Jefferson Lab Alignment Group

Data Transmittal

TO: D. Carman, B. Miller		**DATE:** 01/18/2018
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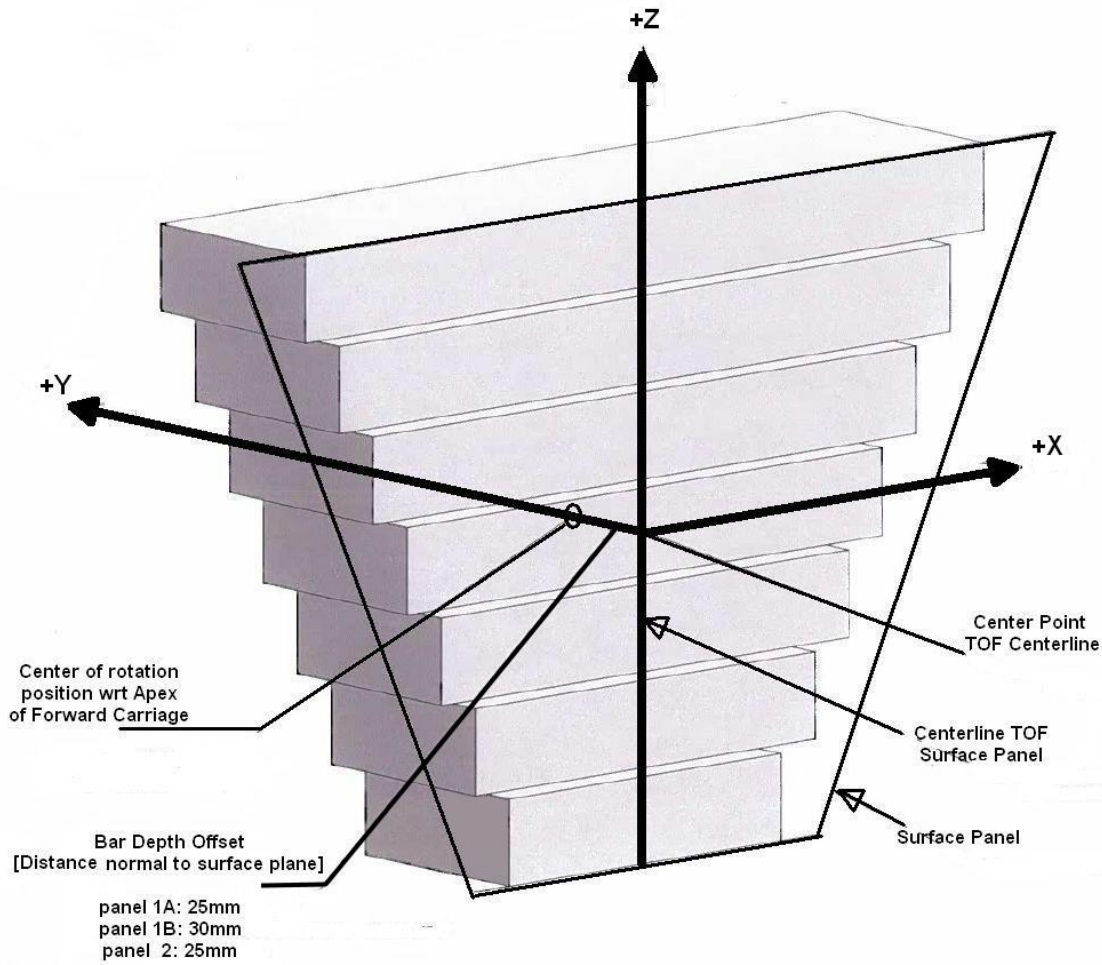
DETAILS: data : data\step2b\hallb\12GFwdCar \180111a

An as-found survey of the forward carriage was carried out on January 11th, 2018.

The x,y,z coordinates are the calculated locations of each detector relative to each sector's coordinate system. That is, each sector's coordinate system is rotated about the beam line's Z axis so that the centerline of the detector is it's actual Z axis. The 0,0 x/z position is the middle of the z axis. For panel 1A and panel 2, the Y coordinate is offset into the detector from the surface of the scintillator's 25.4mm. For panel 1B the Y offset is 30mm into the detector from the surface of the scintillator. The attached spreadsheet contains additional information and a sketch is attached showing the 'in' and 'out' locations as will be explained below.

The data in the first table below shows each sector's translation and rotation from the ideal location. The ideal location is based on the explanation above.

TOF Panel	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
Panel 1A						
P1A-S1	-4.95	48.06	-23.46	-0.0604	0.0251	-0.045
P1A-S2	-0.15	49.20	-25.39	-0.1564	-0.216	-0.1122
P1A-S3	5.81	52.35	-25.17	-0.1107	0.1128	0.2989
P1A-S4	1.15	58.88	-21.29	-0.2502	0.0904	-0.1416
P1A-S5	-1.95	53.17	-18.83	-0.1374	0.0118	-0.2453
P1A-S6	-3.02	46.37	-21.71	0.0193	0.0141	-0.1274
Panel 1B						
P1B-S1	-1.03	50.68	-57.19	-0.0830	0.0707	-0.0006
P1B-S2	3.31	52.54	-60.04	-0.1093	-0.0324	-0.1096
P1B-S3	10.94	54.49	-57.99	-0.1166	0.1205	0.3122
P1B-S4	3.78	62.05	-49.52	-0.2886	0.0394	-0.1386
P1B-S5	1.98	55.63	-50.72	-0.1976	0.0593	-0.2158
P1B-S6	-3.93	48.79	-53.81	-0.0217	0.0247	-0.1167
Panel 2						
P2-S1	-3.77	27.97	-26.03	0.0019	0.1748	0.0111
P2-S2	-0.66	5.39	-48.32	0.1311	0.0483	-0.1137
P2-S3	-9.07	11.54	-46.31	0.3124	0.5512	-0.0361
P2-S4	-4.46	19.65	-28.92	-1.7909	0.0404	-0.0351
P2-S5	-10.74	19.85	-32.96	-0.8298	0.4019	-0.1475
P2-S6	-2.59	9.13	-34.30	-0.9312	-0.0531	-0.2013



The second table below shows the coordinates for each sector based on the 12GeV target. The as-found and design (ideal values) are shown for each sector. Note that the forward carriage was not as close to the torus magnet as designed. rX, rY and rZ represent the rotation about each of the axis in degrees.

Coordinates and rotations at Asfound and Ideal Panel locations - WRT 12GeV Target						
Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
Panel 1A						
P1A-S1-asfnd	2281.19	-3.87	6573.36	114.9396	0.0258	90.0513
P1A-S2-asfnd	1139.16	1974.93	6575.21	114.8431	0.1885	149.8611
P1A-S3-asfnd	-1146.70	1972.35	6577.97	114.8891	-0.3229	-150.0146
P1A-S4-asfnd	-2287.73	-2.22	6582.25	114.7500	0.0857	-89.8487
P1A-S5-asfnd	-1144.53	-1980.64	6576.03	114.8628	0.2129	-29.8762
P1A-S6-asfnd	1139.35	-1977.29	6571.09	115.0194	0.1051	30.0761
P1A-S1-Ideal	2282.14	1.08	6519.89	115.0000	-0.0044	90.0095
P1A-S2-Ideal	1140.14	1976.93	6519.89	115.0000	-0.0044	150.0094
P1A-S3-Ideal	-1142.01	1975.85	6519.89	115.0000	-0.0044	-149.9906
P1A-S4-Ideal	-2282.14	-1.08	6519.89	115.0000	-0.0044	-89.9905
P1A-S5-Ideal	-1140.14	-1976.93	6519.89	115.0000	-0.0044	-29.9905
P1A-S6-Ideal	1142.01	-1975.85	6519.89	115.0000	-0.0044	30.0095

Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
Panel 1B						
P1-S1-asfnd	2188.51	-1.03	6440.11	114.9169	-0.0293	90.0643
P1-S2-asfnd	1090.49	1895.40	6443.00	114.8907	0.1130	150.0169
P1-S3-asfnd	-1104.17	1890.60	6443.90	114.8832	-0.3339	-150.0227
P1-S4-asfnd	-2200.26	-3.78	6447.18	114.7115	0.1089	-89.9057
P1-S5-asfnd	-1096.52	-1903.18	6441.86	114.8027	0.1705	-29.8551
P1-S6-asfnd	1091.99	-1899.23	6436.97	114.9784	0.0954	30.0717
P1B-S1-ideal	2218.92	0.00	6370.01	115.0000	0.0000	90.0000
P1B-S2-ideal	1109.46	1921.64	6370.01	115.0000	0.0000	150.0000
P1B-S3-ideal	-1109.46	1921.64	6370.01	115.0000	0.0000	-150.0000
P1B-S4-ideal	-2218.92	0.00	6370.01	115.0000	0.0000	-90.0000
P1B-S5-ideal	-1109.46	-1921.64	6370.01	115.0000	0.0000	-30.0000
P1B-S6-ideal	1109.46	-1921.64	6370.01	115.0000	0.0000	30.0000
Panel 2						
P2-S1-asfnd-12G	4079.48	4.29	4998.62	147.8013	-0.1538	90.0838
P2-S2-asfnd-12G	2017.78	3509.89	5005.76	147.9289	0.0167	150.1222
P2-S3-asfnd-12G	-2026.57	3512.12	5007.45	148.1074	-0.4471	-149.6754
P2-S4-asfnd-12G	-4070.95	-3.52	4996.94	146.0069	-0.0125	-89.9485
P2-S5-asfnd-12G	-2036.82	-3522.36	5000.22	146.9712	-0.2585	-29.6608
P2-S6-asfnd-12G	2034.26	-3512.47	4995.52	146.8718	0.1522	30.1422
P2-S1-ideal-12G	4069.68	8.06	4961.69	147.7995	0.0000	90.0000
P2-S2-ideal-12G	2027.86	3528.47	4961.69	147.7995	0.0000	150.0000
P2-S3-ideal-12G	-2041.82	3520.42	4961.69	147.7995	0.0000	-150.0000
P2-S4-ideal-12G	-4069.68	-8.06	4961.69	147.7995	0.0000	-90.0000
P2-S5-ideal-12G	-2027.86	-3528.47	4961.69	147.7995	0.0000	-30.0000
P2-S6-ideal-12G	2041.82	-3520.42	4961.69	147.7995	0.0000	30.0000