Jefferson Lab Alignment Group

Data Transmittal

TO: Mark Pitt, Steve Wood, Dave Gaskell		**DATE:** 16 Nov 2011
FROM: Kelly Tremblay	**Checked:**	**# :** C1420

DETAILS: data: step2b\hallc\qweak\111108b

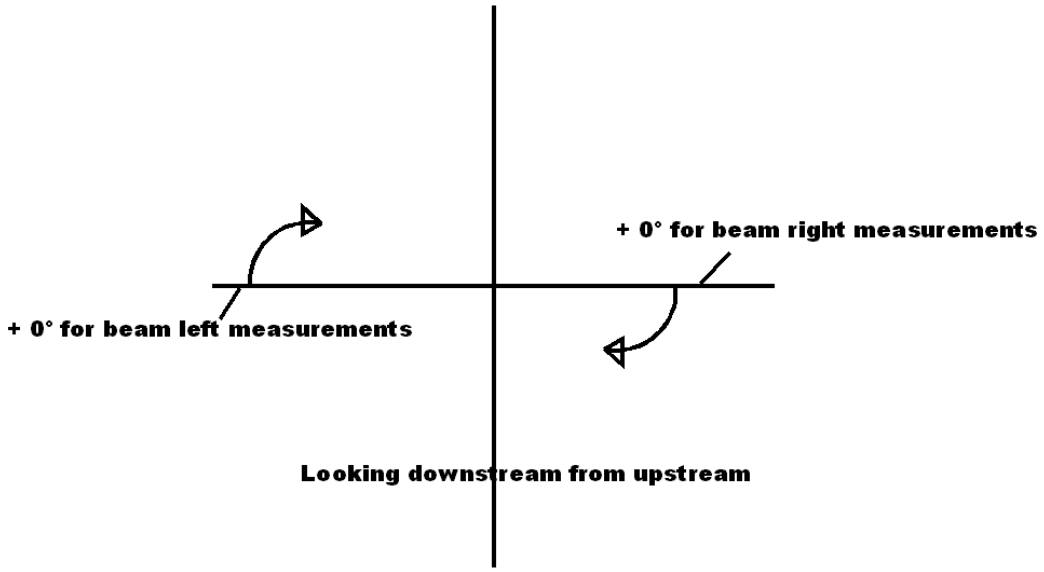
The Hall C region 2 detectors were surveyed November 8th, 2011. The first table below shows the 4 detectors, and their resulting locations for each of the referenced surveyed positions. The positions and target names are based upon a system that Mark Pitt used with the survey crew. The column labeled 'rad dist' refers to the calculated radial distance that the detector center (based on fiducials) is from the ideal beam center along with the vector direction which is shown in the 'angle' column. The Data set column refers to the group of points that were used to survey the detectors in a given position (see third table for point coordinate data). The radial distances are in millimeters and angle values are degrees. See the sketch that follows the first table which explains the angles.

Detector	Position	rad dist	angle	Data Set
Beam Right Upstream	1	12.84	-0.2031	R2BRU1
	2	15.67	44.7541	R2BRU2
	3	15.21	-44.8246	R2BRU3
	4	16.66	-90.3892	R2BRU4
	5	15.64	-134.9244	R2BRU5
	6	443.97	0.1095	R2BRU6
Beam Left . DnStream	3	2.79	-45.1598	R2BLD3
	4	9.96	-90.5893	R2BLD4
	5	12.56	-134.8722	R2BLD5
Beam Left Upstream	1	15.49	-0.8458	R2BLU1
	2	18.55	44.1719	R2BLU2
	3	5.79	-45.3616	R2BLU3
	5	6.75	-135.1332	R2BLU5
	6	424.35	-0.9664	R2BLU6
Beam Right Dn Stream	1	4.97	-0.2628	R2BRD1
	2	16.74	-315.3691	R2BRD2
	4	7.02	-90.4229	R2BRD4
	6	437.53	0.0128	R2BRD6

Three of the observation sets were repeated with the results in the next table.

Repeat Measurements				
Detector	Position	rad dist	angle	Data Set
Left UpStr	1	16.037	-0.88858	R2RLU1
Right DnStr	1	5.63	-0.30615	R2RRD1
Right UpStr	1	13.39	-0.19698	R2RRU1

The angles are based on the following drawing which is looking downstream from the upstream beamline.



The next set of data shows the coordinates for each of the observed targets. The system origin is the Qweak target center, which is 6.0633 meters downstream of the standard Hall C target. Positive z is downstream, +x is to the beam left and +y is above the beamline. Units are millimeters.

Detector Beam Left DownStream				
Position	Target	Z (mm)	X (mm)	Y (mm)
1 No Soln.	R2BLD23	3473.46	295.98	144.79
	R2BLD25	3471.20	654.46	460.02
3	R2BLD31	3473.50	294.24	-151.92
	R2BLD32	3473.07	222.14	-223.66
	R2BLD33	3473.47	150.09	-295.46
	R2BLD34	3471.68	648.84	-471.87
4	R2BLD41	3473.67	99.57	-316.03
	R2BLD42	3473.12	-2.17	-314.91
	R2BLD43	3473.52	-103.84	-313.72

	R2BLD44	3471.99	120.20	-792.82
	R2BLD45	3471.69	-134.09	-790.25
5	R2BLD51	3473.61	-148.13	-294.62
	R2BLD52	3473.03	-220.11	-222.80
	R2BLD53	3473.36	-292.44	-151.46
	R2BLD54	3471.79	-466.56	-650.28
	R2BLD55	3471.45	-646.60	-470.91
6 No Soln.	R2BLD64	3471.07	1221.00	110.95
	R2BLD65	3471.16	1217.82	-143.23
Detector Beam Left Upstream				
Position	Target	Z (mm)	X (mm)	Y (mm)
1	R2BLU11	3045.25	275.97	96.62
	R2BLU12	3044.96	274.55	-5.09
	R2BLU13	3045.57	273.05	-106.75
	R2BLU14	3044.35	753.20	115.11
	R2BLU15	3044.73	749.43	-139.22
2	R2BLU21	3045.36	125.78	261.69
	R2BLU22	3045.18	196.51	188.88
	R2BLU23	3045.75	267.34	115.92
	R2BLU24	3044.28	450.29	612.14
	R2BLU25	3044.66	627.28	429.58
3	R2BLU31	3045.38	266.65	-123.78
	R2BLU32	3045.02	194.36	-195.34
	R2BLU34	3044.71	619.98	-445.10
	R2BLU35	3044.90	438.97	-623.92
5	R2BLU52	3045.25	-192.16	-194.41
	R2BLU53	3045.74	-263.90	-122.40
	R2BLU54	3044.68	-440.38	-620.90
	R2BLU55	3044.90	-619.86	-440.53
6	R2BLU61	3045.27	704.01	91.03
	R2BLU62	3045.13	702.37	-10.69
	R2BLU63	3045.84	700.65	-112.33
	R2BLU64	3043.88	1181.24	108.44
	R2BLU65	3044.62	1176.87	-145.74
Detector Beam Right Downstream				

Position	Target	Z (mm)	X (mm)	Y (mm)
1 Min Soln.	R2BRD11	3465.79	-310.33	102.07
	R2BRD14	3466.97	-786.95	130.04
	R2BRD15	3466.27	-788.26	-125.08
2 Min Soln.	R2BRD23	3466.06	-149.89	-293.47
	R2BRD24	3467.06	-649.90	-465.59
	R2BRD25	3466.41	-471.34	-646.48
5 No Soln.	R2BRD33	3465.75	-291.36	146.61
	R2BRD35	3466.06	-646.95	465.14
4	R2BRD41	3466.01	105.00	309.63
	R2BRD42	3465.66	3.39	310.36
	R2BRD43	3465.98	-98.34	311.18
	R2BRD44	3466.80	134.10	785.74
5 No Soln.	R2BRD51	3466.04	293.22	148.08
	R2BRD54	3467.11	648.56	466.83
6	R2BRD61	3466.39	-741.55	100.80
	R2BRD62	3466.04	-741.55	-0.84
	R2BRD64	3467.79	-1218.21	126.12
	R2BRD65	3466.99	-1218.24	-127.98
Detector Beam Right Upstream				
Position	Target	Z (mm)	X (mm)	Y (mm)
1	R2BRU11	3039.26	-271.80	103.92
	R2BRU12	3038.40	-272.08	2.19
	R2BRU13	3038.66	-272.46	-99.60
	R2BRU14	3041.12	-748.43	131.18
	R2BRU15	3040.56	-749.38	-123.32
2	R2BRU21	3039.52	-266.70	-120.25
	R2BRU22	3038.62	-195.04	-192.46
	R2BRU24	3041.24	-623.39	-437.65
	R2BRU25	3040.72	-444.33	-618.39
3	R2BRU31	3039.37	-118.79	264.82
	R2BRU32	3038.42	-190.50	192.63
	R2BRU33	3038.63	-262.21	120.46
	R2BRU34	3040.97	-439.02	618.99
	R2BRU35	3040.30	-618.42	438.47

4	R2BRU41	3039.61	106.87	270.74
	R2BRU42	3038.66	5.12	271.35
	R2BRU43	3038.83	-96.61	272.04
	R2BRU44	3041.18	135.48	747.31
	R2BRU45	3040.47	-118.96	749.01
5	R2BRU51	3039.63	267.35	119.03
	R2BRU52	3038.64	195.30	190.94
	R2BRU53	3038.80	123.39	262.88
	R2BRU54	3041.22	622.34	438.38
	R2BRU55	3040.47	442.29	618.16
6	R2BRU61	3039.89	-703.08	102.89
	R2BRU62	3039.00	-702.84	1.12
	R2BRU63	3039.19	-702.74	-100.56
	R2BRU64	3041.87	-1179.96	127.52
	R2BRU65	3041.19	-1179.46	-126.92

This last table shows the coordinates for the traditional hall C target, the Qweak target and the scattering chamber in the Jefferson Lab coordinate system. Units are meters.

component	Z (M)	X (M)	Y (M)		Dist from Pivot
Scattering Chamber	-393.07332	-128.29149	99.98834		6.02553
Qweak Targ	-393.10324	-128.31446	99.98834		6.06325
Hall C pivot &Target	-388.29400	-124.62200	99.98834		