Gradient Dipole Magnet Checks	145D11

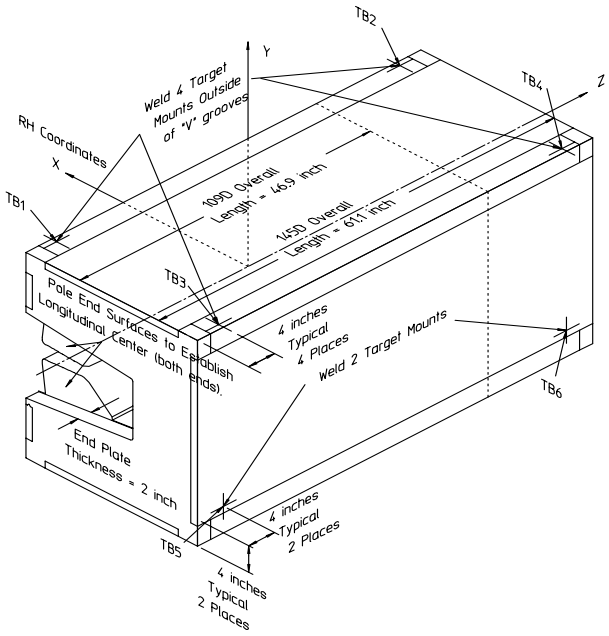
Date: 7/30/01

Magnet: 145D11

Operators: J. McDougal; H. Imfeld

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5691	3.4295	17.0001
TB2	26.5476	3.4309	17.0043
TB3	-26.5582	-22.4200	16.9985
TB4	26.5414	-22.4120	17.0001
TB5	-26.6875	-24.2684	-11.3637
TB6	26.5548	-24.2707	-11.7118

Offset: 0.0105 inches

Description:

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

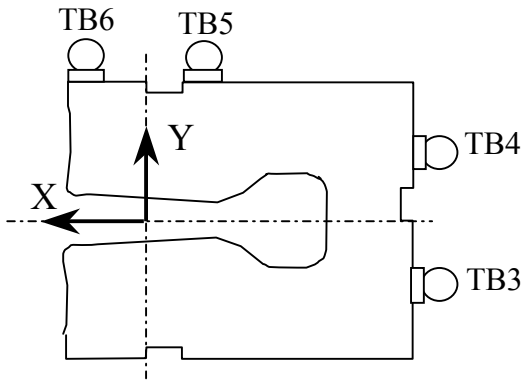
Downstream Garage Mechanical Check:

145D11 Status

Horizontal (X)	Vertical (Y)		
0.074 mm	-0.090 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:

145D11 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2800.222 mm	2800.186 mm	-0.036	OK

Description:

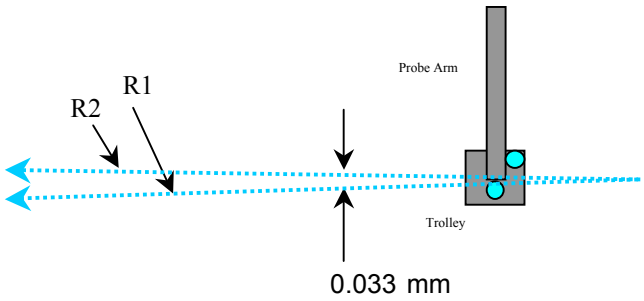
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0233	0.0143	0.0184	mrad	0.033	OK

Description:

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



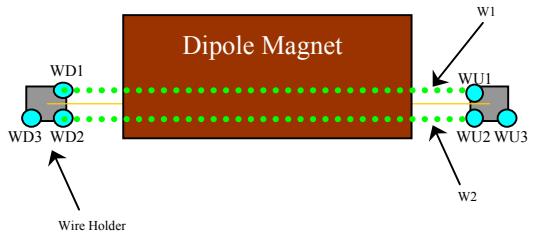
Wire Holder Position Checks:

145D11 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.311 mm	2383.026 mm		-0.285	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D11 Status

Wire Orientation				
3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0408	0.0248	-0.0324 mrad	0.049	OK

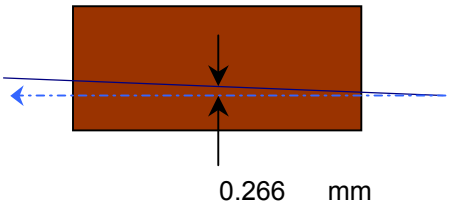
Description:

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

Wire Offsets				
US	Origin	DS	Origin Offset:	
0.236	**0.266**	0.295 mm		Too Big?

Description:

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



End Surface Orientation Check and Magnet Length: 145D11

End Surfaces	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	0.9445	-0.8888	-0.3196	mrad	~ 0.633	Too Big?
DS:	0.8092	-0.7960	0.1451		~ 0.542	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		Status
	1590.491	mm	1552.391	mm	LENGTH?

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

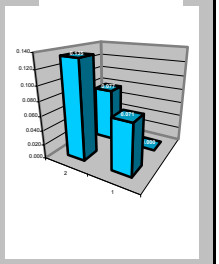
Top Surface Orientation Check: 145D11

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.743	mm	0.071	Delta Y C1:	OK
Corner 2	412.807	mm	0.135	Delta Y C2:	OK
Corner 3	412.672	mm	0.000	Delta Y C3:	OK
Corner 4	412.749	mm	0.077	Delta Y C4:	OK

Dispersion:

Corner 1	0.052	mm		
Corner 2	0.051	mm		
Corner 3	0.048	mm		
Corner 4	0.073	mm		
Overall	0.061	mm		



Roll (mm) ~ 0.058 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1197	0.1071	-0.0534	mrad	~ -0.083	OK

Twist:	Roll	Pitch			Status
	0.0241	0.0084	mrad		
	0.013	0.013	mm	Twist:	OK

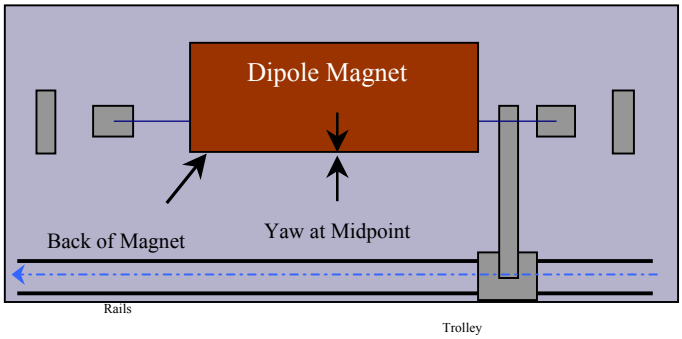
Description:
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 145D11

					Status
Back of Magnet					
Horizontal (X-value)				Delta X	
US:	115.633	mm		0.077	
Origin:	115.594	mm		0.038	
DS:	115.556	mm		0.000	
3D Angle	Roll	Yaw			
0.1429	-0.1321	-0.0546	mrad		
				Midpoint Yaw in mm	
				-0.042	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: 145D11
Capacitive System Alignment
Date_____, Operator _____

Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 7/30/01 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: 145D11

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.266 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

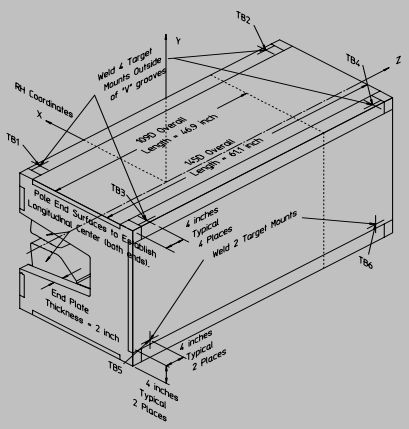
Fiducialization:

Operator(s): J. McDouga H. Imfeld

Date: 7/30/01 Temp: 22 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.854	87.110	431.803
TB2	674.310	87.146	431.910
TB3	-674.579	-569.469	431.762
TB4	674.152	-569.264	431.803
TB5	-677.863	-616.417	-288.639
TB6	674.491	-616.475	-297.480

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.854	87.110	431.803
TB2	674.310	87.146	431.910
TB3	-674.579	-569.469	431.762
TB4	674.152	-569.264	431.803
TB5	-677.863	-616.417	-288.639
TB6	674.491	-616.475	-297.480

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.583	96.520
C2	96.506	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.693	393.700
C2	393.757	393.700
C3	393.622	393.700
C4	393.699	393.700
	incl. paint	no paint

Approval: