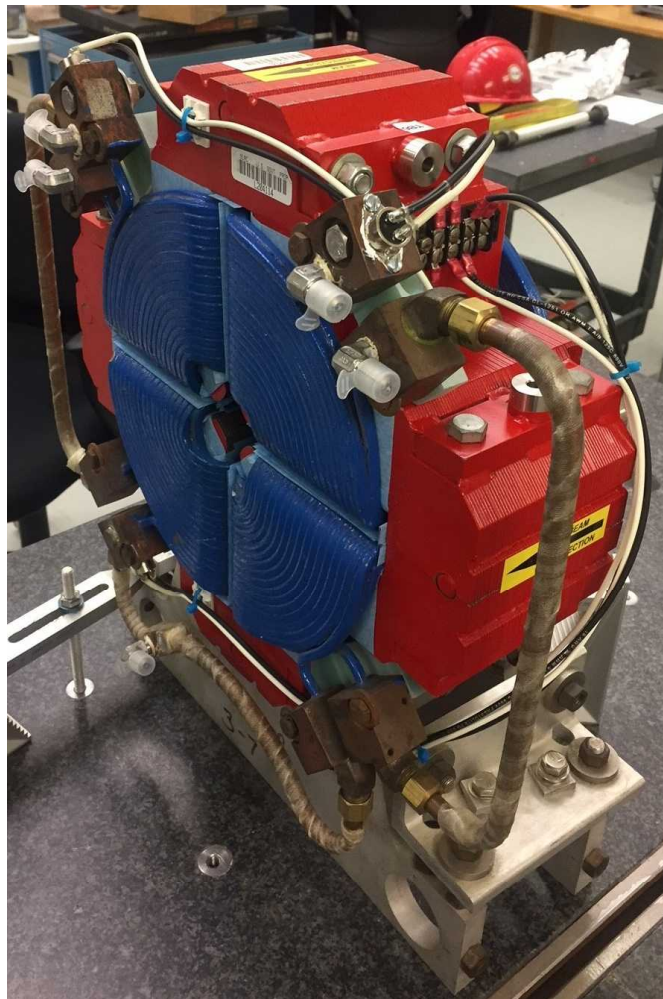


## LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban  
Engineer : J. Amann  
Drawing No. : SA-902-675-01  
Barcode # : 4123  
Mfg. S/N : E046

## **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.

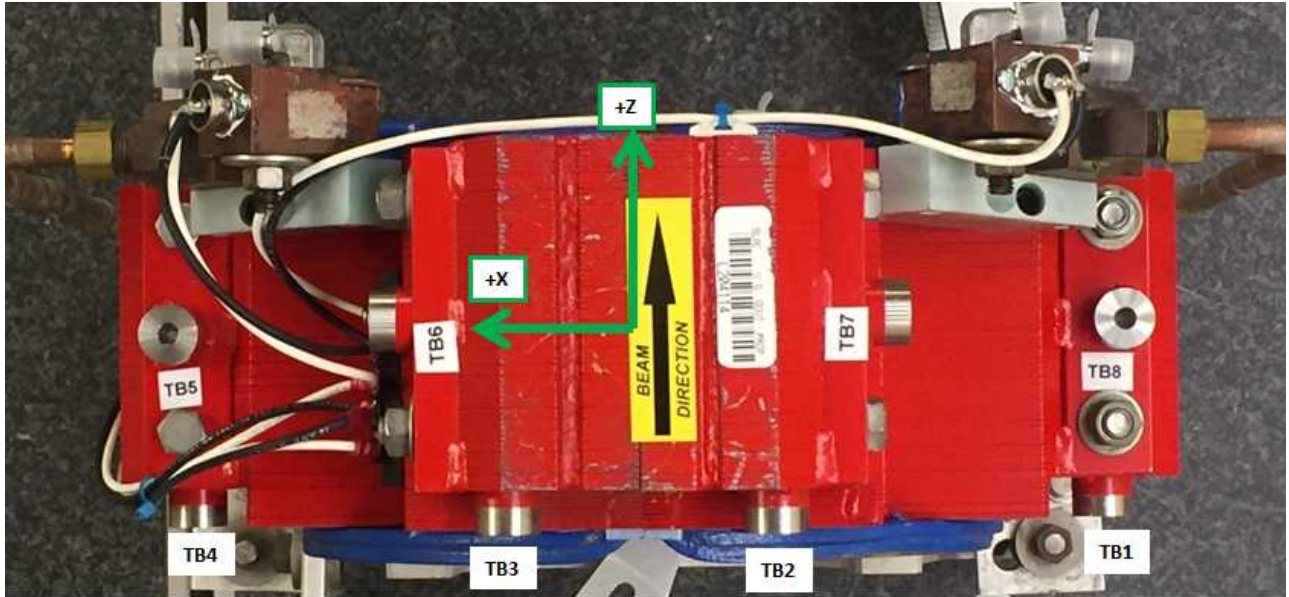
### **Coordinate Origins**

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 # : 4123**

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## Tooling Ball Locations



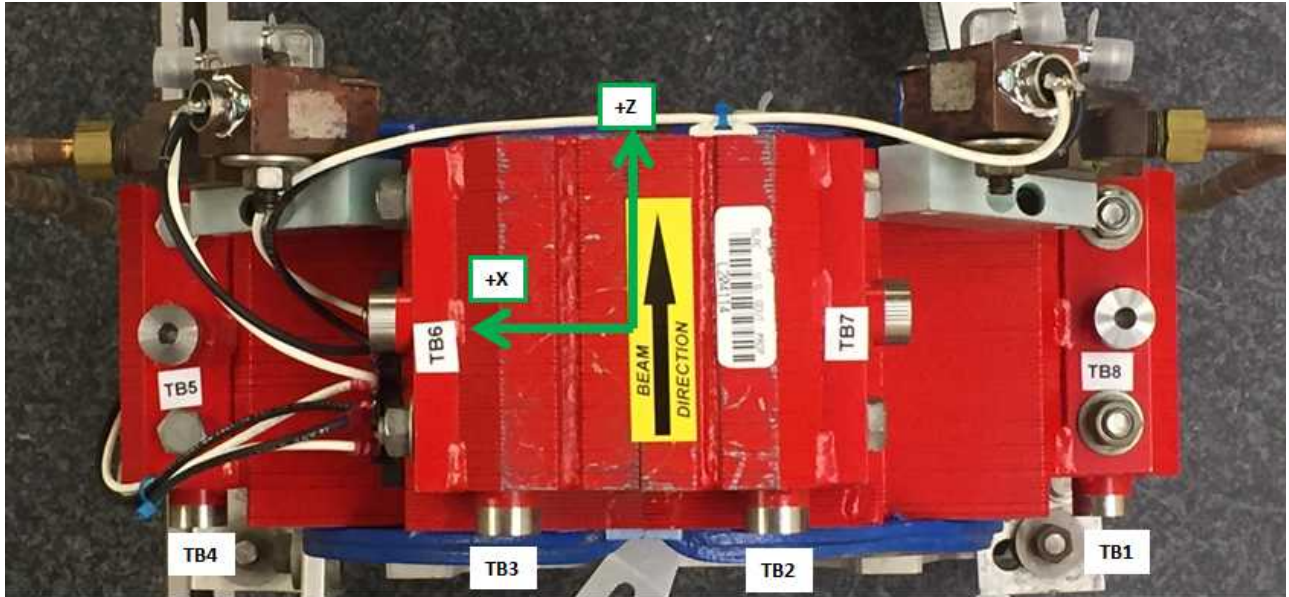
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.6347	1.5113	-3.1904
TB 2	-1.4938	5.7309	-3.1938
TB 3	1.4922	5.6958	-3.2053
TB 4	5.7390	1.4891	-3.2052
TB 5	5.7788	4.0052	0.2388
TB 6	3.9980	5.8090	0.2198
TB 7	-4.0071	5.7752	0.2382
TB 8	-5.8188	3.9955	0.2594

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	-5.6302	1.5092	-2.5021
TB 2	-1.4939	5.7346	-2.5058
TB 3	1.4923	5.7001	-2.5160
TB 4	5.7397	1.4944	-2.5178
TB 5	5.7781	3.3185	0.2389
TB 6	3.3098	5.8071	0.2179
TB 7	-3.3194	5.7766	0.2375
TB 8	-5.8166	3.3076	0.2580

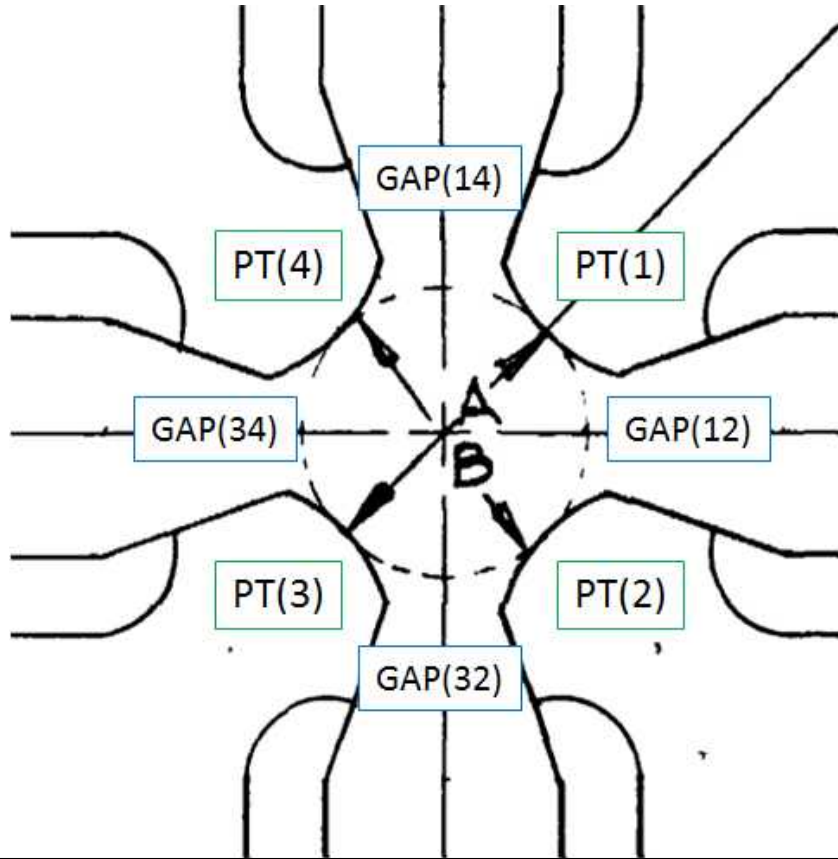
Tooling Ball Locations are 5/16 inch above Tooling Ball Adapter Plane  
Dimensions in Inch

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## Pole Tip Gap Measurements



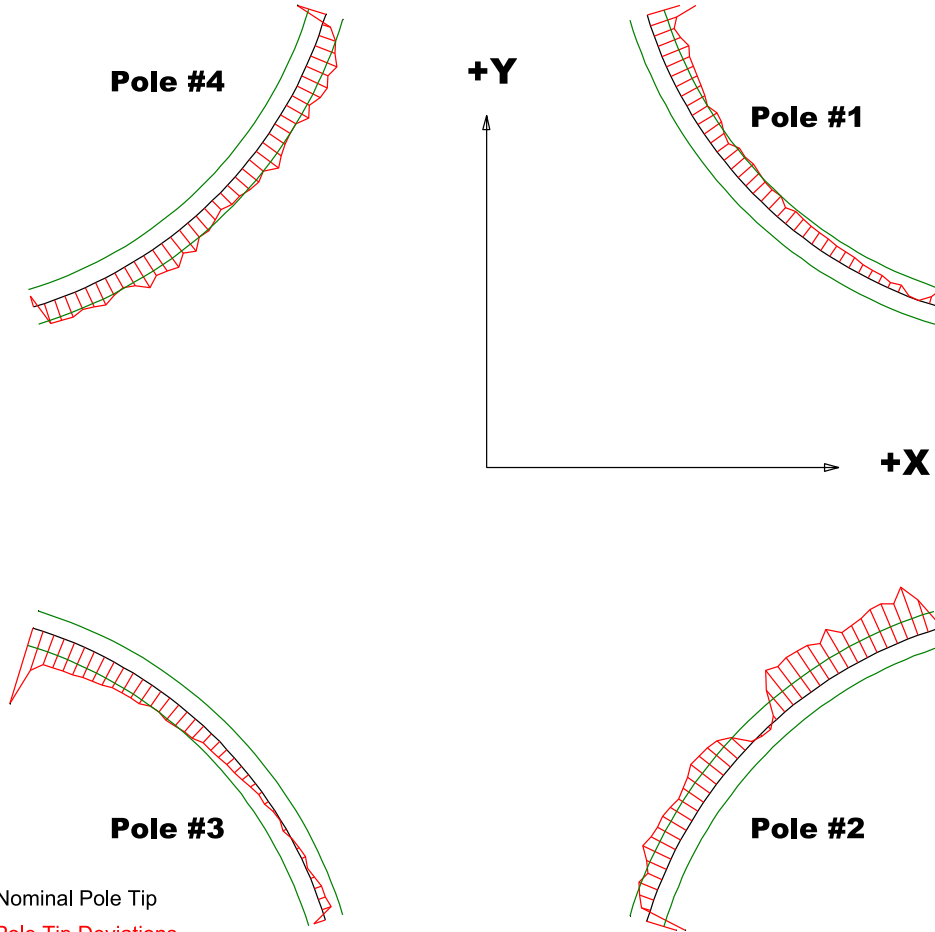
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08653	1.08555
PT Distance 2-4(B)	1.085	1.08406	1.08748
Gap 1-2	0.4546	0.44857	0.45727
Gap 2-3	0.4546	0.45882	0.45885
Gap 3-4	0.4546	0.46064	0.45994
Gap 4-1	0.4546	0.46099	0.46181

Dimensions in Inch

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**Mfg. S/N : E046**

## Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

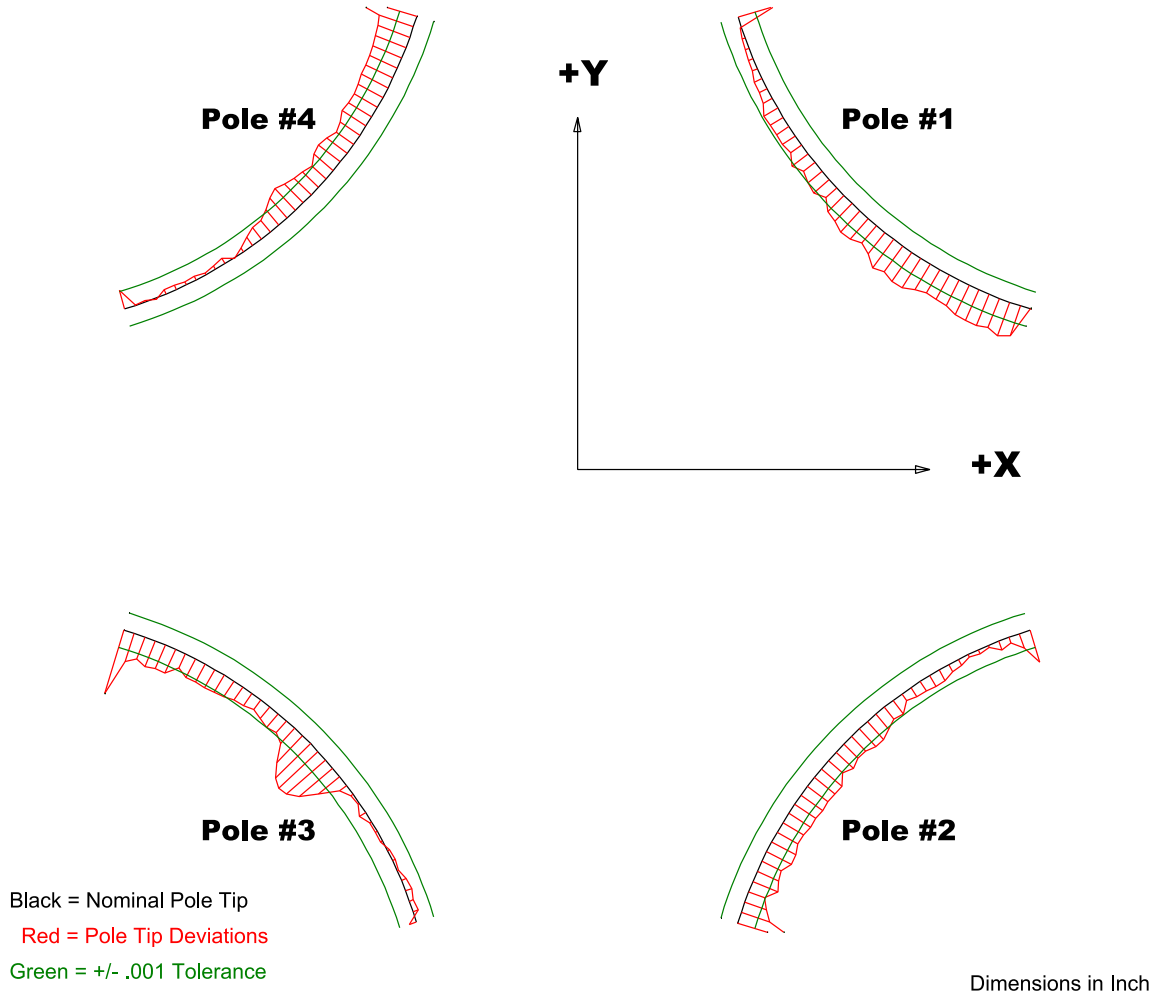
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00379	-0.00294	-0.0044	-0.00166
Max. Dev.	0.00002	0.00287	0.00054	0.00172

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**Mfg. S/N : E046**

## Composite Best-fit of Pole Tips, Upstream



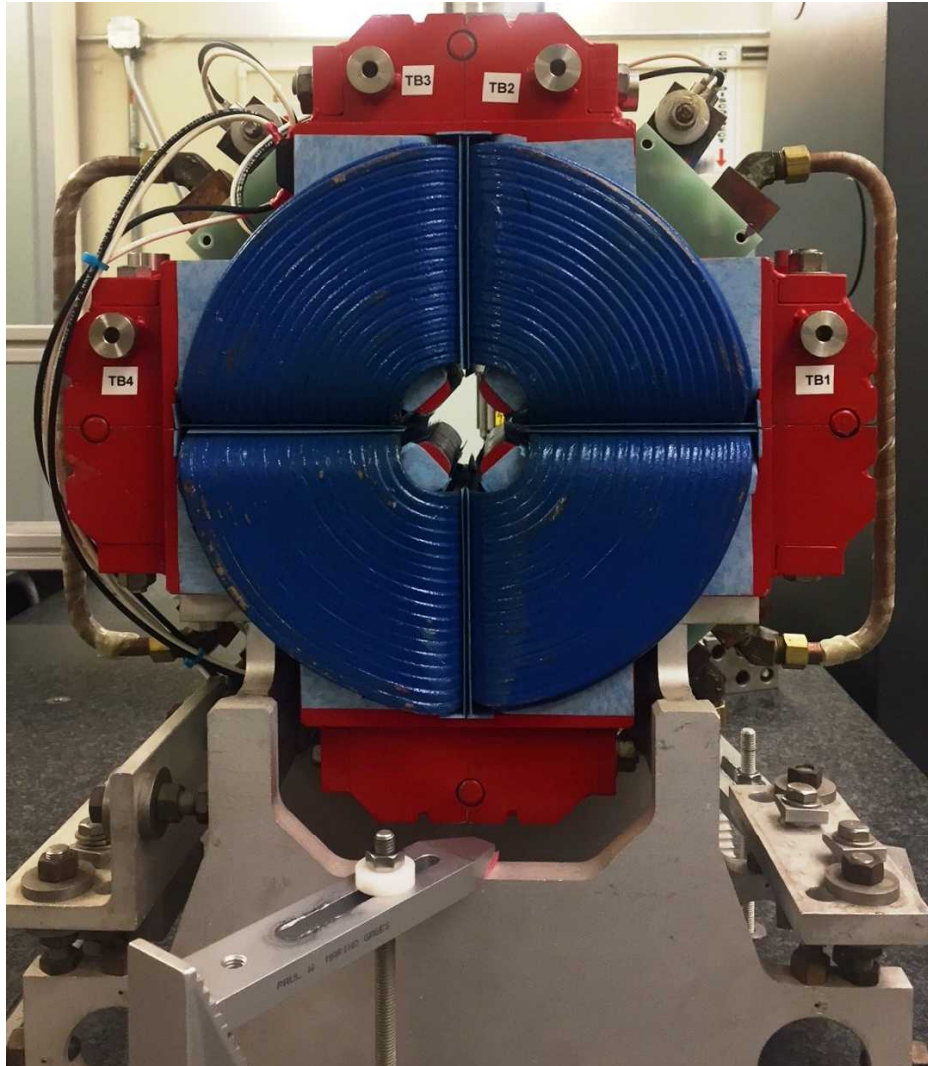
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00212	-0.0034	-0.0037	-0.00427
Max. Dev.	0.002	-0.00011	0.00035	0.00009

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**Mfg. S/N : E046**

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



Angle in Decimal Degrees  $^{\circ}$  :-0.02636

Angle in Milliradians :-0.46010

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