Gradient Dipole Magnet Checks	109D33

Date: 2/7/02

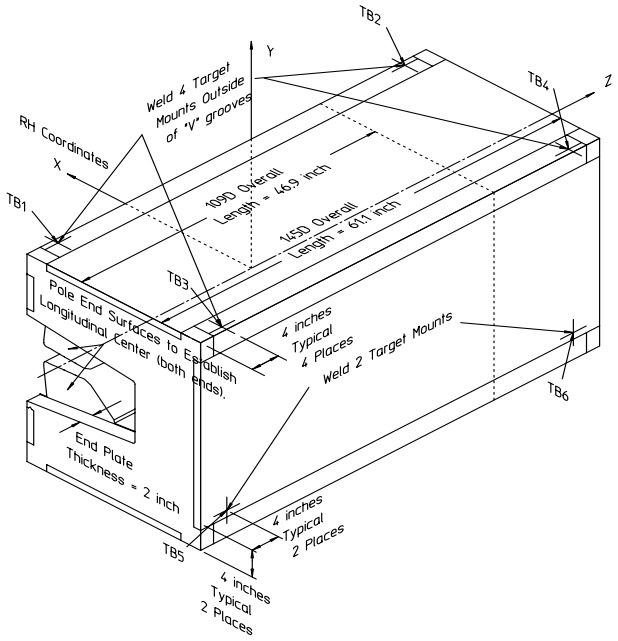
Magnet: 109D33

Operators: F. Gaudreault; C. Banuelos

Notes:

No second set of observations

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-19.4218	3.4440	16.9965
TB2	19.3979	3.4445	16.9966
TB3	-19.4370	-22.4113	16.9928
TB4	19.3897	-22.3965	16.9921
TB5	-19.4648	-24.2451	-11.4210
TB6	19.3140	-24.2431	-11.3963

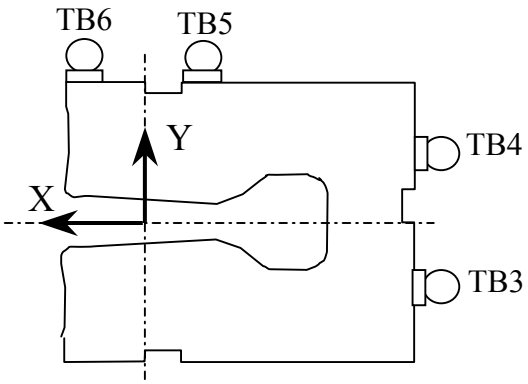
Offset: 0.2081 inches

Description:

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

Downstream Garage Mechanical Check:

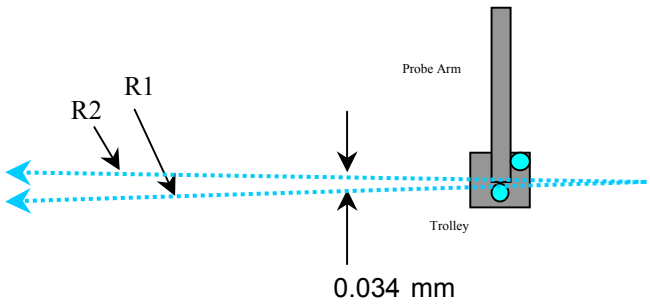
		109D33 Status
Horizontal (X) 0.077 mm; Vertical (Y) -0.022 mm	X-value: Y-value:	OK OK
Description: *How much does the Z-axis from the US garage miss the center of the DS garage?*		



Trolley Checks:

		109D33 Status
Trolley Distance 3D Distance R1 2800.306 mm; 3D Distance R2 2800.255 mm	R2 - R1 (mm) -0.051	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: 0.0241 / 0.0101 / 0.0219 mrad	Midpoint 3D Offset (mm) 0.034	OK
Description: *Angle between R1 and R2 vectors. The average of these two defines the Z-axis.*		



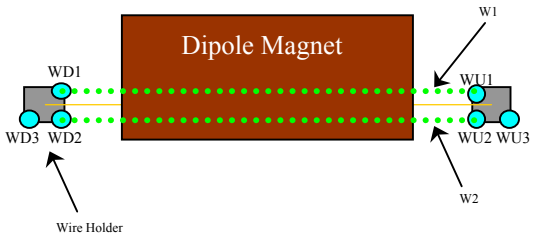
Wire Holder Position Checks:

109D33
Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.592 mm	2383.195 mm		-0.397	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

109D33
Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0801	0.0430	-0.0677	mrad	0.095	Too Big?

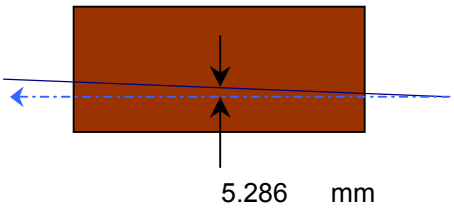
Description:

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

Wire Offsets					
US	Origin	DS			
5.235	**5.286**	5.337	mm	Origin Offset:	Range?

Description:

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



End Surface Orientation Check and Magnet Length: 109D33

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.2435	-1.1629	-0.4403	mrad	~ 0.833	Too Big?
DS:	1.3879	-1.3382	-0.3681		~ 0.930	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
1227.903	mm	1189.803	mm	LENGTH?

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

Top Surface Orientation Check: 109D33

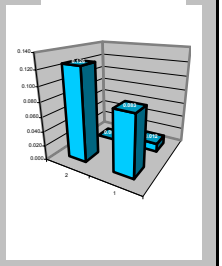
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.647	mm	0.083	Delta Y C1:	OK
Corner 2	412.690	mm	0.126	Delta Y C2:	OK
Corner 3	412.576	mm	0.012	Delta Y C3:	OK
Corner 4	412.564	mm	0.000	Delta Y C4:	OK

Dispersion:

Corner 1	0.043	mm
Corner 2	0.039	mm
Corner 3	0.038	mm
Corner 4	0.037	mm
Overall	0.044	mm



Roll (mm) ~ 0.094 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1754	0.1748	-0.0144	mrad	~ -0.017	OK

Twist:	Roll	Pitch		Twist:	Status
	-0.1019	-0.0462	mrad		
	-0.055	-0.055	mm		OK

Description:

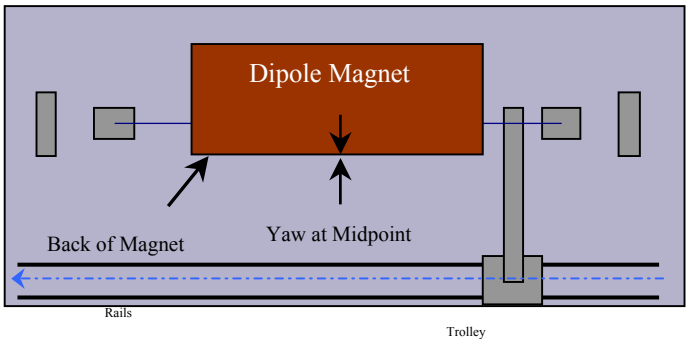
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 109D33

Back of Magnet					Status
Horizontal (X-value)				Delta X	
US:	115.580	mm		0.000	
Origin:	115.608	mm		0.028	
DS:	115.636	mm		0.056	
3D Angle	Roll	Yaw			
0.057	0.0321	0.0466	mrad	Midpoint Yaw in mm: 0.028	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: 109D33
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 2/7/02 Operator: F. Gaudreault
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: 109D33

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 5.286 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

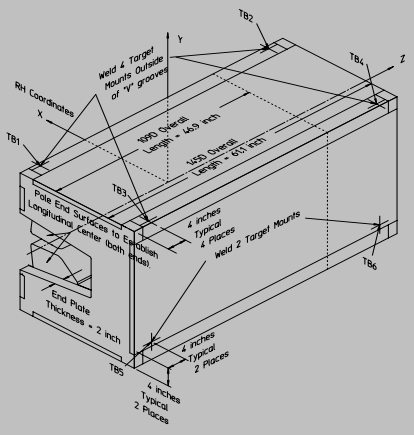
Fiducialization:

Operator(s): F. Gaudrea C. Banuelos

Date: 2/7/02 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-493.313	87.477	431.710
TB2	492.707	87.491	431.713
TB3	-493.700	-569.248	431.617
TB4	492.499	-568.870	431.600
TB5	-494.406	-615.825	-290.093
TB6	490.576	-615.776	-289.467

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-493.313	87.477	431.710
TB2	492.707	87.491	431.713
TB3	-493.700	-569.248	431.617
TB4	492.499	-568.870	431.600
TB5	-494.406	-615.825	-290.093
TB6	490.576	-615.776	-289.467

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.530	96.520
C2	96.586	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.597	393.700
C2	393.640	393.700
C3	393.526	393.700
C4	393.514	393.700
	incl. paint	no paint

Approval: