Gradient Dipole Magnet Checks — 145D25

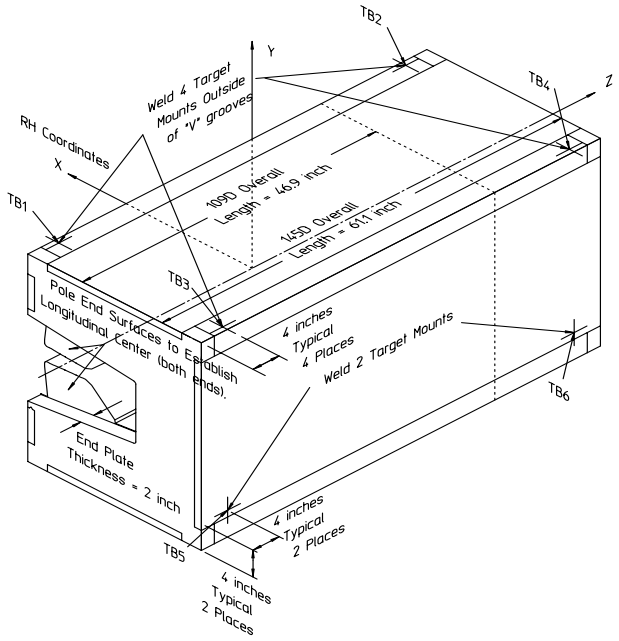
Date: 10/23/01

Magnet: 145D25

Operators: J. McDougal; H. Imfeld

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5439	3.4381	16.9964
TB2	26.5373	3.4275	17.0031
TB3	-26.5728	-22.4138	16.9974
TB4	26.5826	-22.4246	16.9920
TB5	-26.4778	-24.2613	-11.6789
TB6	26.5414	-24.2780	-11.6309

Offset: 0.0182 inches

Description:

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

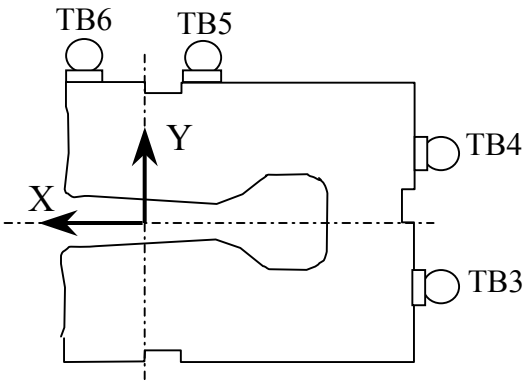
Downstream Garage Mechanical Check:

145D25 Status

Horizontal (X)	Vertical (Y)		
0.073 mm	-0.036 mm	X-value: Y-value:	OK OK

Description:

How much does the Z-axis from the US garage miss the center of the DS garage?



Trolley Checks:

145D25 Status

Trolley Distance

3D Distance R1	3D Distance R2		
2800.114 mm	2800.055 mm	R2 - R1 (mm) -0.059	OK

Description:

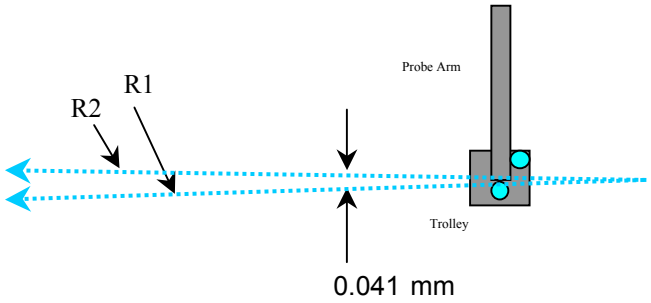
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch		
0.0293	0.0138	0.0258	mrad	Midpoint 3D Offset (mm) 0.041	OK

Description:

Angle between R1 and R2 vectors. The average of these two defines the Z-axis.



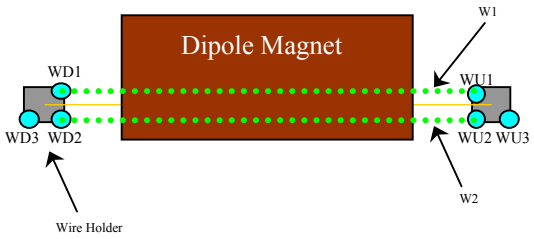
Wire Holder Position Checks:

145D25 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2382.936 mm	2382.581 mm		-0.355	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D25 Status

Wire Orientation				
3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0539	0.0277	-0.0462 mrad	0.064	OK

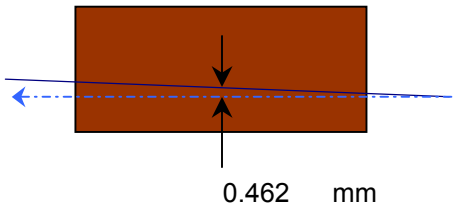
Description:

Orientation of wire with respect to Z-axis defining axis of dipole.

Wire Offsets				
US	Origin	DS	Origin Offset:	
0.429	**0.462**	0.495 mm		Too Big?

Description:

Offset distance from the mechanical center to the wire. (x-offsets only!)



End Surface Orientation Check and Magnet Length: 145D25

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	
US:	1.2524	-1.0196	0.7273	mrad	~ 0.839	Too Big?
DS:	0.7060	-0.1429	-0.6914		~ 0.473	OK

Description:

End surface orientation relative to reference frame.

Note: 3D Offset based on average of width and height of the magnet side.

Length of Magnet

Distance **with SMR**		Distance			
1590.997	mm	1552.897	mm		LENGTH?

Description: *Length of magnet along Z-axis. (Design vals: 1551.61 and 1189.10)*

Top Surface Orientation Check: 145D25

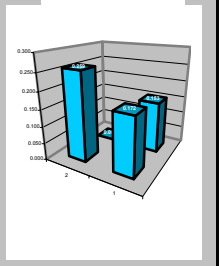
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		
Corner 1	412.784	mm	0.172	Delta Y C1:	OK
Corner 2	412.871	mm	0.259	Delta Y C2:	OK
Corner 3	412.765	mm	0.153	Delta Y C3:	OK
Corner 4	412.612	mm	0.000	Delta Y C4:	OK

Dispersion:

Corner 1	0.027	mm		
Corner 2	0.031	mm		
Corner 3	0.023	mm		Roll (mm)
Corner 4	0.035	mm	~ 0.127	OK
Overall	0.069	mm		



3D Angle	Roll	Pitch		Pitch (mm)	
0.2361	0.2347	0.0260	mrad	~ 0.040	OK

Twist:	Roll	Pitch			
	-0.4444	-0.1545	mrad		
	-0.240	-0.240	mm	Twist:	OK

Description:

Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check:

145D25
Status

Back of Magnet

Horizontal (X-value)			Delta X
US:	115.620	mm	0.209
Origin:	115.515	mm	0.104
DS:	115.411	mm	0.000

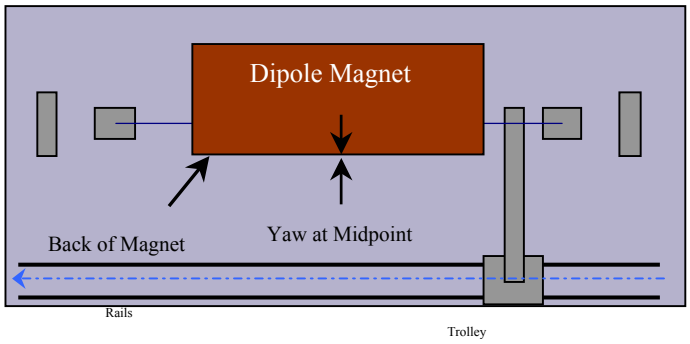
3D Angle	Roll	Yaw	
0.2204	0.1619	-0.1495	mrad

Midpoint
Yaw in mm
-0.116

OK

Description:

Position of scanned half of back surface of magnet for yaw check. ***(With 0.75" SMR offset.)***



Gradient Magnet
Magnetic Measurements/FiducializationTraveller

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: 145D25
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 10/23/01 Operator: J. McDougal
Water, Power and Interlock Connections.
Date_____, Operator _____
Measured Water Flow _____ gpm at Δp= _____ 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: 145D25

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.462 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

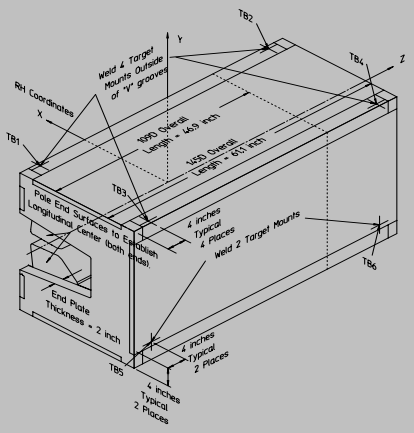
Fiducialization:

Operator(s): J. McDouga H. Imfeld

Date: 10/23/01 Temp: 21 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.216	87.328	431.709
TB2	674.047	87.058	431.879
TB3	-674.949	-569.311	431.733
TB4	675.198	-569.585	431.598
TB5	-672.535	-616.237	-296.644
TB6	674.151	-616.660	-295.425

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.216	87.328	431.709
TB2	674.047	87.058	431.879
TB3	-674.949	-569.311	431.733
TB4	675.198	-569.585	431.598
TB5	-672.535	-616.237	-296.644
TB6	674.151	-616.660	-295.425

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.570	96.520
C2	96.361	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.734	393.700
C2	393.821	393.700
C3	393.715	393.700
C4	393.562	393.700
	incl. paint	no paint

Approval: