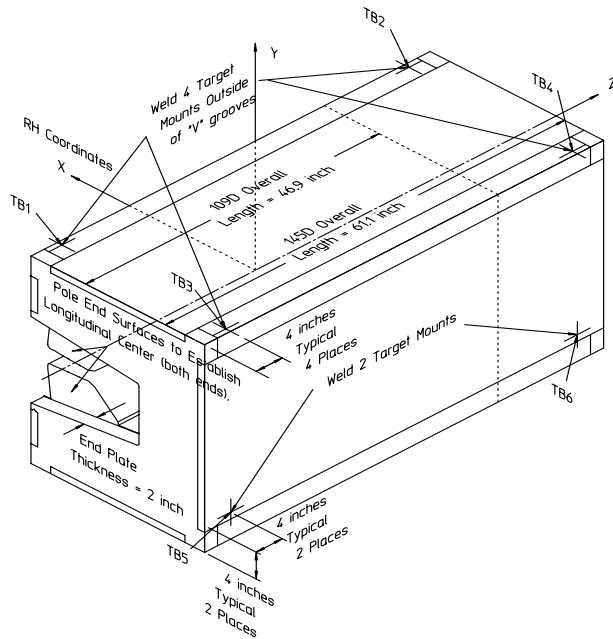


<b>Gradient Dipole Magnet Checks</b>	<b>145D09</b>
--------------------------------------	---------------

Date:	Magnet:	Operators:
<input type="text" value="1/17/02"/>	<input type="text" value="145D09"/>	<input type="text" value="J. McDougal"/>
		<input type="text" value="H. Imfeld"/>
Notes:		
<p style="color: red; font-weight: bold;">Magnetic vs. Mechanical offset NOT applied (June 2002)</p>		



**Magnetic Fiducial Coordinates: (inches)**

Fiducial	Z	X	Y
TB1	-26.5456	3.4285	17.0053
TB2	26.5352	3.4297	17.0102
TB3	-26.5291	-22.3760	17.0014
TB4	26.5367	-22.4149	17.0024
TB5	-26.6635	-24.2623	-11.5813
TB6	26.4649	-24.2727	-11.4796

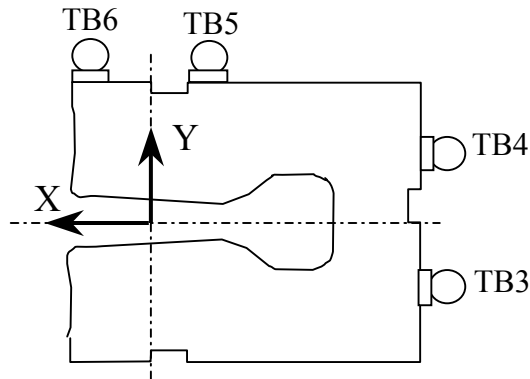
Offset:  inches

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

**Downstream Garage Mechanical Check:**

145D09  
Status

Horizontal (X) 0.043 mm	Vertical (Y) -0.002 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>			

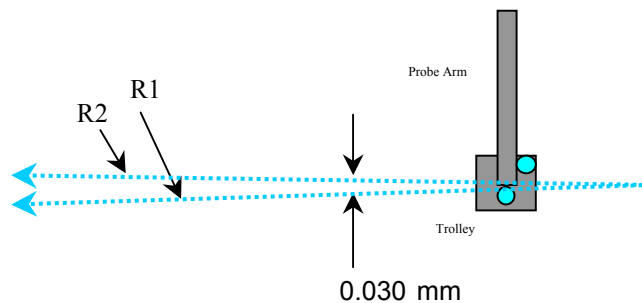


**Trolley Checks:**

145D09  
Status

<u>Trolley Distance</u>			
3D Distance R1 2800.083 mm	3D Distance R2 2800.034 mm	R2 - R1 (mm) -0.049	OK
<p><b>Description:</b> Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.</p>			

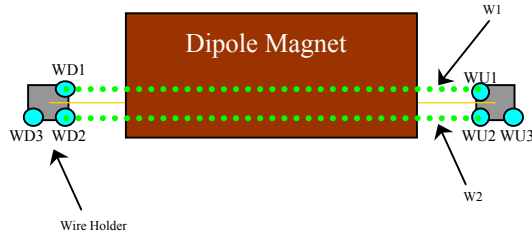
<u>Z-axis Vector</u>			
3D Angle Yaw 0.0212	Pitch 0.0112	0.0180 mrad	Midpoint 3D Offset (mm) 0.030
<p><b>Description:</b> Angle between R1 and R2 vectors. The average of these two defines the Z-axis.</p>			



**Wire Holder Position Checks:**

145D09  
Status

<u>Wire Holders' Yaw Check</u>			
3D Distance W1 2383.398 mm	3D Distance W2 2383.042 mm	W2 - W1 (mm) -0.356	<b>OK</b>
<p><b>Description:</b> Distance between wire holders for TB1 and TB2.</p>			

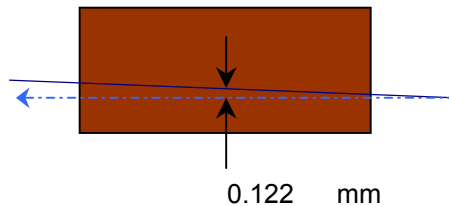


**Wire Position Checks:**

145D09  
Status

<u>Wire Orientation</u>				
3D Angle Yaw 0.1363	Pitch 0.0456	-0.1284 mrad	Midpoint 3D Offset (mm) 0.162	<b>Too Big?</b>
<p><b>Description:</b> Orientation of wire with respect to Z-axis defining axis of dipole.</p>				

<u>Wire Offsets</u>				
US 0.068	Origin <b>0.122</b>	DS 0.177 mm	Origin Offset:	<b>OK</b>
<p><b>Description:</b> Offset distance from the mechanical center to the wire. ( x-offsets only! )</p>				



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

145D09  
Status

<u>End Surfaces</u>					
	3D Angle	Yaw	Pitch	3D Offset (mm)	
US:	0.3594	0.0619	0.3540 mrad	~ 0.241	OK
DS:	0.5508	-0.5311	-0.1460	~ 0.369	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		
1590.484 mm	1552.384 mm		LENGTH?
<b>Description:</b> Length of magnet along Z-axis. (Design vals: 1551.61 and 1189.10)			

**Top Surface Orientation Check:**

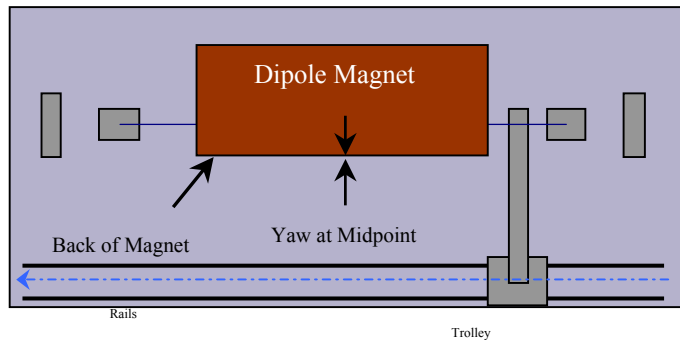
145D09  
Status

<u>Top of Magnet</u>					
Height (Y-value) with 0.75"		Delta Y			
Corner 1	412.846 mm		0.069	Delta Y C1:	OK
Corner 2	412.943 mm		0.166	Delta Y C2:	OK
Corner 3	412.777 mm		0.000	Delta Y C3:	OK
Corner 4	412.814 mm		0.037	Delta Y C4:	OK
Dispersion:					
Corner 1	0.022 mm				
Corner 2	0.026 mm				
Corner 3	0.022 mm				
Corner 4	0.032 mm				
Overall	0.036 mm				
3D Angle	Roll	Pitch		Roll (mm)	
0.1693	0.1611	-0.0521 mrad		~ 0.087	OK
				Pitch (mm)	
				~ -0.081	OK
Twist:	Roll	Pitch		Twist:	OK
	-0.1111	-0.0387 mrad			
	-0.060	-0.060 mm			
<b>Description:</b> Top surface corner heights and average surface orientation values. (With 0.75" SMR offset.)					

**Back Surface Orientation Check:**

145D09  
Status

<u>Back of Magnet</u>					
Horizontal (X-value)			Delta X		
US:	115.527	mm	0.076		
Origin:	115.489	mm	0.038		
DS:	115.451	mm	0.000		
3D Angle Roll			Yaw		
	0.0602	0.0267	-0.0540	mrad	
				Midpoint Yaw in mm	
				-0.042	<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: 145D09

Capacitive System Alignment

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

Fiducial Measurements

See Data Sheet on Next Page.

Approval:

Date: 1/17/02 Operator: J. McDougal

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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: 145D09

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

Measured Magnetic Center Offset: 0.122 mm

Measured at:

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

Corrected to:

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

**Fiducialization:**

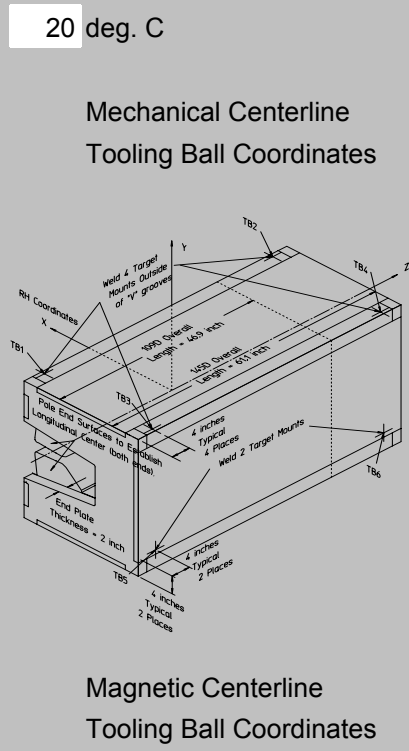
Operator(s): J. McDougall H. Imfeld

Date: 1/17/02

Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.259	87.083	431.934
TB2	673.995	87.114	432.058
TB3	-673.840	-568.350	431.836
TB4	674.033	-569.338	431.861
TB5	-677.254	-616.263	-294.166
TB6	672.208	-616.527	-291.581

Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.259	87.083	431.934
TB2	673.995	87.114	432.058
TB3	-673.840	-568.350	431.836
TB4	674.033	-569.338	431.861
TB5	-677.254	-616.263	-294.166
TB6	672.208	-616.527	-291.581



**Check Measurements:**

Corner	X <sub>measured</sub> mm	X <sub>nominal</sub> mm
C1	96.477	96.520
C2	96.401	96.520

incl. paint    no paint

	Y <sub>measured</sub> mm	Y <sub>nominal</sub> mm
C1	393.796	393.700
C2	393.893	393.700
C3	393.727	393.700
C4	393.764	393.700

incl. paint    no paint

Approval: