



Jefferson Lab Alignment Group

Data Transmittal

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DETAILS:

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Below are the results of the recent SHMS Dipole Mapper survey. The values given are the locations of the probe relative to the centerline of the dipole cryostat. The coordinate system is right hand rule. A positive X is beam left, a positive Y is up and a positive Z is downstream. A positive rotation about Z (roll) is clockwise looking downstream. A positive rotation about X (pitch) is counter clockwise looking from the beam left. A positive rotation about Y (yaw) is counter clockwise looking from above.

When measuring the locations of the 90° probe, only two of the three tooling balls were visible for Stations -60 through 50 and should be considered approximations. Those frames were created by constructing a circle through the frames that had three tooling balls visible. This circle was used to define the axis of rotation. Lines were created through the two tooling balls to determine the rotation angle and the frames were clocked around the axis of rotation accordingly.

STRAIGHT AHEAD 1500A						
STATION	X(mm)	Y(mm)	Z(mm)	PITCH°	YAW°	ROLL°
-1276	4.2	-1.7	-1275.9	0.879	-1.357	-1.007
-1121	4.0	-2.0	-1121.3	0.877	-1.350	-0.991
-968	3.9	-1.9	-967.8	0.887	-1.354	-1.022
-816	4.0	-0.8	-815.9	0.876	-1.356	-0.996
-663	3.7	-3.0	-663.2	0.820	-1.354	-1.034
-566	4.3	-2.5	-565.7	0.853	-1.376	-1.028
-529	4.4	-3.2	-529.5	0.808	-1.374	-1.037
-529	4.4	-3.1	-529.1	0.808	-1.376	-0.974
-434	5.7	-2.6	-433.7	0.805	-1.408	-1.001
-276	6.2	-2.7	-276.3	0.798	-1.426	-1.022
-111	6.1	-2.8	-110.8	0.797	-1.429	-1.041
-1	6.9	-3.0	-1.5	0.792	-1.456	-1.032
152	6.4	-2.4	152.4	0.816	-1.451	-1.029
306	5.6	-3.1	306.1	0.779	-1.426	-1.019
459	5.2	-3.6	459.0	0.759	-1.413	-1.081
612	5.1	-3.5	611.6	0.758	-1.414	-1.066
765	4.3	-3.2	764.6	0.769	-1.381	-1.074
916	4.1	-1.6	916.3	0.855	-1.381	-1.041
1040	4.3	-0.8	1039.9	0.900	-1.401	-1.097

ROTATIONS 1500A						
STATION°	X(mm)	Y(mm)	Z(mm)	PITCH°	YAW°	ROLL°
0	4.9	-2.9	-2.5	0.801	-1.396	-1.011
10	5.1	-2.4	-2.6	0.794	-1.368	8.267
20	4.9	-1.8	-2.6	0.787	-1.331	18.941
30	5.0	-1.3	-2.6	0.781	-1.306	27.836
0	5.0	-2.9	-2.6	0.808	-1.399	-1.461
-10	4.9	-3.4	-2.6	0.817	-1.429	-11.256
-20	4.5	-3.9	-2.6	0.832	-1.451	-20.615
-30	4.2	-4.5	-2.5	0.841	-1.476	-30.529
0	5.1	-2.8	-2.6	0.808	-1.405	-1.041
STRAIGHT AHEAD 2500A						
STATION	X(mm)	Y(mm)	Z(mm)	PITCH°	YAW°	ROLL°
-1451	4.6	-0.5	-1450.7	0.978	-1.378	-0.982
-1309	4.2	-1.0	-1308.8	0.958	-1.353	-1.060
-1155	3.8	-1.6	-1154.6	0.914	-1.348	-1.111
-995	3.4	0.0	-994.9	1.024	-1.335	-1.063
-894	3.4	0.0	-894.2	1.006	-1.339	-1.076
-741	2.8	1.0	-741.3	1.025	-1.320	-1.031
-589	3.2	-1.9	-588.5	0.914	-1.336	-1.079
-437	3.8	-2.1	-436.6	0.875	-1.358	-1.081
-277	4.2	-2.5	-277.1	0.830	-1.371	-1.074
-124	4.6	-2.8	-124.4	0.793	-1.387	-1.072
27	4.8	-2.9	26.9	0.781	-1.395	-1.085
183	4.9	-2.8	183.3	0.792	-1.408	-1.074
383	4.9	-2.8	382.9	0.797	-1.416	-1.090
540	4.9	-2.1	539.7	0.825	-1.413	-1.089
690	4.8	-2.5	690.3	0.789	-1.406	-1.075
767	4.5	-3.9	767.1	0.693	-1.393	-1.095
921	4.4	-3.3	921.1	0.721	-1.400	-1.092
1039	4.5	-2.6	1039.4	0.761	-1.419	-1.092
1264	3.2	-1.6	1264.3	0.878	-1.360	-1.099

PROBE MOUNTED AT 90° WITH ROTATIONS 2500A						
STATION°	X(mm)	Y(mm)	Z(mm)	PITCH°	YAW°	ROLL°
0	5.6	255.0	7.0	0.233	-0.606	-1.070
-10	48.3	250.7	7.1	0.244	-0.708	-10.002
-20	95.8	236.9	5.3	0.256	-0.830	-20.238
-30	132.4	220.3	5.5	0.303	-0.922	-28.576
-40	173.1	192.9	5.8	0.364	-1.022	-38.795
-50	206.4	160.6	6.1	0.436	-1.091	-48.544
-60	234.7	121.3	6.1	0.430	-1.062	-58.817
-70	255.3	78.2	6.1	0.418	-1.034	-68.931
-80	269.3	25.0	6.0	0.400	-1.005	-80.614
-90	272.5	-17.4	5.9	0.381	-0.985	-89.605
-100	268.7	-61.4	5.8	0.360	-0.968	-98.972
-110	256.3	-108.6	5.6	0.332	-0.954	-109.323
-120	237.3	-150.1	5.5	0.305	-0.945	-118.991
-130	211.7	-187.4	5.4	0.277	-0.941	-128.585
-140	174.2	-225.3	5.2	0.244	-0.943	-139.885
-150	134.9	-252.3	5.1	0.214	-0.949	-149.980
-160	94.7	-270.8	5.0	0.189	-0.960	-159.359
-170	46.8	-283.5	4.8	0.163	-0.977	-169.860
-180	1.8	-287.2	4.7	0.142	-0.996	-179.451
170	-49.7	-282.3	4.7	0.122	-1.022	169.601
160	-99.5	-267.6	4.6	0.108	-1.051	158.589
150	-140.6	-246.8	4.6	0.100	-1.079	148.819
140	-177.4	-219.4	4.5	0.097	-1.108	139.111
130	-210.2	-184.8	4.6	0.099	-1.138	128.991
120	-232.7	-152.4	4.7	0.125	-0.005	119.371
110	-252.0	-111.4	4.7	0.136	-0.031	109.776
100	-264.4	-67.1	4.8	0.152	-0.056	100.028
90	-269.1	-20.4	4.9	0.172	-0.077	90.092
80	-265.4	28.5	5.0	0.197	-0.096	79.718
70	-255.5	68.4	5.1	0.220	-0.107	71.016
60	-237.4	110.7	5.3	0.247	-0.116	61.279
50	-212.2	149.6	5.4	0.276	-0.120	51.457
40	-184.7	180.0	5.5	0.302	-0.120	42.795
30	-144.9	210.3	5.2	0.231	-0.221	32.260
20	-96.8	234.4	5.0	0.183	-0.352	20.984
10	-48.1	249.3	5.2	0.227	-0.504	10.409
0	-4.9	253.8	5.2	0.227	-0.611	1.364