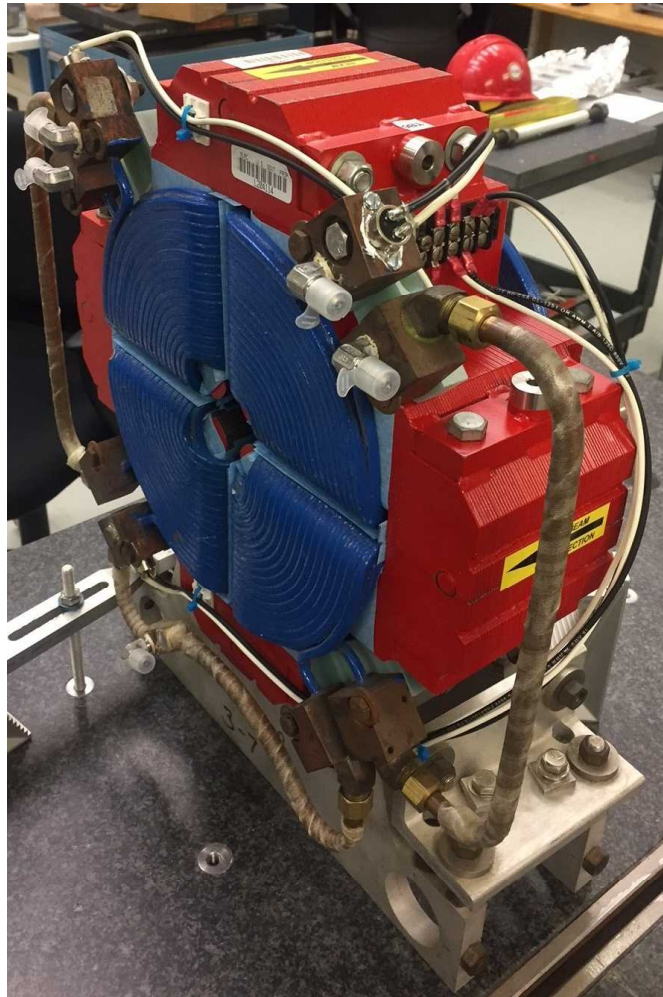


## LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban  
Engineer : J. Amann  
Drawing No. : SA-902-675-01  
Barcode # : 4117  
Mfg. S/N : E075

## **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.

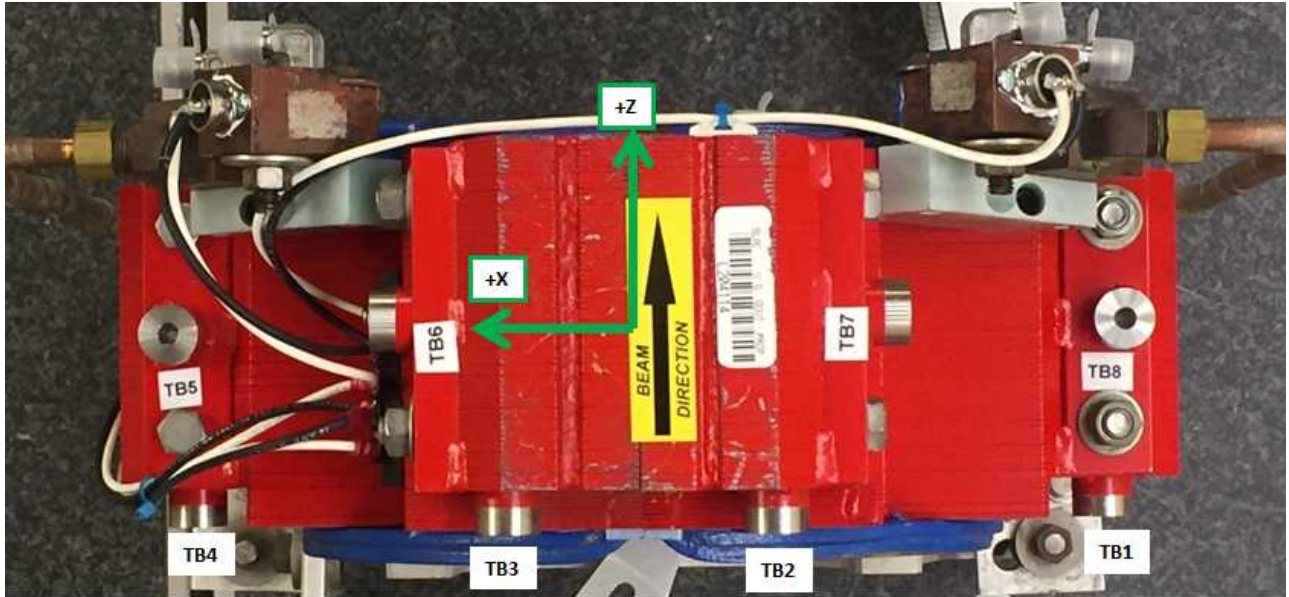
### **Coordinate Origins**

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.

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## Tooling Ball Locations



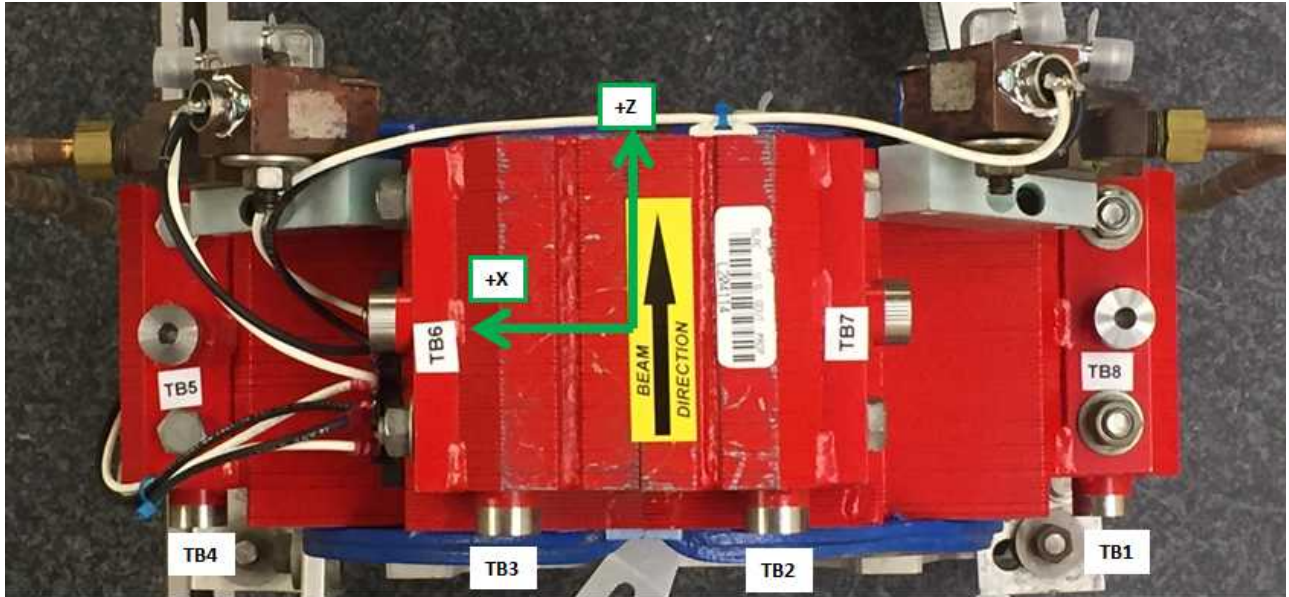
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7710	1.4945	-3.1958
TB 2	-1.5090	5.7579	-3.1939
TB 3	1.5008	5.7714	-3.1885
TB 4	5.7637	1.5212	-3.1942
TB 5	5.8223	4.0075	0.2513
TB 6	3.9937	5.8573	0.2569
TB 7	-4.0078	5.8305	0.2424
TB 8	-5.8509	3.9902	0.2587

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

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## Tooling Ball Locations



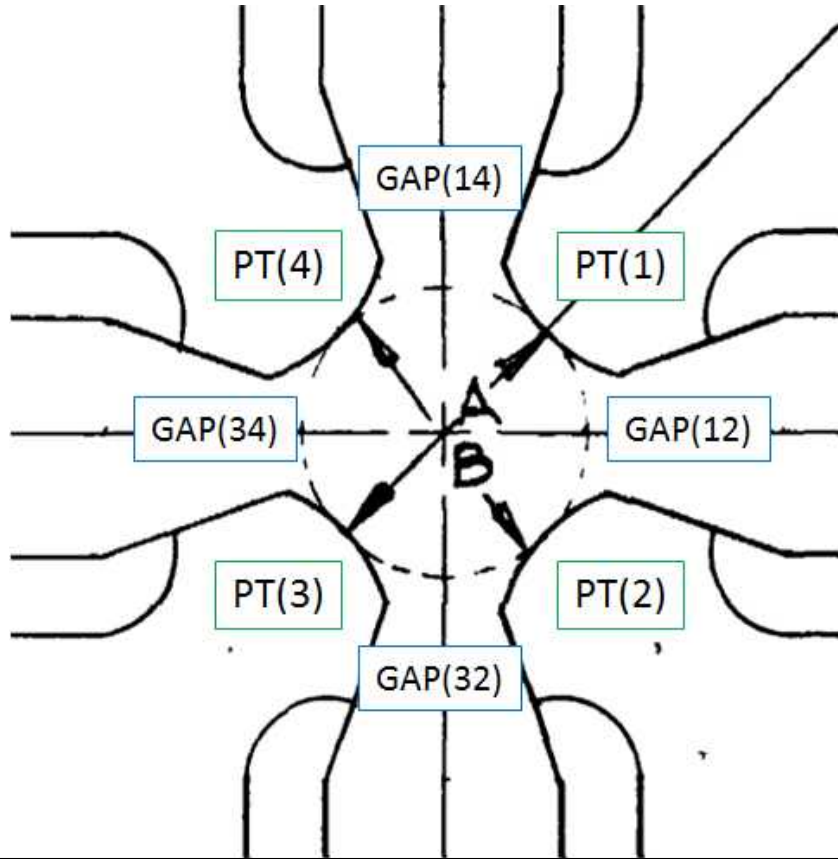
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7691	1.4940	-2.5082
TB 2	-1.5058	5.7625	-2.5056
TB 3	1.4958	5.7720	-2.5002
TB 4	5.7662	1.5215	-2.5053
TB 5	5.8235	3.3206	0.2540
TB 6	3.3055	5.8567	0.2543
TB 7	-3.3198	5.8342	0.2427
TB 8	-5.8473	3.3032	0.2586

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

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## Pole Tip Gap Measurements



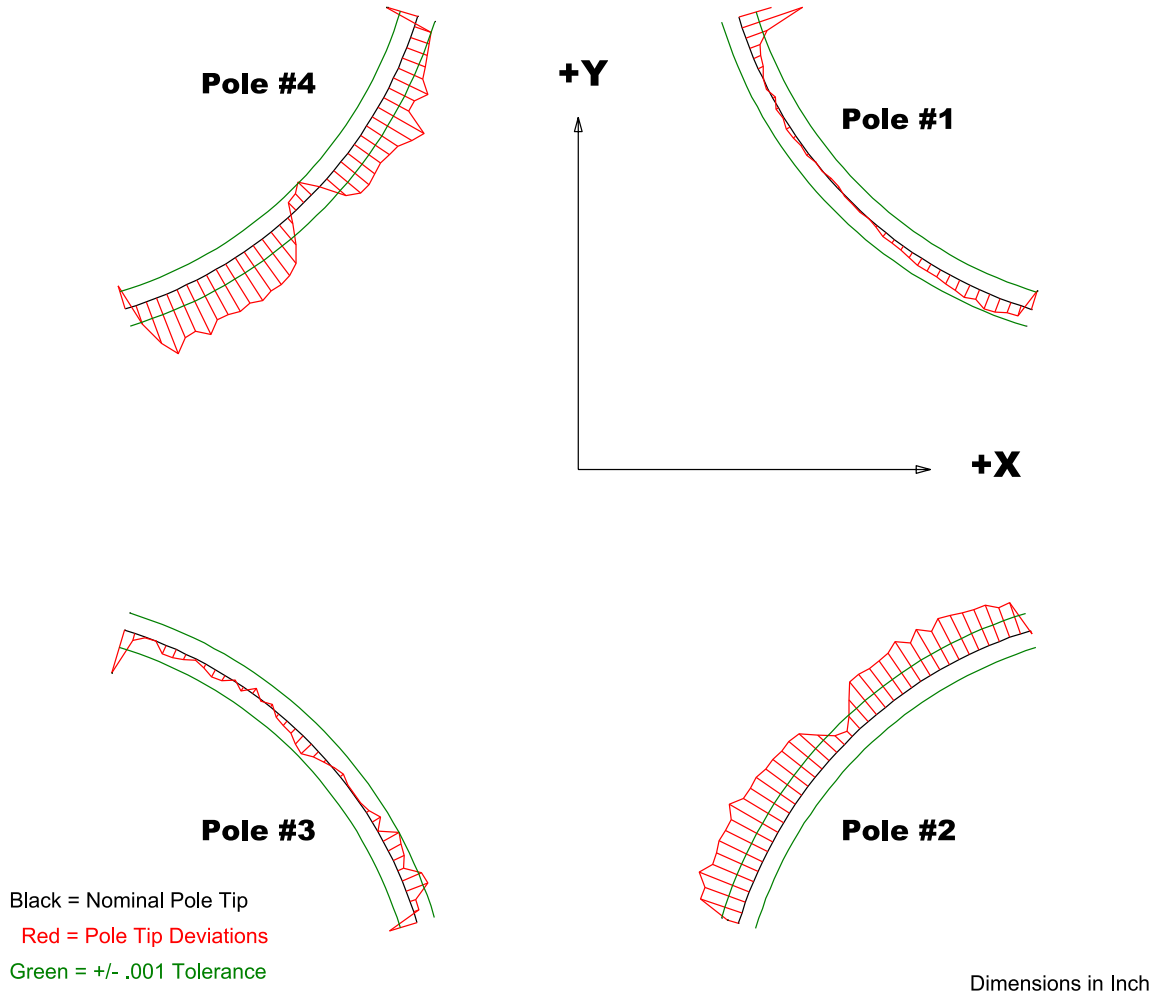
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08563	1.086
PT Distance 2-4(B)	1.085	1.08491	1.08675
Gap 1-2	0.4546	0.4568	0.45615
Gap 2-3	0.4546	0.45642	0.46338
Gap 3-4	0.4546	0.45871	0.45855
Gap 4-1	0.4546	0.46302	0.4613

Dimensions in Inch

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**Mfg. S/N : E075**

## Composite Best-fit of Pole Tips, Downstream



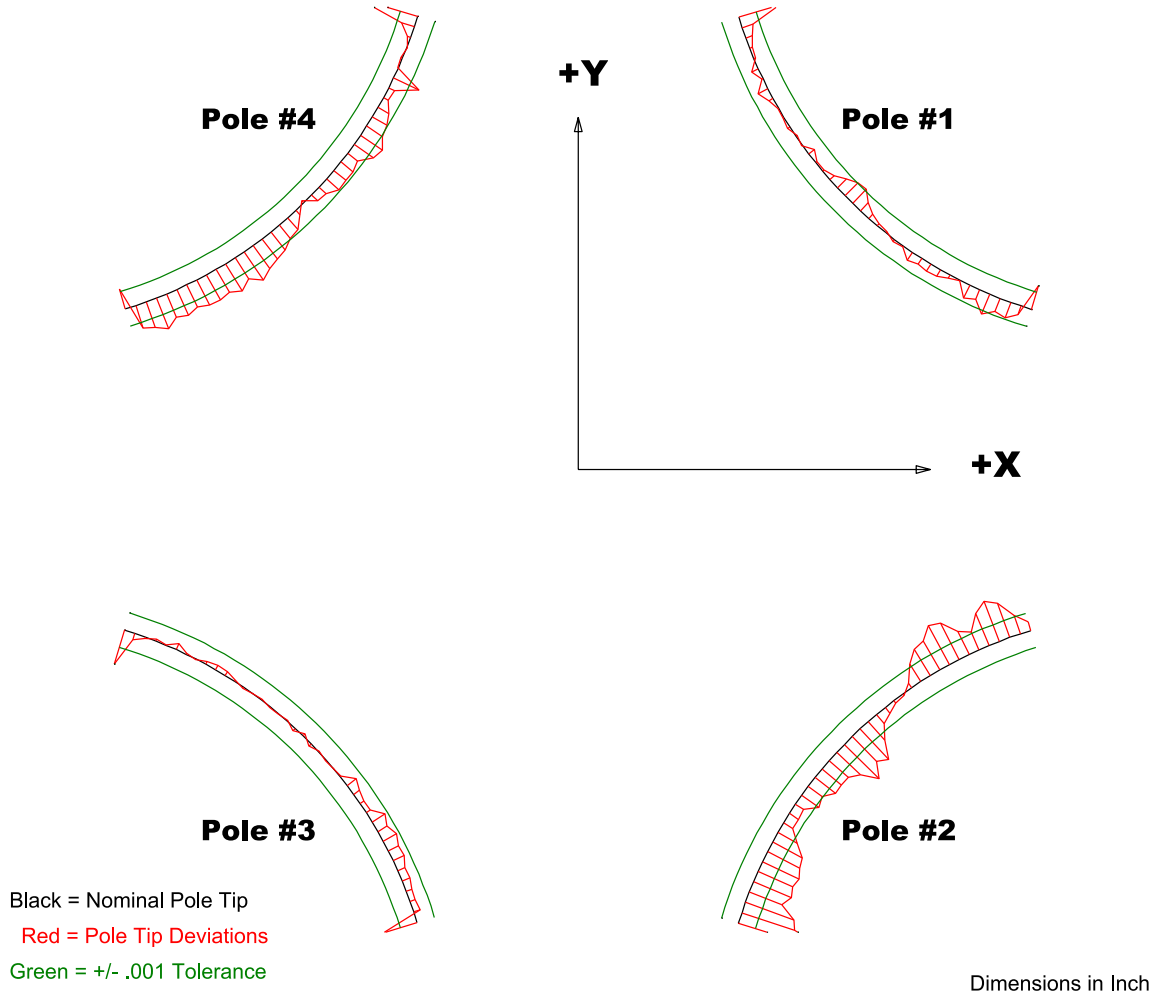
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0057	-0.0002	-0.0025	-0.00189
Max. Dev.	0.00088	0.00314	0.00129	0.00335

**Barcode # : 4117**

**Mfg. S/N : E075**

## Composite Best-fit of Pole Tips, Upstream



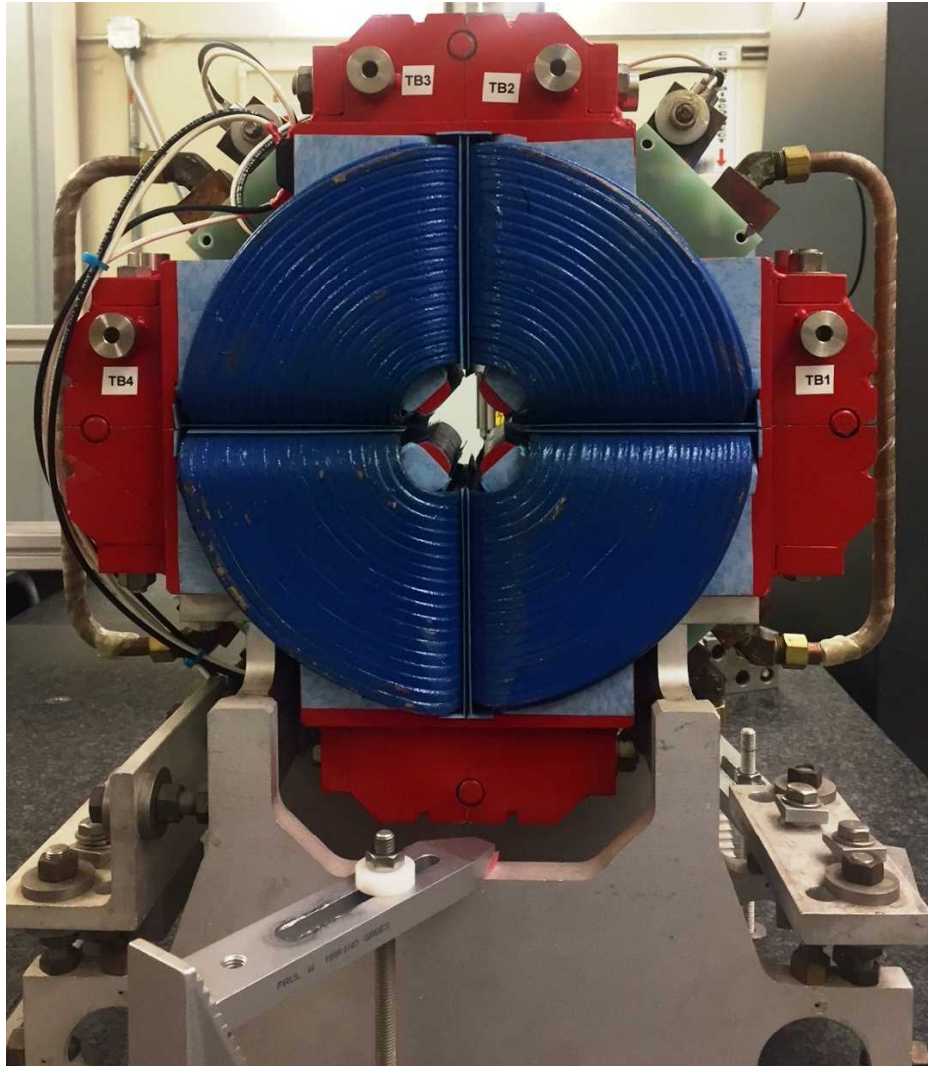
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00234	-0.00609	-0.00202	-0.00345
Max. Dev.	0.00119	0.00247	0.00087	0.00192

**Barcode # : 4117**

**Mfg. S/N : E075**

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



Angle in Decimal Degrees ° :-0.05975

Angle in Milliradians :-1.04278

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