Gradient Dipole Magnet Checks	109D35

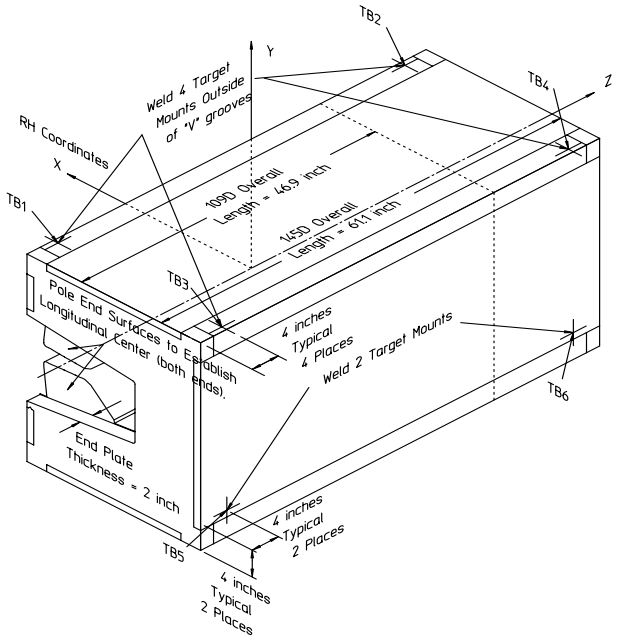
Date: 2/15/02

Magnet: 109D35

Operators: C. Banuelos; F. Gaudreault

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-19.4119	3.4422	16.9979
TB2	19.4134	3.4355	17.0026
TB3	-19.4134	-22.3863	16.9964
TB4	19.4276	-22.3826	17.0018
TB5	-19.2981	-24.2487	-11.5011
TB6	19.1959	-24.2574	-11.5104

Offset: 0.2119 inches

Description:

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

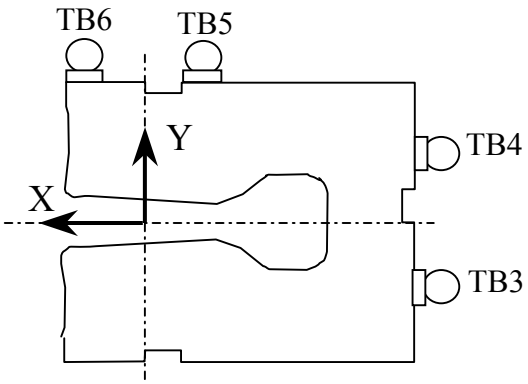
Downstream Garage Mechanical Check:

109D35 Status

Horizontal (X)	Vertical (Y)		
0.069 mm	0.004 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:

109D35 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2800.193 mm	2800.140 mm	-0.053	OK

Description:

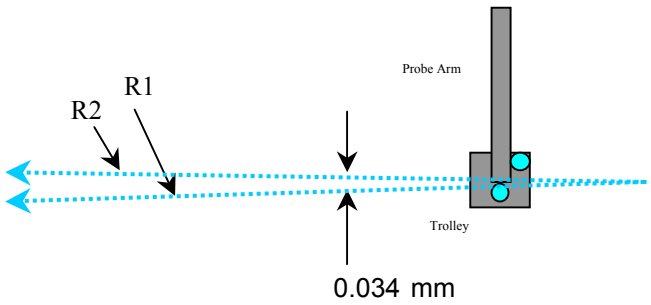
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0242	0.0131	0.0204 mrad	0.034	OK

Description:

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



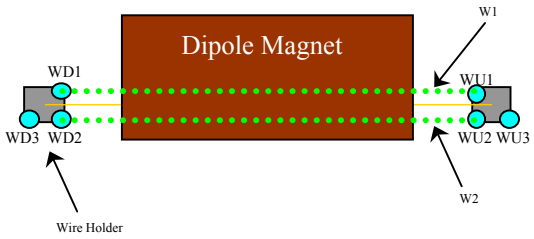
Wire Holder Position Checks:

109D35 Status

Wire Holders' Yaw Check					
3D Distance W1		3D Distance W2		W2 - W1 (mm)	
2383.770	mm	2383.485	mm	-0.285	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

109D35 Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0880	0.0505	-0.0721	mrad	0.105	Too Big?

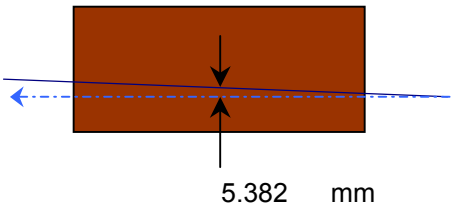
Description:

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

Wire Offsets					
US	Origin	DS			
5.322	**5.382**	5.442	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: 109D35

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.2008	-0.7062	0.9712	mrad	~ 0.805	Too Big?
DS:	1.0274	-0.5801	0.8480		~ 0.688	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
1228.025	mm	1189.925	mm	LENGTH?

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

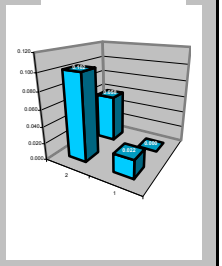
Top Surface Orientation Check: 109D35

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.713	mm	0.022	Delta Y C1:	OK
Corner 2	412.793	mm	0.102	Delta Y C2:	OK
Corner 3	412.691	mm	0.000	Delta Y C3:	OK
Corner 4	412.749	mm	0.058	Delta Y C4:	OK

Dispersion:

Corner 1	0.038	mm
Corner 2	0.029	mm
Corner 3	0.024	mm
Corner 4	0.029	mm
Overall	0.046	mm



Roll (mm) ~ 0.033 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.0855	0.0608	-0.0601	mrad	~ -0.072	OK

Twist:	Roll	Pitch		Twist:	Status
	-0.0407	-0.0185	mrad		
	-0.022	-0.022	mm		OK

Description:

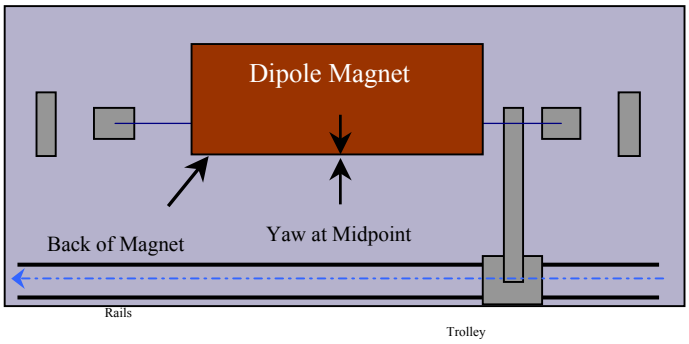
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 109D35

					Status
Back of Magnet					
Horizontal (X-value)			Delta X		
US:	115.532	mm	0.000		
Origin:	115.545	mm	0.013		
DS:	115.558	mm	0.026		
3D Angle	Roll	Yaw		Midpoint Yaw in mm	
0.1594	0.1579	0.0218	mrad	0.013	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: 109D35
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 2/15/02 Operator: C. Banuelos
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: 109D35

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 5.382 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

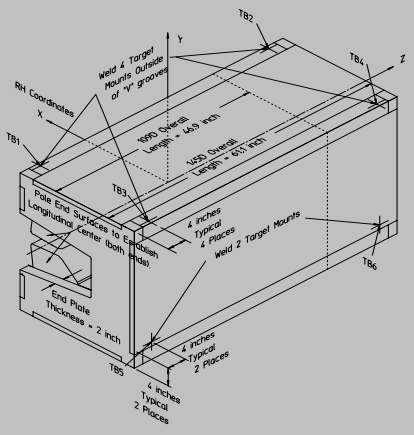
Fiducialization:

Operator(s): C. Banuelos F. Gaudreault

Date: 2/15/02 Temp: deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-493.063	87.431	431.747
TB2	493.101	87.261	431.867
TB3	-493.100	-568.613	431.708
TB4	493.462	-568.519	431.846
TB5	-490.171	-615.918	-292.127
TB6	487.575	-616.138	-292.363

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-493.063	87.431	431.747
TB2	493.101	87.261	431.867
TB3	-493.100	-568.613	431.708
TB4	493.462	-568.519	431.846
TB5	-490.171	-615.918	-292.127
TB6	487.575	-616.138	-292.363

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.482	96.520
C2	96.508	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.663	393.700
C2	393.743	393.700
C3	393.641	393.700
C4	393.699	393.700
	incl. paint	no paint

Approval: