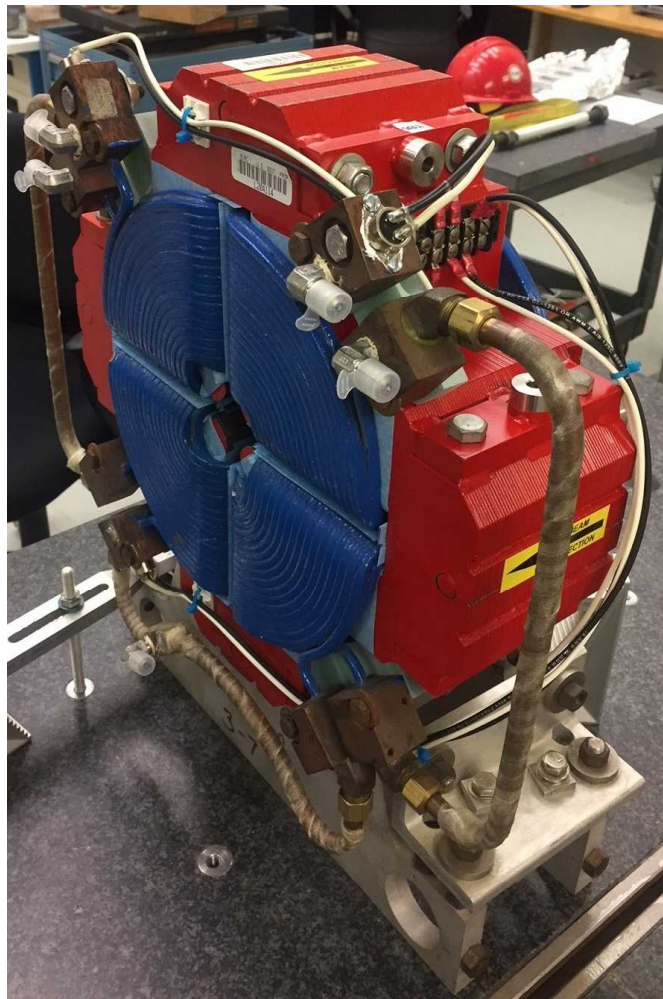


LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-902-675-01
Barcode # : 4130
Mfg. S/N : E014

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 0.100 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.

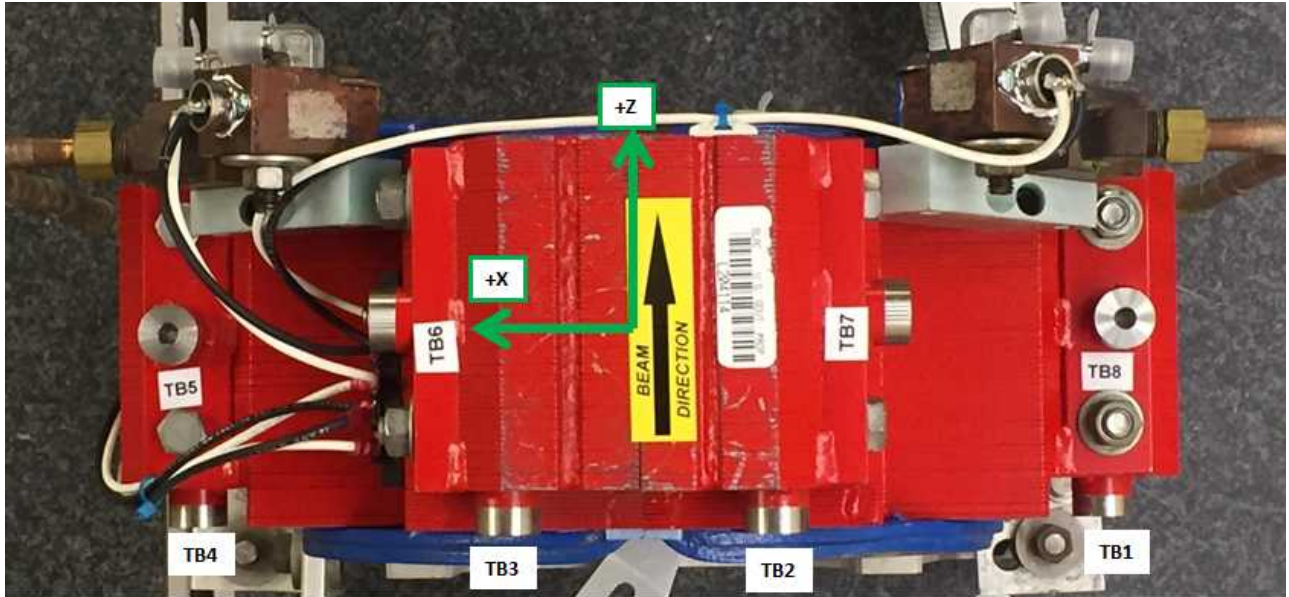
Coordinate Origins

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



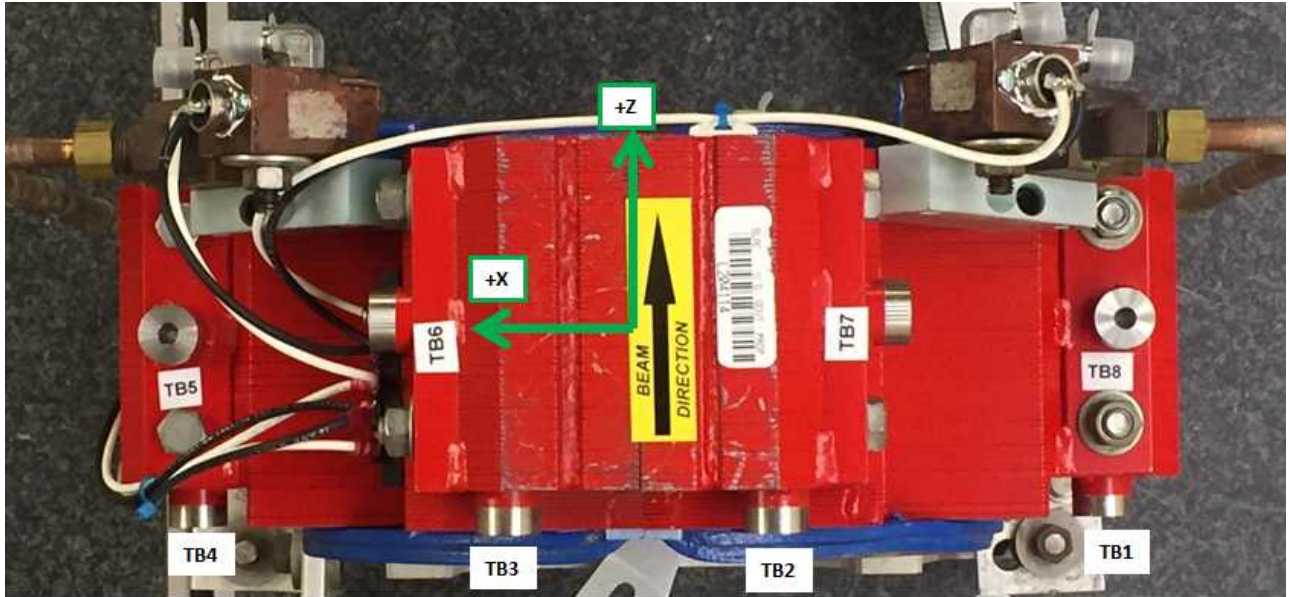
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7718	1.5069	-3.1923
TB 2	-1.5378	5.7529	-3.1955
TB 3	1.5077	5.7693	-3.1854
TB 4	5.7475	1.5277	-3.2005
TB 5	5.8259	4.0166	0.2014
TB 6	4.0040	5.8625	0.2204
TB 7	-4.0235	5.8056	0.2250
TB 8	-5.8664	3.9926	0.2347

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

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Tooling Ball Locations



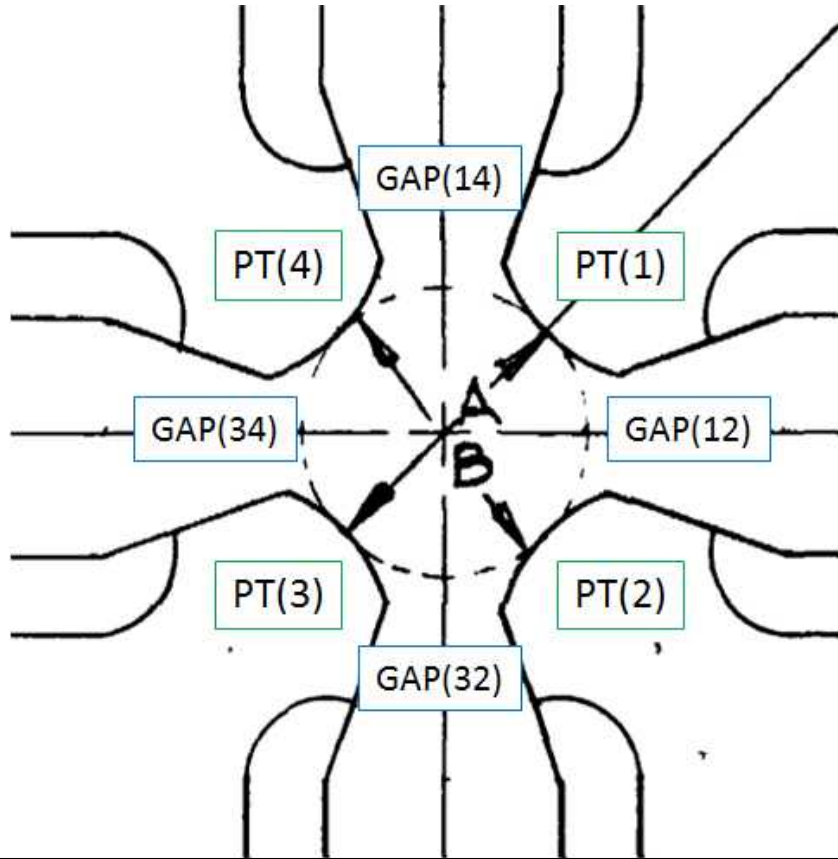
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7697	1.5060	-2.5043
TB 2	-1.5332	5.7533	-2.5074
TB 3	1.5032	5.7650	-2.4960
TB 4	5.7454	1.5257	-2.5114
TB 5	5.8296	3.3285	0.2016
TB 6	3.3267	5.8558	0.2213
TB 7	-3.3360	5.8216	0.2262
TB 8	-5.8565	3.3056	0.2334

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

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Mfg. S/N : E014

Pole Tip Gap Measurements



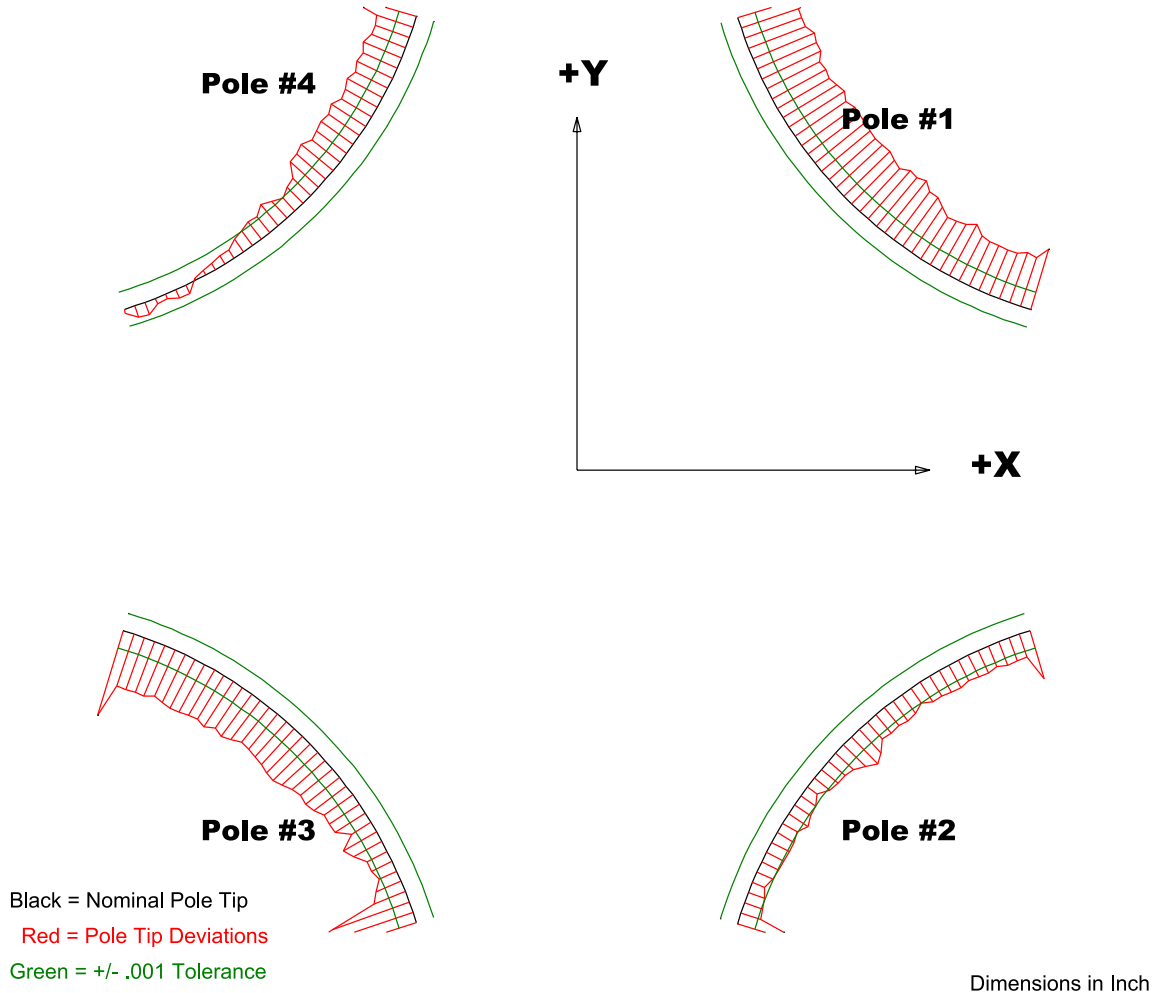
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.09134	1.08674
PT Distance 2-4(B)	1.085	1.08802	1.08817
Gap 1-2	0.4546	0.46138	0.45797
Gap 2-3	0.4546	0.46868	0.46437
Gap 3-4	0.4546	0.45984	0.45734
Gap 4-1	0.4546	0.46434	0.45899

Dimensions in Inch

Barcode # : 4130

Mfg. S/N : E014

Composite Best-fit of Pole Tips, Downstream



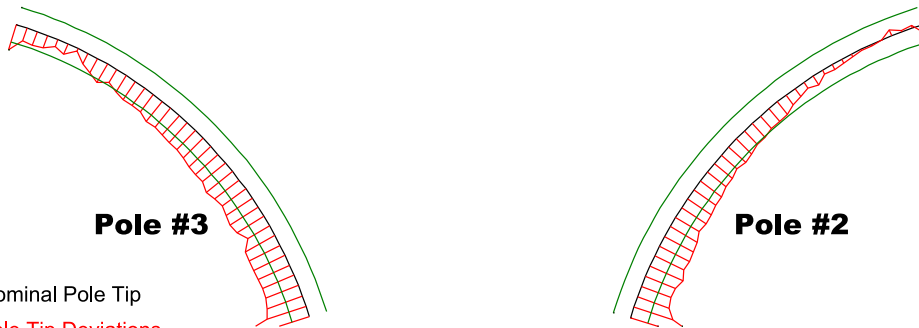
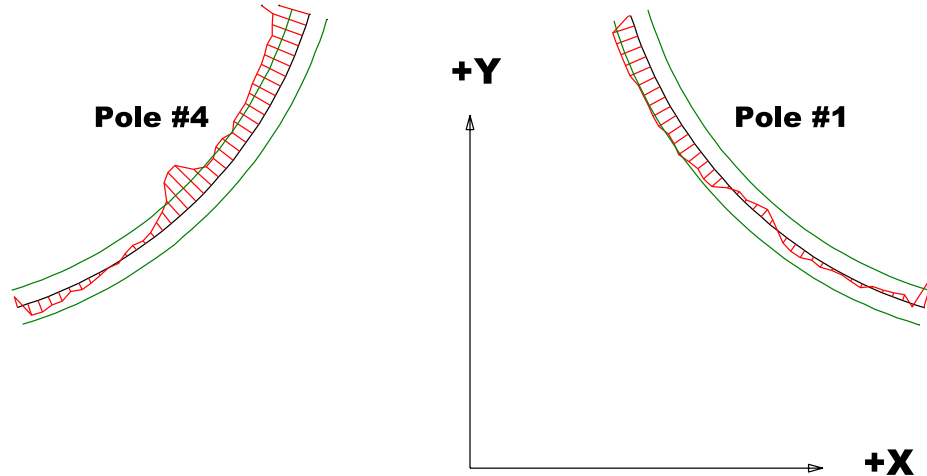
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00498	-0.00426	-0.01031	-0.00448
Max. Dev.	-0.0027	-0.00067	-0.00106	0.00073

Barcode # : 4130

Mfg. S/N : E014

Composite Best-fit of Pole Tips, Upstream



Black = Nominal Pole Tip
 Red = Pole Tip Deviations
 Green = +/- .001 Tolerance

Dimensions in Inch

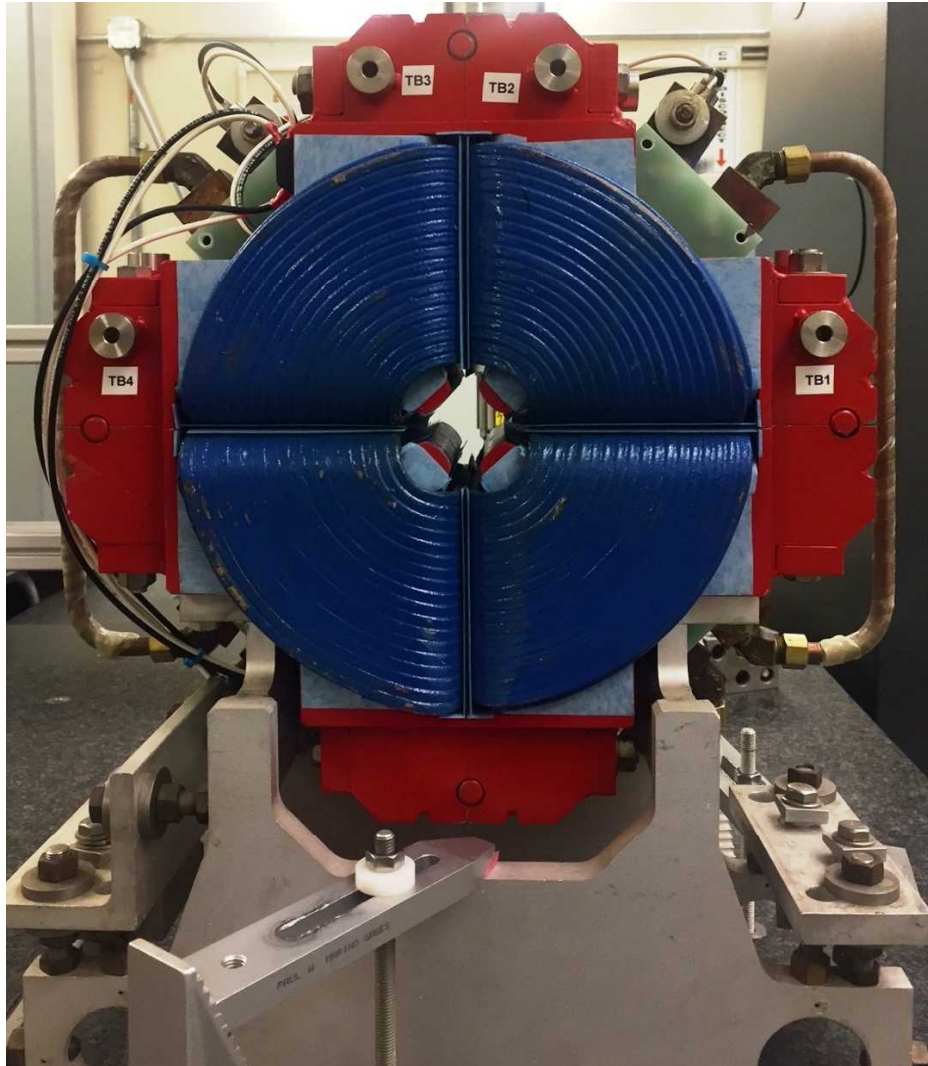
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00208	-0.0042	-0.00483	-0.0035
Max. Dev.	0.00128	0.00035	-0.00014	0.00068

Barcode # : 4130

Mfg. S/N : E014

Angle of the Composite Pole Tip Best-Fit In Relation to TB 5 Plate and TB 8 Plate



Angle in Decimal Degrees $^{\circ}$:-0.09322

Angle in Milliradians :-1.62707

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Mfg. S/N : E014