Gradient Dipole Magnet Checks — 145D26

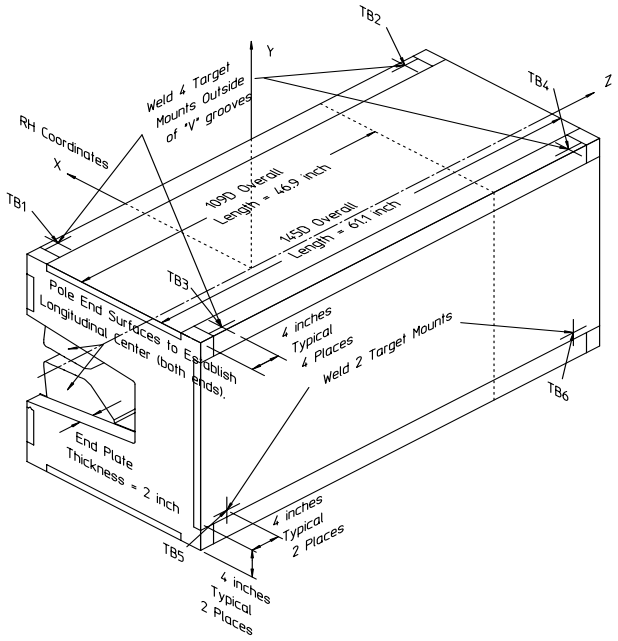
Date: 11/2/01

Magnet: 145D26

Operators: L. Juarez, M. Rogers

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5513	3.4322	17.0000
TB2	26.5358	3.4385	17.0004
TB3	-26.5676	-22.4138	16.9922
TB4	26.5470	-22.4306	17.0005
TB5	-26.4726	-24.2609	-11.3451
TB6	26.4602	-24.2444	-11.3561

Offset: 0.0125 inches

Description:

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

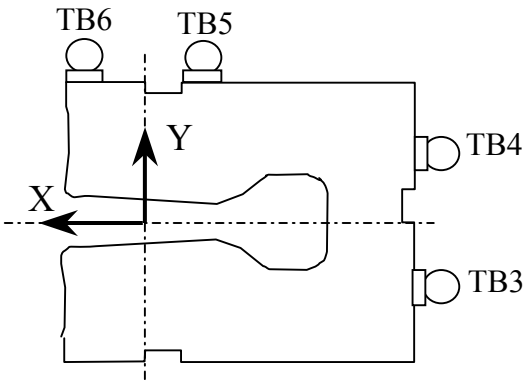
Downstream Garage Mechanical Check:

145D26 Status

Horizontal (X)	Vertical (Y)		
0.088 mm	-0.051 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:

145D26 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2814.723 mm	2814.674 mm	-0.049	OK

Description:

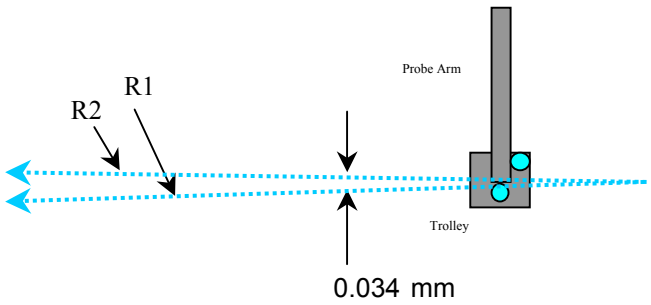
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0245	0.0084	0.0230 mrad	0.034	OK

Description:

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



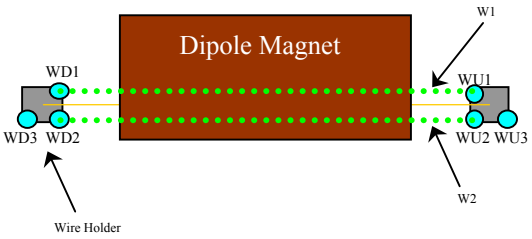
Wire Holder Position Checks:

145D26
Status

Wire Holders' Yaw Check					
3D Distance W1		3D Distance W2		W2 - W1 (mm)	
2383.003	mm	2382.641	mm	-0.362	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D26
Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0411	0.0238	-0.0335	mrad	0.049	OK

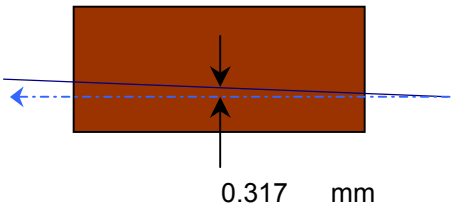
Description:

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

Wire Offsets					
US	Origin	DS		Origin Offset:	
0.289	**0.317**	0.346	mm		Too Big?

Description:

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



End Surface Orientation Check and Magnet Length: 145D26

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.5899	-1.5558	-0.3277	mrad	~ 1.065	Too Big?
DS:	0.6719	-0.5265	-0.4175		~ 0.450	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		Status
1590.386	mm	1552.286	mm	LENGTH?

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

Top Surface Orientation Check: 145D26

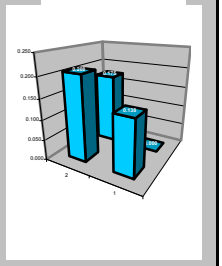
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.775	mm	0.138	Delta Y C1:	OK
Corner 2	412.845	mm	0.208	Delta Y C2:	OK
Corner 3	412.637	mm	0.000	Delta Y C3:	OK
Corner 4	412.812	mm	0.175	Delta Y C4:	OK

Dispersion:

Corner 1	0.023	mm
Corner 2	0.032	mm
Corner 3	0.033	mm
Corner 4	0.030	mm
Overall	0.042	mm



Roll (mm) ~ 0.081 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1772	0.1506	-0.0933	mrad	~ -0.145	OK

Twist:	Roll	Pitch			Status
	0.1944	0.0676	mrad		
	0.105	0.105	mm	Twist:	OK

Description:

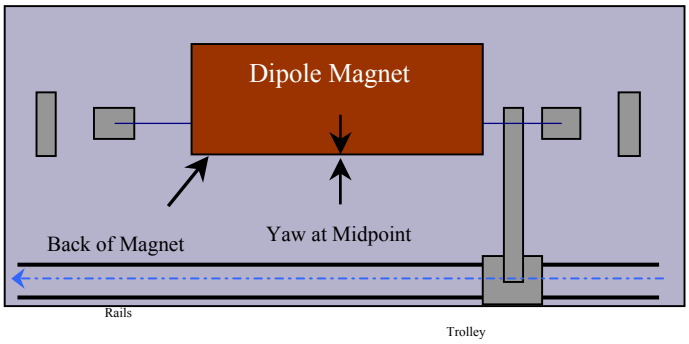
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 145D26

Back of Magnet					Status
Horizontal (X-value)				Delta X	
US:	115.553	mm		0.000	
Origin:	115.597	mm		0.044	
DS:	115.641	mm		0.088	
3D Angle	Roll	Yaw			
0.3552	0.3497	0.0625	mrad	Midpoint Yaw in mm: 0.049	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: 145D26
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 11/2/01 Operator: L. Juarez
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: 145D26

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 0.317 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

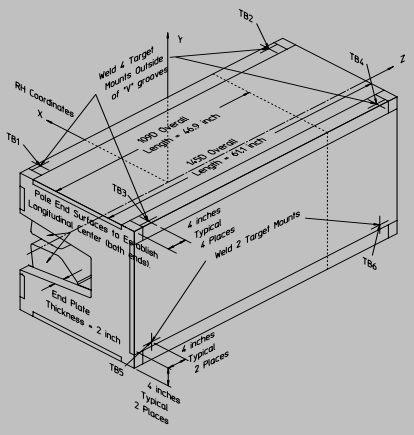
Fiducialization:

Operator(s): L. Juarez M. Rogers

Date: 11/2/01 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.404	87.179	431.800
TB2	674.009	87.339	431.811
TB3	-674.818	-569.311	431.601
TB4	674.293	-569.736	431.812
TB5	-672.405	-616.227	-288.165
TB6	672.090	-615.808	-288.445

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.404	87.179	431.800
TB2	674.009	87.339	431.811
TB3	-674.818	-569.311	431.601
TB4	674.293	-569.736	431.812
TB5	-672.405	-616.227	-288.165
TB6	672.090	-615.808	-288.445

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.503	96.520
C2	96.591	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.725	393.700
C2	393.795	393.700
C3	393.587	393.700
C4	393.762	393.700
	incl. paint	no paint

Approval: