Gradient Dipole Magnet Checks	145D01

Date: 4/30/91

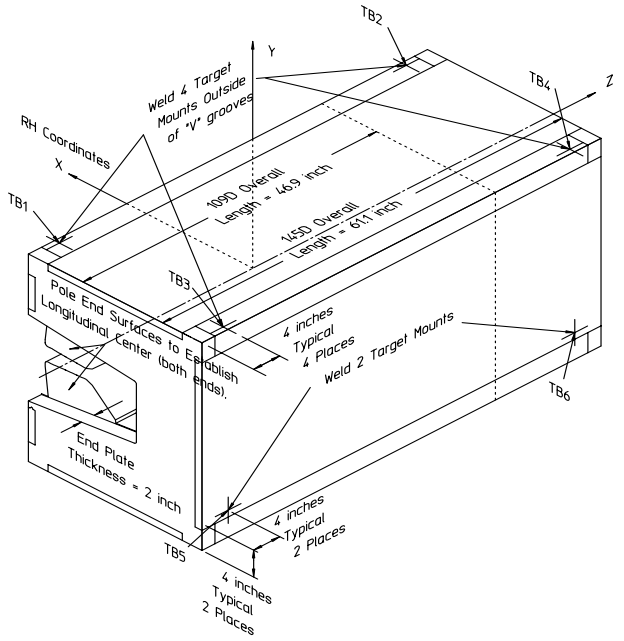
Magnet: 145D01

Operators: M. Rogers; J. McDougal

Notes:

Second run

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5458	3.4337	17.0079
TB2	26.5650	3.4469	16.9969
TB3	-26.5252	-22.4148	16.9987
TB4	26.5520	-22.4045	17.0013
TB5	-26.2303	-24.2407	-11.0996
TB6	26.4650	-24.2679	-11.4338

Offset: 0.0071 inches

Description:

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

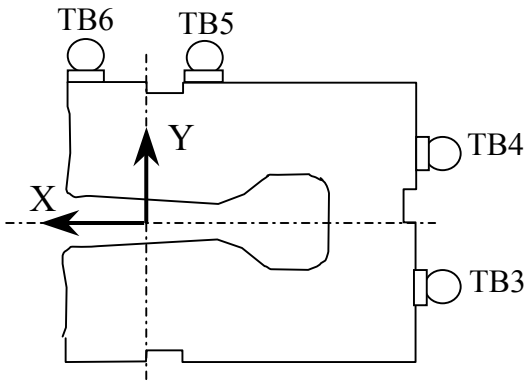
Downstream Garage Mechanical Check:

145D01 Status

Horizontal (X)	Vertical (Y)		
0.068 mm	-0.084 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:

145D01 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2800.209 mm	2800.145 mm	-0.064	OK

Description:

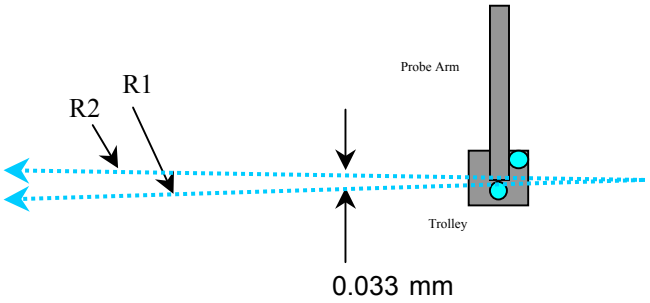
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0239	0.0107	0.0213 mrad	0.033	OK

Description:

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



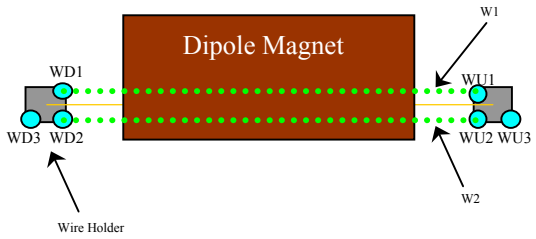
Wire Holder Position Checks:

145D01 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.091 mm	2382.769 mm		-0.322	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D01 Status

Wire Orientation				
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)
0.0601	0.0215	-0.0561	mrad	0.072 OK

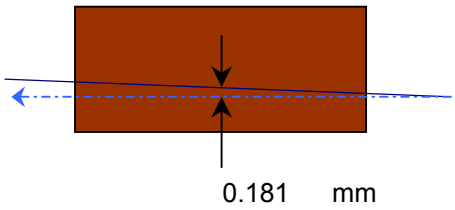
Description:

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

Wire Offsets				
US	Origin	DS		Origin Offset:
0.155	**0.181**	0.206	mm	OK

Description:

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



End Surface Orientation Check and Magnet Length: 145D01

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	
US:	0.2753	-0.2527	-0.1093	mrad	~ 0.184	OK
DS:	0.8837	-0.6893	0.5531		~ 0.592	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		
1589.993	mm	1551.893	mm	OK

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

Top Surface Orientation Check: 145D01

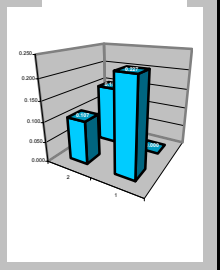
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		
Corner 1	412.755	mm	0.227	Delta Y C1:	OK
Corner 2	412.635	mm	0.107	Delta Y C2:	OK
Corner 3	412.528	mm	0.000	Delta Y C3:	OK
Corner 4	412.678	mm	0.150	Delta Y C4:	OK

Dispersion:

Corner 1	0.033	mm	Roll (mm)	
Corner 2	0.034	mm		
Corner 3	0.026	mm		
Corner 4	0.030	mm	~ 0.083	OK
Overall	0.083	mm		



3D Angle	Roll	Pitch		Pitch (mm)	
0.1536	0.1531	-0.0130	mrad	~ -0.020	OK

Twist:	Roll	Pitch			
	0.5000	0.1740	mrad		
	0.270	0.270	mm	Twist:	OK

Description:

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

Back Surface Orientation Check: 145D01

Status

Back of Magnet

Horizontal (X-value)			Delta X
US:	115.718	mm	0.000
Origin:	115.793	mm	0.075
DS:	115.867	mm	0.149

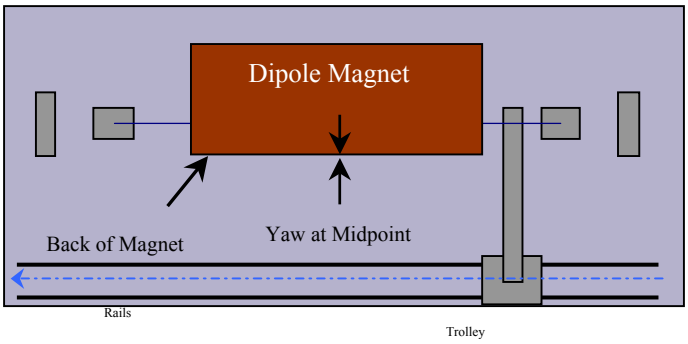
3D Angle	Roll	Yaw	
0.5239	0.5128	0.1070	mrad

Midpoint Yaw in mm: 0.083

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: 145D01
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 4/30/91 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: 145D01

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.181 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

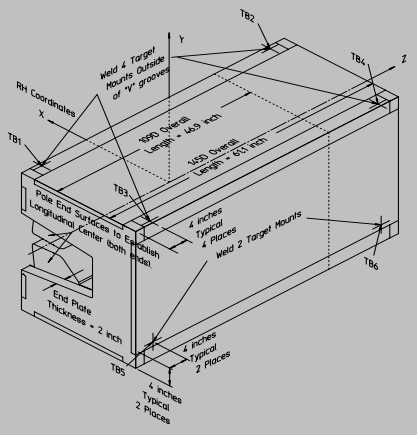
Fiducialization:

Operator(s): M. Rogers J. McDougal

Date: 4/30/91 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.263	87.215	432.000
TB2	674.752	87.552	431.721
TB3	-673.741	-569.336	431.768
TB4	674.421	-569.074	431.832
TB5	-666.250	-615.713	-281.930
TB6	672.211	-616.404	-290.419

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.263	87.215	432.000
TB2	674.752	87.552	431.721
TB3	-673.741	-569.336	431.768
TB4	674.421	-569.074	431.832
TB5	-666.250	-615.713	-281.930
TB6	672.211	-616.404	-290.419

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.668	96.520
C2	96.817	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.705	393.700
C2	393.585	393.700
C3	393.478	393.700
C4	393.628	393.700
	incl. paint	no paint

Approval: