Gradient Dipole Magnet Checks	109D39

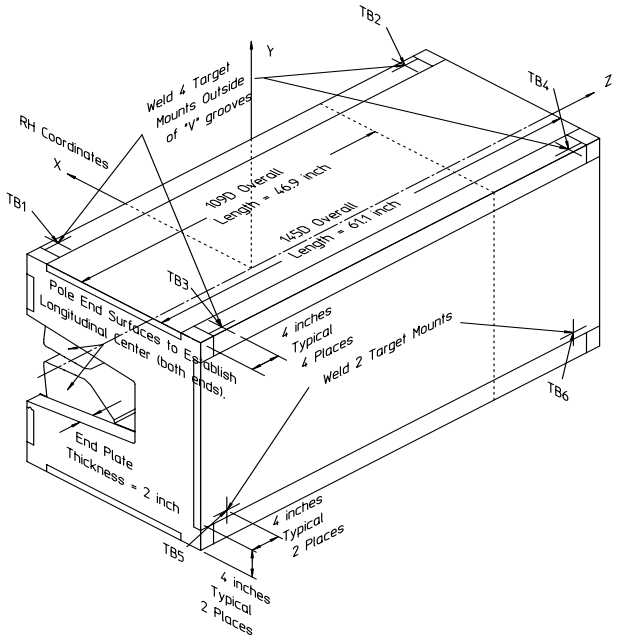
Date: 4/12/02

Magnet: 109D39

Operators: M. Rogers; H. Imfeld

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-19.4268	3.4459	17.0007
TB2	19.4224	3.4437	17.0013
TB3	-19.4207	-22.4212	16.9991
TB4	19.3685	-22.3796	16.9989
TB5	-19.3539	-24.2462	-11.4141
TB6	19.3515	-24.2506	-11.3477

Offset: 0.2123 inches

Description:

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

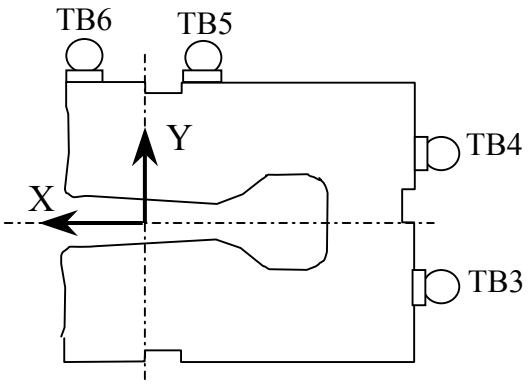
Downstream Garage Mechanical Check:

109D39 Status

Horizontal (X)	Vertical (Y)		
0.085 mm	-0.022 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:

109D39 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2800.221 mm	2800.161 mm	-0.060	OK

Description:

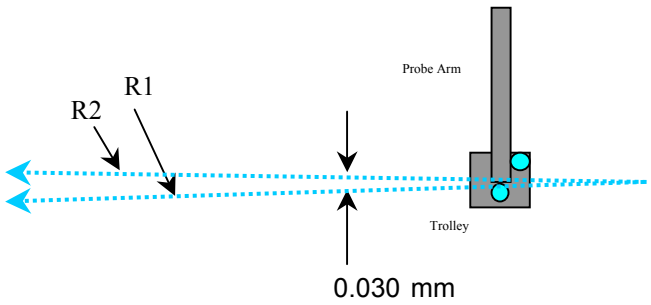
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0215	0.0141	0.0163	mrad	0.030	OK

Description:

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



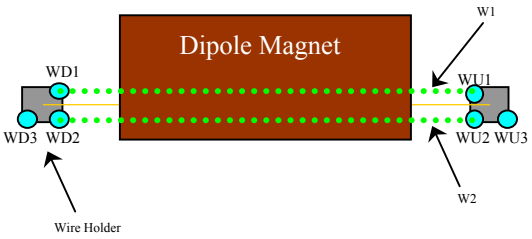
Wire Holder Position Checks:

109D39
Status

Wire Holders' Yaw Check					
3D Distance W1		3D Distance W2		W2 - W1 (mm)	
2383.028	mm	2382.729	mm	-0.299	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

109D39
Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0847	0.0618	-0.0580	mrad	0.101	Too Big?

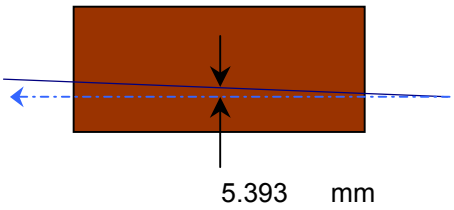
Description:

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

Wire Offsets					
US	Origin	DS			
5.319	**5.393**	5.466	mm	Origin Offset:	Range?

Description:

Offset distance from the mechanical center to the wire. (x-offsets only! 5.00 mm considered nom)



End Surface Orientation Check and Magnet Length: 109D39

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.6624	-1.3222	-1.0076	mrad	~ 1.114	Too Big?
DS:	1.2010	-1.1927	0.1411		~ 0.805	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
1229.010	mm	1190.910	mm	LENGTH?

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

Top Surface Orientation Check: 109D39

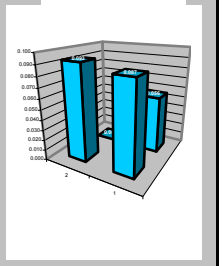
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.765	mm	0.087	Delta Y C1:	OK
Corner 2	412.771	mm	0.093	Delta Y C2:	OK
Corner 3	412.734	mm	0.056	Delta Y C3:	OK
Corner 4	412.678	mm	0.000	Delta Y C4:	OK

Dispersion:

Corner 1	0.019	mm
Corner 2	0.022	mm
Corner 3	0.019	mm
Corner 4	0.031	mm
Overall	0.035	mm



Roll (mm) ~ 0.057 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1124	0.1058	0.0380	mrad	~ 0.045	OK

Twist:	Roll	Pitch			Status
	-0.1148	-0.0521	mrad		
	-0.062	-0.062	mm	Twist:	OK

Description:

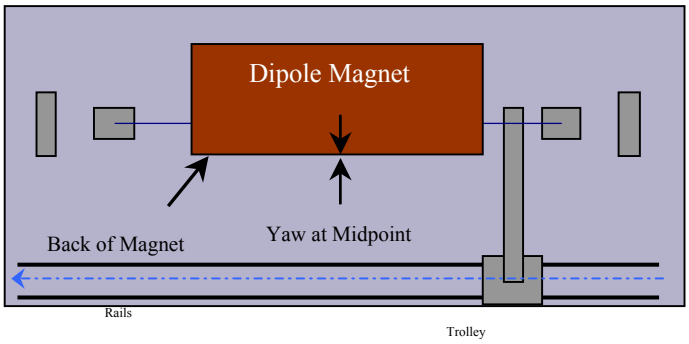
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 109D39

					Status
Back of Magnet					
Horizontal (X-value)				Delta X	
US:	115.884	mm		0.085	
Origin:	115.842	mm		0.043	
DS:	115.799	mm		0.000	
3D Angle	Roll	Yaw			
0.1816	0.1675	-0.0702	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: 109D39
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 4/12/02 Operator: M. Rogers
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: 109D39

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset:	5.393	mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

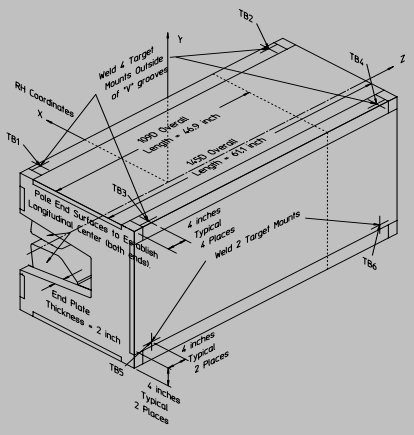
Fiducialization:

Operator(s): M. Rogers H. Imfeld

Date: 4/12/02 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-493.441	87.527	431.818
TB2	493.330	87.470	431.834
TB3	-493.286	-569.499	431.777
TB4	491.959	-568.443	431.771
TB5	-491.589	-615.853	-289.919
TB6	491.527	-615.964	-288.232

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-493.441	87.527	431.818
TB2	493.330	87.470	431.834
TB3	-493.286	-569.499	431.777
TB4	491.959	-568.443	431.771
TB5	-491.589	-615.853	-289.919
TB6	491.527	-615.964	-288.232

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.834	96.520
C2	96.749	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.715	393.700
C2	393.721	393.700
C3	393.684	393.700
C4	393.628	393.700
	incl. paint	no paint

Approval: