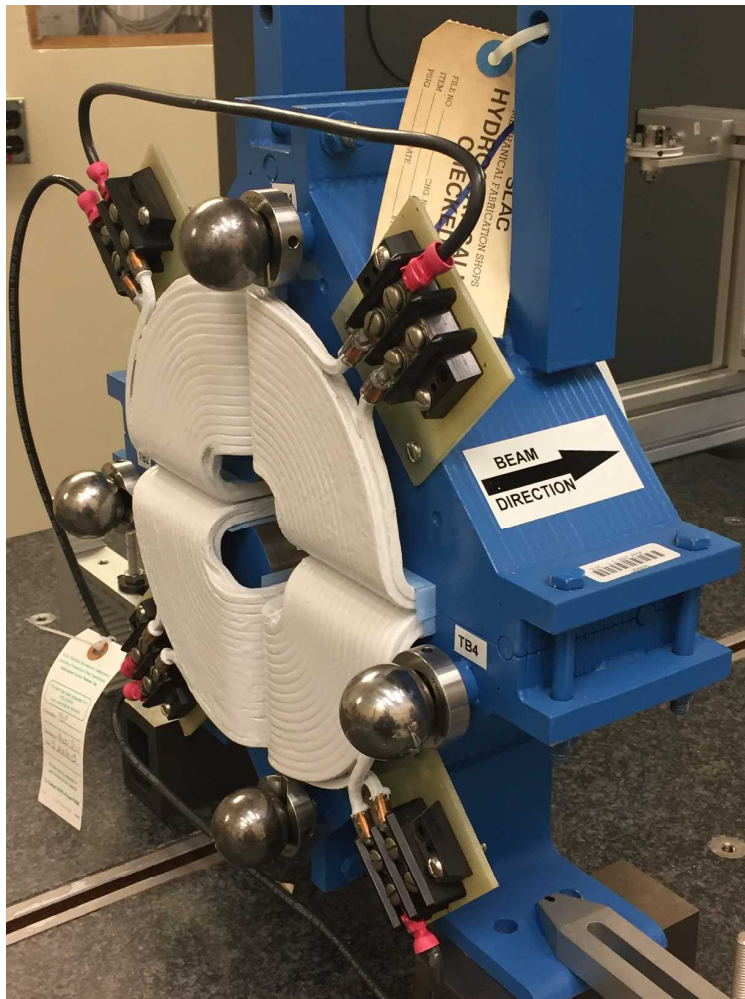


LCLS II 2Q4 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-112-01
Barcode # : 4040
Old S/N : P01
Old MAD Element Name : LX04QU4
Old Unit : QEB46580

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.

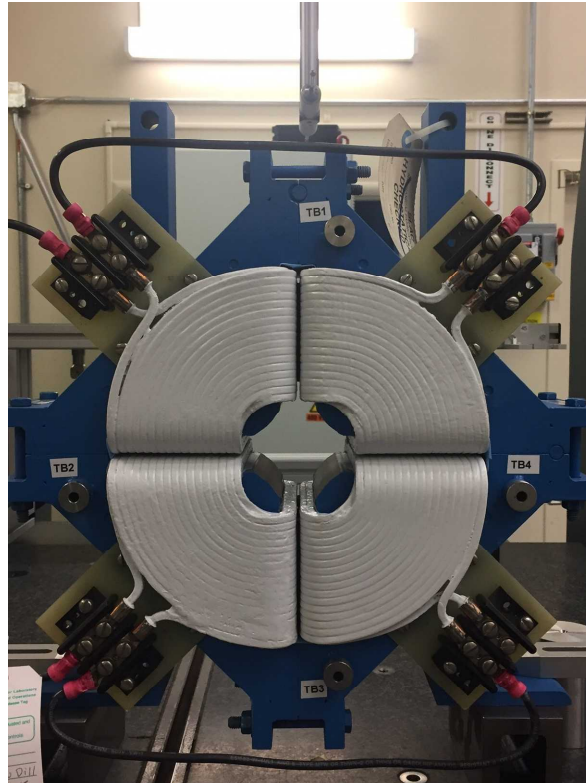
Coordinate Origins

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 # : 4040

Mfg. S/N : P01

Tooling Ball Locations



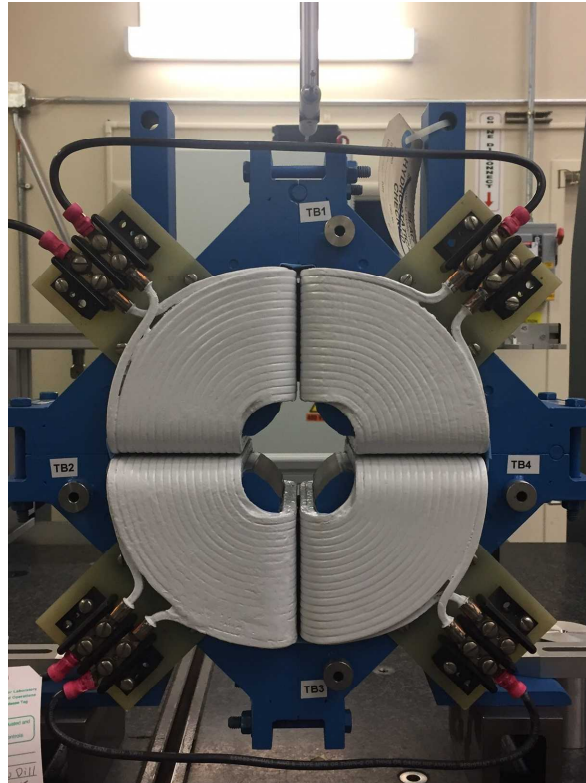
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-1.0041	5.5058	-3.4244
TB 2	5.5054	-1.0061	-3.4183
TB 3	-1.0058	-5.5091	-3.4338
TB 4	-5.5105	-1.0007	-3.4310

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

Barcode # : 4040

Mfg. S/N : P01

Tooling Ball Locations



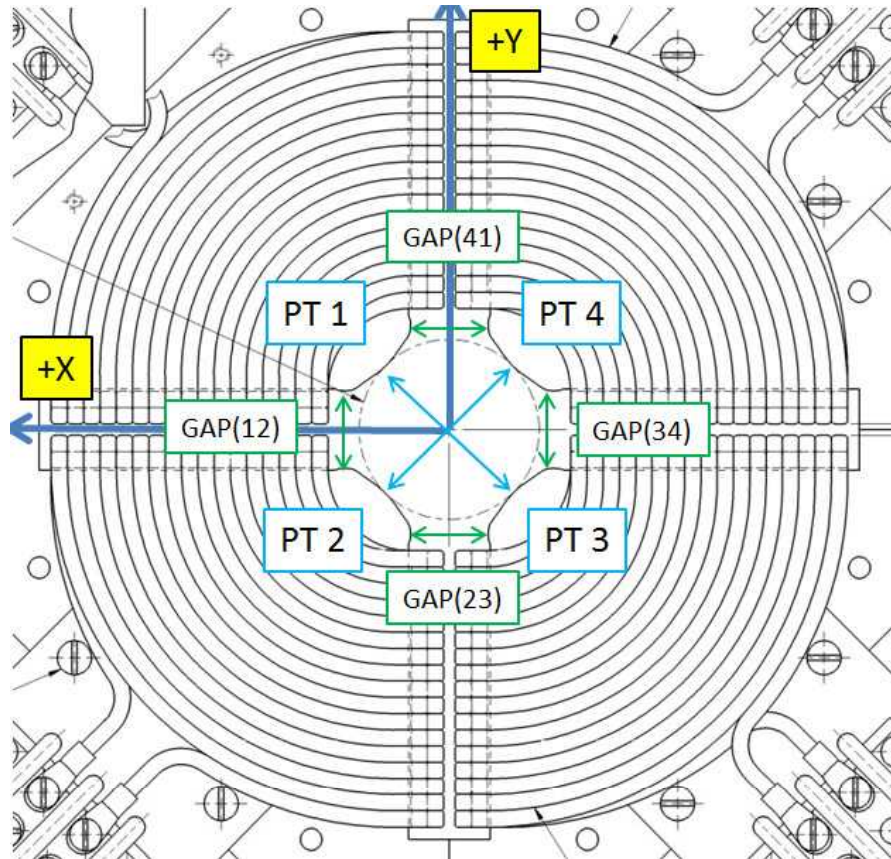
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-1.0014	5.5041	-2.7364
TB 2	5.5026	-1.0035	-2.7307
TB 3	-1.0037	-5.5062	-2.7465
TB 4	-5.5067	-0.9976	-2.7438

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

Barcode # : 4040

Mfg. S/N : P01

Pole Tip Gap Measurements



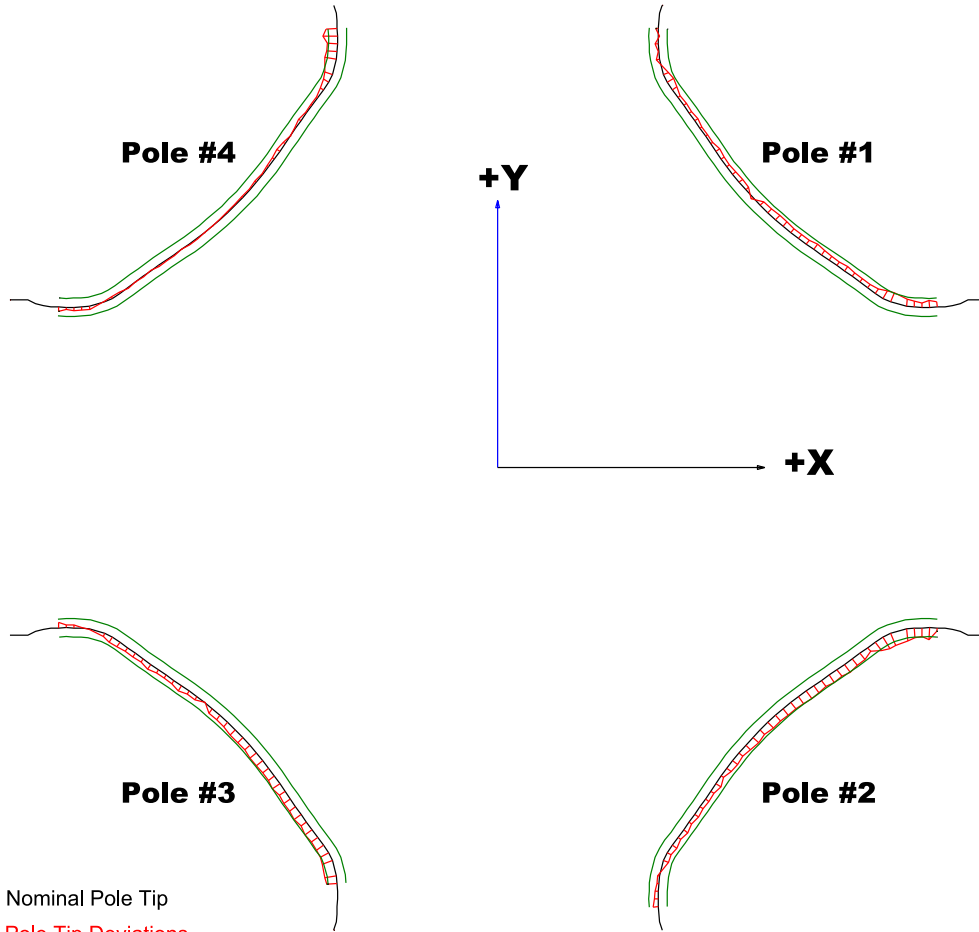
	Nominal Distance	Downstream Pole End	Upstream Pole End
Pole Tip Distance 1-3	2.086 ± .002	2.08734	2.08761
Pole Tip Distance 2-4	2.086 ± .002	2.08663	2.08816
Gap 1-2	0.900	0.90258	0.90064
Gap 2-3	0.900	0.90249	0.90368
Gap 3-4	0.900	0.9001	0.90275
Gap 4-1	0.900	0.902	0.90225

Barcode # : 4040

Dimensions in Inch

Mfg. S/N : P01

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

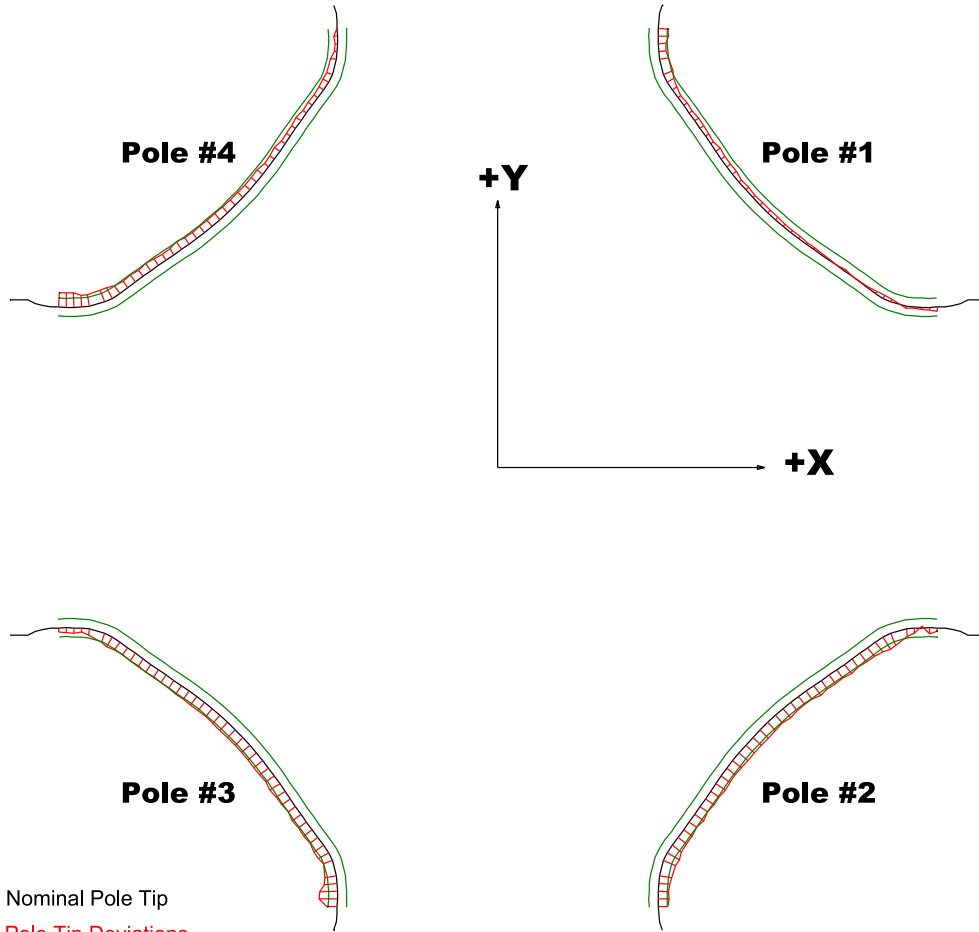
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00034	-0.0006	-0.00064	-0.00044
Max. Dev.	0.00108	0.00151	0.00126	0.00166

Barcode # : 4040

Mfg. S/N : P01

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

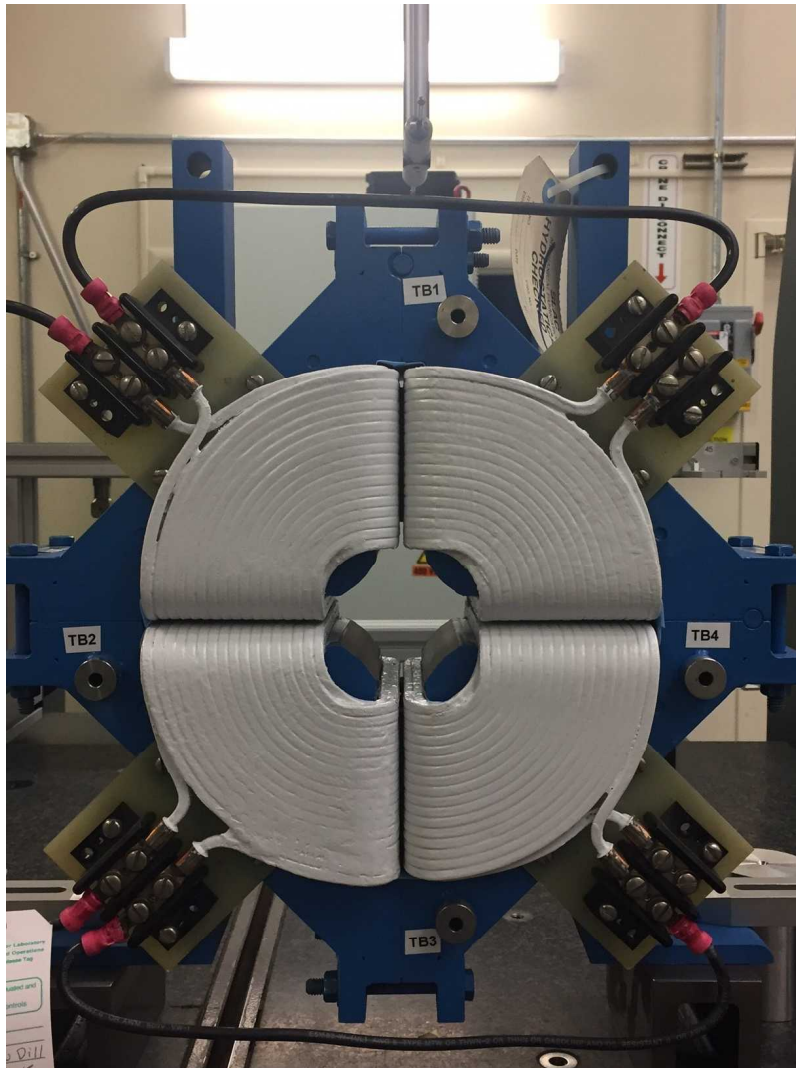
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00045	-0.00016	0.00043	0.00006
Max. Dev.	0.00118	0.00157	0.00203	0.00164

Barcode # : 4040

Mfg. S/N : P01

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



Angle in Decimal Degrees ° :0.04994

Angle in Milliradians :0.87164

Barcode # : 4040

Mfg. S/N : P01