Gradient Dipole Magnet Checks — 145D08

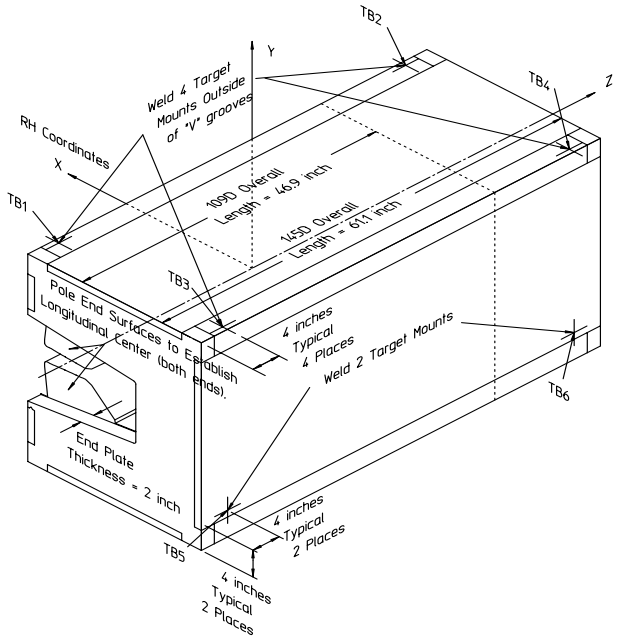
Date: 6/8/01

Magnet: 145D08

Operators: F. Gaudreault; H. Imfeld

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-26.5726	3.4327	17.0079
TB2	26.5439	3.4360	17.0070
TB3	-26.5308	-22.4255	17.0004
TB4	26.4771	-22.3958	17.0009
TB5	-26.4310	-24.2732	-11.3775
TB6	26.6229	-24.2659	-11.5773

Offset: 0.0124 inches

Description:

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

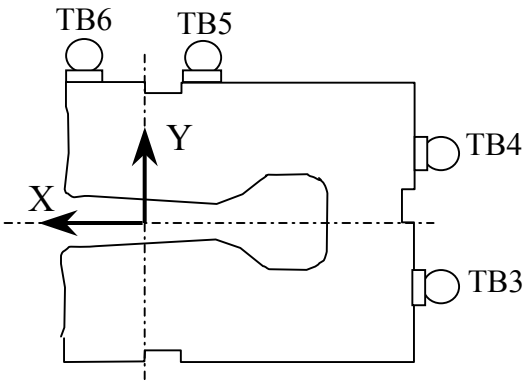
Downstream Garage Mechanical Check:

145D08 Status

Horizontal (X)	Vertical (Y)		
0.094 mm	-0.103 mm	X-value: Y-value:	OK Y > 100µm!

Description:

How much does the Z-axis from the US garage miss the center of the DS garage?



Trolley Checks:

145D08 Status

Trolley Distance

3D Distance R1	3D Distance R2		
2800.242 mm	2800.185 mm	R2 - R1 (mm) -0.057	OK

Description:

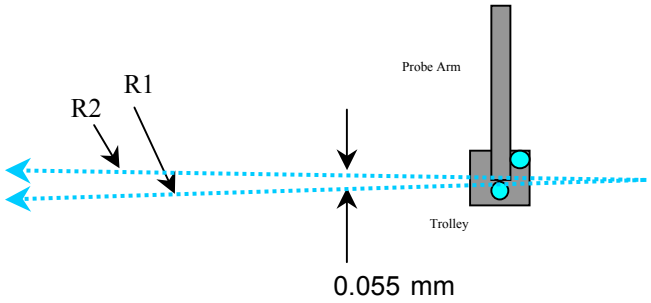
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch		
0.0396	0.0124	0.0376	mrad	Midpoint 3D Offset (mm) 0.055	Too Big?

Description:

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



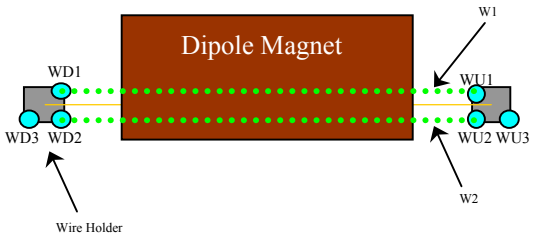
Wire Holder Position Checks:

145D08 Status

Wire Holders' Yaw Check				
3D Distance W1	3D Distance W2		W2 - W1 (mm)	
2383.280 mm	2383.005 mm		-0.275	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

145D08 Status

Wire Orientation				
3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0339	0.0160	-0.0299 mrad	0.040	OK

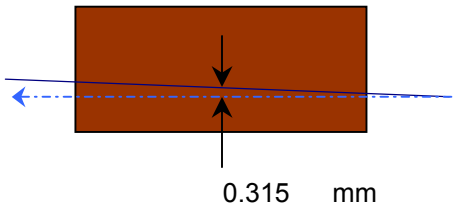
Description:

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

Wire Offsets				
US	Origin	DS	Origin Offset:	
0.296	**0.315**	0.334 mm		Too Big?

Description:

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



End Surface Orientation Check and Magnet Length: 145D08

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	0.3669	0.0092	0.3667	mrad	~ 0.246	OK
DS:	0.4701	0.1923	0.4289		~ 0.315	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
1590.585	mm	1552.485	mm	LENGTH?

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

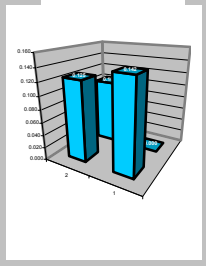
Top Surface Orientation Check: 145D08

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.769	mm	0.142	Delta Y C1:	OK
Corner 2	412.752	mm	0.125	Delta Y C2:	OK
Corner 3	412.627	mm	0.000	Delta Y C3:	OK
Corner 4	412.729	mm	0.102	Delta Y C4:	OK

Dispersion:

Corner 1	0.032	mm
Corner 2	0.018	mm
Corner 3	0.031	mm
Corner 4	0.013	mm
Overall	0.046	mm



Roll (mm) ~ 0.087 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1643	0.1617	-0.0294	mrad	~ -0.046	OK

Twist:	Roll	Pitch		Twist:	Status
	0.2204	0.0767	mrad		
	0.119	0.119	mm		OK

Description:

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

Back Surface Orientation Check:

145D08
Status

Back of Magnet

Horizontal (X-value)			Delta X
US:	115.559	mm	0.090
Origin:	115.514	mm	0.045
DS:	115.469	mm	0.000

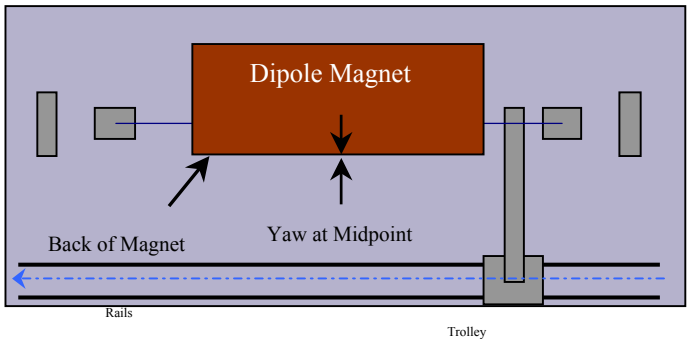
3D Angle	Roll	Yaw	
0.1753	-0.1630	-0.0646	mrad

Midpoint
Yaw in mm
-0.050

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: 145D08
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 6/8/01 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: 145D08

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset:	0.315	mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

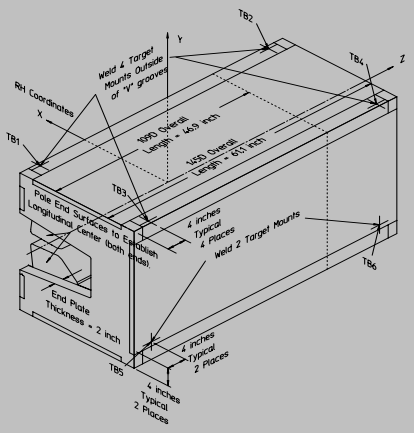
Fiducialization:

Operator(s): F. Gaudreau H. Imfeld

Date: 6/8/01 Temp: 25 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-674.945	87.191	432.000
TB2	674.216	87.275	431.978
TB3	-673.883	-569.608	431.810
TB4	672.518	-568.853	431.824
TB5	-671.348	-616.539	-288.989
TB6	676.222	-616.353	-294.063

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-674.945	87.191	432.000
TB2	674.216	87.275	431.978
TB3	-673.883	-569.608	431.810
TB4	672.518	-568.853	431.824
TB5	-671.348	-616.539	-288.989
TB6	676.222	-616.353	-294.063

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.509	96.520
C2	96.419	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.719	393.700
C2	393.702	393.700
C3	393.577	393.700
C4	393.679	393.700
	incl. paint	no paint

Approval: