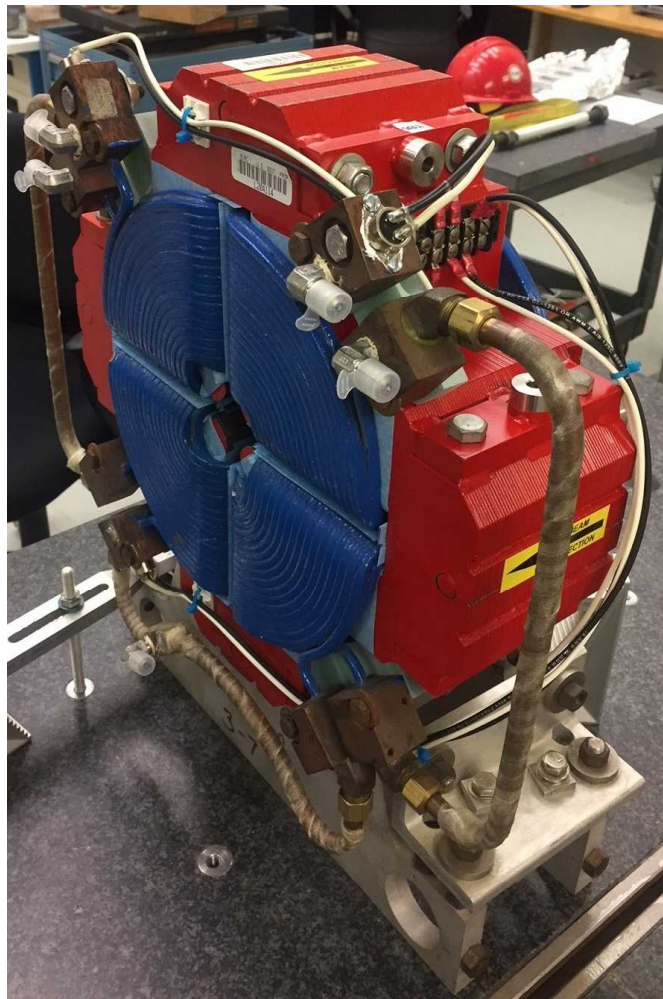


## LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban  
Engineer : J. Amann  
Drawing No. : SA-902-675-01  
Barcode # : 4113  
Mfg. S/N : E056

## **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.

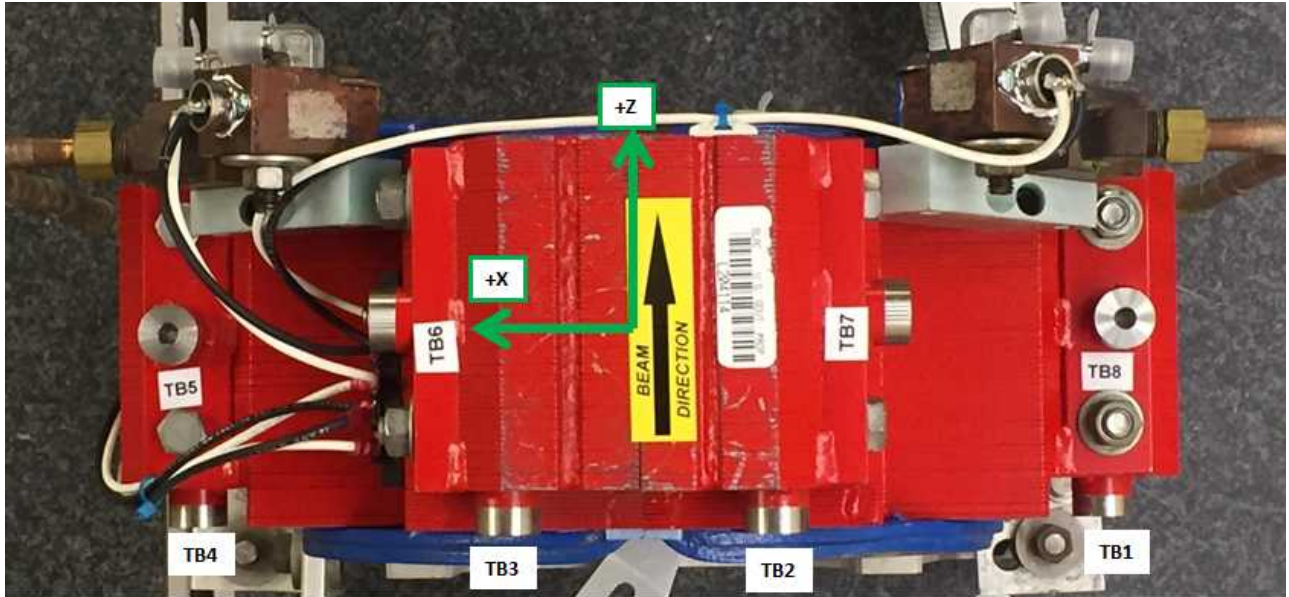
### **Coordinate Origins**

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.

**Barcode # : 4113**

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## Tooling Ball Locations



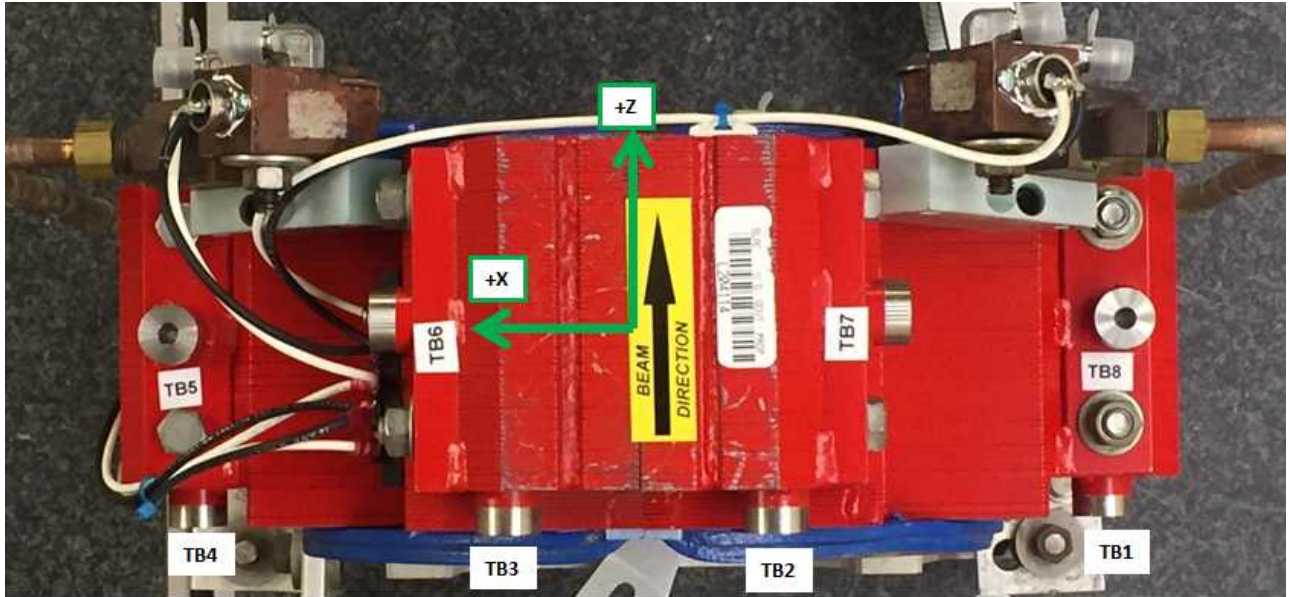
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7200	1.4647	-3.1682
TB 2	-1.5098	5.7081	-3.1772
TB 3	1.4778	5.7978	-3.1696
TB 4	5.7411	1.5057	-3.1831
TB 5	5.8059	4.0158	0.2026
TB 6	3.9854	5.8206	0.2224
TB 7	-4.0183	5.7977	0.2398
TB 8	-5.8073	3.9856	0.2625

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

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## Tooling Ball Locations



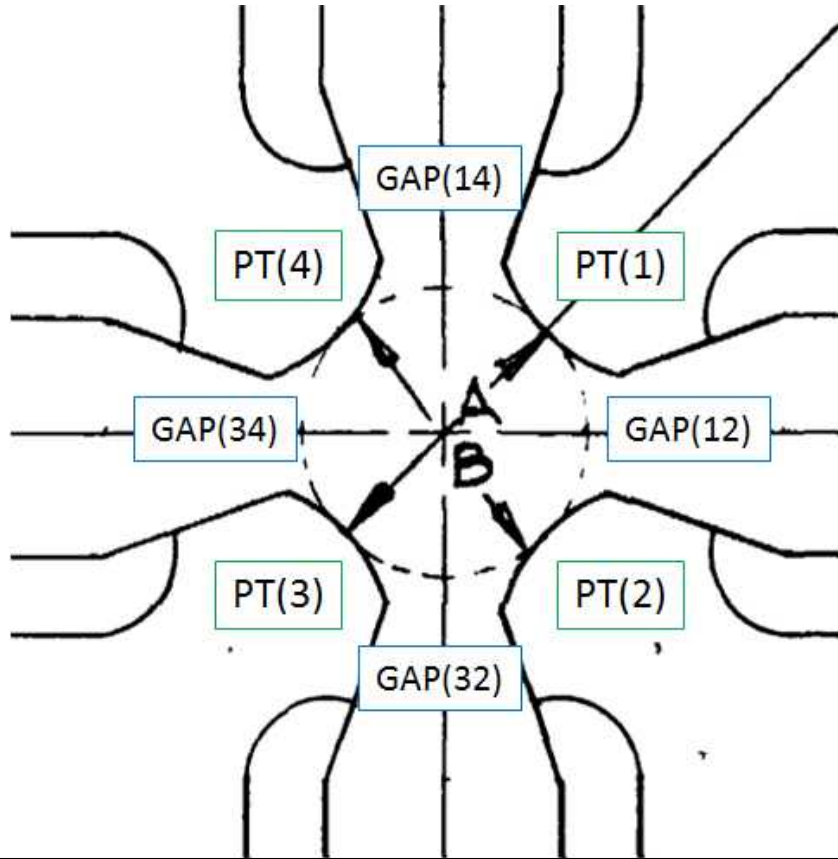
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7185	1.4660	-2.4803
TB 2	-1.5098	5.7094	-2.4890
TB 3	1.4775	5.7962	-2.4812
TB 4	5.7442	1.5066	-2.4945
TB 5	5.8063	3.3276	0.2021
TB 6	3.2978	5.8216	0.2234
TB 7	-3.3304	5.8037	0.2388
TB 8	-5.8028	3.2978	0.2618

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

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## Pole Tip Gap Measurements



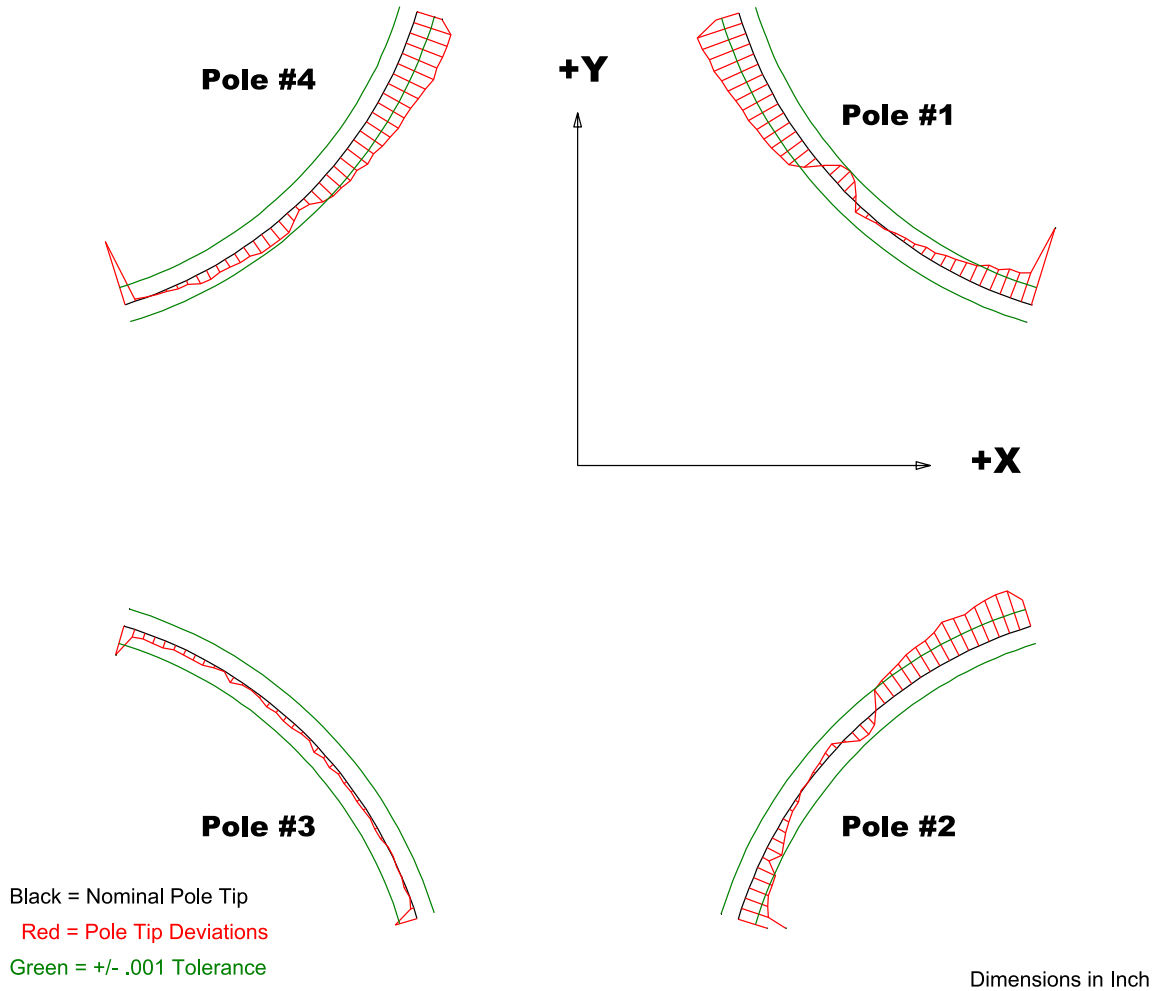
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08506	1.08705
PT Distance 2-4(B)	1.085	1.08437	1.08629
Gap 1-2	0.4546	0.45839	0.46157
Gap 2-3	0.4546	0.4442	0.45874
Gap 3-4	0.4546	0.45068	0.45783
Gap 4-1	0.4546	0.45284	0.45845

Dimensions in Inch

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**Mfg. S/N : E056**

## Composite Best-fit of Pole Tips, Downstream



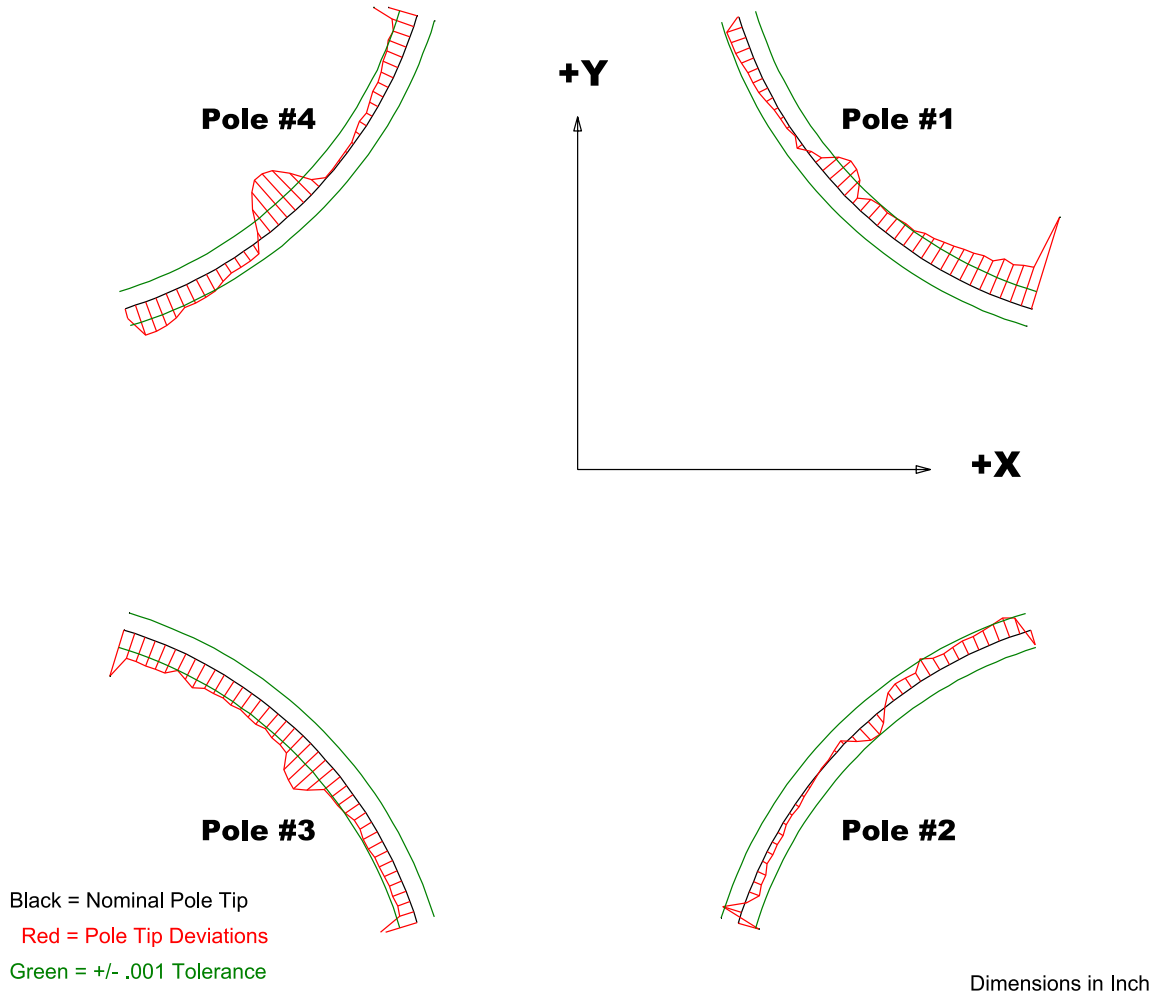
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00449	-0.00381	-0.00169	-0.00369
Max. Dev.	0.00263	0.00229	0.00002	0.00219

**Barcode # : 4113**

**Mfg. S/N : E056**

## Composite Best-fit of Pole Tips, Upstream



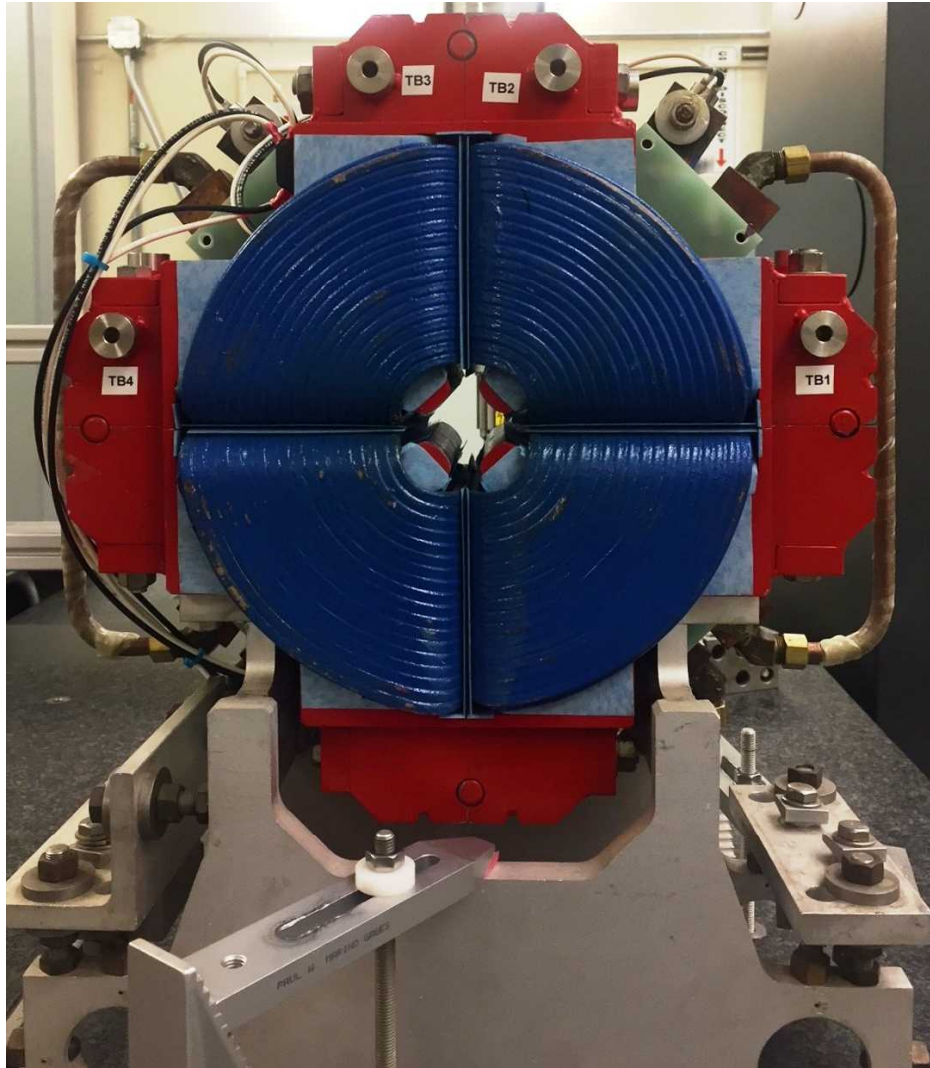
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00535	-0.00118	-0.0027	-0.00327
Max. Dev.	0.00091	0.00116	-0.00071	0.00176

**Barcode # : 4113**

**Mfg. S/N : E056**

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



Angle in Decimal Degrees ° :-0.12531

Angle in Milliradians :-2.18714

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