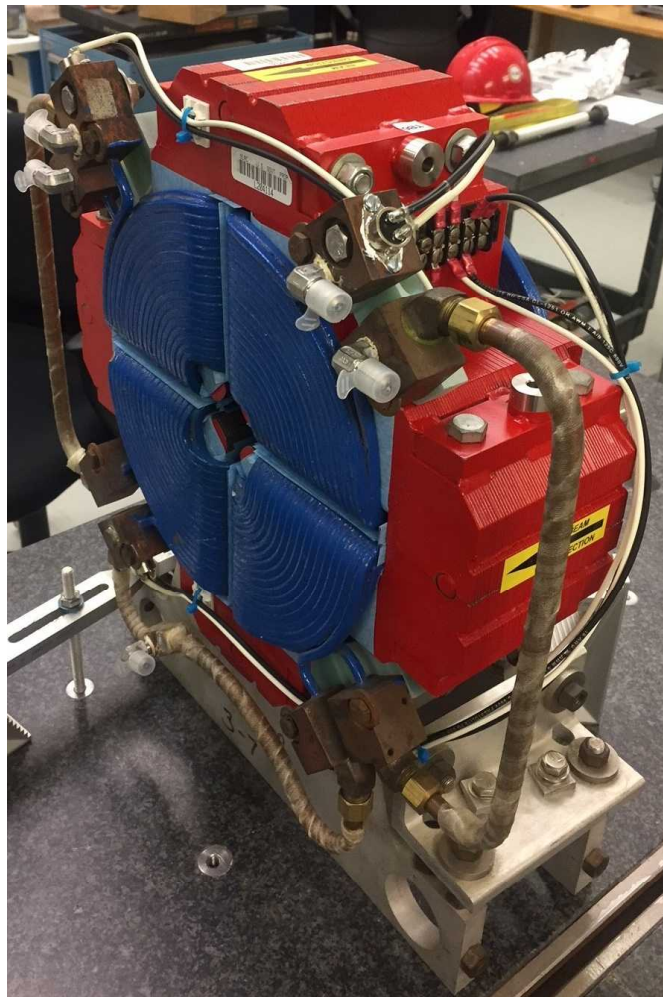


## LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban  
Engineer : J. Amann  
Drawing No. : SA-902-675-01  
Barcode # : 4111  
Mfg. S/N : E080

## **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.

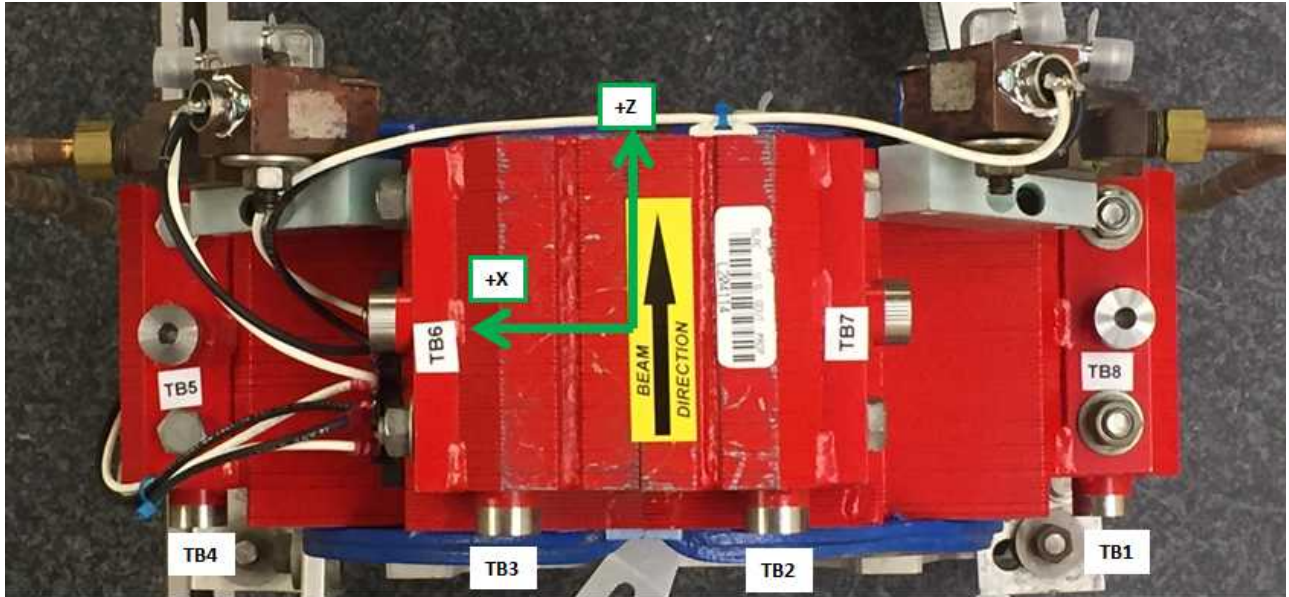
### **Coordinate Origins**

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



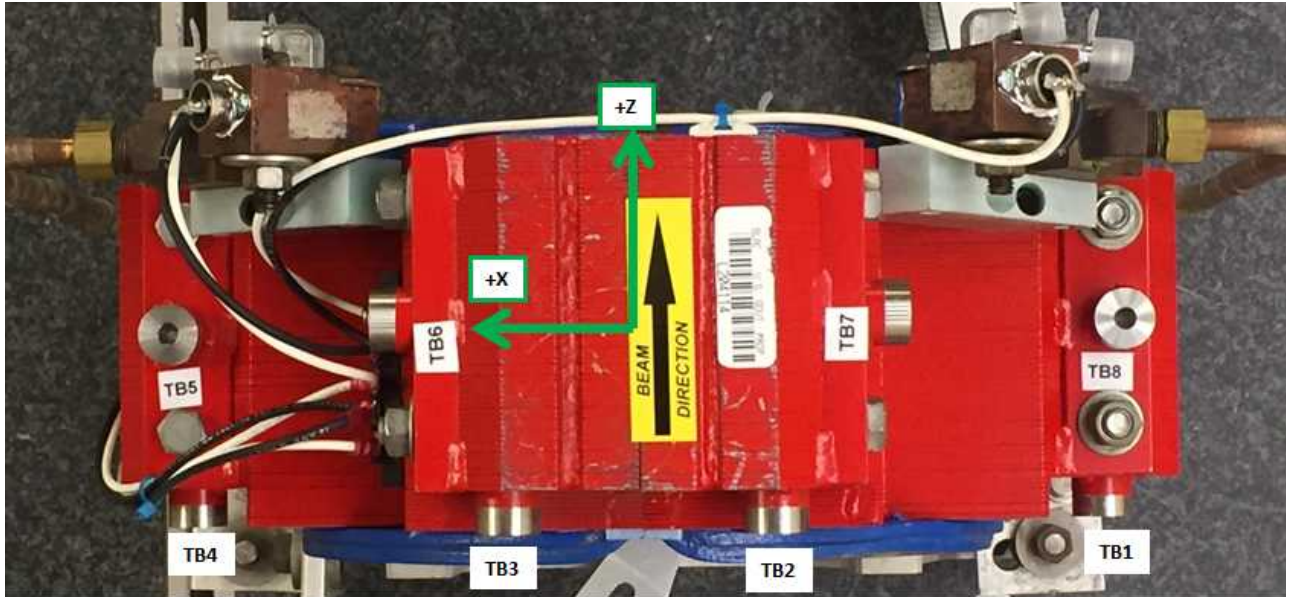
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7837	1.5007	-3.2125
TB 2	-1.4753	5.7537	-3.2268
TB 3	1.4903	5.7092	-3.2042
TB 4	5.7225	1.4982	-3.2053
TB 5	5.8207	4.0098	0.2267
TB 6	3.9901	5.8587	0.2340
TB 7	-4.0104	5.8295	0.2075
TB 8	-5.8522	3.9902	0.2291

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	-5.7815	1.5012	-2.5264
TB 2	-1.4756	5.7611	-2.5384
TB 3	1.4889	5.7098	-2.5163
TB 4	5.7219	1.5002	-2.5174
TB 5	5.8220	3.3222	0.2266
TB 6	3.3017	5.8557	0.2328
TB 7	-3.3229	5.8333	0.2075
TB 8	-5.8488	3.3031	0.2264

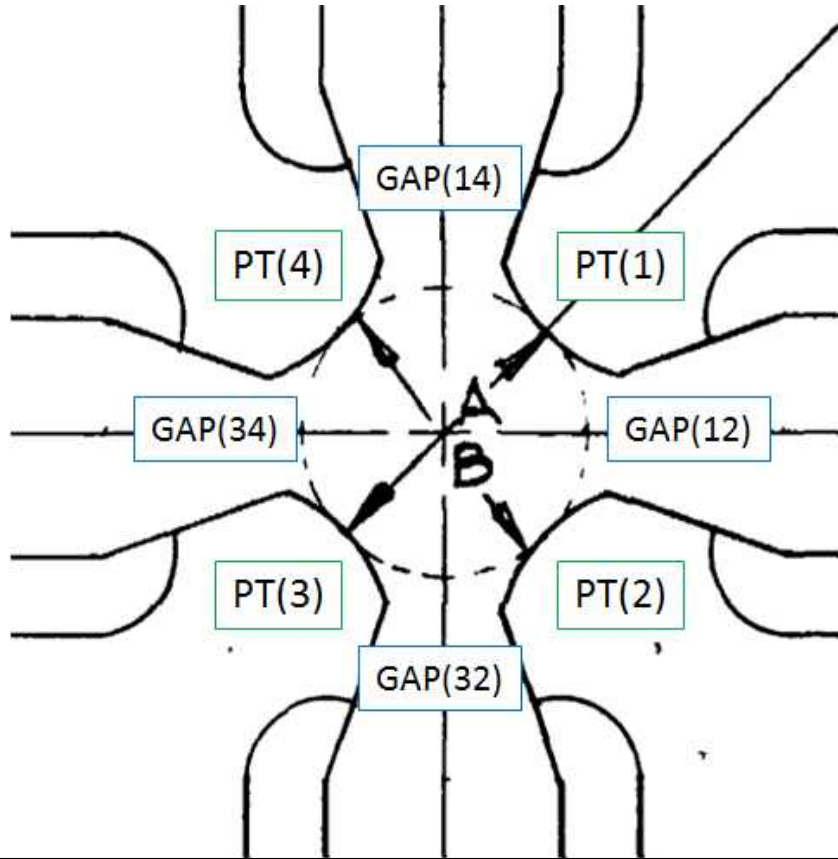
Tooling Ball Locations are 5/16 inch above Tooling Ball Adapter Plane  
Dimensions in Inch

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## Pole Tip Gap Measurements



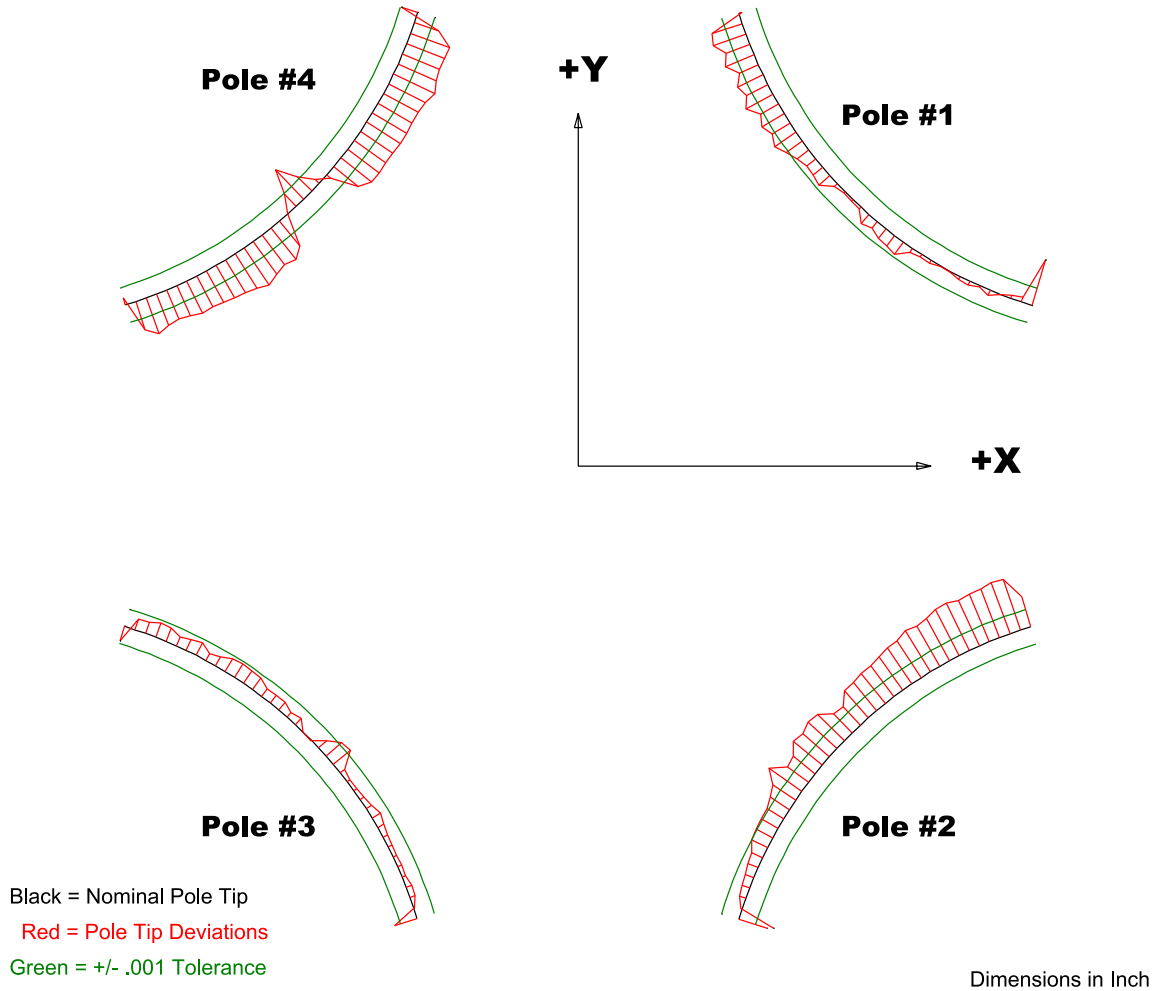
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08479	1.08573
PT Distance 2-4(B)	1.085	1.08424	1.0873
Gap 1-2	0.4546	0.45652	0.458
Gap 2-3	0.4546	0.45932	0.46258
Gap 3-4	0.4546	0.45686	0.4559
Gap 4-1	0.4546	0.45634	0.46109

Dimensions in Inch

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**Mfg. S/N : E080**

## Composite Best-fit of Pole Tips, Downstream



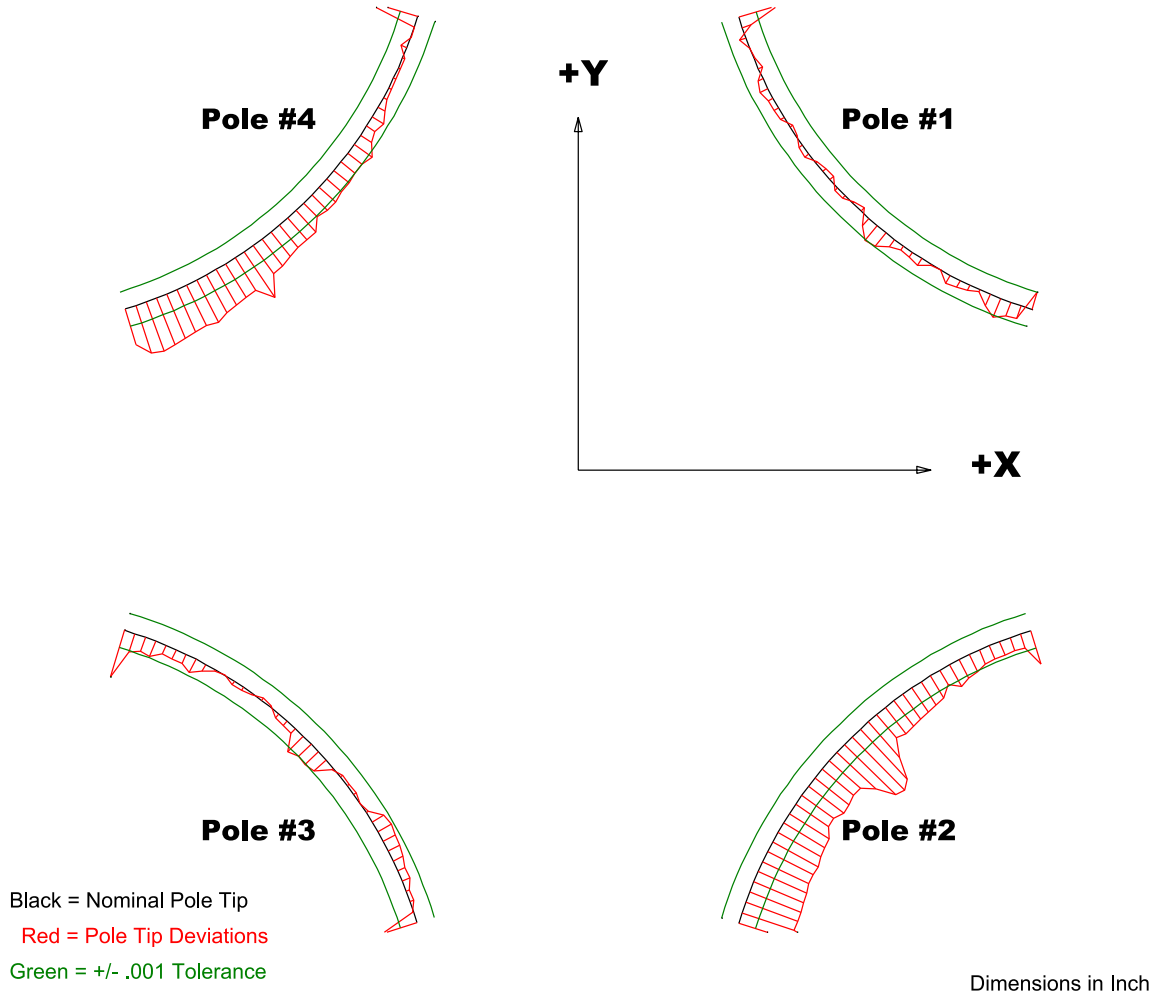
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00265	-0.0024	-0.00133	-0.00225
Max. Dev.	0.00195	0.00304	0.00126	0.00258

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**Mfg. S/N : E080**

## Composite Best-fit of Pole Tips, Upstream



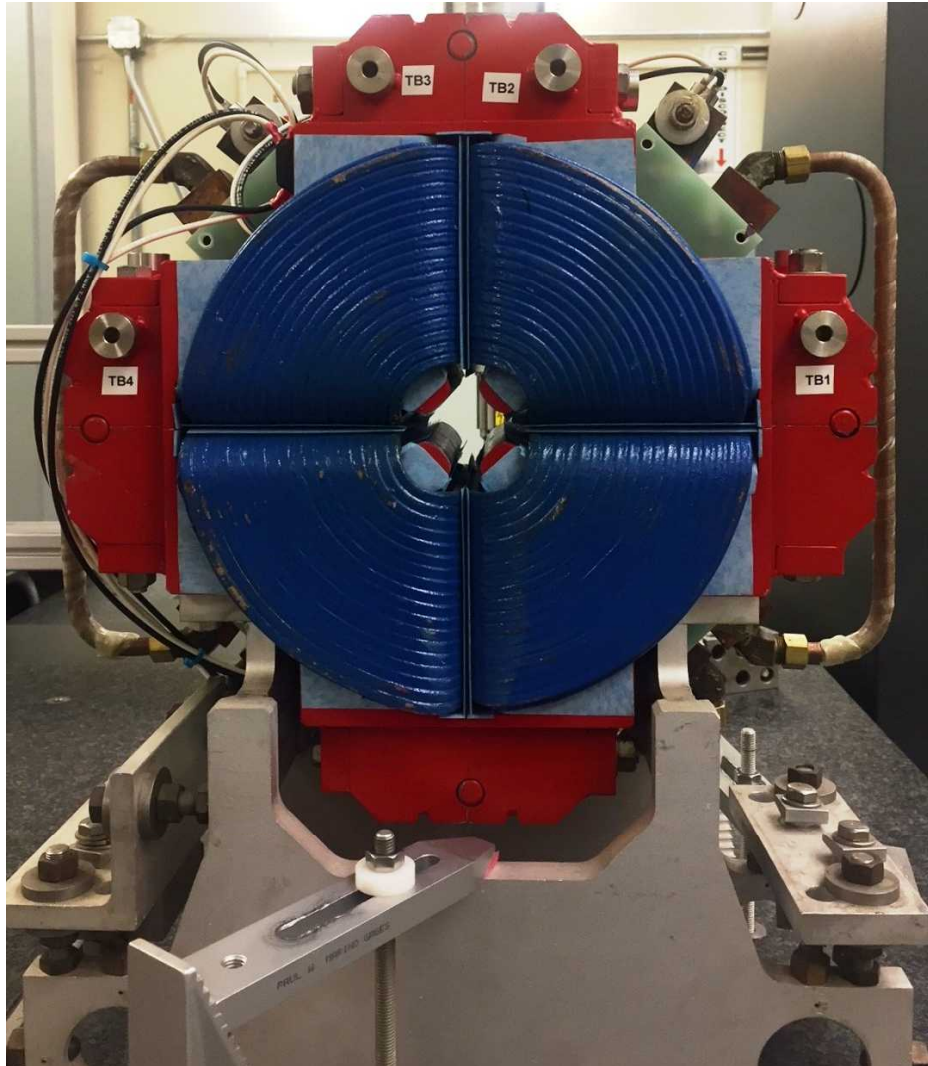
### Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00229	-0.00559	-0.00272	-0.00343
Max. Dev.	0.00111	-0.00078	0.00088	0.00307

**Barcode # : 4111**

**Mfg. S/N : E080**

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



Angle in Decimal Degrees  $^{\circ}$  :-0.09204

Angle in Milliradians :-1.60641

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