Jefferson Lab Alignment Group
Data Transmittal

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DETAILS:

data: M:\align\DATA\Step2B\HALLA\MOLLER_DETECTOR\190605A
M:\align\DATA\Step2B\HALLA\190523A

The Hall A Moeller experimental components were surveyed between May 23rd and June 5th, 2019. The ideal (designed) coordinates and angles are shown in the first table in meters and degrees relative to the JLab's CEBAF coordinate system.

The as-found table shows the current location in CEBAF system (meters) and the beam following system (BFS) in millimeters. The BFS data shows the as-found position as it follows the beam relative to the ideal position. In the BFS, a positive dx value is to the beam left looking downstream along beam from the ideal; a positive dy is along beam vertically from ideal (note the pitched data bfs xyz coordinates are along the pitched beamline – dy not truly vertical); A positive dz is downstream from ideal. The delta angle are shown in degrees and are the differences (found – ideal) from ideal. The distance from the standard Hall A target is shown [not PREX target].

Positive Yaw angles are counterclockwise about the Y axis viewed from above, positive Pitch angles are clockwise about the X axis viewed from the left and positive Roll angles are clockwise about the Z axis looking downstream.

CEBAF IDEAL DATA						
	Accelerator coords METERS			ideal angles degrees		
	x[m]	y[m]	z[m]	yaw	pitch	roll
MOLSOL	-43.57183	100.02200	-379.19945	142.5000	0.0000	0.0000
MOLTAR	-43.57183	100.02200	-379.19945	142.5000	0.0000	0.0000
MMA1H01	-41.03793	100.02200	-382.50167	142.5000	0.0000	0.0000
MOLBOX	-39.25683	100.02200	-384.82285	142.5000	0.0000	0.0000
MOLDET	-39.02864	99.50960	-385.12024	142.5000	-7.3000	0.0000
Hall A Target	-32.95843	100.02200	-393.03108	142.5000	0.0000	0.0000

FOUND DATA										
	found accelerator coords METERS				BFS [mm]			delta angles degrees		
	x[m]	y[m]	z[m]	to target[m]	dx	dy	dz	dYaw	dPitch	dRoll
MOLSOL	-43.57165	100.02200	-379.19931	-17.4344	-0.23	0.00	0.00	-0.0042	-0.0049	-0.0077
MOLTAR	-43.57295	100.02180	-379.19816	-17.4361	0.10	-0.20	-1.70	-0.0037	-0.1942	0.2286
MMA1H01	-41.03806	100.02205	-382.50139	-13.2723	-0.07	0.05	-0.30	-0.0062	0.0249	-0.0026
MOLDET	-39.01932	99.55340	-385.13525	-9.9595	1.74	45.66	11.88	0.1551	-0.1569	0.2757

The PMT Detector was re-fiducialized on May 23rd. The Z axis was defined by constructing a line through the upstream and downstream centers of the box. The upstream slot of the box was used to control roll (Y axis). The origin was created by intersecting the Z axis and the plane constructed through the eight downstream aluminum tube faces. This was done in order to keep continuity between previous surveys. The table below shows the as-set locations of each of the paddle corner points as well as the upstream and downstream box centers.

The coordinates in the table below are reported in a beam following system (along the pitched line) relative to the MOLDET ideal. See picture below for naming convention.

	BFS (mm)		
	X	Y	Z
USBOX	0.07	43.91	-610.42
DSBOX	1.39	45.31	-119.23
PMTORIGIN	1.74	45.68	11.87
L1BOTBR	27.63	-108.16	-625.19
L2BOTBL	63.06	95.73	-629.00
L3BOTBL	63.32	-5.11	-640.74
L4BOTBL	63.19	-109.46	-655.25
L4BOTBR	44.31	-109.31	-656.15
L3BOTBR	44.50	-5.16	-640.99
R1BOTBL	-22.89	-111.40	-624.71
R2BOTBR	-62.83	89.49	-626.80
R3BOTBL	-45.91	-5.42	-642.44
R3BOTBR	-63.76	-5.46	-642.94
R4BOTBL	-44.08	-111.29	-654.81
R4BOTBR	-62.45	-111.43	-655.30