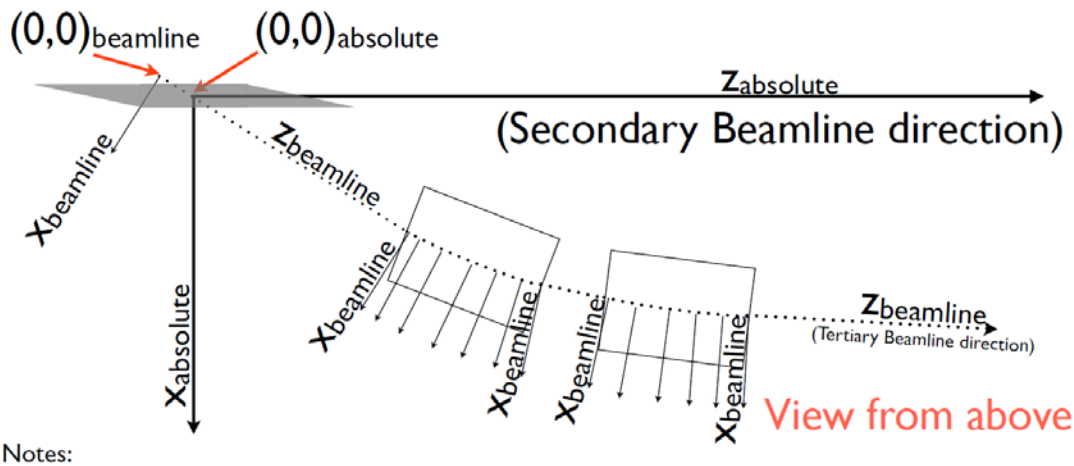
Project: 6782 **Request: 6924**

Align/As-found LArIAT
Tertiary Beam Line
(July 2014)

Document#: LArTPC Document 1141-v1 (TwoBeamlineCoordinateSystems.pdf)

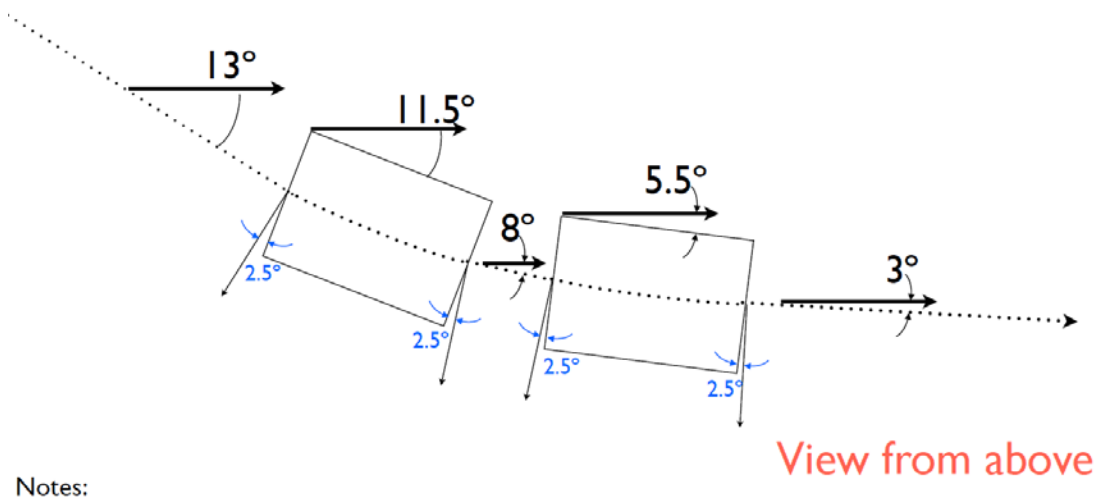
Two Coordinate Systems:
absolute (for layout in space)
& beamline (for simulation in G4Beamline)



Notes:
Center of target (0,0)absolute is at zbeamline = 100 mm

zbeamline passes through center of target at 13° from zabsolute, then follows nominal beam path: curve 5° inside first dipole, then another 5° inside the second dipole, before emerging at 3° from zabsolute and through the TPC.
xbeamline always orthogonal to nearest point along zbeamline.

Angles between beamline and absolute z-axes
(Also showing angle wrt dipole magnets)

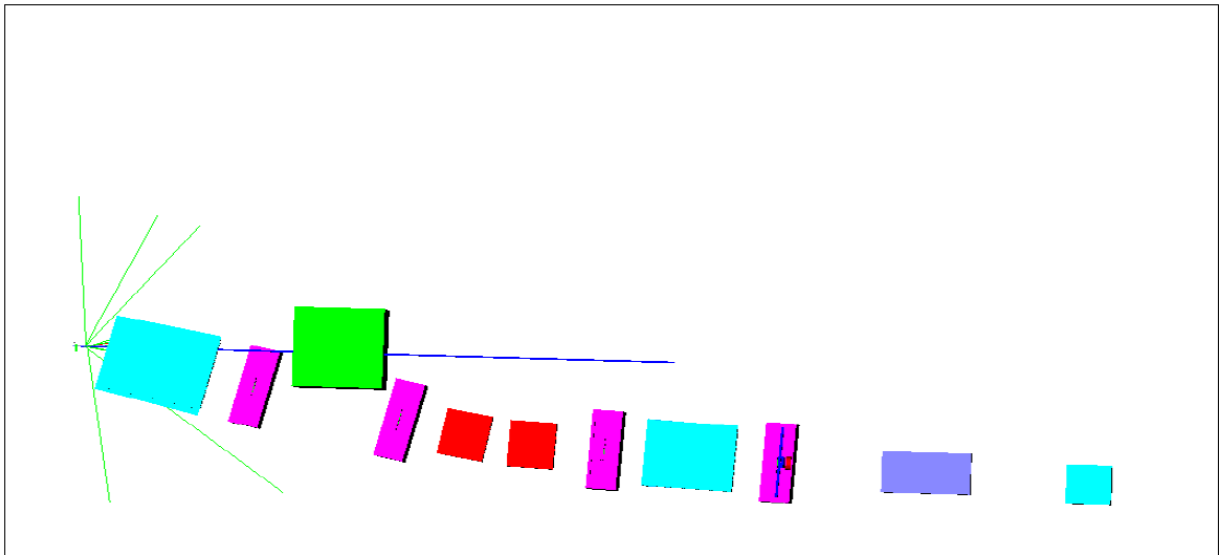


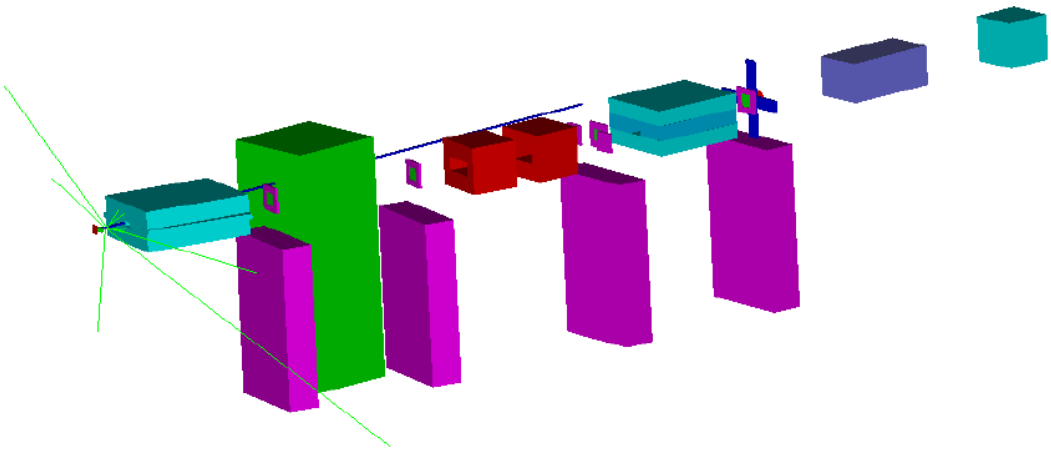
Notes:
zbeamline passes through center of target at 13° from zabsolute, then follows nominal beam path: curve 5° inside first dipole, then another 5° inside the second dipole, before emerging at 3° from zabsolute and through the TPC.

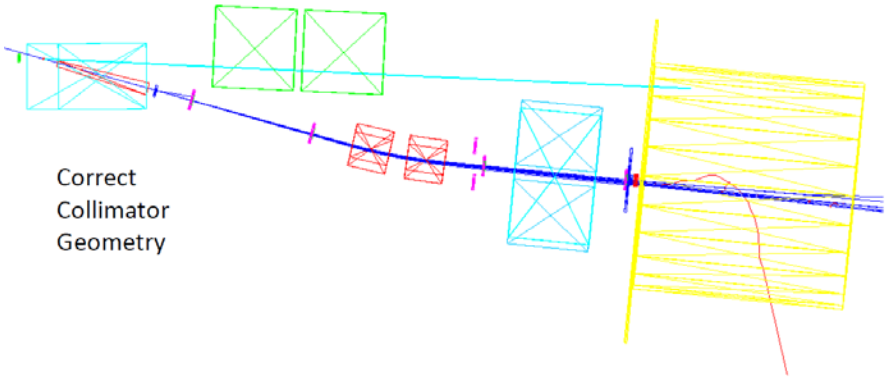
Beam path (and therefore zbeamline) enters and exits every dipole magnet at 2.5° from normal incidence.

Document#: LArTPC Document 1199-v3 (Lariat Tertiary Beam Geometry_C.pdf)

Plan view, horizontal line is secondary beam line. Shielding block shown is a C block. Purple chamber supports are simple Al frames. Purple Lariat detector is sensitive volume. Blue downstream shields are Iron. Upstream Collimator rotation is artistic (for now) – it is in fact square to the secondary beam line: See Below **13 deg. production, 10 deg. bend**

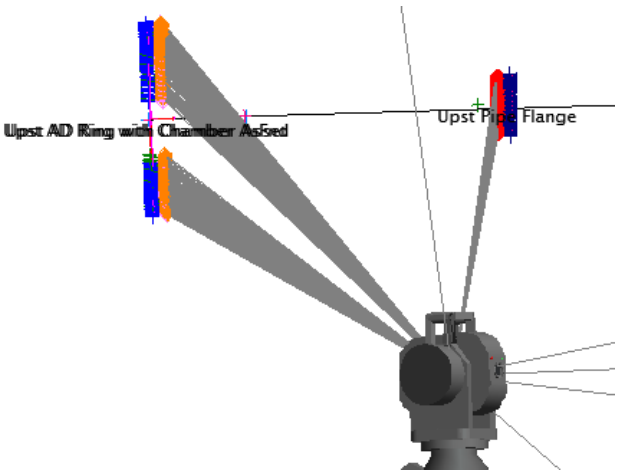


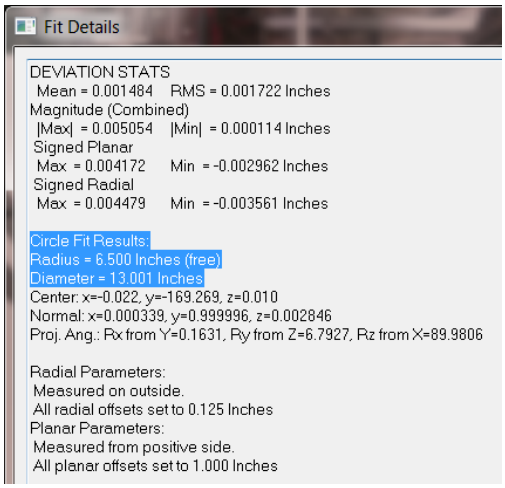


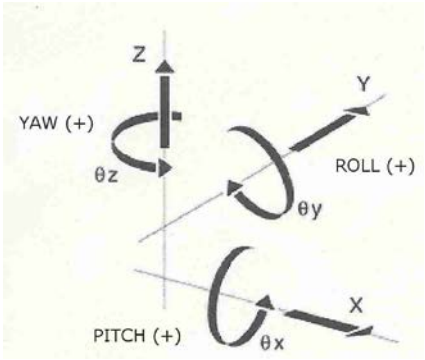


AS-SET MC7PWC1 (SPWC2)

Radial measurements were taken to outer edge of ring and planar measurements to downstream surface of ring (offsets were applied for fixturing).







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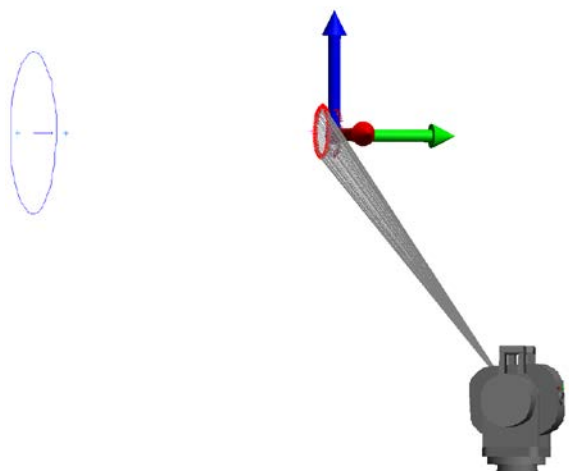
LARiAT_CW3_jck.xit

AS-SET MC7PWC1 (SPWC2)					
Point Name	FSCS_X	FSCS_Y	FSCS_Z	Radius Inside	Radius Inside
	[Metres]	[Metres]	[Metres]	[Metres]	[Inches]
MC7PWC1_UP	30264.06613	32242.51370	227.95983		
MC7PWC1_CT	30264.06340	32242.53016	227.95988	0.1651	6.500
MC7PWC1_DN	30264.06066	32242.54662	227.95992		

MIPP Beamsheet FSCSz in dbase (9/29/2003)			
AS-SET MC7PWC1 (SPWC2)			
	X	Y	Z
	Inches	Inches	Inches
MC7PWC1_UP	-0.022	-0.657	0.010
MC7PWC1_CT	-0.022	0.000	0.012
MC7PWC1_DN	-0.022	0.657	0.014

Note: aligned aluminum ring using circle fit.

AS-SET UPST PIPE FLANGE



DEVIATION STATS
Mean = 0.001495 RMS = 0.001893 Inches
Magnitude (Combined)
|Max| = 0.005992 |Min| = 0.000057 Inches
Signed Planar
Max = 0.001706 Min = -0.003427 Inches
Signed Radial
Max = 0.004915 Min = -0.004937 Inches

Circle Fit Results:
Radius = 2.142 Inches (free)
Diameter = 4.283 Inches
Center: x=-0.112, y=-1.999, z=0.298
Normal: x=0.006502, y=0.999847, z=-0.016210
Proj. Ang.: Rx from Y=-0.9288, Ry from Z=158.1455, Rz from X=89.6274

Radial Parameters:
Measured on inside.
All radial offsets set to 0.125 Inches
Planar Parameters:
Measured from positive side.
All planar offsets set to 1.000 Inches

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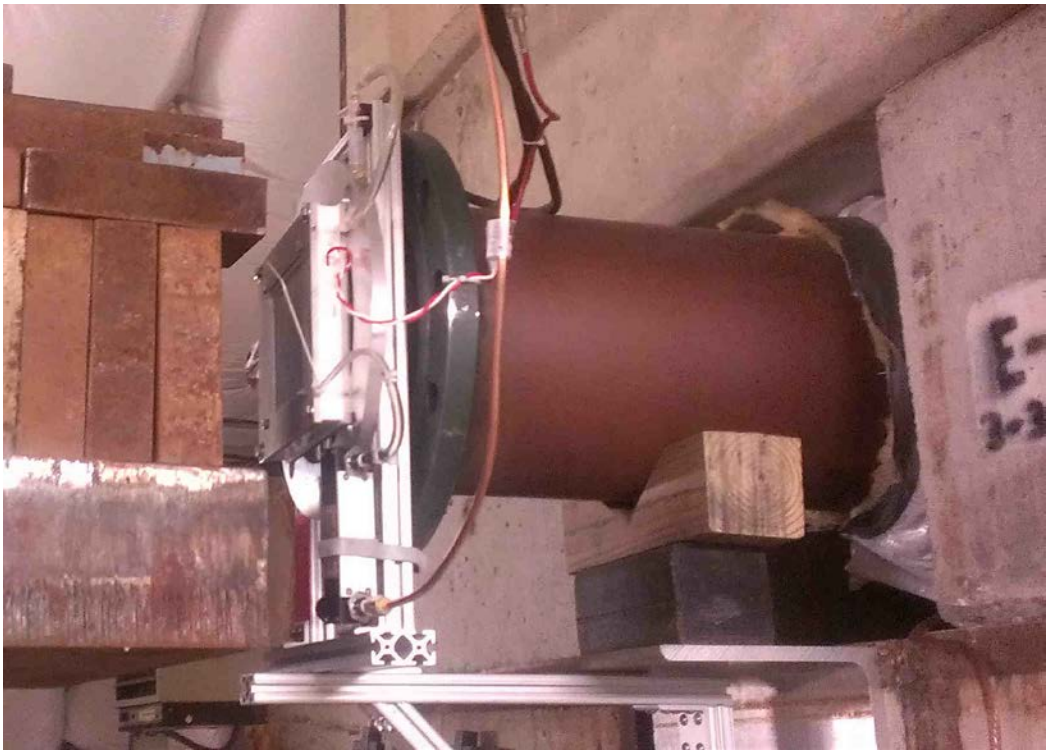
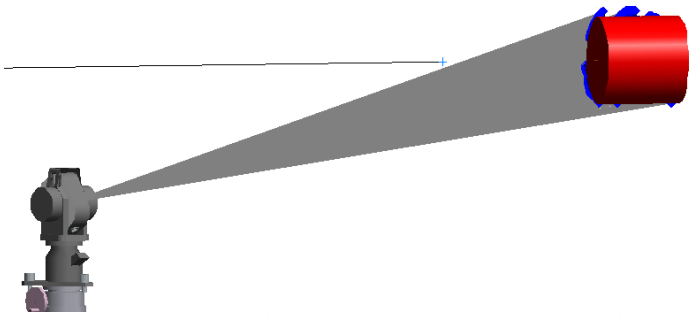
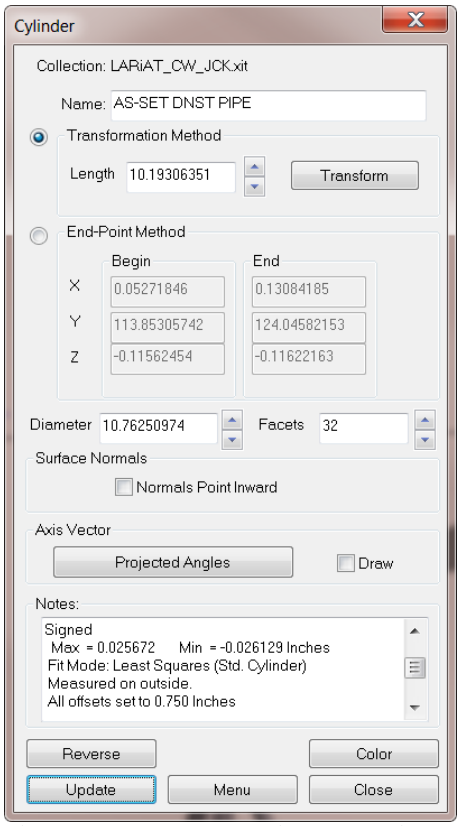
AS-SET UPST-PIPE-FLANGE					
Point Name	FSCS_X	FSCS_Y	FSCS_Z	Radius Inside	Radius Inside
	[Metres]	[Metres]	[Metres]	[Metres]	[Inches]
UPST-PIPE-FLANGE_CT	30263.96005	32243.13905	227.96614	0.0544	2.142

MIPP Beamsheet FSCSz in dbase (9/29/2003)			
AS-SET UPST-PIPE-FLANGE			
	X	Y	Z
	Inches	Inches	Inches
UPST-PIPE-FLANGE_CT	-0.099	0.000	0.265

AS-SET DNST PIPE







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AS-SET DNST-PIPE

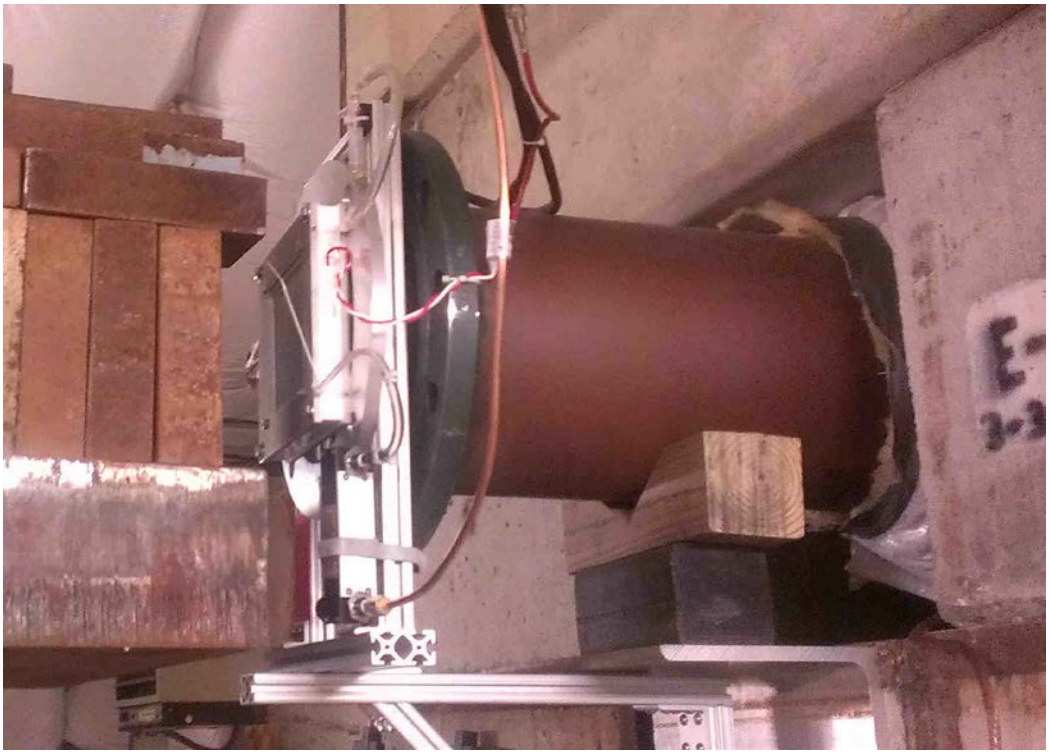
Point Name	FSCS_X	FSCS_Y	FSCS_Z	Radius Inside	Radius Inside
	[Metres]	[Metres]	[Metres]	[Metres]	[Inches]
DNST-PIPE_UP	30263.48889	32245.99228	227.95564		
DNST-PIPE_CT	30263.46861	32246.12013	227.95560	0.1367	5.381
DNST-PIPE_DN	30263.44833	32246.24798	227.95555		

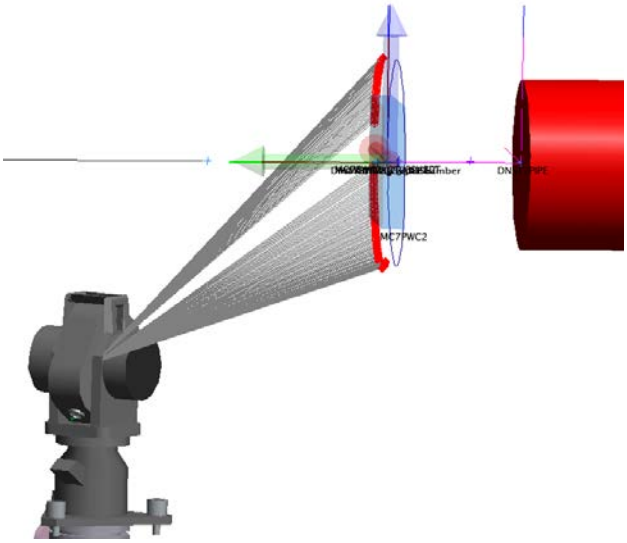
MIPP Beamsheet FSCSz in dbase (9/29/2003)

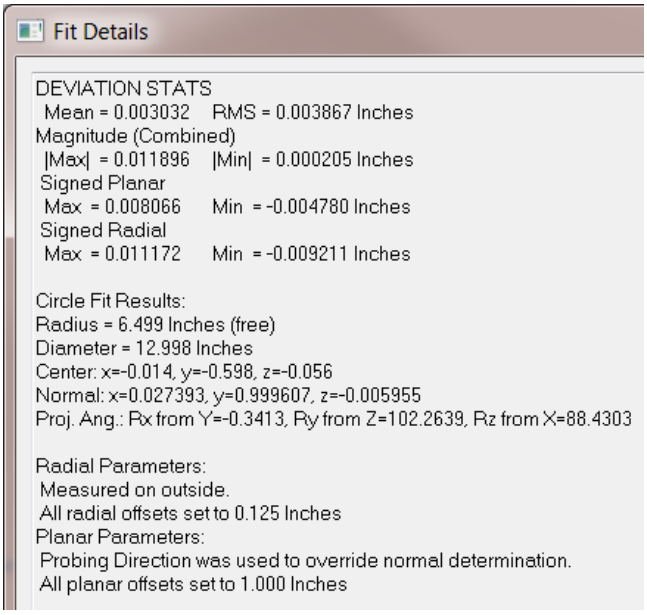
AS-SET DNST-PIPE

	X Inches	Y Inches	Z Inches
DNST-PIPE_UP	0.053	-10.193	-0.116
DNST-PIPE_CT	0.092	-5.097	-0.116
DNST-PIPE_DN	**0.131**	0.000	**-0.116**

AS-SET MC7PWC2 (SPWC4)







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AS-SET MC7PWC2 (SPWC4)

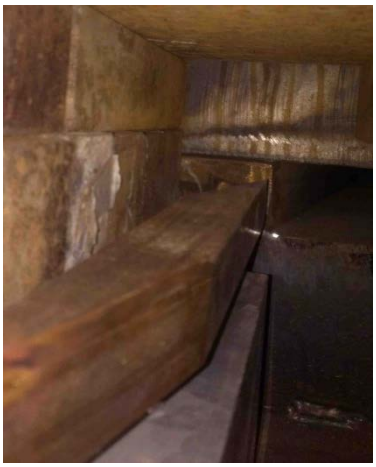
Point Name	FSCS_X	FSCS_Y	FSCS_Z	Radius Inside	Radius Inside
	[Metres]	[Metres]	[Metres]	[Metres]	[Inches]
MC7PWC2_UP	30263.41183	32246.44451	227.95703	0.1651	6.499
MC7PWC2_CT	30263.40955	32246.46103	227.95692		
MC7PWC2_DN	30263.40726	32246.47756	227.95682		

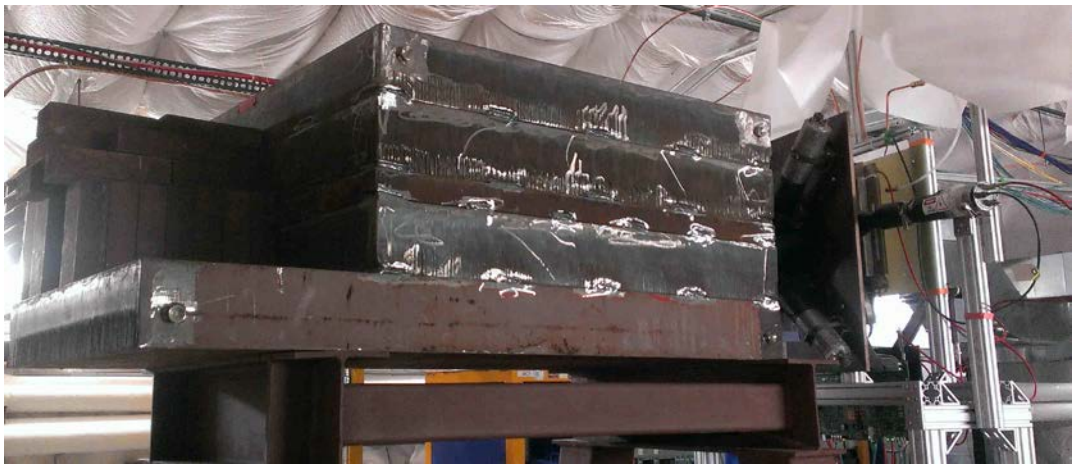
MIPP Beamsheet FSCSz in dbase (9/29/2003)

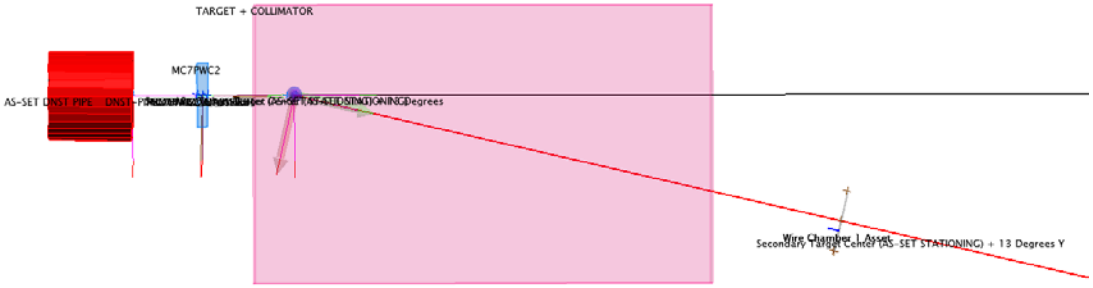
AS-SET MC7PWC2 (SPWC4)

	X	Y	Z
	Inches	Inches	Inches
MC7PWC2_UP	-0.016	-0.656	-0.056
MC7PWC2_CT	**0.002**	0.000	**-0.060**
MC7PWC2_DN	0.020	0.657	-0.064

AS-SET TARGET + COLLIMATOR







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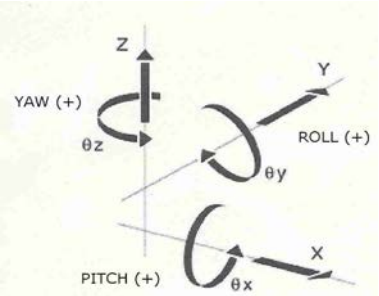
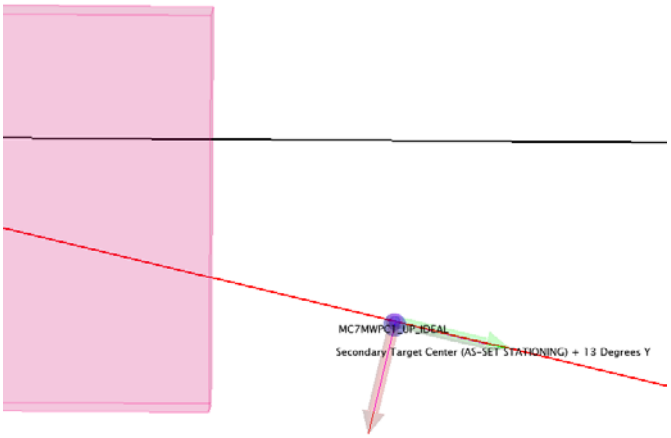
AS-SET TARGET + COLLIMATOR			
Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
TGT-COLL_TGTUPST	30263.37932	32246.65536	227.95829
TGT-COLL_ROLL	30263.36331	32246.73793	230.49855
TGT-COLL_C	30264.00626	32246.74486	227.71722
TGT-COLL_TGTCTR	30263.35974	32246.74491	227.95856
TGT-COLL_TGTDNST	30263.33509	32246.85765	227.95891
TGT-COLL_CHANNELUPST	30263.37308	32246.95311	227.95911
TGT-COLL_H	30263.15417	32246.95948	228.27925
TGT-COLL_A	30263.84915	32247.11234	228.27851
TGT-COLL_B	30263.92622	32247.12931	228.19861
TGT-COLL_R	30262.94134	32247.91845	228.28177
TGT-COLL_J	30263.63684	32248.07141	228.28107
TGT-COLL_CHANNELDNST	30263.44523	32248.07938	227.96211
TGT-COLL_L	30263.70905	32248.08552	227.72255
TGT-COLL_K	30263.71334	32248.08771	228.20159

MIPP Beamsheet FSCSz in dbase (9/29/2003)			
Secondary Target Center (AS-SET STATIONING)			
	X	Y	Z
	Inches	Inches	Inches
TGT-COLL_C	25.011	-4.180	-9.495
TGT-COLL_TGTUPST	0.085	-3.604	-0.004
TGT-COLL_Roll	-0.003	-0.323	100.007
TGT-COLL_TGTCTR	**-0.096**	**0.000**	**0.008**
TGT-COLL_TGTDNST	-0.325	4.538	0.023
TGT-COLL_CHANNELUPST	1.768	7.999	0.032
TGT-COLL_H	-6.692	9.659	12.636
TGT-COLL_A	21.286	11.101	12.608
TGT-COLL_B	24.389	11.263	9.462
TGT-COLL_R	-8.757	48.277	12.746
TGT-COLL_J	19.242	49.720	12.719
TGT-COLL_L	22.138	49.807	-9.270
TGT-COLL_K	22.318	49.859	9.590
TGT-COLL_CHANNELDNST	11.852	51.272	0.162



Beamsheet Frame										
Query Frame to Frame Results from Tracker										
		Inches		Inches		Inches				
Translation:	dx	**-0.096**	dy	**0.000**	dz	**0.008**	dMag	0.097		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	0.1873	Ry	0.0442	Rz	2.8821	Total	Angle	2.8884	deg.
Rotation	**Rx**	**0.003**	Ry	**0.001**	Rz	**0.050**	**mrad**			

AS-SET MC7MWPC1 (MWPC "I")



Note: MWPC "I" SHOT WITH SWIC PIN FIXTURE.CORR= 1.600" Stationing
Stationing values shown to upstream surface of chamber

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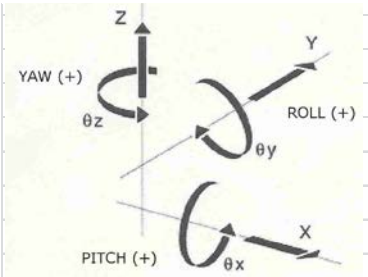
LARiAT_CW2_jck.xit

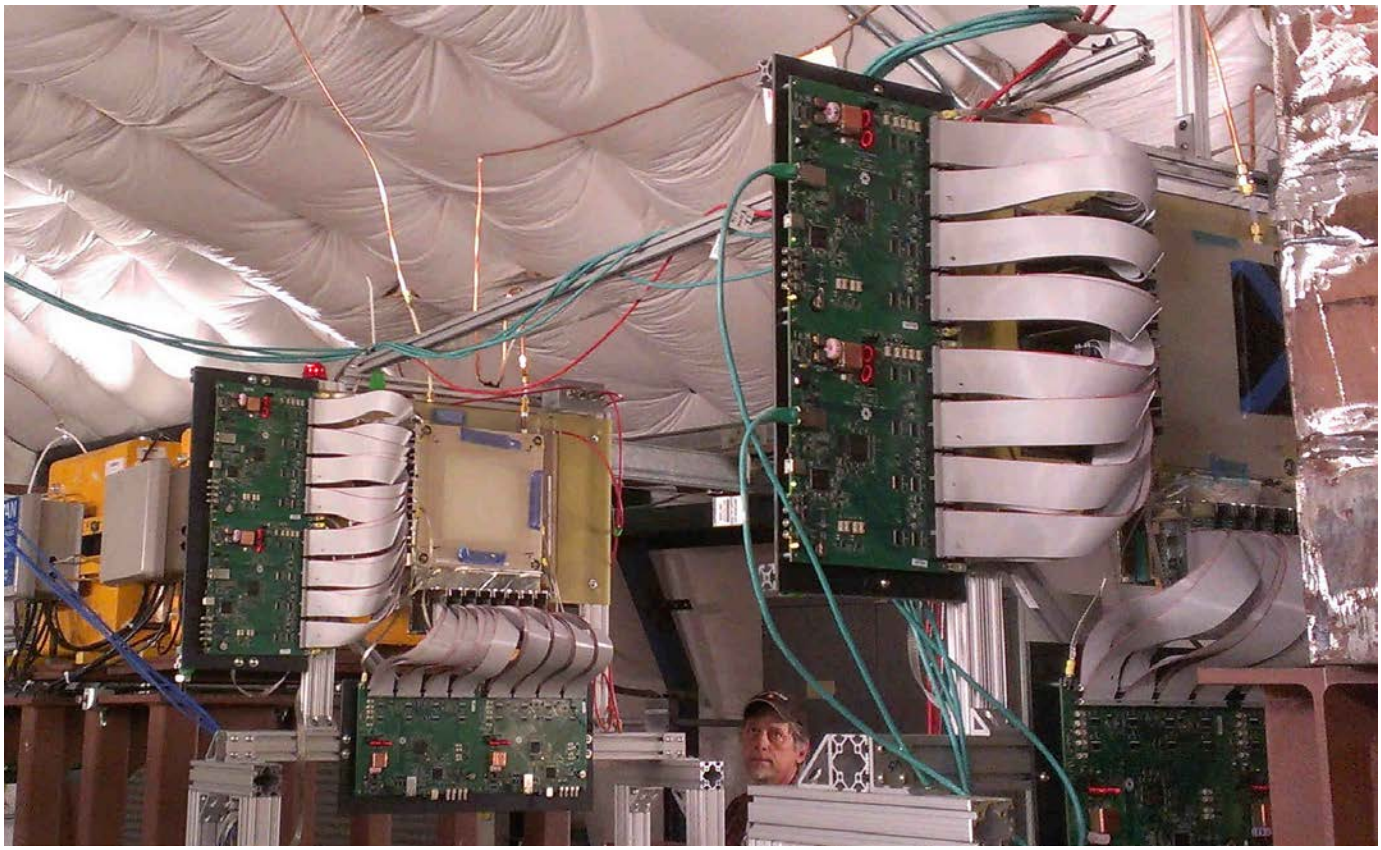
AS-SET MC7MWPC1 (MWPC "I")			
Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
MC7MWPC1_UTL	30263.37471	32248.48934	228.05218
MC7MWPC1_UP	30263.47040	32248.48401	227.95742
MC7WPC1_ROLL	30263.46986	32248.48290	228.05274
MC7MWPC1_UBR	30263.56609	32248.47869	227.86267
MC7MWPC1_UTR	30263.56501	32248.47645	228.05331

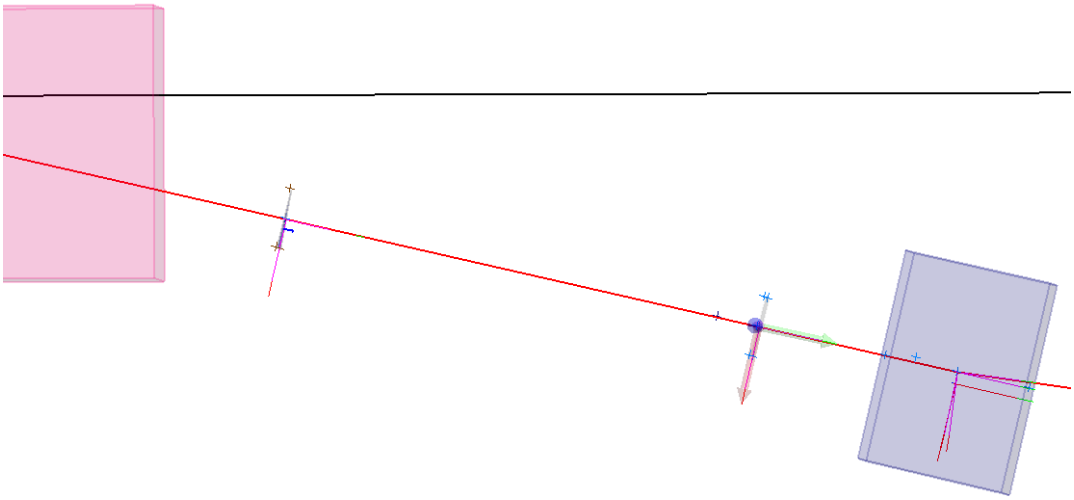
MIPP Beamsheet FSCSz in dbase (9/29/2003)			
Secondary Target Center (AS-SET STATIONING)			
	X	Y	Z
	Inches	Inches	Inches
TGT-COLL_TGTCTR	-0.096	**0.000**	0.008
MC7MWPC1_UTR	19.071	65.917	3.757
MC7MWPC1_UBR	19.128	65.999	-3.749
MC7WPC1_ROLL	15.418	66.782	3.735
MC7MWPC1_UP	**15.446**	**66.823**	**-0.018**
AS-SET MC7MWPC1_UP			
Secondary Target Center (AS-SET STATIONING) + 13 Degrees			
MC7MWPC1_UTR	3.755	-0.068	3.757
MC7WPC1_ROLL	0.000	-0.046	3.735
MC7MWPC1_UTL	-3.755	-0.025	3.713
MC7MWPC1_UP	**0.018**	**0.000**	**-0.018**
MC7MWPC1_UBR	3.791	0.025	-3.749



AS-SET MC7MWPC1_UP										
Query Frame to Frame Results from Tracker										
		Inches		Inches		Inches				
Translation:	dx	**0.018**	dy	**0.000**	dz	**-0.018**	dMag	0.026		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	0.7081	Ry	-0.2757	Rz	-0.3262	Total	Angle	0.8263	deg.
Rotation	**Rx**	**0.012**	Ry	**-0.005**	Rz	**-0.006**	**mrad**			

AS-SET MC7MWPC2 (MWPC “M”)





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LARiAT_CW2_jck.xit

AS-SET MC7MWPC2 (MWPC "M")

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
MC7MWPC2_UBL	30263.47126	32250.02728	227.86202
MC7MWPC2_UTL	30263.46968	32250.02610	228.05296
MC7MWPC2_UTR	30263.66035	32250.01036	228.05369
MC7MWPC2_UBR	30263.66129	32250.01159	227.86268
MC7MWPC2_CT	30263.56565	32250.01883	227.95784
MC7MWPC2_ROLL	30263.54886	32250.00280	230.49773

MIPP Beamsheet FSCSz in dbase (9/29/2003)

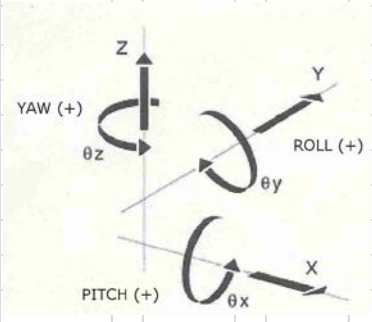
Secondary Target Center (AS-SET STATIONING)

	X	Y	Z
	Inches	Inches	Inches
MC7MWPC2_UBL	25.458	126.752	-3.757
MC7MWPC2_UTL	25.389	126.714	3.760
MC7MWPC2_UTR	32.692	124.870	3.789
MC7MWPC2_UBR	32.737	124.914	-3.731
MC7MWPC2_CT	**29.069**	**125.813**	**0.015**
MC7MWPC2_ROLL	28.314	125.270	100.011

Secondary Target Center (AS-SET STATIONING) + 13 Degrees

AS-SET MC7MWPC2_UP

MC7MWPC2_UBL	-3.707	0.103	-3.757
MC7MWPC2_UTL	-3.766	0.051	3.760
MC7MWPC2_UTR	3.765	-0.103	3.789
MC7MWPC2_UBR	3.798	-0.050	-3.731
MC7MWPC2_CT	**0.023**	**0.000**	**0.015**
MC7MWPC2_ROLL	-0.592	-0.698	100.011

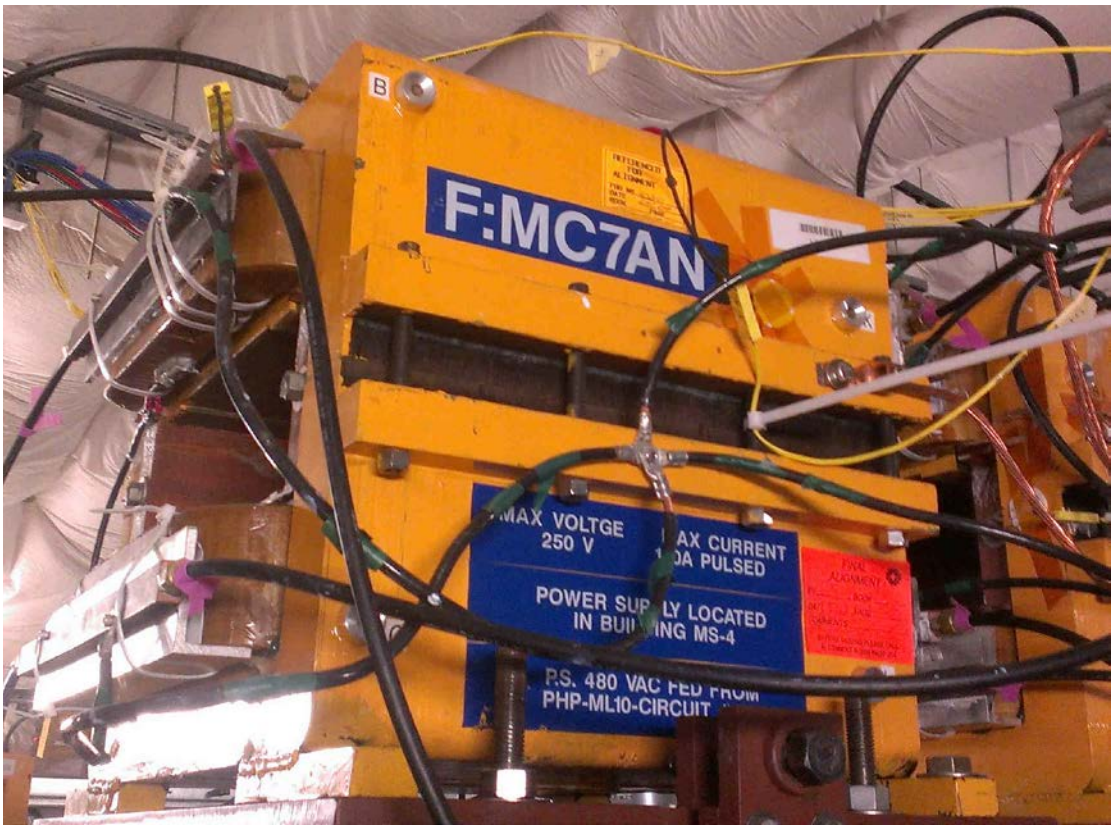


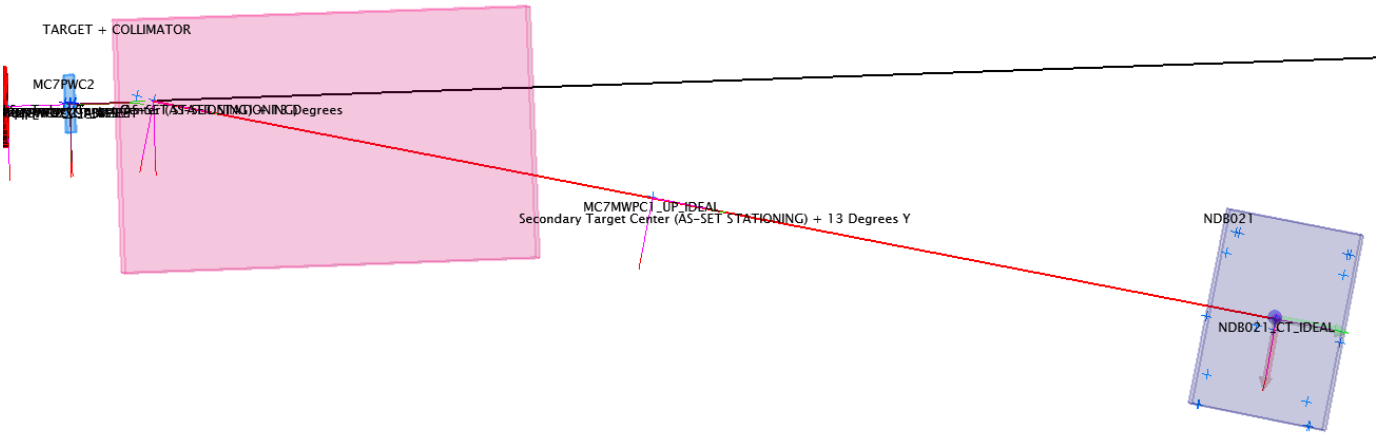
AS-SET MC7MWPC2_UP

Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**0.023**	dy	**0.000**	dz	**0.015**	dMag	0.027		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	0.4073	Ry	-0.3436	Rz	-1.1732	Total	Angle	1.2874	deg.
Rotation	**Rx**	**0.007**	Ry	**-0.006**	Rz	**-0.020**	**mrad**			

AS-SET NDB021





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LARiAT_CW_jck.xit

AS-SET NDB021

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
NDB021_UP	30263.62635	32250.42549	227.95725
NDB021_C	30263.92877	32250.42991	227.79383
NDB021_H	30263.40383	32250.47069	228.22322
NDB021_B	30263.92963	32250.44209	228.15294
NDB021_A	30263.82511	32250.45926	228.22317
NDB021_G	30263.32835	32250.49100	228.08889
NDB021_F	30263.32875	32250.49467	227.76282
NDB021_CT	30263.64160	32250.65859	227.95707
NDB021_ROLL	30263.64205	32250.66053	230.49707
NDB021_J	30263.87317	32250.81110	228.22288
NDB021_L	30263.95441	32250.82006	227.78226
NDB021_K	30263.95443	32250.82192	228.07053
NDB021_Q	30263.35401	32250.88095	228.11968
NDB021_P	30263.35413	32250.88289	227.78925
NDB021_R	30263.42682	32250.87971	228.22297
NDB021_DN	30263.65685	32250.89169	227.95689

MIPP Beamsheet FSCSz in dbase (9/29/2003)

Secondary Target Center (AS-SET STATIONING)

	X	Y	Z
	Inches	Inches	Inches
NDB021_UP	**34.056**	**141.213**	**-0.004**
NDB021_C	45.829	139.431	-6.438
NDB021_H	25.707	144.404	10.469
NDB021_B	45.941	139.894	7.700
NDB021_A	41.994	141.236	10.466
NDB021_G	22.907	145.682	5.180
NDB021_F	22.946	145.826	-7.657
NDB021_CT	**36.156**	**150.167**	**-0.008**
NDB021_ROLL	36.185	150.211	99.992
NDB021_J	46.135	154.589	10.458
NDB021_L	49.348	154.417	-6.889
NDB021_K	49.360	154.486	4.460
NDB021_Q	26.425	160.660	6.397
NDB021_P	26.442	160.738	-6.612
NDB021_R	29.244	160.140	10.463
NDB021_DN	**38.255**	**159.121**	**-0.013**

Secondary Target Center (AS-SET STATIONING) + 13 Degrees

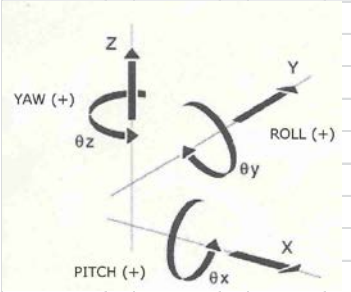
AS-SET NDB021_CT

NDB021_UP	**1.417**	**-9.196**	**-0.004**
NDB021_C	13.290	-8.284	-6.438
NDB021_H	-7.436	-7.965	10.469
NDB021_B	13.295	-7.808	7.700
NDB021_A	9.146	-7.388	10.466
NDB021_G	-10.452	-7.349	5.180
NDB021_F	-10.446	-7.201	-7.657
NDB021_CT	**1.449**	**0.000**	**-0.008**
NDB021_ROLL	1.468	0.050	99.992
NDB021_J	10.178	6.554	10.458
NDB021_L	13.347	7.109	-6.889
NDB021_K	13.344	7.179	4.460
NDB021_Q	-10.393	8.035	6.397
NDB021_P	-10.394	8.116	-6.612
NDB021_R	-7.529	8.163	10.463
NDB021_DN	**1.480**	**9.197**	**-0.013**

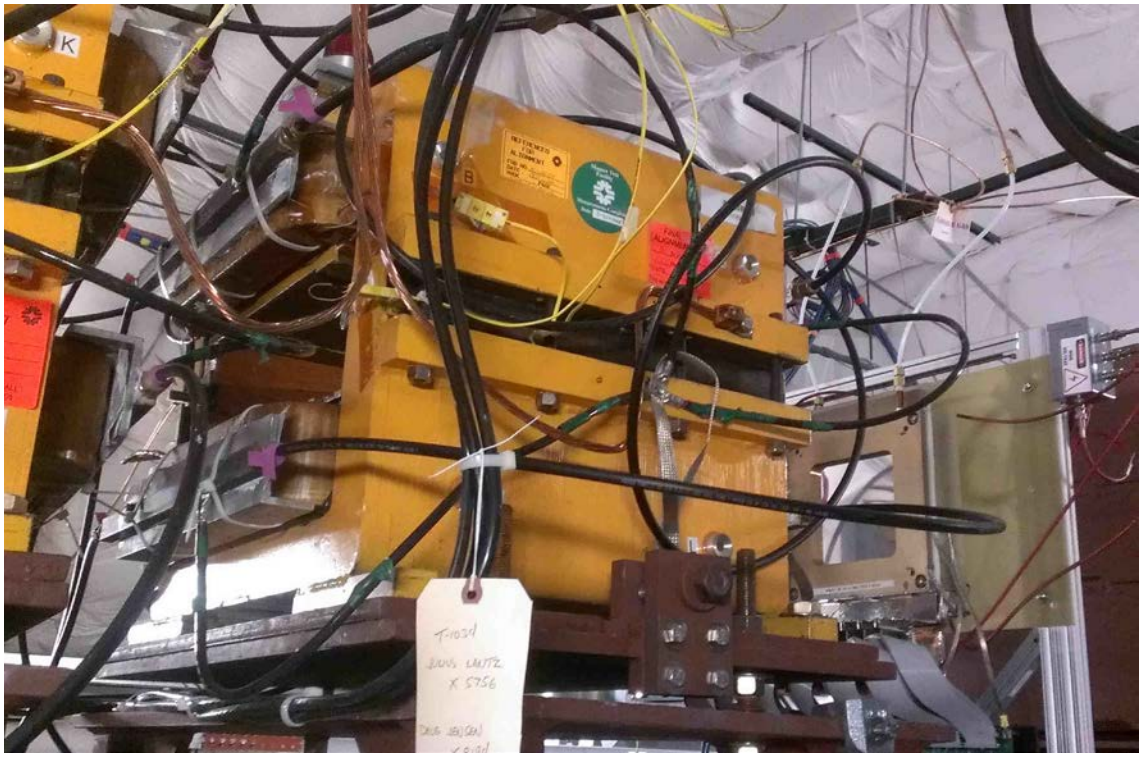
AS-SET NDB021_CT

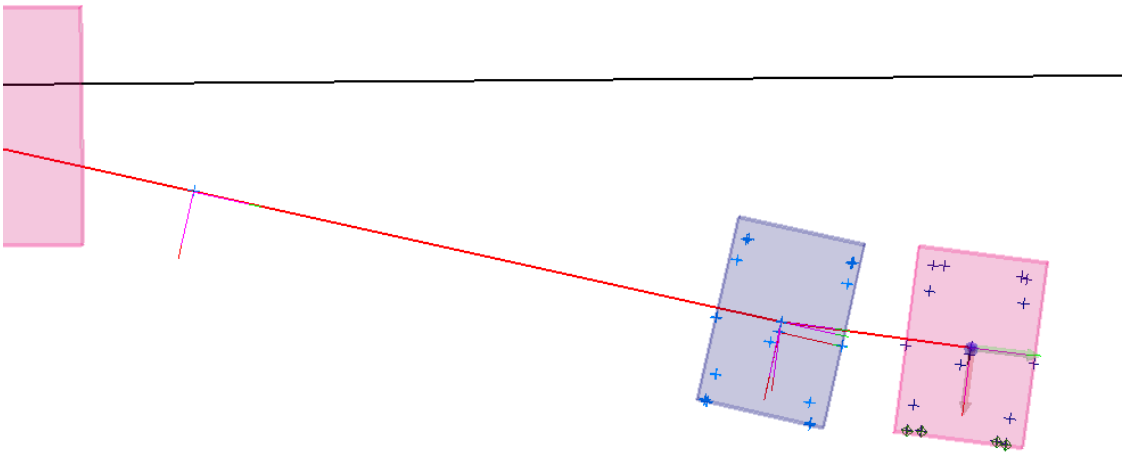
Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**1.449**	dy	**0.005**	dz	**-0.008**	dMag	1.449		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	-0.0284	Ry	0.0109	Rz	-0.1953	Total	Angle	0.1976	deg.
Rotation	**Rx**	**0.000**	Ry	**0.000**	Rz	**-0.003**	**mrad**			



AS-SET NDB022





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AS-SET NDB022

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
NDB022_UP	30263.61874	32251.12110	227.95732
NDB022_B	30263.91980	32251.17142	228.09761
NDB022_A	30263.82489	32251.18381	228.22305
NDB022_G	30263.31648	32251.17375	228.09364
NDB022_H	30263.40798	32251.17628	228.22337
NDB022_C	30263.91860	32251.21981	227.79957
NDB022_F	30263.31563	32251.21100	227.79086
NDB022_ROLL	30263.61695	32251.35443	230.49737
NDB022_CT	30263.61518	32251.35482	227.95736
NDB022_L	30263.91440	32251.49618	227.78333
NDB022_P	30263.31144	32251.49363	227.80236
NDB022_Q	30263.31116	32251.51726	228.11773
NDB022_K	30263.91418	32251.53328	228.08410
NDB022_R	30263.39899	32251.52074	228.22343
NDB022_J	30263.81848	32251.53661	228.22313
NDB022_DN	30263.61162	32251.58854	227.95740

MIPP Beamsheet FSCSz in dbase (9/29/2003)

Secondary Target Center (AS-SET STATIONING)

	X	Y	Z
	Inches	Inches	Inches
NDB022_UP	**38.258**	**168.277**	**0.007**
NDB022_B	50.276	168.283	5.530
NDB022_A	46.670	169.376	10.469
NDB022_G	26.860	172.274	5.375
NDB022_H	30.430	171.779	10.482
NDB022_C	50.542	170.173	-6.203
NDB022_F	27.068	173.729	-6.545
NDB022_ROLL	39.698	177.321	100.011
NDB022_CT	**39.631**	**177.376**	**0.011**
NDB022_L	52.166	180.933	-6.839
NDB022_P	28.733	184.732	-6.089
NDB022_Q	28.875	185.648	6.327
NDB022_K	52.397	182.372	5.002
NDB022_R	32.308	185.214	10.489
NDB022_J	48.702	183.118	10.476
NDB022_DN	**41.004**	**186.476**	**0.015**

Secondary Target Center (AS-SET STATIONING)
ROTATED 13 DEGREES - 5 DEGREES
AS-SET NDB022_CT

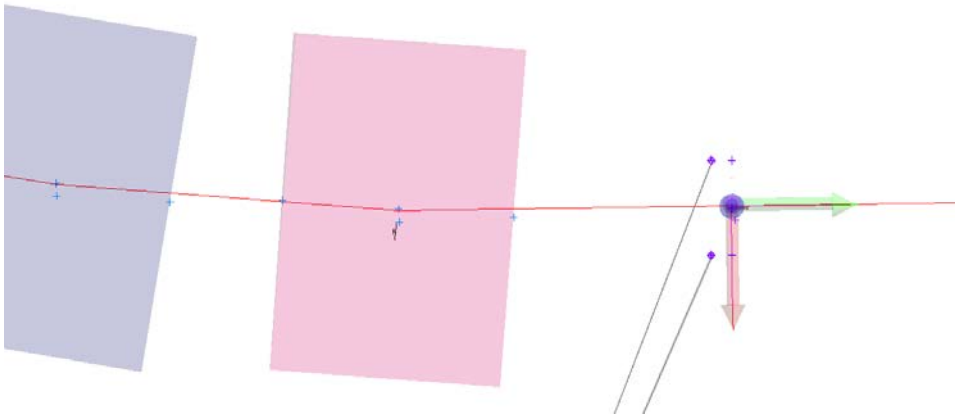
NDB022_UP	**1.005**	**-9.202**	**0.007**
NDB022_B	12.905	-7.523	5.530
NDB022_A	9.182	-6.943	10.469
NDB022_G	-10.838	-6.829	5.375
NDB022_H	-7.234	-6.823	10.482
NDB022_C	12.905	-5.615	-6.203
NDB022_F	-10.835	-5.359	-6.545
NDB022_ROLL	1.172	-0.045	100.011
NDB022_CT	**1.098**	**0.000**	**0.011**
NDB022_L	13.016	5.267	-6.839
NDB022_P	-10.718	5.768	-6.089
NDB022_Q	-10.705	6.695	6.327
NDB022_K	13.045	6.724	5.002
NDB022_R	-7.244	6.743	10.489
NDB022_J	9.281	6.949	10.476
NDB022_DN	**1.192**	**9.202**	**0.015**

AS-SET NDB022_CT

Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**1.098**	dy	**0.000**	dz	**0.011**	dMag	1.099		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	0.0256	Ry	0.0423	Rz	-0.5808	Total	Angle	0.5829	deg.
Rotation	**Rx**	**0.000**	Ry	**0.001**	Rz	**-0.010**	**mrad**			

AS-SET MC7MWPC3 (MWPC “W”)



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AS-SET MC7MWPC3 (MWPC "W")

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
MC7MWPC3_UBR	30263.61196	32252.03473	227.86214
MC7MWPC3_UTR	30263.61159	32252.03511	228.05292
MC7MWPC3_UTL	30263.42213	32252.01631	228.05304
MC7MWPC3_UBL	30263.42213	32252.01593	227.86227
MC7MWPC3_UP	30263.51695	32252.02552	227.95759
MC7MWPC3_ROLL	30263.51458	32252.03068	230.49759

MIPP Beamsheet FSCSz in dbase (9/29/2003)

Secondary Target Center (AS-SET STATIONING)

	X	Y	Z
	Inches	Inches	Inches
MC7MWPC3_UBR	43.902	203.802	-3.730
MC7MWPC3_UTR	43.891	203.818	3.781
MC7MWPC3_UTL	36.411	204.313	3.786
MC7MWPC3_UBL	36.409	204.300	-3.725
MC7MWPC3_UP	**40.153**	**204.058**	**0.028**
MC7MWPC3_ROLL	40.094	204.245	100.028

Secondary Target Center (AS-SET STATIONING) ROTATED 13 DEGREES - 10 DEGREES

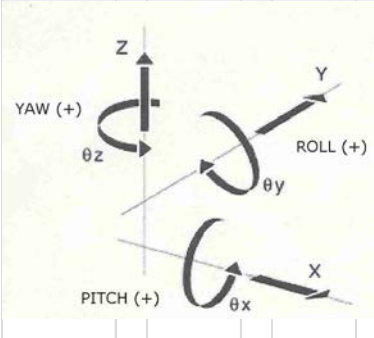
AS-SET MC7MWPC3 (MWPC "W")

MC7MWPC3_UBR	3.976	-0.059	-3.730
MC7MWPC3_UTR	3.964	-0.044	3.781
MC7MWPC3_UTL	-3.531	0.059	3.786
MC7MWPC3_UBL	-3.533	0.046	-3.725
MC7MWPC3_UP	**0.219**	**0.000**	**0.028**
MC7MWPC3_ROLL	0.150	0.184	100.028

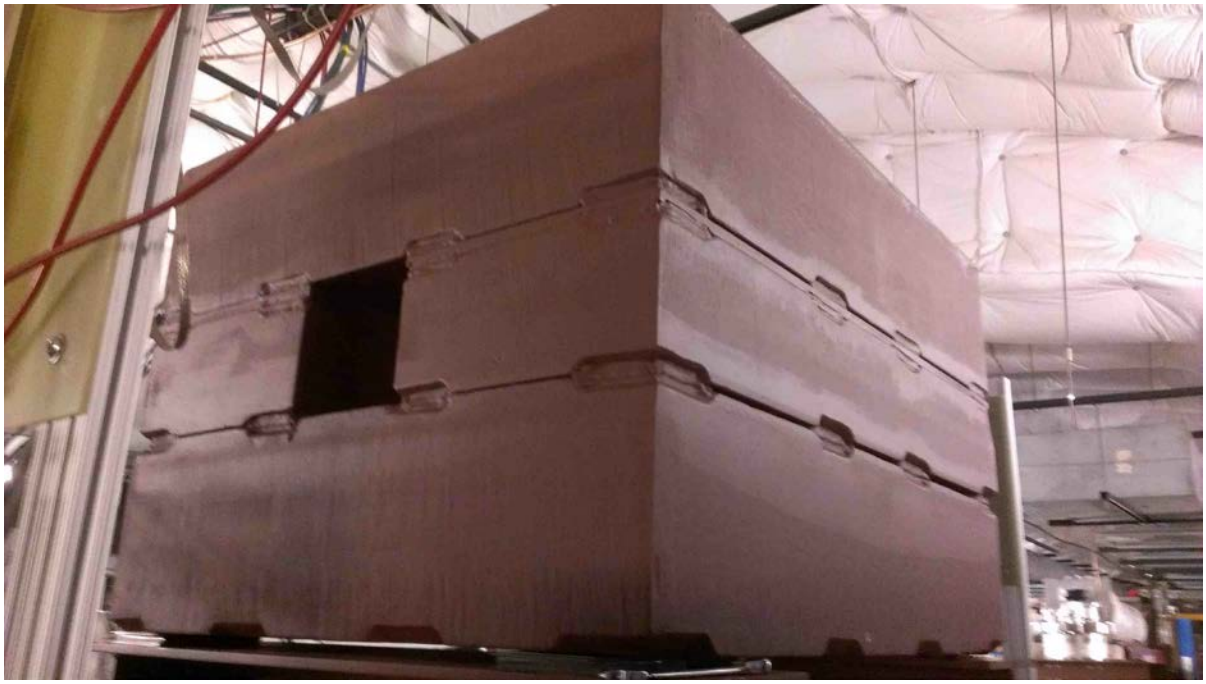
AS-SET MC7MWPC3 (MWPC "W")

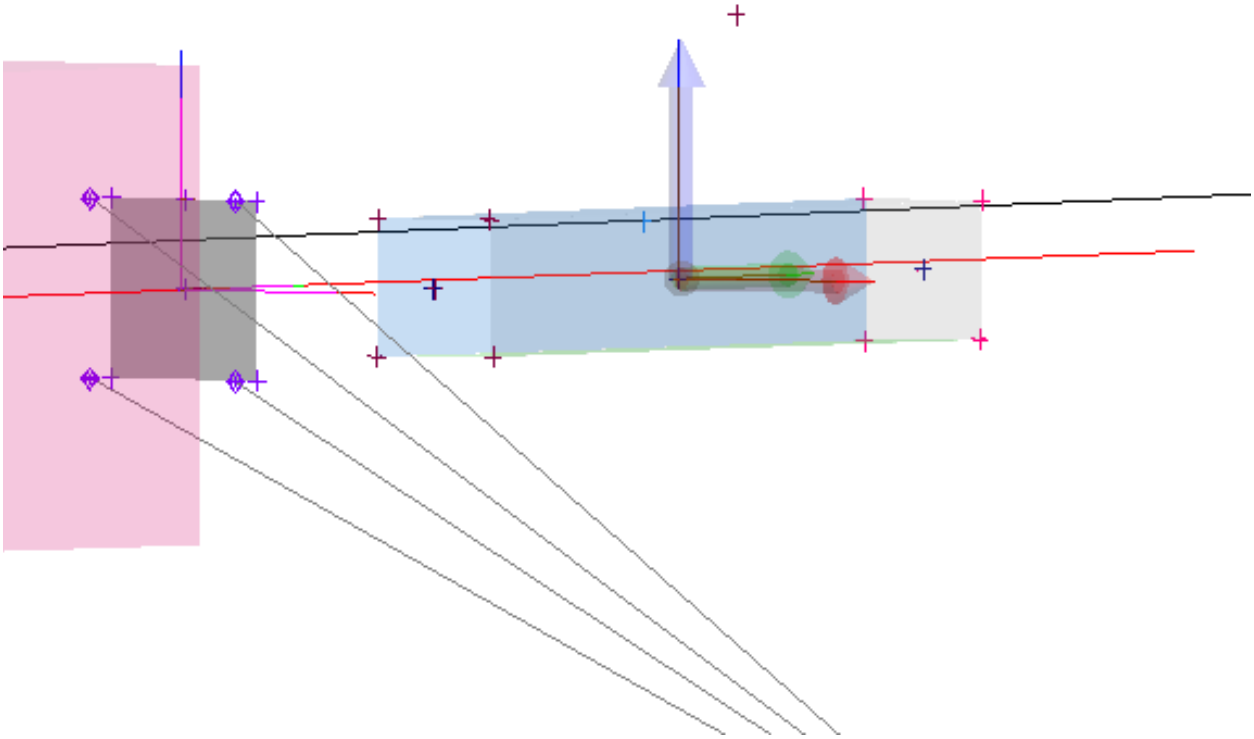
Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**0.219**	dy	**0.000**	dz	**0.028**	dMag	0.221		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	-0.1048	Ry	-0.0408	Rz	-0.7914	Total	Angle	0.7994	deg.
Rotation	**Rx**	**-0.002**	Ry	**-0.001**	Rz	**-0.014**	**mrad**			



As-found Collimator





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AS-FOUND COLLIMATOR

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
COLLIMATOR_UP	30263.49217	32252.44986	227.94982
COLLIMATOR_CT	30263.43648	32252.90343	227.94922
COLLIMATOR_ROLL	30263.42694	32252.90559	230.48920
COLLIMATOR_DN	30263.38079	32253.35700	227.94863

MIPP Beamsheet FSCSz in dbase (9/29/2003)

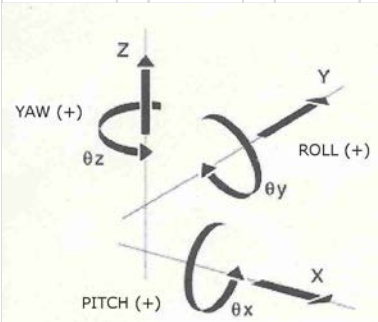
Secondary Target Center (AS-SET STATIONING)	X	Y	Z
	Inches	Inches	Inches
COLLIMATOR_UP	41.935	220.698	-0.274
COLLIMATOR_CT	**42.705**	**238.673**	**-0.292**
COLLIMATOR_ROLL	42.348	238.790	99.707
COLLIMATOR_DN	43.475	256.647	-0.310

Secondary Target Center (AS-SET STATIONING) ROTATED 13 DEGREES - 10 DEGREES AS-FOUND COLLIMATOR			
COLLIMATOR_UP	1.127	-17.990	-0.274
COLLIMATOR_CT	**0.956**	**0.000**	**-0.292**
COLLIMATOR_ROLL	0.593	0.098	99.707
COLLIMATOR_DN	0.784	17.990	-0.310

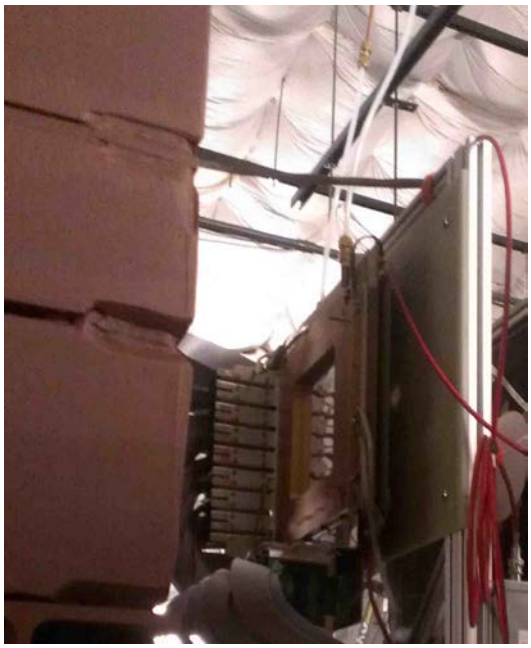
AS-FOUND COLLIMATOR

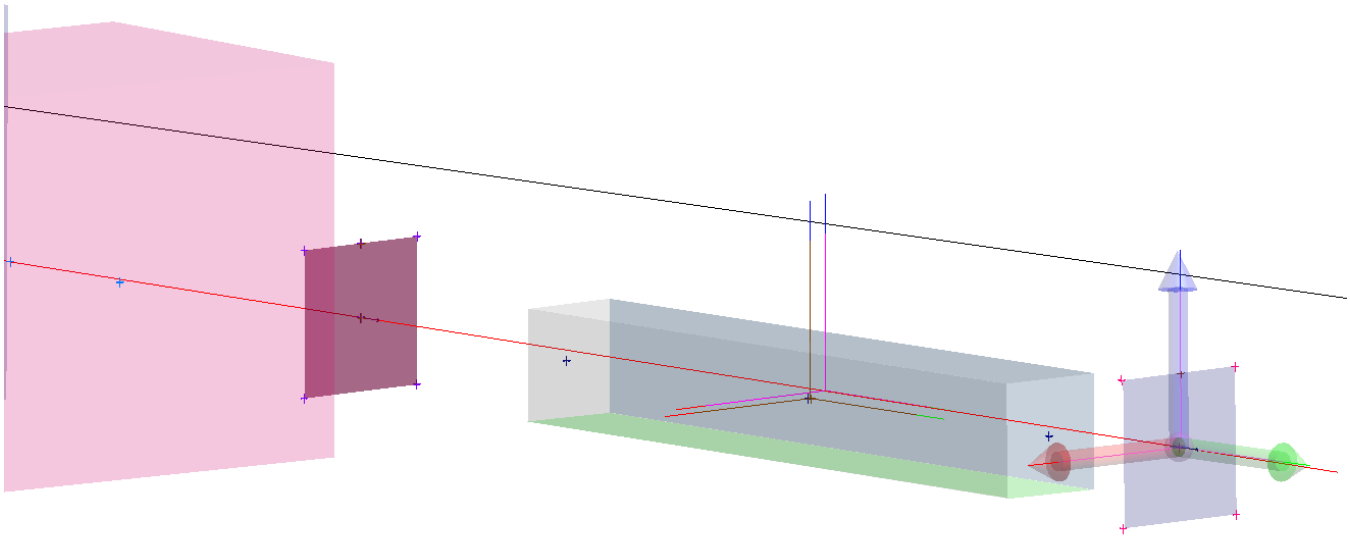
Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**0.954**	dy	**-0.050**	dz	**-0.292**	dMag	0.999		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	-0.0690	Ry	-0.2037	Rz	0.5472	Total	Angle	0.5878	deg.
Rotation	**Rx**	**-0.001**	Ry	**-0.004**	Rz	**0.010**	**mrad**			



AS-SET MC7MWPC4 (MWPC “U”)





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AS-SET MC7MWPC4 (MWPC "U")

Point Name	FSCS_X	FSCS_Y	FSCS_Z
	[Metres]	[Metres]	[Metres]
MC7MWPC4_UTL	30263.24628	32253.57511	228.05308
MC7MWPC4_UBL	30263.24632	32253.57790	227.86262
MC7MWPC4_UBR	30263.43588	32253.59630	227.86249
MC7MWPC4_UTR	30263.43634	32253.59352	228.05283
MC7MWPC4_CT	30263.34120	32253.58571	227.95775
MC7MWPC4_ROLL	30263.34401	32253.54861	230.49748

MIPP Beamsheet FSCSz in dbase (9/29/2003)

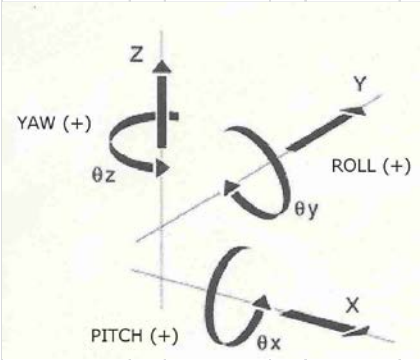
Secondary Target Center (AS-SET STATIONING)	X	Y	Z
	Inches	Inches	Inches
MC7MWPC4_ROLL	43.285	264.298	100.041
MC7MWPC4_UTR	47.162	265.472	3.795
MC7MWPC4_UBR	47.161	265.585	-3.699
MC7MWPC4_CT	**43.416**	**265.785**	**0.052**
MC7MWPC4_UTL	39.661	265.986	3.805
MC7MWPC4_UBL	39.681	266.097	-3.693

Secondary Target Center (AS-SET STATIONING) ROTATED 13 DEGREES - 10 DEGREES			
AS-SET MC7MWPC4 (MWPC "U")			
MC7MWPC4_UTL	-3.514	0.005	3.805
MC7MWPC4_UBL	-3.499	0.116	-3.693
MC7MWPC4_UBR	3.997	-0.003	-3.699
MC7MWPC4_UTR	4.004	-0.116	3.795
MC7MWPC4_CT	**0.247**	**0.000**	**0.052**
MC7MWPC4_ROLL	0.194	-1.492	100.041

AS-SET MC7MWPC4 (MWPC "U")

Query Frame to Frame Results from Tracker

		Inches		Inches		Inches				
Translation:	dx	**0.245**	dy	**0.028**	dz	**0.052**	dMag	0.252		
		Pitch (Rx)		**Roll (Ry)**		**Yaw (Rz)**				
Rotation:	Rx	0.8518	Ry	-0.0792	Rz	-0.9150	Total	Angle	1.2530	deg.
Rotation	**Rx**	**0.015**	Ry	**-0.001**	Rz	**-0.016**	**mrad**			



Work Request:

****----------****
**** No written hazard analysis required ****
****----------****

Request # : 6924 Requisition Date : 16-JUN-14
Project # : 6782
WBS : 40.13.03
Task Manager : JOHN KYLE
Starting Date : 06-JUN-16 Completion Date : 06-JUN-16
Requested By : TODD NEBEL
Expt/Beamline : MC7
Devices need to be moved or realigned :
Magnet Stand Other
Description :
align wire chambers, detectors, comilators, 2 small magnets to tershiary beam line
OCR inspection 6/19/14, if can not be completed by then we can drop beam on another date with advance notice

Contact for the job
Fermi ID # : N 4878 Name : TODD NEBEL
Extension : 3837 E-Mail : TNEBEL@FNAL.GOV
Mail Stop : 313 Pager/Cell : 6307401981

Hazard assessor's name : TODD NEBEL

Crew Reports:

Request # : 6924 Date : 15-JUL-14
Project # : 6782 Crew # : 2
Area : MC7
Log Book # : Page # :
File Backup (Y/N) : N Filename : 6924.6782_15Jul14_LT
Job Completion (Y/N) : Y
Note is checked (Y/N) : Checked by :
Note or file is put inside the basket (Y/N) :
Description
Aligned wire chamber 4 and the Target Collimator in the MC7 tertiary beamline. Also aligned the 2 AD wire chambers upstream of the Target. This completes the alignment for now.

Request # : 6924 Date : 14-JUL-14
Project # : 6782 Crew # : 2
Area : MC7
Log Book # : Page # :
File Backup (Y/N) : N Filename : 6924.6782_14Jul14_LT
Job Completion (Y/N) : Y
Note is checked (Y/N) : Checked by :
Note or file is put inside the basket (Y/N) :
Description
Aligned wire chambers 1,2, and 3 in the MC7 tertiary beamline. Chamber 4 and the target need to be aligned. Equipment left warm for chamber 4 alignment in the morning.

Request # : 6924 Date : 10-JUL-14
Project # : 6782 Crew # : 2
Area : MC6
Log Book # : Page # :
File Backup (Y/N) : N Filename : 6924.6782_10Jul14_LT
Job Completion (Y/N) : Y
Note is checked (Y/N) : Checked by :
Note or file is put inside the basket (Y/N) :
Description

Aligned NDB021 and NDB022 in MC6. Collimator is 2" low
with no way for us to adjust it.