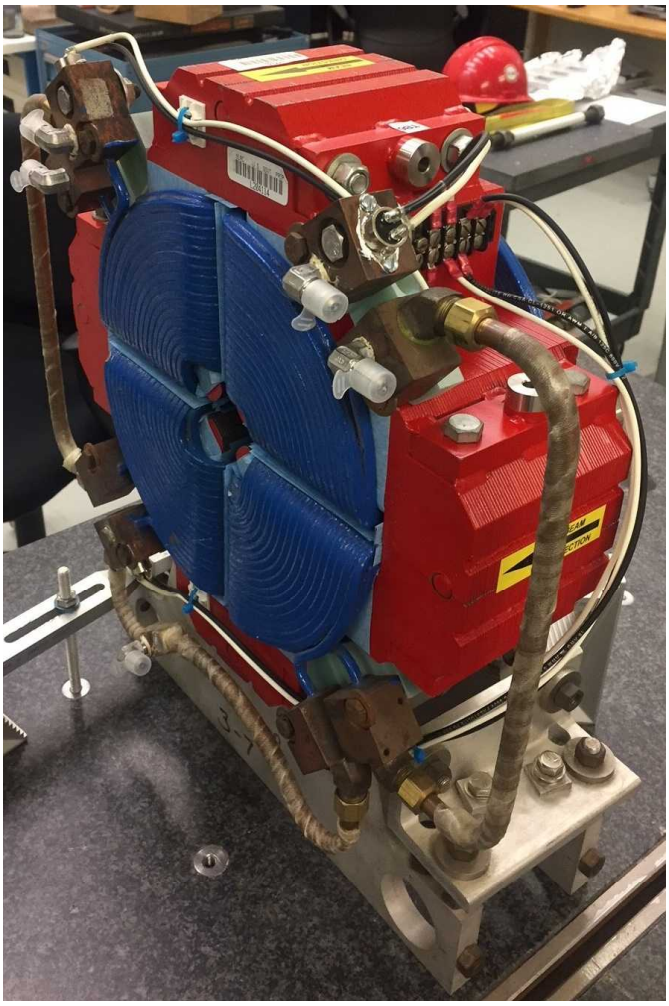
LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-902-675-01
Barcode # : 4125
Mfg. S/N : E071

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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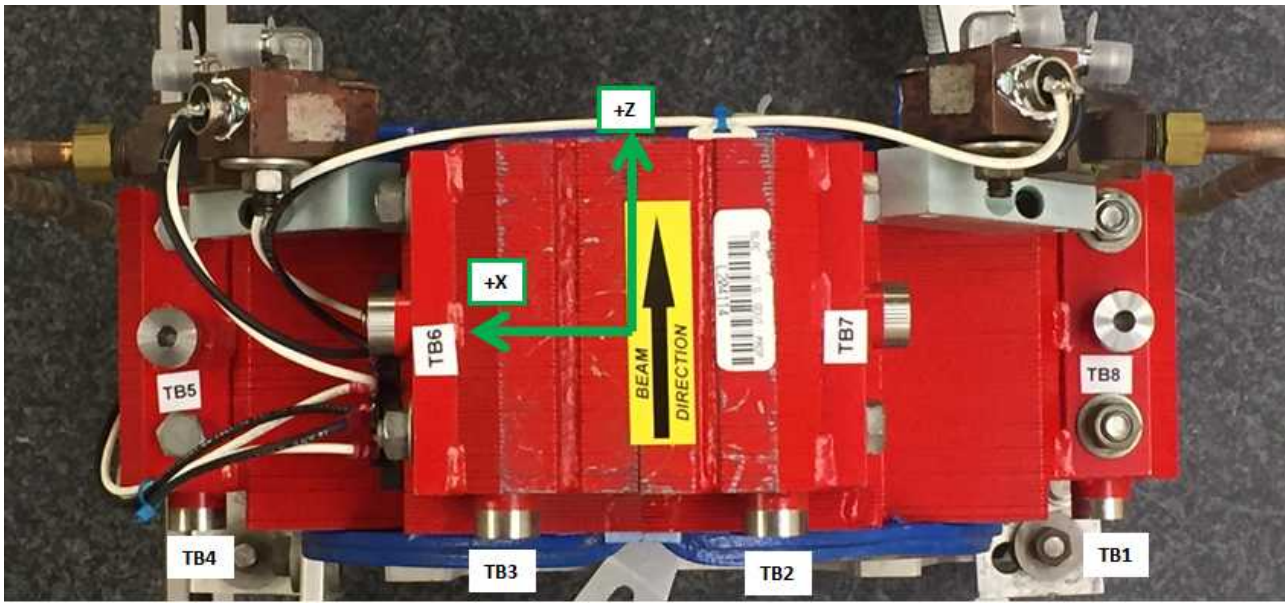
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7698	1.5505	-3.1734
TB 2	-1.5528	5.7749	-3.1821
TB 3	1.5247	5.7858	-3.1778
TB 4	5.7720	1.5159	-3.1868
TB 5	5.7561	4.0060	0.2320
TB 6	3.9944	5.8180	0.2448
TB 7	-4.0084	5.7661	0.2413
TB 8	-5.8056	3.9949	0.2292

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

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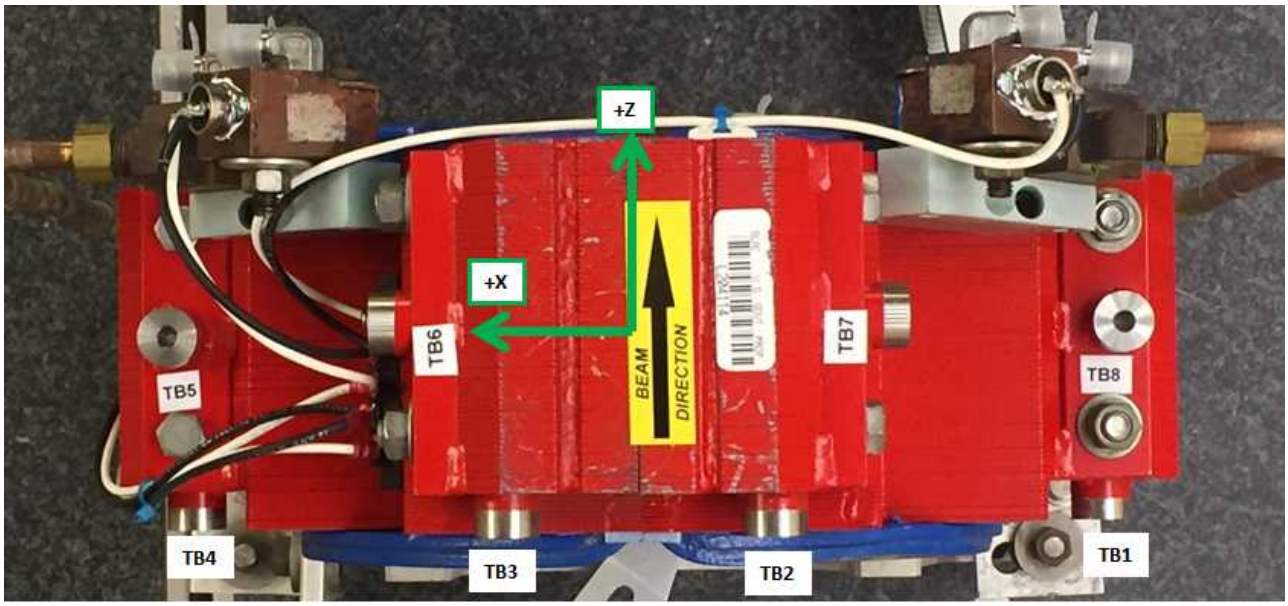
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7660	1.5492	-2.4840
TB 2	-1.5489	5.7793	-2.4942
TB 3	1.5244	5.7849	-2.4898
TB 4	5.7744	1.5180	-2.4981
TB 5	5.7585	3.3176	0.2338
TB 6	3.3066	5.8170	0.2446
TB 7	-3.3205	5.7691	0.2414
TB 8	-5.8025	3.3077	0.2274

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

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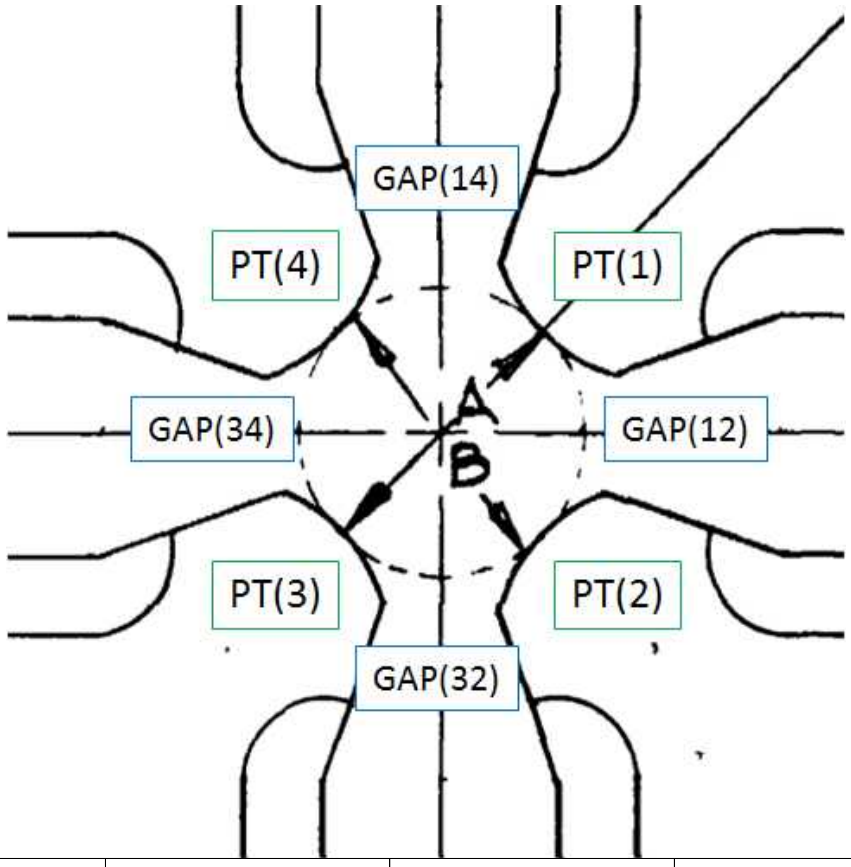
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08588	1.08642
PT Distance 2-4(B)	1.085	1.08261	1.08475
Gap 1-2	0.4546	0.4568	0.46062
Gap 2-3	0.4546	0.46285	0.45943
Gap 3-4	0.4546	0.45513	0.45812
Gap 4-1	0.4546	0.45687	0.46098

Dimensions in Inch

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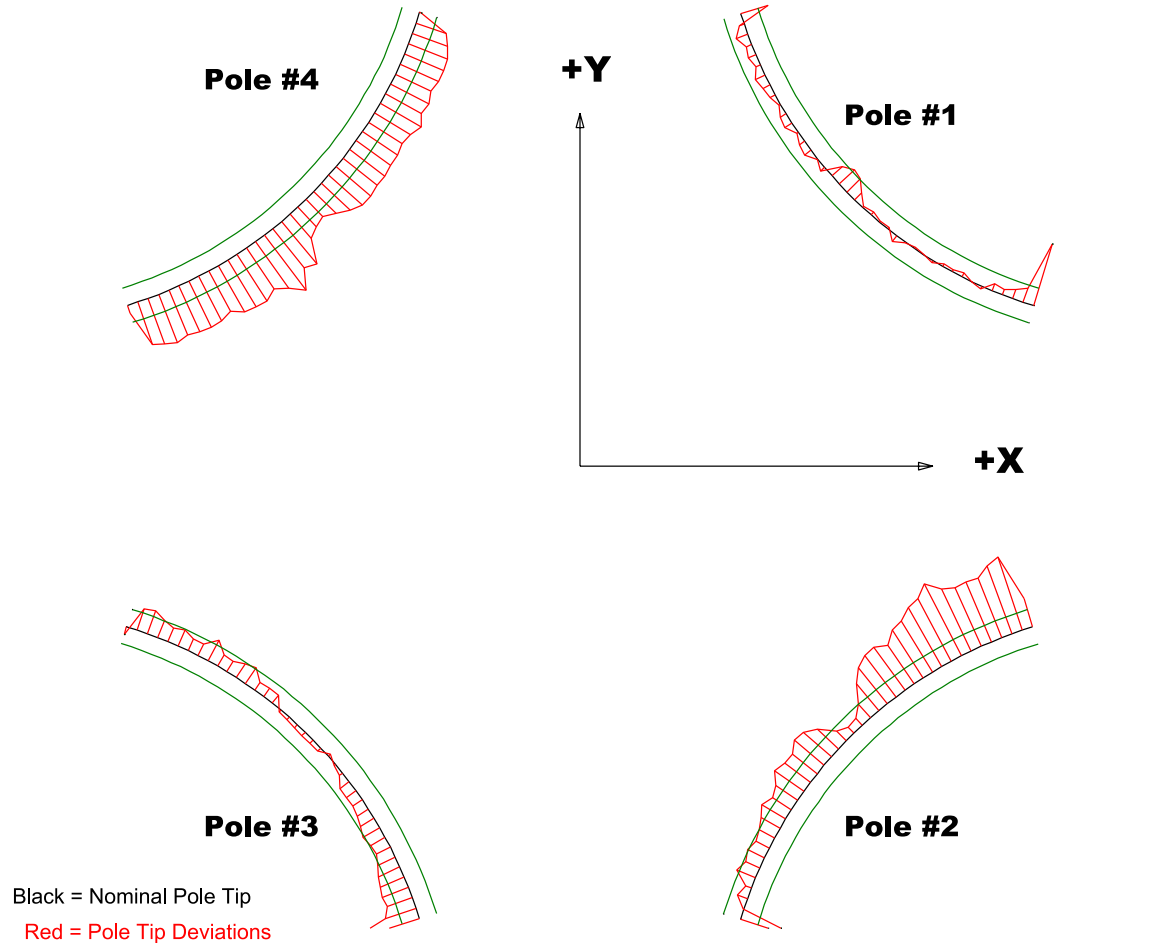
Composite Best-fit of Pole Tips, Downstream



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.	-0.00358	-0.0034	-0.00395	0.00009
Max. Dev.	0.00068	0.00453	0.00136	0.00386

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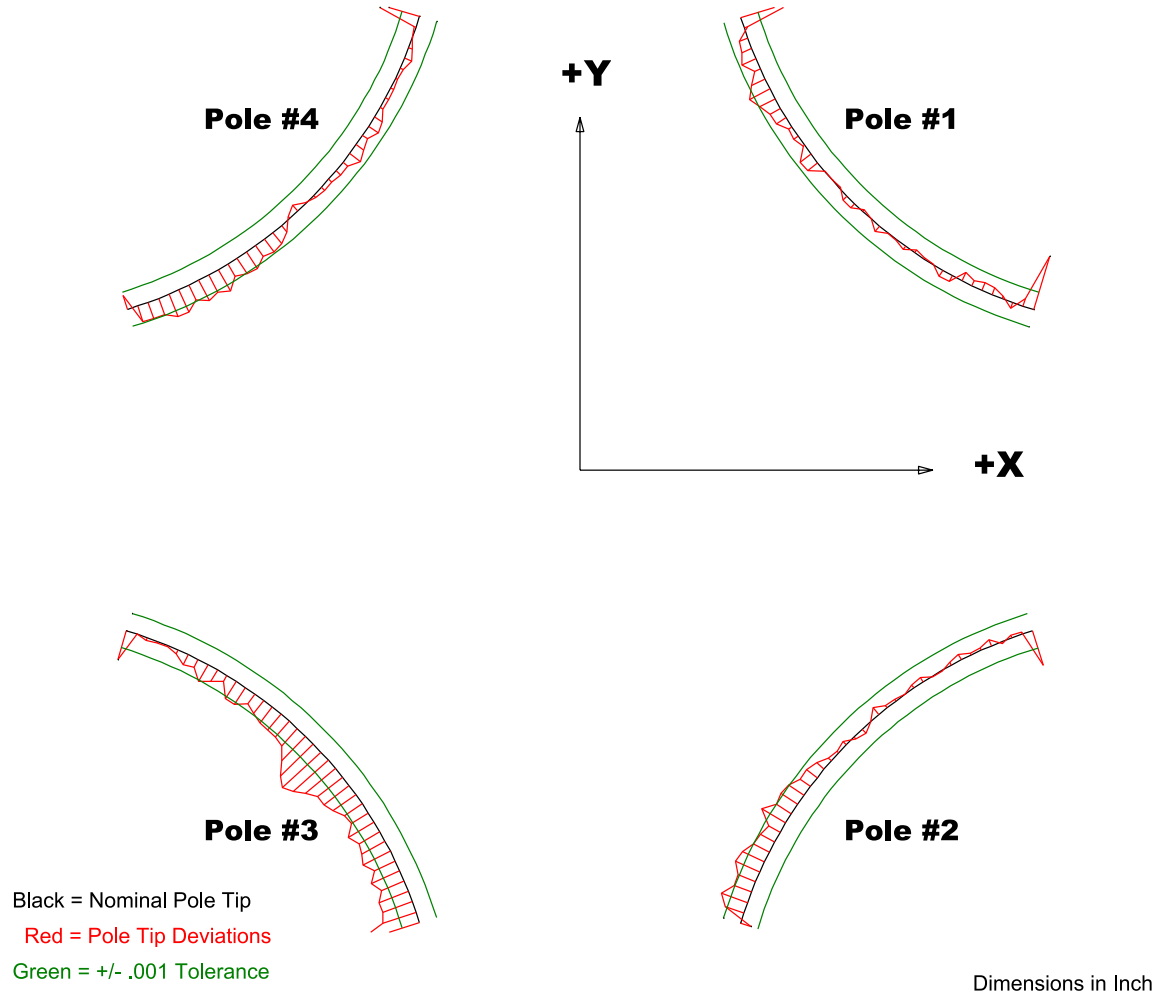
Mfg. S/N : E071

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.	-0.0032	-0.00203	-0.00366	-0.00298
Max. Dev.	0.00128	0.00157	0.00001	0.00139

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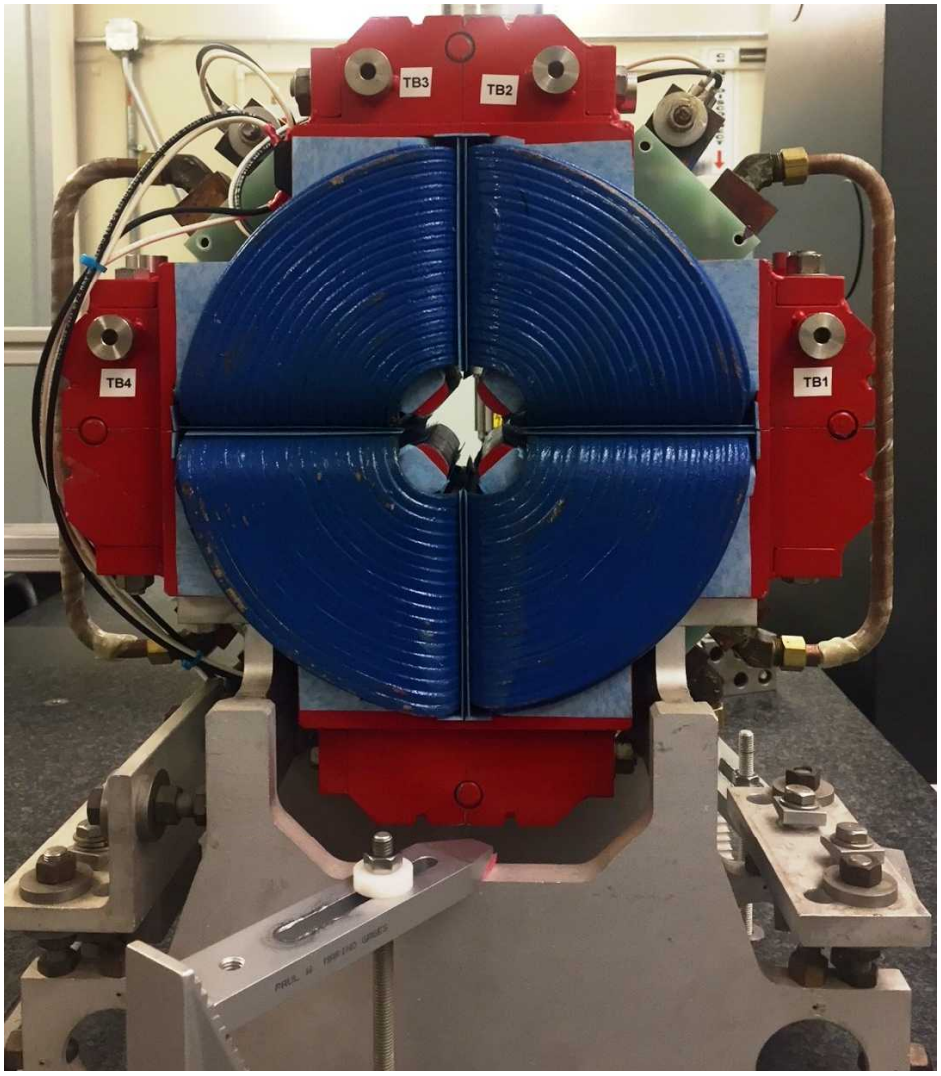
Angle of the Composite Pole Tip Best-Fit In Relation to TB 5 Plate and TB 8 Plate



Angle in Decimal Degrees ° :-0.05794

Angle in Milliradians :-1.01124

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