Jefferson Lab Alignment Group

Data Transmittal

TO: D. Carman, B. Miller		**DATE:** 01/25/2018
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DETAILS:

data: step2b\hallb\12GFwdCar\180111a

An as-found survey of the forward carriage pre-shower and electron calorimeters was carried out on December 1st, 2017.

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.

The data in the first table below shows each sector's translation and rotation from the ideal location.

Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
Electron Calorimeter (Ecal)						
EC-S1-asfnd	-4.79	55.19	-13.86	-0.1565	-0.2675	0.0292
EC-S2-asfnd	0.12	59.21	-10.87	-0.1817	0.0074	-0.0749
EC-S3-asfnd	11.13	59.60	-9.59	-0.1733	0.0475	0.2986
EC-S4-asfnd	6.34	61.49	-5.81	-0.2837	0.1557	-0.0068
EC-S5-asfnd	2.88	58.86	-8.39	-0.1765	0.0478	-0.1597
EC-S6-asfnd	-6.95	51.60	-12.25	-0.1091	-0.0500	-0.0974
Pre-Shower Calorimeter (Pcal)						
PCal-S1-asfnd	-0.967	104.439	-8.488	-0.0393	-0.0297	0.0487
PCal-S2-asfnd	1.927	108.067	-7.995	-0.1283	-0.0139	-0.041
PCal-S3-asfnd	5.175	109.598	-5.929	-0.1559	0.0508	0.3362
PCal-S4-asfnd	0.09	112.824	-4.675	-0.2262	-0.0469	-0.123
PCal-S5-asfnd	0.135	106.864	-5.122	-0.1081	0.0631	-0.2007
PCal-S6-asfnd	-5.099	101.701	-7.521	0.0407	-0.0874	-0.0762

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 12G Target						
Electron Calorimeter (Ecal)						
EC – As-Found Data						
Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
EC-S1-asfnd	2115.20	-5.85	7120.09	114.8434	0.0866	89.7452
EC-S2-asfnd	1060.62	1835.17	7122.46	114.8183	0.0648	150.0383

Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
EC-S3-asfnd	-1069.20	1831.75	7122.28	114.8268	-0.2907	-150.0831
EC-S4-asfnd	-2125.16	-5.28	7122.40	114.7163	-0.0597	-89.8560
EC-S5-asfnd	-1059.28	-1838.36	7121.10	114.8237	0.1245	-29.8892
EC-S6-asfnd	1050.64	-1835.78	7116.15	114.8909	0.1094	29.9958
EC – Ideal Data						
EC-S1-ideal	2104.44	-1.06	7064.21	115.0000	0.0000	90.0000
EC-S2-ideal	1053.14	1821.97	7064.21	115.0000	0.0000	150.0000
EC-S3-ideal	-1051.31	1823.03	7064.21	115.0000	0.0000	-150.0000
EC-S4-ideal	-2104.44	1.06	7064.21	115.0000	0.0000	-90.0000
EC-S5-ideal	-1053.14	-1821.97	7064.21	115.0000	0.0000	-30.0000
EC-S6-ideal	1051.31	-1823.03	7064.21	115.0000	0.0000	30.0000
Pre-Shower Calorimeter (PCal)						
PCal As-Found Data						
Detector	x[mm]	y[mm]	z[mm]	rX[deg]	rY[deg]	rZ[deg]
PCal-S1-asfnd	2096.15	29.19	6839.75	114.9607	-0.0317	89.9527
PCal-S2-asfnd	1021.27	1833.07	6842.83	114.8717	0.0430	150.0049
PCal-S3-asfnd	-1080.92	1801.54	6843.35	114.8442	-0.3262	-150.0958
PCal-S4-asfnd	-2103.15	-30.25	6845.74	114.7737	0.1312	-89.9903
PCal-S5-asfnd	-1023.87	-1833.99	6840.53	114.8922	0.1551	-29.8578
PCal-S6-asfnd	1069.64	-1802.54	6836.86	115.0406	0.1059	29.9532
PCal Ideal						
PCal-S1-ideal	2059.70	30.16	6741.51	115.000	0.000	90.000
PCal-S2-ideal	1003.73	1798.83	6741.51	115.000	0.000	150.000
PCal-S3-ideal	-1055.97	1768.67	6741.51	115.000	0.000	-150.000
PCal-S4-ideal	-2059.70	-30.16	6741.51	115.000	0.000	-90.000
PCal-S5-ideal	-1003.73	-1798.83	6741.51	115.000	0.000	-30.000
PCal-S6-ideal	1055.97	-1768.67	6741.51	115.000	0.000	30.000