

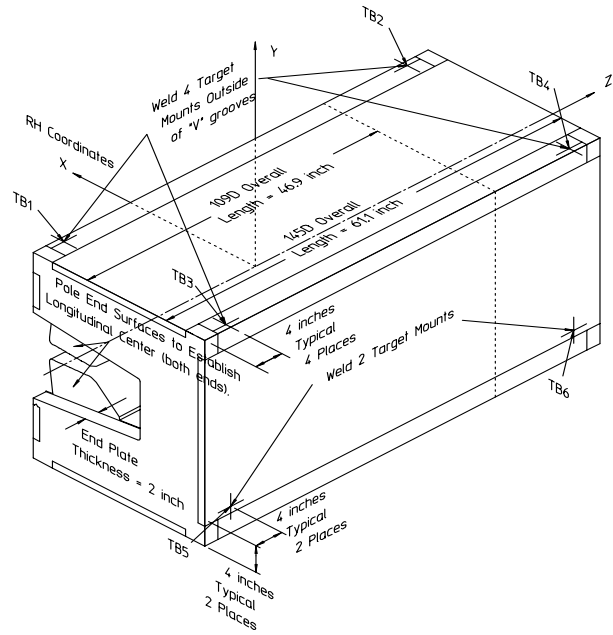
<b>Gradient Dipole Magnet Checks</b>	<b>145D17</b>
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Date:	Magnet:	Operators:
8/23/01	145D17	L. Juarez
		H. Imfeld

Notes:

A data collection error was made in the field when measuring the side plane. Therefore no roll of the side has been entered.

**Magnetic vs. Mechanical offset NOT applied (June 2002)**



**Magnetic Fiducial Coordinates: (inches)**

Fiducial	Z	X	Y
TB1	-26.5522	3.4405	17.0026
TB2	26.5396	3.4299	17.0087
TB3	-26.5285	-22.4266	17.0074
TB4	26.5561	-22.4275	17.0015
TB5	-26.5403	-24.2619	-11.4696
TB6	26.4722	-24.2679	-11.4335

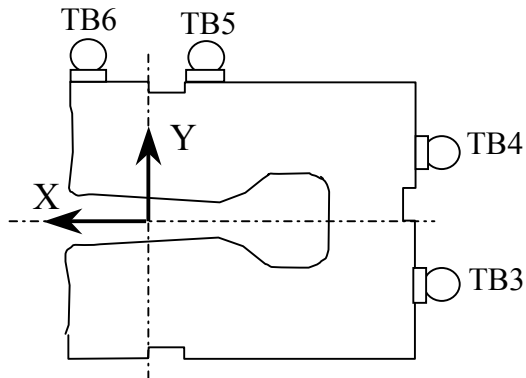
Offset:  inches

**Description:**  
 Fiducial values based on the x-offset of the mechanical center line to the magnetic.

**Downstream Garage Mechanical Check:**

145D17  
Status

Horizontal (X) 0.070 mm	Vertical (Y) -0.064 mm	X-value: Y-value:	OK OK
<p><b>Description:</b> How much does the Z-axis from the US garage miss the center of the DS garage?</p>			

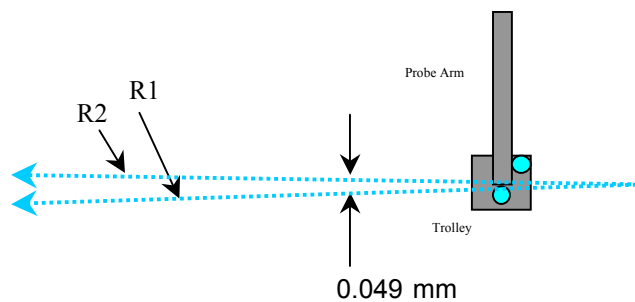


**Trolley Checks:**

145D17  
Status

<u>Trolley Distance</u>			
3D Distance R1 2800.184 mm	3D Distance R2 2800.127 mm	R2 - R1 (mm) -0.057	OK
<p><b>Description:</b> Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.</p>			

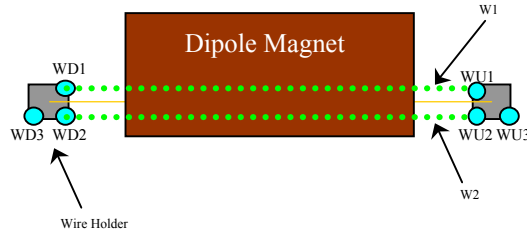
<u>Z-axis Vector</u>			
3D Angle Yaw 0.0352	Pitch 0.0157	0.0315 mrad	Midpoint 3D Offset (mm) 0.049
<p><b>Description:</b> Angle between R1 and R2 vectors. The average of these two defines the Z-axis.</p>			



**Wire Holder Position Checks:**

145D17  
Status

<u>Wire Holders' Yaw Check</u>			
3D Distance W1 2383.983 mm	3D Distance W2 2383.511 mm	$W2 - W1$ (mm) -0.472	OK
<b>Description:</b> Distance between wire holders for TB1 and TB2.			

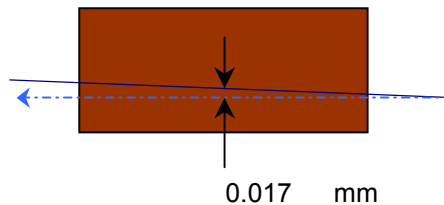


**Wire Position Checks:**

145D17  
Status

<u>Wire Orientation</u>				
3D Angle Yaw 0.0462	Pitch 0.0112	-0.0448 mrad	Midpoint 3D Offset (mm) 0.055	OK
<b>Description:</b> Orientation of wire with respect to Z-axis defining axis of dipole.				

<u>Wire Offsets</u>				
US 0.003	Origin 0.017	DS 0.030 mm	Origin Offset:	OK
<b>Description:</b> Offset distance from the mechanical center to the wire. ( x-offsets only! )				



**End Surface Orientation Check and Magnet Length:**

145D17  
Status

<u>End Surfaces</u>					
	3D Angle	Yaw	Pitch	3D Offset (mm)	
US:	1.1806	-0.3523	1.1268	~ 0.791	Too Big?
DS:	0.4818	-0.4732	0.0909	~ 0.323	OK
<b>Description:</b>					
End surface orientation relative to reference frame.					
Note: 3D Offset based on average of width and height of the magnet side.					

<u>Length of Magnet</u>			
Distance with SMR	Distance		
1590.666 mm	1552.566 mm		LENGTH?
<b>Description:</b>			
Length of magnet along Z-axis. (Design vals: 1551.61 and 1189.10)			

**Top Surface Orientation Check:**

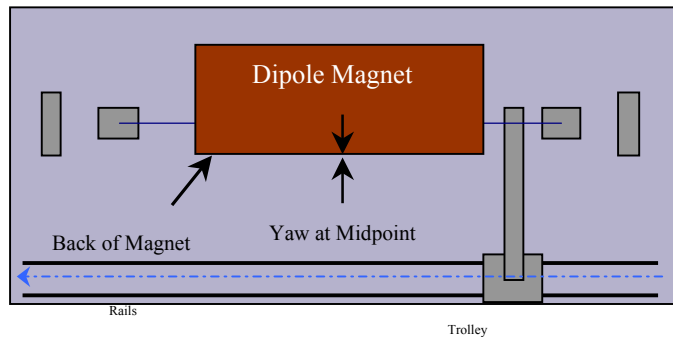
145D17  
Status

<u>Top of Magnet</u>					
Height (Y-value) with 0.75"		Delta Y			
Corner 1	412.831 mm		0.110	Delta Y C1:	OK
Corner 2	412.957 mm		0.236	Delta Y C2:	OK
Corner 3	412.829 mm		0.108	Delta Y C3:	OK
Corner 4	412.721 mm		0.000	Delta Y C4:	OK
Dispersion:					
Corner 1	0.045 mm				
Corner 2	0.033 mm				
Corner 3	0.037 mm				
Corner 4	0.042 mm				
Overall	0.077 mm				
3D Angle	Roll	Pitch		Roll (mm)	
0.2061	0.2060	-0.0067	mrad	~ 0.111	OK
				Pitch (mm)	
				~ -0.010	OK
Twist:	Roll	Pitch		Twist:	
	-0.4333	-0.1507	mrad		OK
	-0.234	-0.234	mm		
<b>Description:</b>					
Top surface corner heights and average surface orientation values. (With 0.75" SMR offset.)					

**Back Surface Orientation Check:**

145D17  
Status

<u>Back of Magnet</u>					
Horizontal (X-value)		Delta X			
US:	113.266	mm		0.017	
Origin:	113.258	mm		0.009	
DS:	113.249	mm		0.000	
3D Angle	Roll	Yaw			
		-0.0117		mrad	
				<u>Midpoint</u>	
				<u>Yaw in mm</u>	
				-0.009	<b>OK</b>
<b>Description:</b>					
Position of scanned half of back surface of magnet for yaw check. (With 0.75" SMR offset.)					



**Gradient Magnet  
Magnetic Measurements/Fiducialization Traveller**

Approval must be obtained before going on to the next procedure  
or removing the magnet from the test stand.

Magnetic Measurements Approval by – Jack Tanabe or Nanyang Li

Fiducialization Approval by – Jack Tanabe or Tony King

Magnet Serial Number: 145D17

Capacitive System Alignment

Date \_\_\_\_\_, Operator \_\_\_\_\_

Fiducial Measurements

See Data Sheet on Next Page.

Approval:

Date: 8/23/01 Operator: L. Juarez

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Water, Power and Interlock Connections.

Date \_\_\_\_\_, Operator \_\_\_\_\_

Measured Water Flow \_\_\_\_\_ gpm at  $\Delta p =$  \_\_\_\_\_ psi

Maximum Conditioning Current: \_\_\_\_\_ Amps

Wire Magnetic Measurements

Currents \_\_\_\_\_

Summary File Name(s) \_\_\_\_\_

Date \_\_\_\_\_, Operator \_\_\_\_\_ Approval \_\_\_\_\_

Coil Magnetic Measurements: Required \_\_\_\_\_ Yes \_\_\_\_\_ No.

Currents \_\_\_\_\_

Summary File Name(s) \_\_\_\_\_

Date \_\_\_\_\_, Operator \_\_\_\_\_ Approval \_\_\_\_\_

**Gradient Magnet  
Reduced Data Sheet**

Approval must be obtained before removing magnet from test stand.

Magnetic Measurements Approval by – Jack Tanabe or Tony King.

Magnet Serial Number: 145D17

Magnetic Measurements Operator: \_\_\_\_\_ Date: \_\_\_\_\_

Measured Magnetic Center Offset: 0.017 mm

Measured at:

Integrated Field: \_\_\_\_\_ T-m @ \_\_\_\_\_ Amps

Corrected to:

Integrated Field: XX.XXX T-m @ XXX.XXX Amps

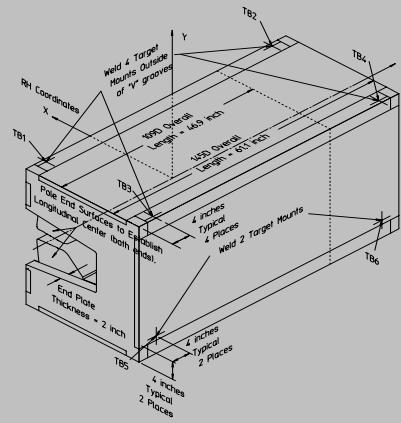
**Fiducialization:**

Operator(s): L. Juarez H. Imfeld

Date: 8/23/01 Temp: 22 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.427	87.389	431.865
TB2	674.105	87.119	432.022
TB3	-673.823	-569.635	431.989
TB4	674.526	-569.658	431.839
TB5	-674.124	-616.253	-291.329
TB6	672.395	-616.404	-290.410

Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.427	87.389	431.865
TB2	674.105	87.119	432.022
TB3	-673.823	-569.635	431.989
TB4	674.526	-569.658	431.839
TB5	-674.124	-616.253	-291.329
TB6	672.395	-616.404	-290.410



**Check Measurements:**

Corner	X <sub>measured</sub> mm	X <sub>nominal</sub> mm
C1	94.216	96.520
C2	94.199	96.520

incl. paint no paint

	Y <sub>measured</sub> mm	Y <sub>nominal</sub> mm
C1	393.781	393.700
C2	393.907	393.700
C3	393.779	393.700
C4	393.671	393.700

incl. paint no paint

Approval: