Jefferson Lab Alignment Group

Data Transmittal

TO: S. Wood, D. Gaskell, G. Smith, A. Kenyon, J. Benesch		**DATE:** 24 Mar 2010
FROM: Kelly Tremblay	**Checked:** (cjc)	**# :** C1274

DETAILS:

Data: data\step2b\hallc\qweak\100323a

The Q-Tor magnet coils were surveyed after the final lintel was installed. This work was carried out on March 22nd and 23rd, 2010. The ideal position of the magnet with respect to the overall CEBAF coordinate system is given below, together with the ideal yaw, pitch and roll angles for the coils in degrees.

From the found locations of the fiducials on each individual coil, a least squares transformation was used to determine the coils position relative to the ideal center. From the results of the transformations, an overall position for each coil plus the deltas from the ideal yaw, pitch and roll were determined. The results are given below, with the deltas from the ideal center shown in millimeters with respect to the beam following coordinate system. The delta yaw and delta pitch show the difference from the ideal beam trajectory in the hall. The delta roll value is from the ideal roll angle for each coil.

Note that the Y values are approximately 4 to 5 millimeters lower than previously reported (C1260). This is due to a redefinition of the vertical survey control based on a connecting survey from the main accelerator.

A +z (bfs) indicates the coil is too far downstream, a +x indicates the coil is to the beam left and a +y means the coil is high. A positive delta yaw indicates a counter clockwise rotation (when looked at from above), a positive delta pitch means the coil is pointing upwards from the upstream beam to the downstream beam, and a + roll indicates the coil is rotated clockwise from the ideal roll angle looking downstream.

	Z (m)	X(m)	Y(m)		Yaw (deg)	Pitch (deg)	Roll (deg)
Ideal Center	-398.25596	-132.27064	99.99500		-142.48324	0.00000	*
	BFS Coordinates						
Coil	**Z mm)**	**X (mm)**	**Y (mm)**	**Roll angle**	**Delta yaw**	**Delta pitch**	**Delta Roll**
Coil 2	0.18	-1.07	-6.90	22.50	0.0054	0.0032	-0.0261
Coil 3	0.11	-0.71	-6.61	67.50	0.0002	0.0126	-0.0458
Coil 4	0.00	1.22	-8.00	112.50	0.0058	-0.0037	-0.0685
Coil 5	-0.24	1.00	-6.22	157.50	-0.0006	0.0040	-0.0126
Coil 6	-0.23	-0.40	-5.73	202.50	-0.0022	0.0034	-0.0029
Coil 7	-0.20	-1.72	-7.60	247.50	-0.0022	-0.0049	0.0948
Coil 8	0.38	1.09	-5.83	292.50	0.0048	0.0037	0.0662
Coil 9	0.23	0.79	-6.42	337.50	0.0052	0.0083	0.0103

(* Depends on individual coil – see angles in column labeled “roll angle”)