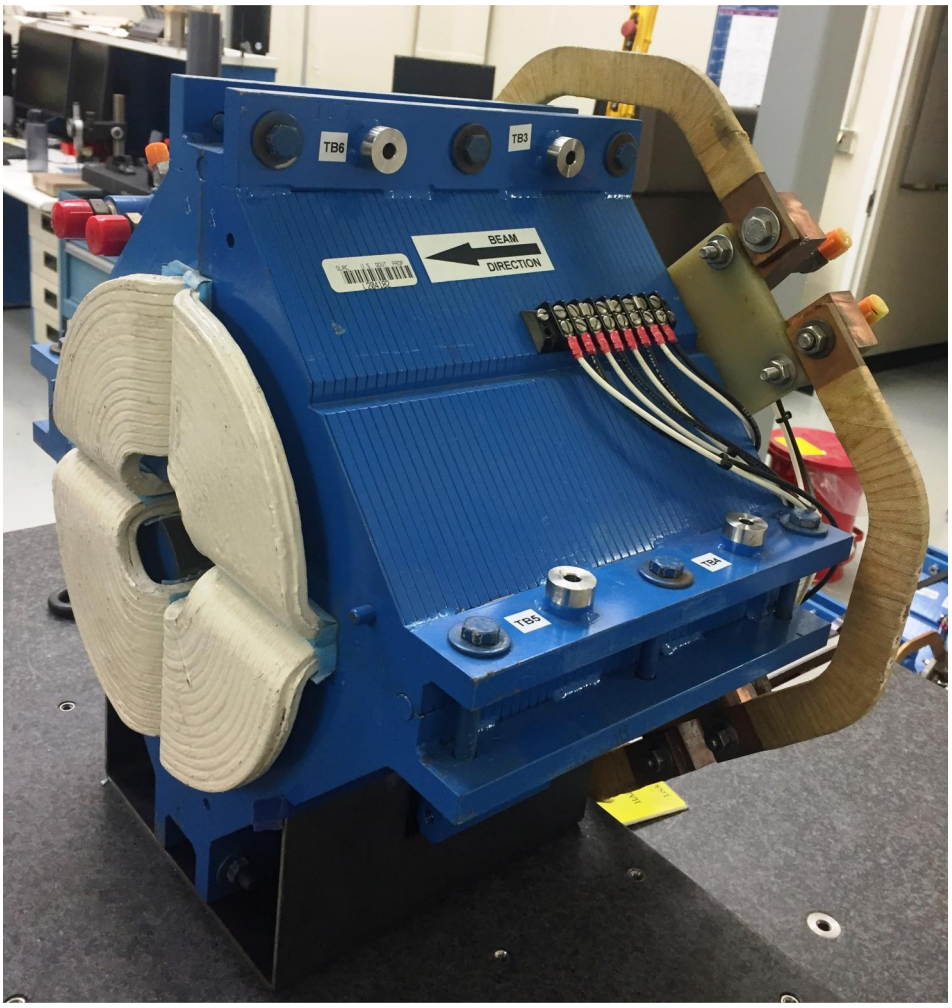
LCLS II 2Q10 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-344-113-21
Barcode # : 4186
Mfg. S/N : #27

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.

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.

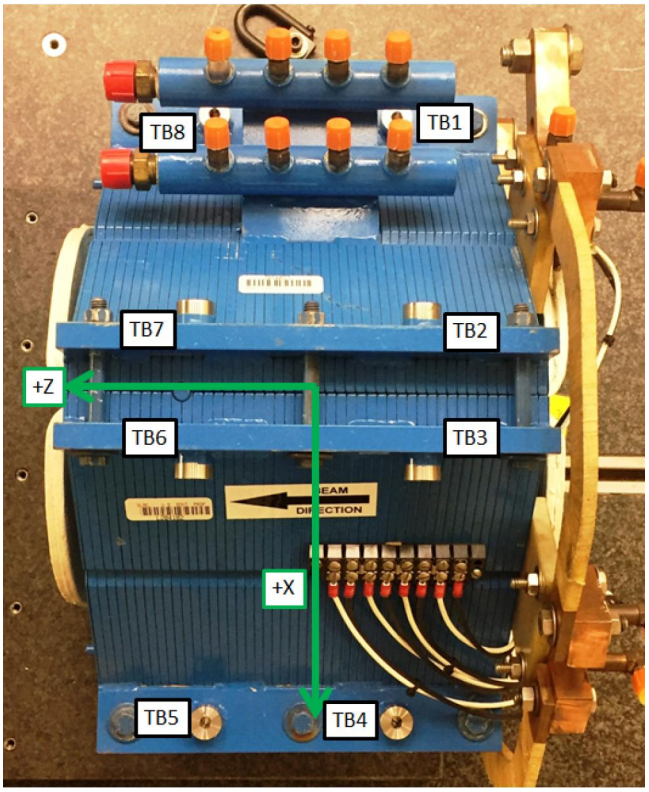
Coordinate Origins

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 # : 4186

Mfg. S/N : #27

Tooling Ball Locations



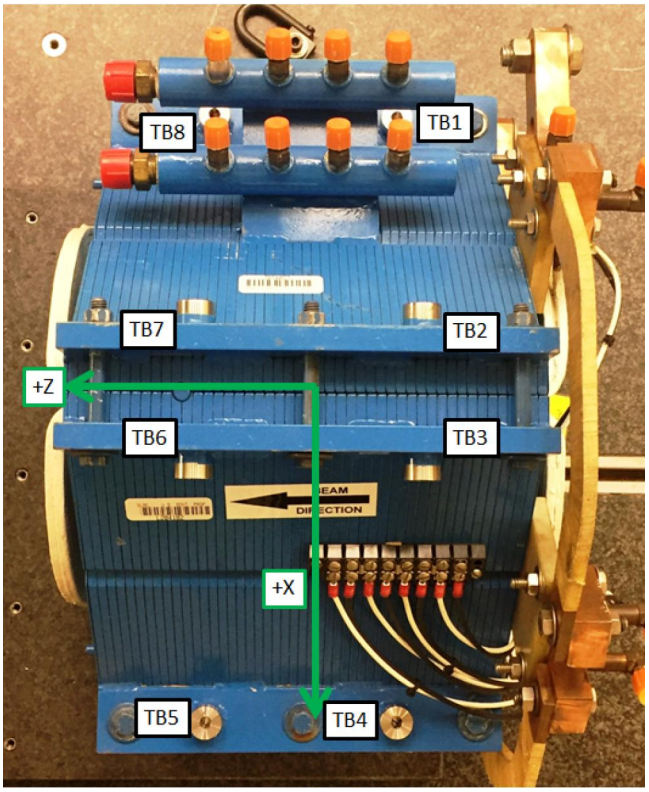
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0939	2.6863	-2.1437
TB 2	-2.6970	7.0717	-2.1620
TB 3	2.6570	7.0581	-2.1772
TB 4	7.0363	2.6780	-2.1878
TB 5	7.0550	2.6780	2.1552
TB 6	2.6714	7.0526	2.1597
TB 7	-2.6764	7.0652	2.1710
TB 8	-7.0745	2.6800	2.1941

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

Barcode # : 4186

Mfg. S/N : #27

Tooling Ball Locations



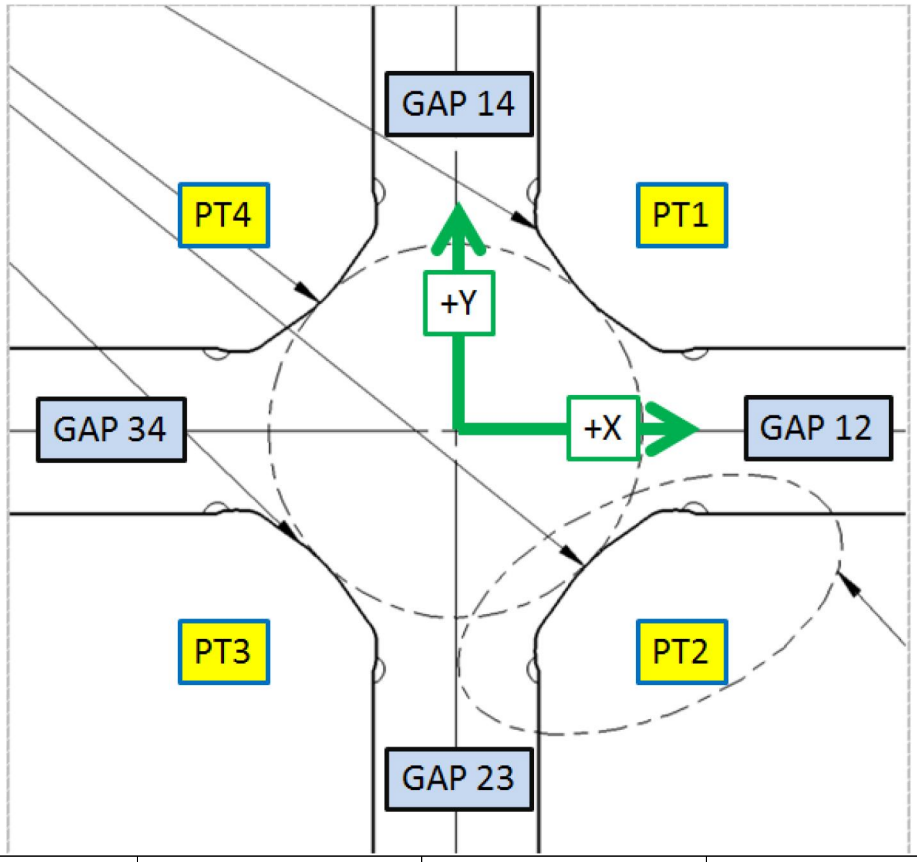
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-7.0926	1.9995	-2.1447
TB 2	-2.0101	7.0670	-2.1621
TB 3	1.9689	7.0572	-2.1737
TB 4	7.0346	1.9894	-2.1869
TB 5	7.0559	1.9902	2.1561
TB 6	1.9834	7.0517	2.1629
TB 7	-1.9900	7.0619	2.1696
TB 8	-7.0738	1.9925	2.1912

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

Barcode # : 4186

Mfg. S/N : #27

Pole Tip Gap Measurements



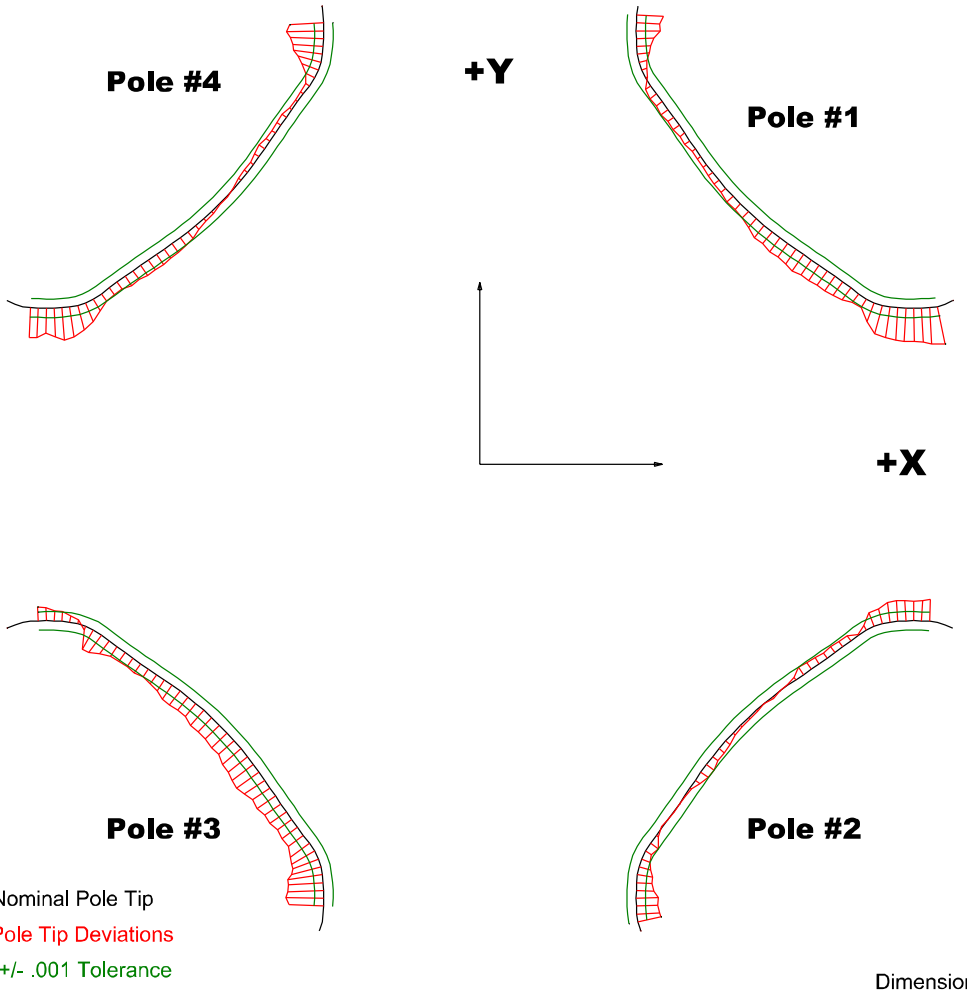
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.02727	2.02655
PT Distance 2-4	2.026	2.02615	2.02699
Gap 1-2	0.8602	0.85331	0.85231
Gap 2-3	0.8602	0.86429	0.86302
Gap 3-4	0.8602	0.854	0.85426
Gap 1-4	0.8602	0.86432	0.86505

Dimensions in Inch

Barcode # : 4186

Mfg. S/N : #27

Composite Best-fit of Pole Tips, Downstream



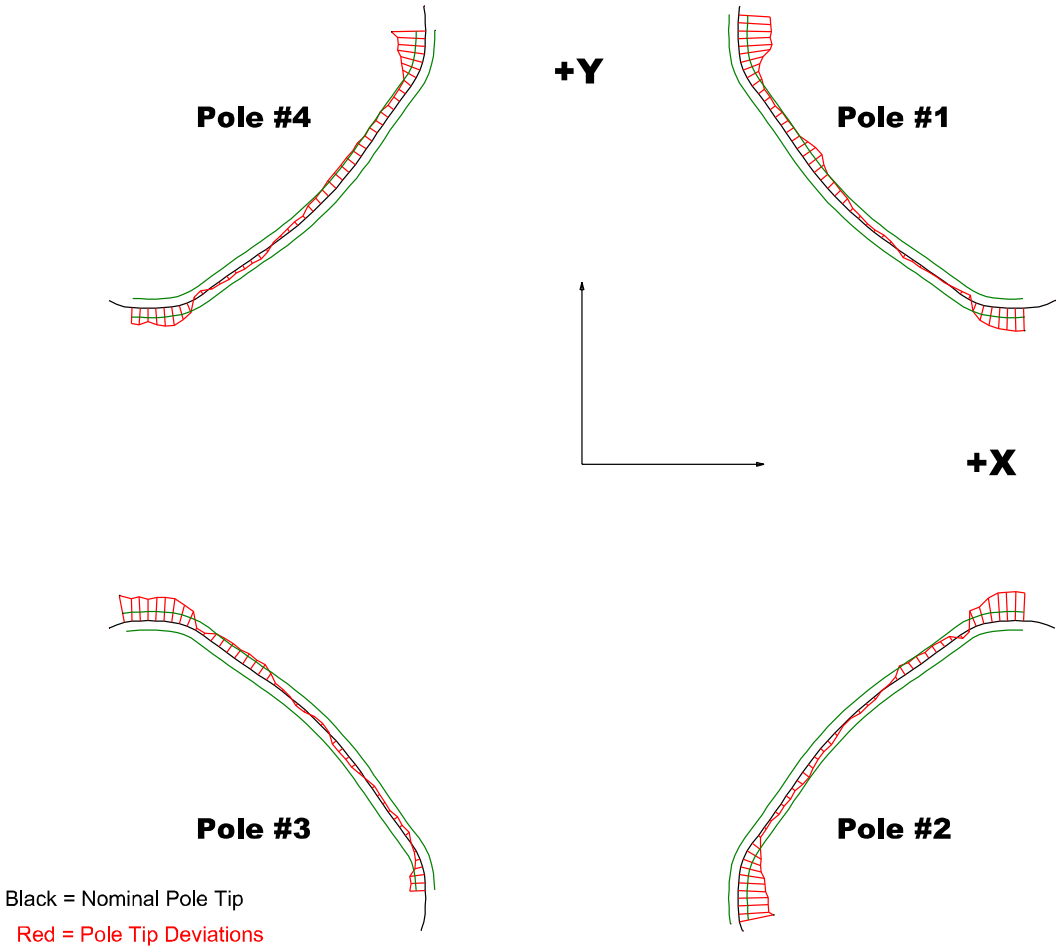
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00286	-0.00255	-0.00413	-0.00407
Max. Dev.	0.00412	0.00237	0.00153	0.00354

Barcode # : 4186

Mfg. S/N : #27

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

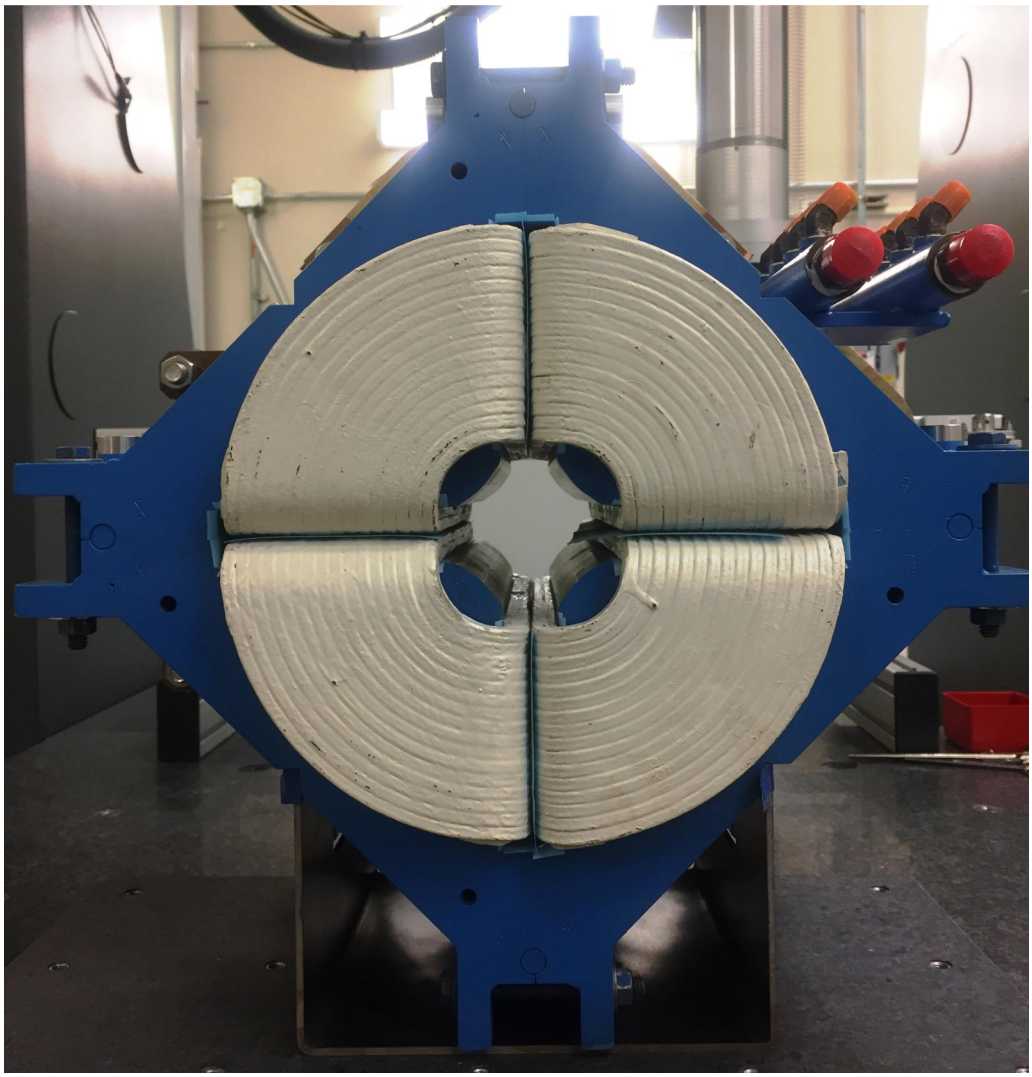
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00363	-0.00372	-0.00169	-0.0037
Max. Dev.	0.00247	0.00313	0.00292	0.00201

Barcode # : 4186

Mfg. S/N : #27

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.05157
Angle in Milliradians :	0.90006

Barcode # : 4186

Mfg. S/N : #27