Gradient Dipole Magnet Checks | *145D24*

Date: 10/10/01

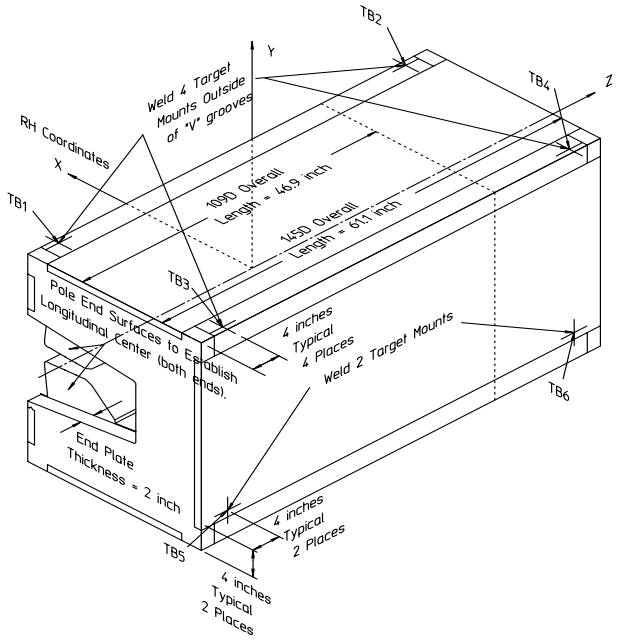
Magnet: 145D24

Operators: J. McDougal; H. Imfeld

Notes:

Corrupted data from station 3. Survey was repeated next day.

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5919	3.3977	16.9981
TB2	26.5493	3.4072	17.0006
TB3	-26.5425	-22.3820	16.9963
TB4	26.5630	-22.3642	17.0009
TB5	-26.5468	-24.2434	-11.4402
TB6	26.4964	-24.2460	-11.5362

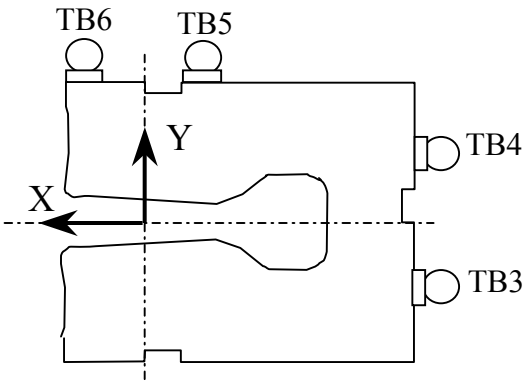
Offset: 0.0155 inches

Description:

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

Downstream Garage Mechanical Check:

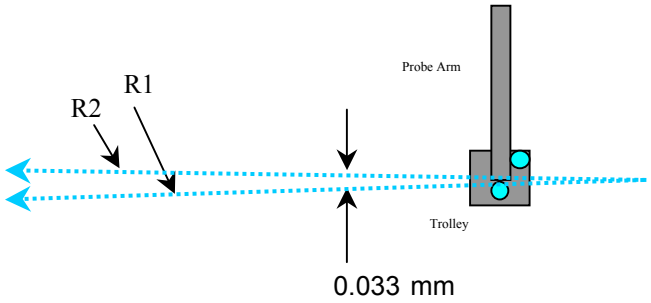
		145D24 Status
Horizontal (X) 0.049 mm; Vertical (Y) -0.016 mm	X-value: OK Y-value: OK	
Description: *How much does the Z-axis from the US garage miss the center of the DS garage?*		



Trolley Checks:

		145D24 Status
Trolley Distance 3D Distance R1 2800.159 mm; 3D Distance R2 2800.104 mm	R2 - R1 (mm) -0.055	OK
Description: *Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.*		

Z-axis Vector 3D Angle 0.0235; Yaw 0.0138; Pitch 0.0190 mrad	Midpoint 3D Offset (mm) 0.033	OK
Description: *Angle between R1 and R2 vectors. The average of these two defines the Z-axis.*		



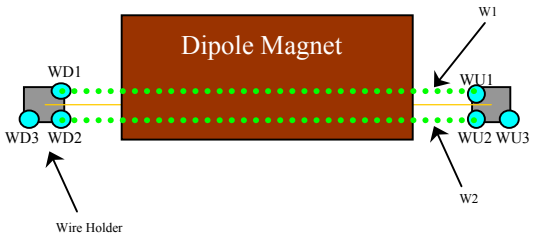
Wire Holder Position Checks:

145D24 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.292 mm	2382.994 mm		-0.298	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D24 Status

Wire Orientation				
3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0560	0.0295	-0.0476 mrad	0.067	OK

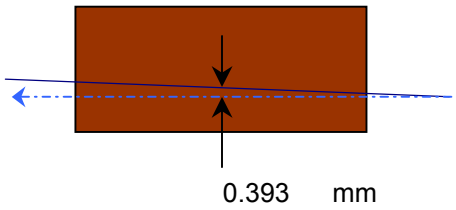
Description:

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

Wire Offsets				
US	Origin	DS	Origin Offset:	
0.358	**0.393**	0.428 mm		Too Big?

Description:

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



End Surface Orientation Check and Magnet Length: 145D24

						Status
End Surfaces						
	3D Angle	Yaw	Pitch		3D Offset (mm)	
US:	0.7185	-0.6571	-0.2908	mrad	~ 0.481	OK
DS:	0.8228	0.6106	-0.5516		~ 0.551	OK
Description:						
End surface orientation relative to reference frame.						
Note: 3D Offset based on average of width and height of the magnet side.						

				Status
Length of Magnet				
Distance **with SMR**	Distance			
1590.222 mm	1552.122	mm		LENGTH?
Description:	*Length of magnet along Z-axis. (Design vals: 1551.61 and 1189.10)*			

Top Surface Orientation Check: 145D24

						Status
Top of Magnet						
Height (Y-value) **with 0.75"**			Delta Y			
Corner 1	412.777	mm	0.044		Delta Y C1:	OK
Corner 2	412.831	mm	0.098		Delta Y C2:	OK
Corner 3	412.733	mm	0.000		Delta Y C3:	OK
Corner 4	412.809	mm	0.076		Delta Y C4:	OK
Dispersion:						
Corner 1	0.020	mm				
Corner 2	0.022	mm				
Corner 3	0.030	mm			Roll (mm)	
Corner 4	0.021	mm			~ 0.032	OK
Overall	0.032	mm				
3D Angle	Roll	Pitch			Pitch (mm)	
0.0772	0.0596	-0.0491	mrad		~ -0.076	OK
Twist:	Roll	Pitch				
	0.0407	0.0142	mrad			
	0.022	0.022	mm		Twist:	OK
Description:						
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***						

Back Surface Orientation Check:

145D24
Status

Back of Magnet

Horizontal (X-value)			Delta X
US:	115.711	mm	0.000
Origin:	115.713	mm	0.002
DS:	115.714	mm	0.003

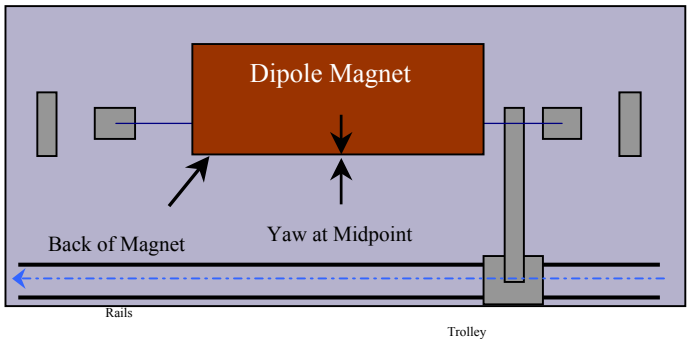
3D Angle	Roll	Yaw	
0.4762	0.4762	0.0020	mrad

Midpoint
Yaw in mm
0.002

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: 145D24
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 10/10/01 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: 145D24

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.393 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

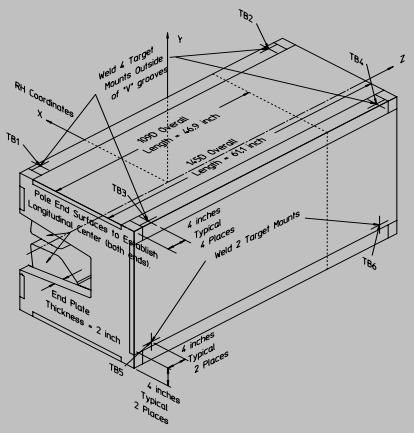
Fiducialization:

Operator(s): J. McDouga H. Imfeld

Date: 10/10/01 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-675.435	86.302	431.752
TB2	674.352	86.544	431.816
TB3	-674.180	-568.502	431.705
TB4	674.699	-568.051	431.823
TB5	-674.289	-615.782	-290.580
TB6	673.008	-615.848	-293.019

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-675.435	86.302	431.752
TB2	674.352	86.544	431.816
TB3	-674.180	-568.502	431.705
TB4	674.699	-568.051	431.823
TB5	-674.289	-615.782	-290.580
TB6	673.008	-615.848	-293.019

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.661	96.520
C2	96.664	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.727	393.700
C2	393.781	393.700
C3	393.683	393.700
C4	393.759	393.700
	incl. paint	no paint

Approval: