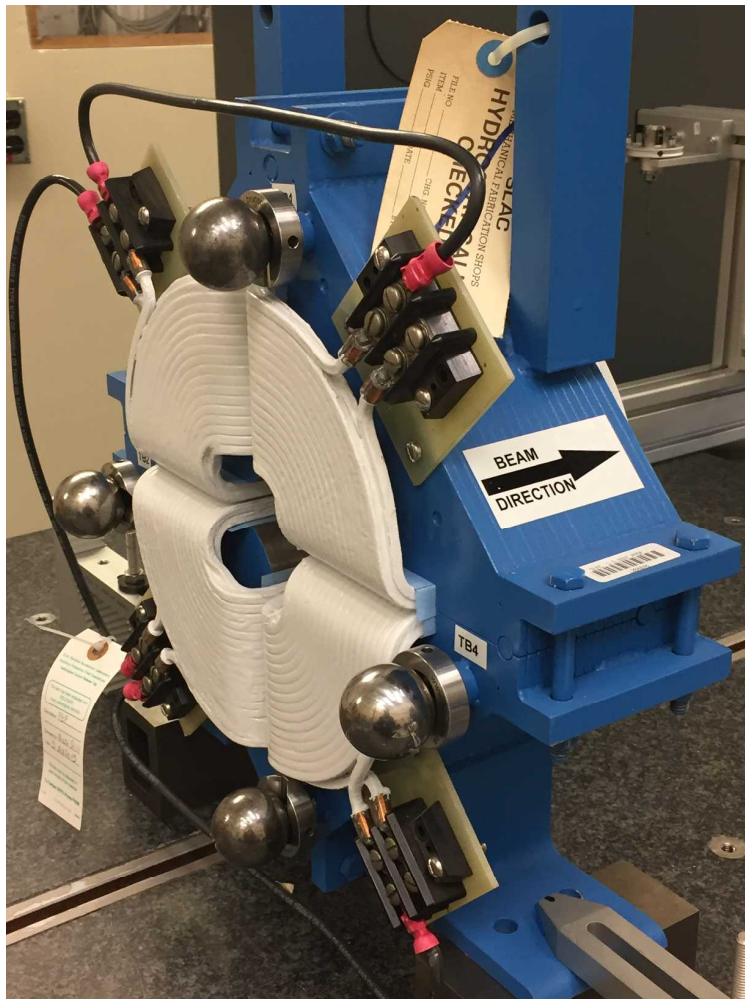


LCLS II 2Q4 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-112-01
Barcode # : 4049
Old S/N : P12
Old MAD Element Name :
Old Unit : QD7030

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.

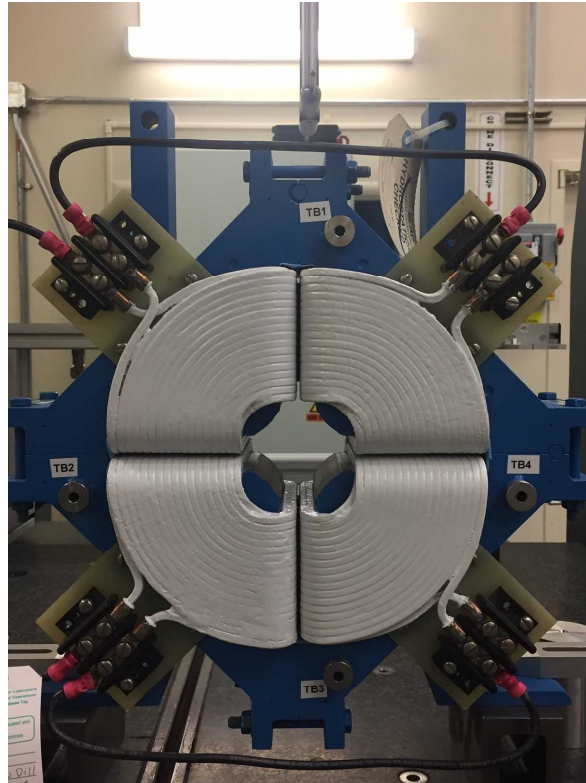
Coordinate Origins

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 # : 4049

Mfg. S/N : P12

Tooling Ball Locations



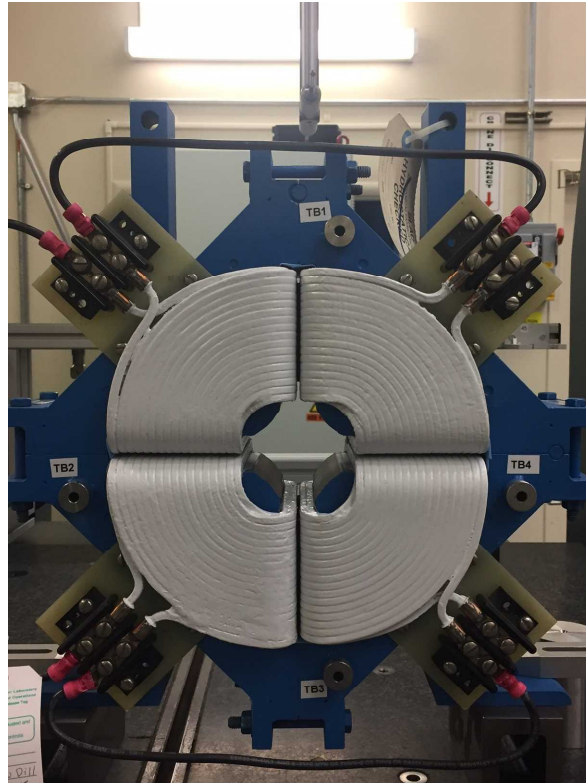
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-0.9975	5.4995	-3.4318
TB 2	5.4990	-1.0069	-3.4314
TB 3	-0.9969	-5.5073	-3.4350
TB 4	-5.5002	-1.0069	-3.4328

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

Barcode # : 4049

Mfg. S/N : P12

Tooling Ball Locations



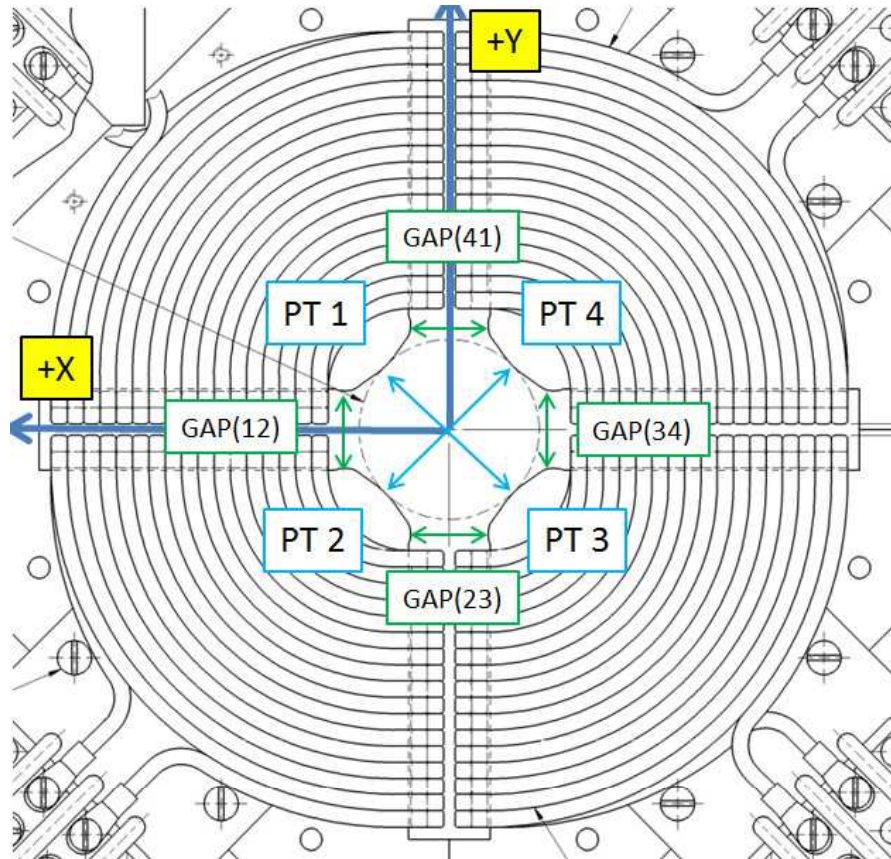
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-0.9977	5.5025	-2.7440
TB 2	5.4985	-1.0020	-2.7438
TB 3	-0.9986	-5.5036	-2.7477
TB 4	-5.5003	-1.0026	-2.7451

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

Barcode # : 4049

Mfg. S/N : P12

Pole Tip Gap Measurements



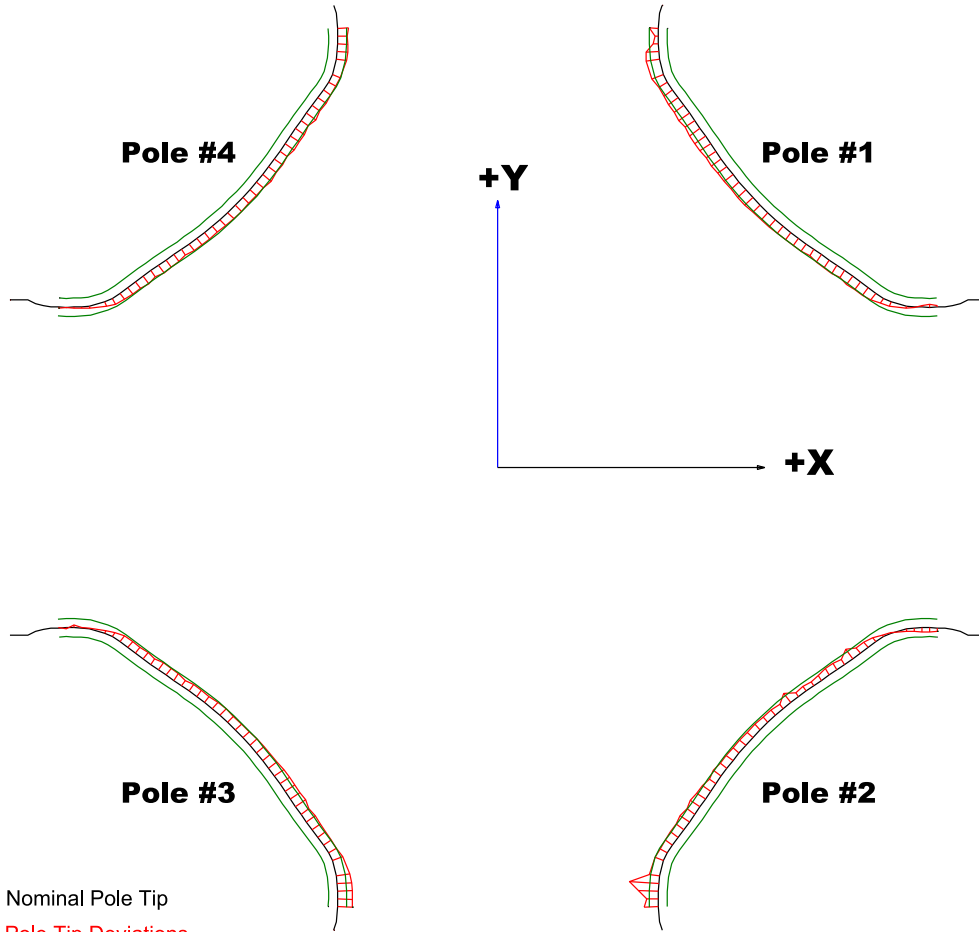
	Nominal Distance	Downstream Pole End	Upstream Pole End
Pole Tip Distance 1-3	2.086 ± .002	2.08399	2.08642
Pole Tip Distance 2-4	2.086 ± .002	2.08419	2.08639
Gap 1-2	0.900	0.90151	0.90401
Gap 2-3	0.900	0.8958	0.89861
Gap 3-4	0.900	0.90037	0.90556
Gap 4-1	0.900	0.89924	0.89782

Barcode # : 4049

Dimensions in Inch

Mfg. S/N : P12

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

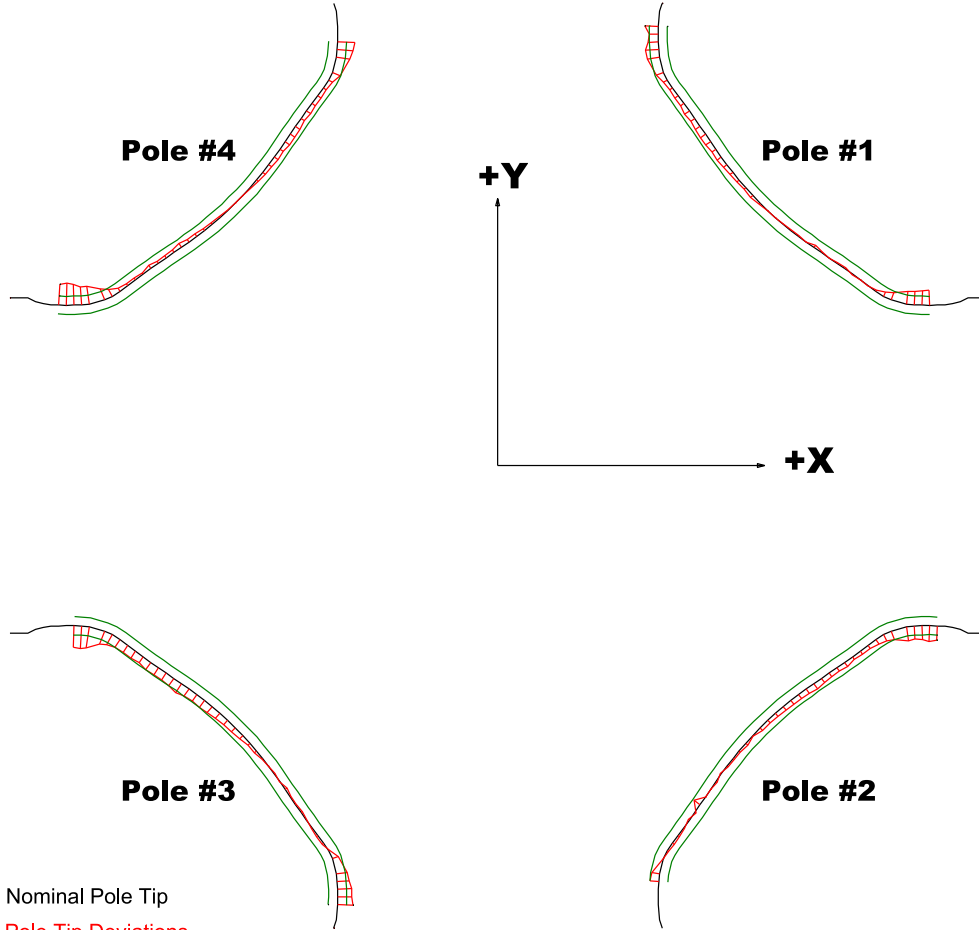
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00151	-0.00323	-0.00163	-0.00132
Max. Dev.	0.00036	0.0005	0.00016	-0.00004

Barcode # : 4049

Mfg. S/N : P12

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

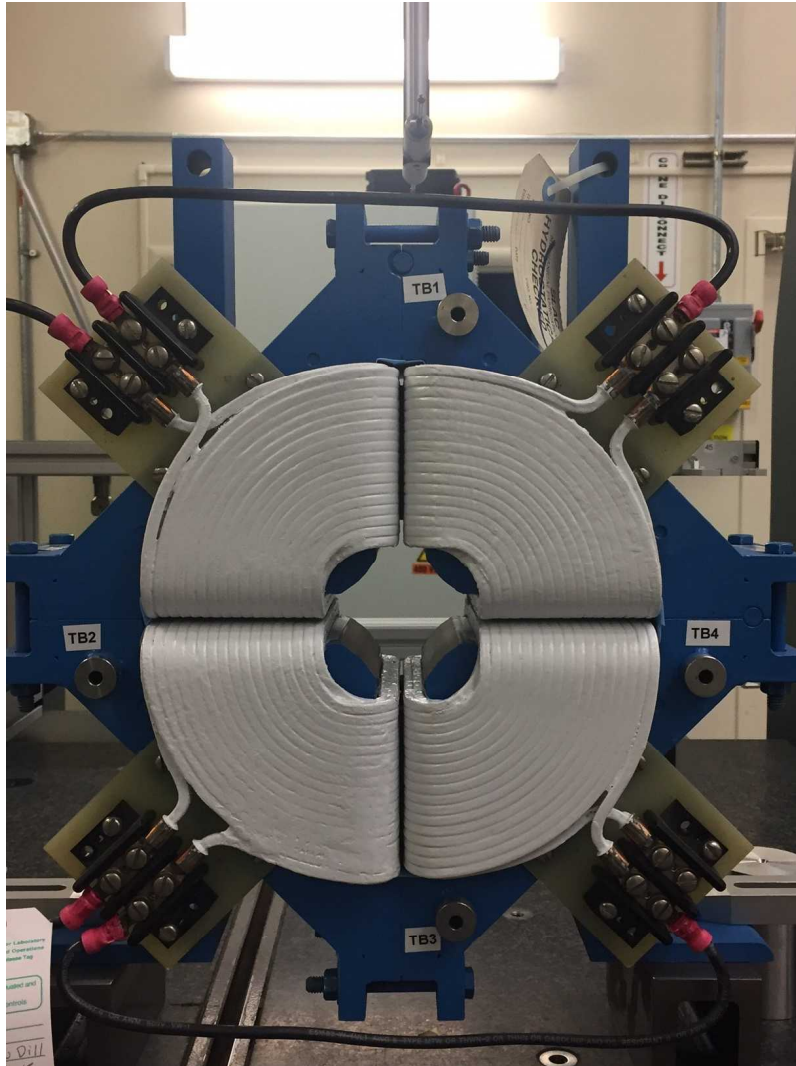
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00154	-0.00095	-0.00174	-0.00194
Max. Dev.	0.00166	0.00178	0.00245	0.00249

Barcode # : 4049

Mfg. S/N : P12

Angle of the Composite Pole Tip Best-Fit In Relation to Base



Angle in Decimal Degrees ° :0.07718

Angle in Milliradians :1.34699

Barcode # : 4049

Mfg. S/N : P12