Gradient Dipole Magnet Checks	145D04

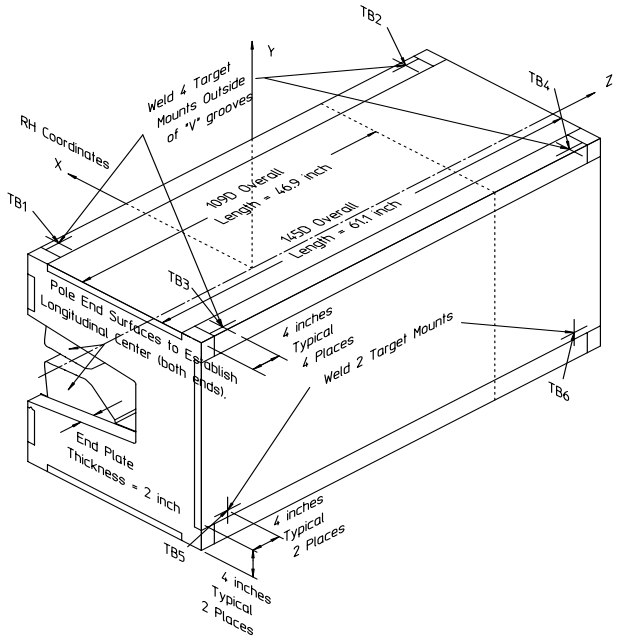
Date: 5/15/01

Magnet: 145D04

Operators: J. McDougal; H. Imfeld

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5554	3.4311	16.9994
TB2	26.5063	3.4380	17.0043
TB3	-26.5646	-22.4060	16.9971
TB4	26.5328	-22.4120	16.9963
TB5	-26.4866	-24.2448	-11.7594
TB6	26.4978	-24.2635	-11.6356

Offset: 0.0034 inches

Description:

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

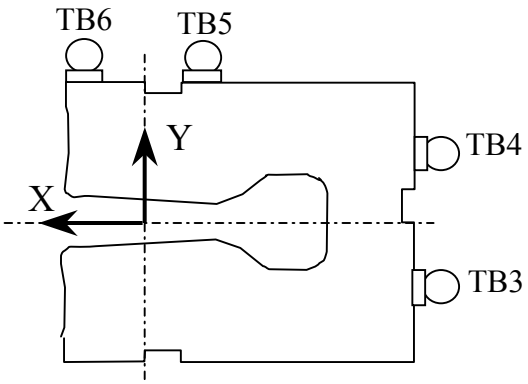
Downstream Garage Mechanical Check:

145D04 Status

Horizontal (X)	Vertical (Y)		
0.034 mm	-0.130 mm	X-value: Y-value:	OK Y > 100µm!

Description:

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



Trolley Checks:

145D04 Status

Trolley Distance

3D Distance R1	3D Distance R2		
2800.169 mm	2800.126 mm	R2 - R1 (mm) -0.043	OK

Description:

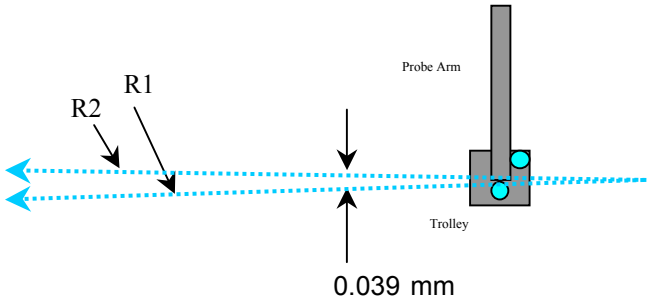
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch		
0.0280	0.0095	0.0264	mrad	Midpoint 3D Offset (mm) 0.039	OK

Description:

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



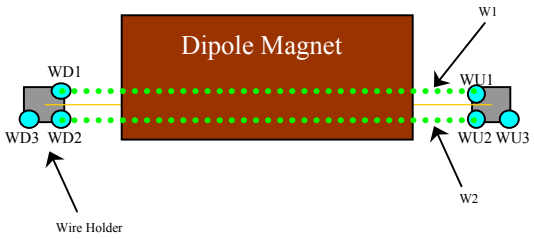
Wire Holder Position Checks:

145D04 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.223 mm	2382.936 mm		-0.287	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D04 Status

Wire Orientation				
3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0379	0.0158	-0.0344 mrad	0.045	OK

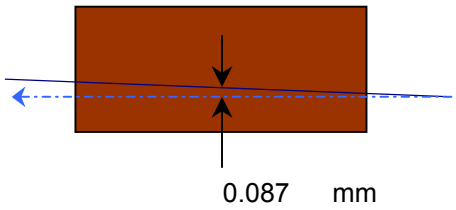
Description:

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

Wire Offsets				
US	Origin	DS	Origin Offset:	
0.069	**0.087**	0.106 mm		OK

Description:

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



End Surface Orientation Check and Magnet Length: 145D04

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.3188	-0.8892	-0.9739	mrad	~ 0.884	Too Big?
DS:	2.2349	-0.5629	-2.1629		~ 1.497	Too Big?

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		Status
1590.261	mm	1552.161	mm	LENGTH?

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

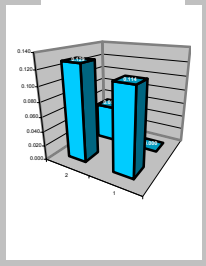
Top Surface Orientation Check: 145D04

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.699	mm	0.114	Delta Y C1:	OK
Corner 2	412.714	mm	0.129	Delta Y C2:	OK
Corner 3	412.585	mm	0.000	Delta Y C3:	OK
Corner 4	412.637	mm	0.052	Delta Y C4:	OK

Dispersion:

Corner 1	0.022	mm
Corner 2	0.021	mm
Corner 3	0.031	mm
Corner 4	0.019	mm
Overall	0.043	mm



Roll (mm) ~ 0.087 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1632	0.1602	-0.0310	mrad	~ -0.048	OK

Twist:	Roll	Pitch		Status
	0.0685	0.0238	mrad	
	0.037	0.037	mm	Twist: OK

Description:

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

Back Surface Orientation Check:

145D04
Status

Back of Magnet

Horizontal (X-value)			Delta X
US:	114.983	mm	0.086
Origin:	114.940	mm	0.043
DS:	114.897	mm	0.000

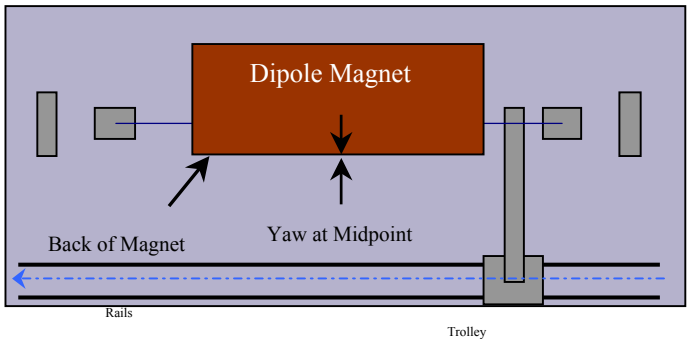
3D Angle	Roll	Yaw	
1.0028	1.0009	-0.0618	mrad

Midpoint
Yaw in mm
-0.048

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: 145D04
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 5/15/01 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: 145D04

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.087 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

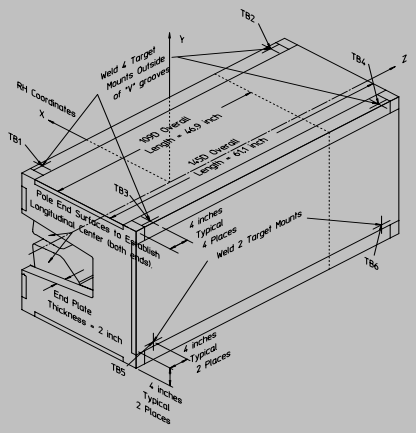
Fiducialization:

Operator(s): J. McDouga H. Imfeld

Date: 5/15/01 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.507	87.151	431.786
TB2	673.259	87.326	431.908
TB3	-674.742	-569.112	431.726
TB4	673.934	-569.264	431.705
TB5	-672.760	-615.817	-298.689
TB6	673.044	-616.293	-295.544

Mechanical Centerline
Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.507	87.151	431.786
TB2	673.259	87.326	431.908
TB3	-674.742	-569.112	431.726
TB4	673.934	-569.264	431.705
TB5	-672.760	-615.817	-298.689
TB6	673.044	-616.293	-295.544

Magnetic Centerline
Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	95.933	96.520
C2	95.847	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.649	393.700
C2	393.664	393.700
C3	393.535	393.700
C4	393.587	393.700
	incl. paint	no paint

Approval: