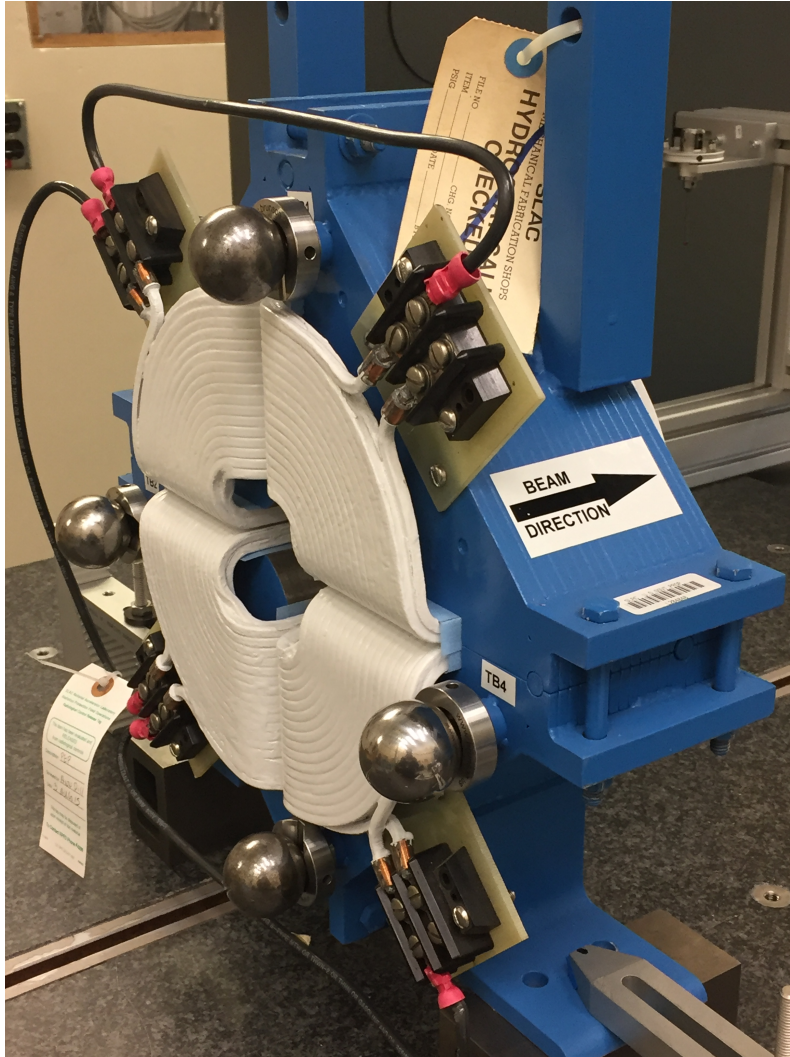


LCLS II 2Q4 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-112-01
Barcode # : 4045
Old S/N : P19
Old MAD Element Name :
Old Unit : Q07230

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. The Terminals & Tooling Ball Sockets are UPSTREAM, therefore +Z (DOWNSTREAM) points away from the Terminals & Tooling Ball Sockets.

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.

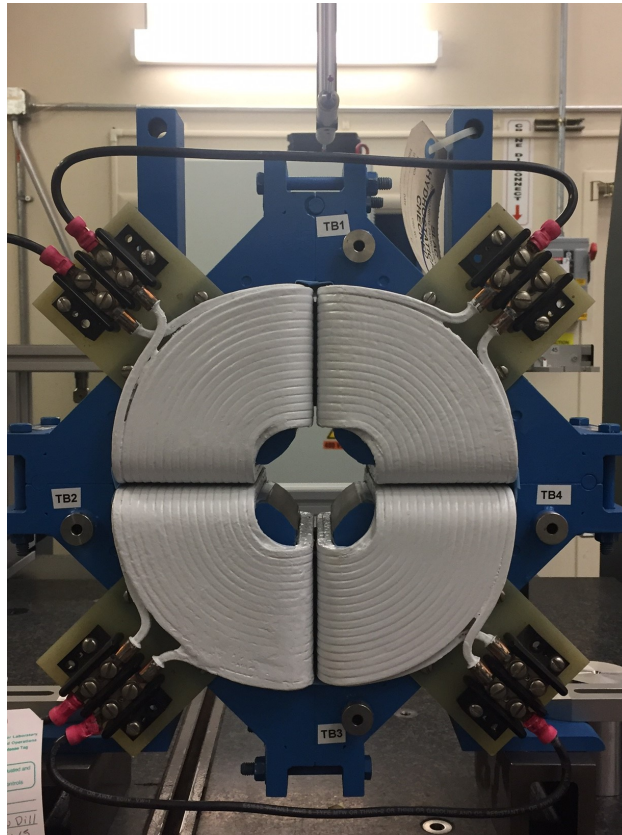
Coordinate Origins

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 # : 4045

Mfg. S/N : P19

Tooling Ball Locations



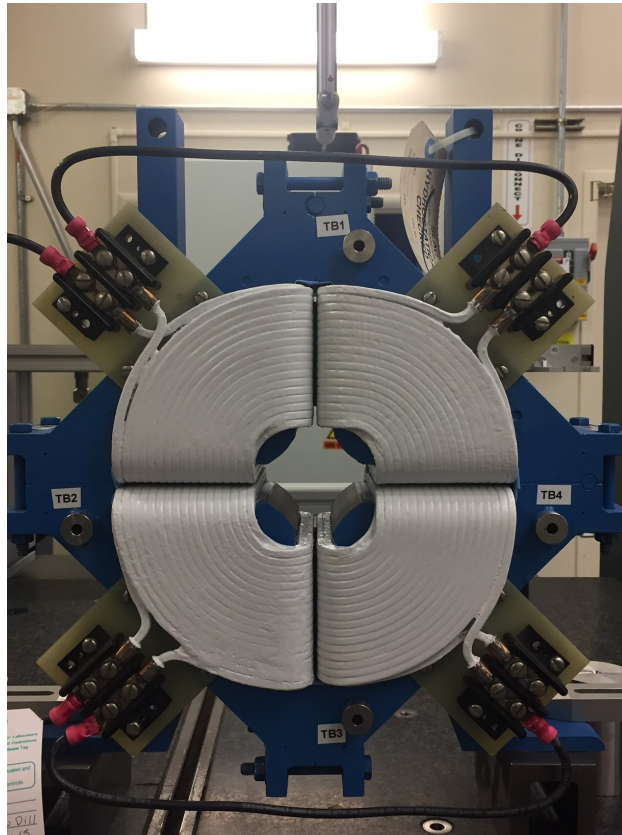
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-1.0022	5.4980	-3.4336
TB 2	5.5011	-0.9993	-3.4328
TB 3	-1.0020	-5.5011	-3.4330
TB 4	-5.5024	-1.0028	-3.4354

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

Barcode # : 4045

Mfg. S/N : P19

Tooling Ball Locations



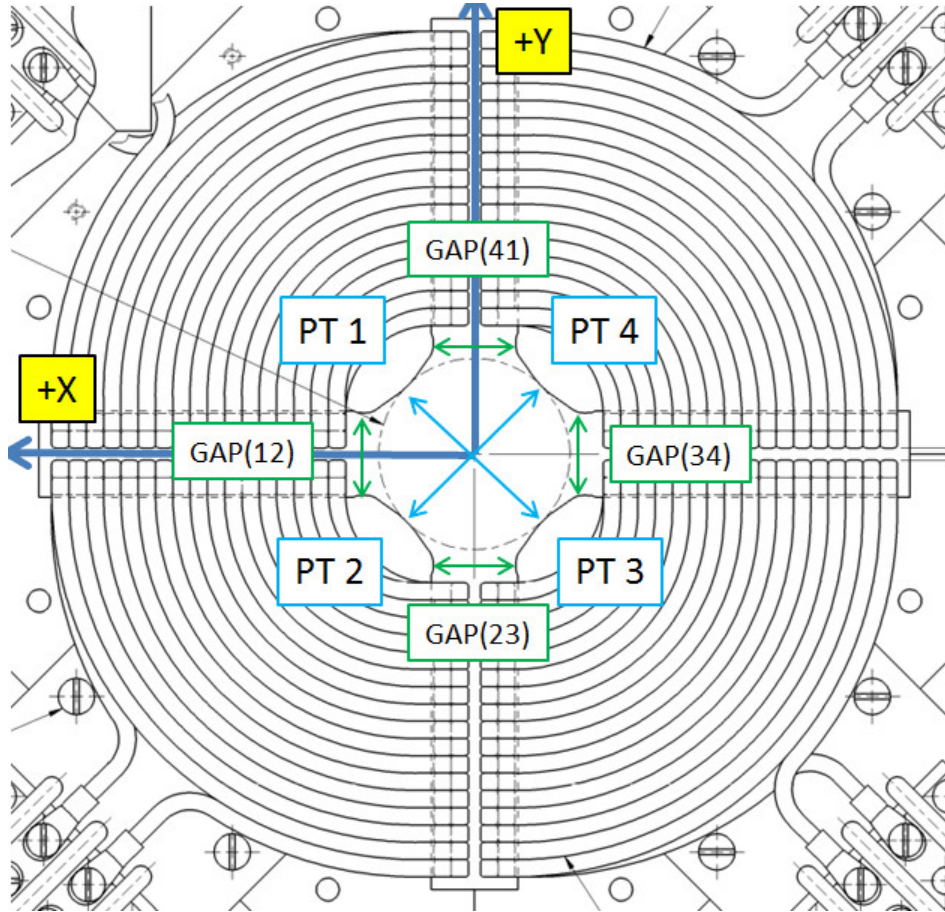
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-1.0017	5.4971	-2.7461
TB 2	5.5012	-1.0000	-2.7453
TB 3	-1.0017	-5.5010	-2.7455
TB 4	-5.5020	-1.0015	-2.7479

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

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Mfg. S/N : P19

Pole Tip Gap Measurements

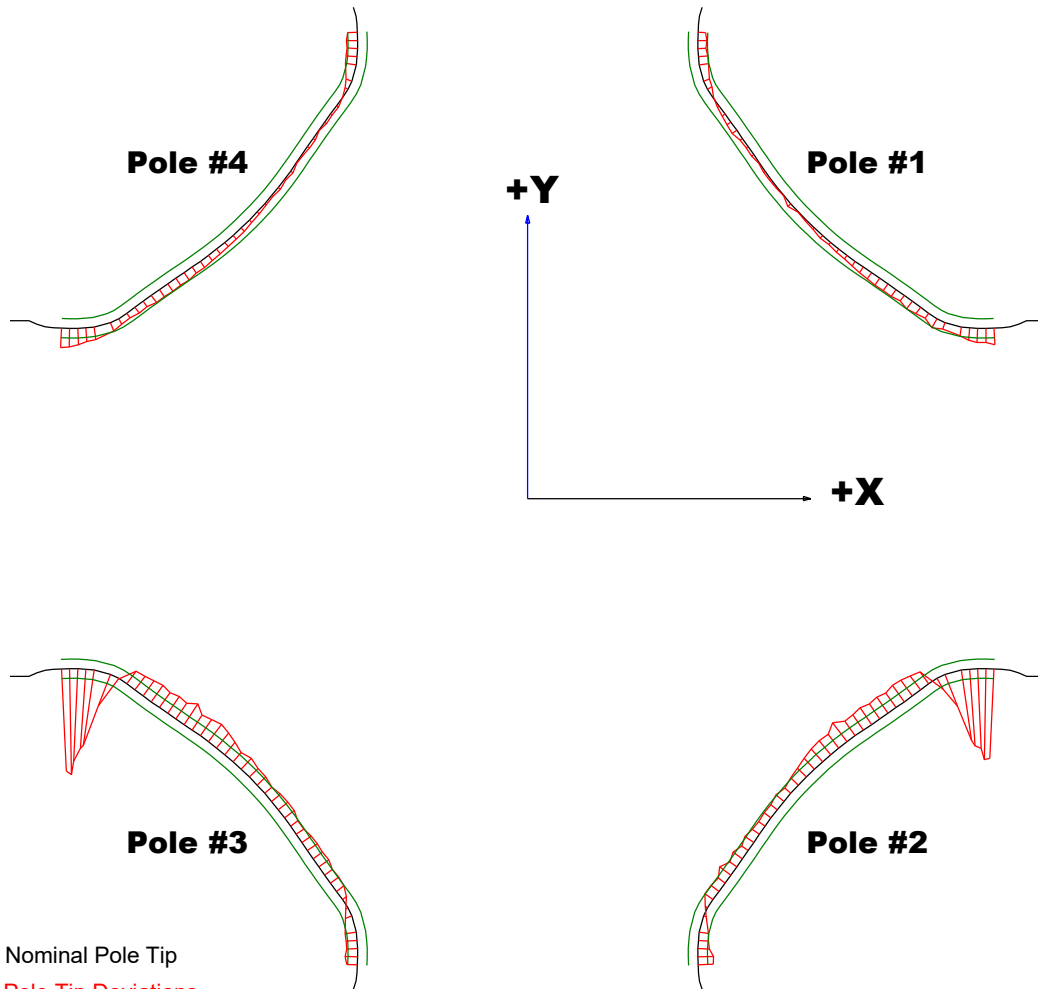


	Nominal Distance	Downstream Pole End	Upstream Pole End
Pole Tip Distance 1-3	2.086 ± .002	2.08454	2.08522
Pole Tip Distance 2-4	2.086 ± .002	2.0843	2.08578
Gap 1-2	0.900	0.90793	0.89781
Gap 2-3	0.900	0.90329	0.90419
Gap 3-4	0.900	0.90805	0.89799
Gap 4-1	0.900	0.90274	0.90207

Barcode # : 4045
Mfg. S/N : P19

Dimensions in Inch

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

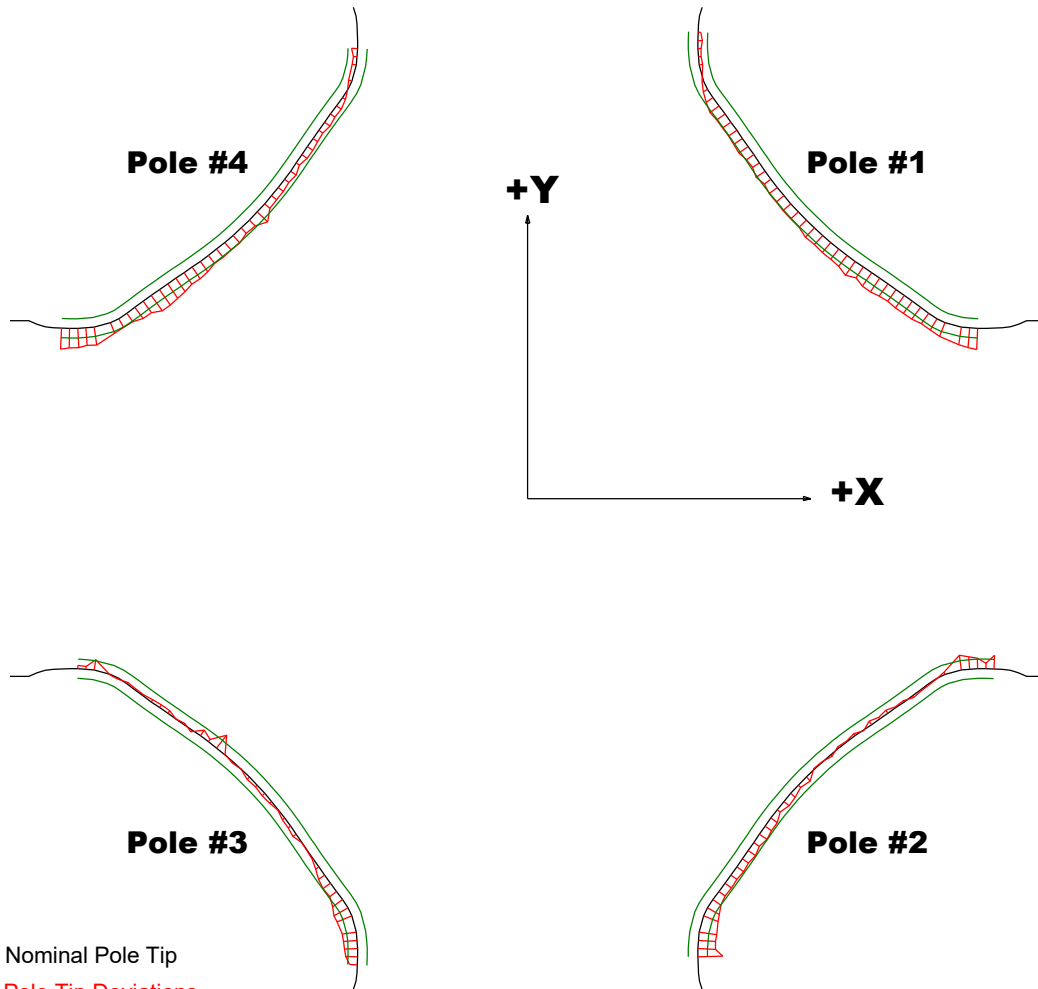
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00173	-0.00249	-0.00261	-0.00203
Max. Dev.	0.00097	0.00949	0.01105	0.00118

Barcode # : 4045

Mfg. S/N : P19

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

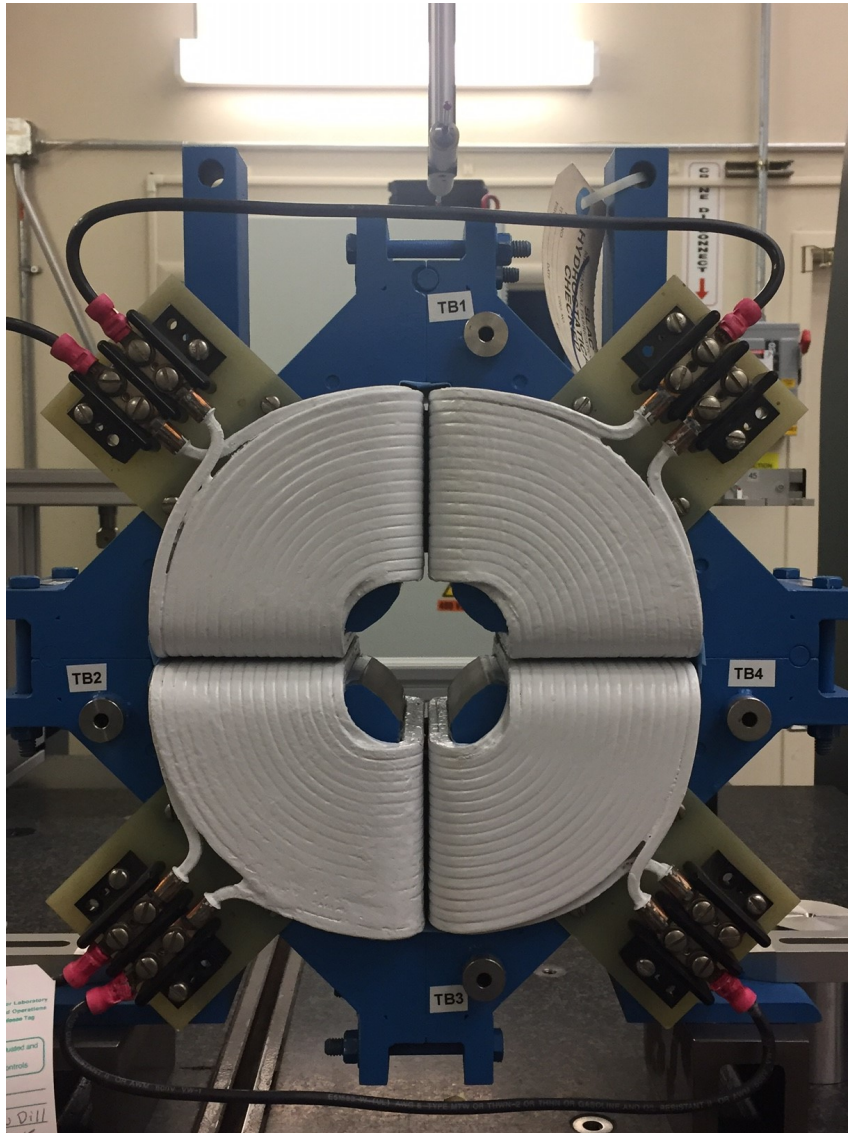
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00221	-0.00155	-0.0017	-0.00219
Max. Dev.	0.00049	0.00261	0.0017	0.00062

Barcode # : 4045

Mfg. S/N : P19

Angle of the Composite Pole Tip Best-Fit



Angle in Decimal Degrees ° :0.04795

Angle in Milliradians :0.83689

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