



Jefferson Lab Alignment Group

Data Transmittal

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DATE: 04 Jan 2012

FROM: J. Dahlberg

Checked:

: C1426

DETAILS:

Data: Step2b\BSY\QW9C\111103a, Fiduc\HallC\Qweak\110826a

Below are the results from the Line C Compton electron detector pre-alignment. A right handed coordinate system was established centered horizontally on the bottom flange of the cylinder and shifted down 120.80 millimeters to be centered vertically on the ideal main beam line. A +X is to the beam left, a +Z is downstream, and a +Y is up. Values are in millimeters and degrees. The values are listed in the sequence as measured.

Also included is the as-installed location of the cylinder based on the ideal position in the main beam line. All values below will have small corrections based on the actual installed location.

PRE ALIGNMENT DATA

DISCRIPTION

LOCATION

P1 initial pitch check EOT+(lower position).	11.143°
P1 initial pitch check EOT- (upper position).	11.150°
Bottom center of detector assembly (upper position).	X: -1.90, Y: -16.70, Z: 17.79
P1 yaw EOT-	4.032° clockwise looking from above.
P1 pitch EOT+	10.408°
Bottom of P1 at EOT+	Y: -162.99
Bottom of P2 at EOT+	Y: -160.15
Bottom of P3 at EOT+	Y: -159.12
Bottom of P4 at EOT+	Y: -156.23
Distance between P1 and P2.	Z: 10.95
Distance between P2 and P3.	Z: 10.01
Distance between P3 and P4.	Z: 10.20
Distance between P1 and P4.	Z: 31.15
Bottom of P1 at EOT-	Y: 34.51
Bottom of P4 at EOT-	Y: 40.84
P1 pitch home 1	5.438°
P1 pitch home 2	3.895°
P1 pitch home 3	5.308°
P1 pitch home 4	8.083°
P1 pitch home 5	9.351°
P1 pitch home 6	9.627°
P1 pitch home 7	10.121°
Det. stack pitch home 7 upstream side.	10.430°
Det. stack pitch home 7 downstream side	10.316°
Bottom of P1 at home 7.	Y: -62.47
Bottom of P4 at home 7.	Y: -56.14
Bottom of P2 at home 7.	Y: -60.15
Bottom of P3 at home 7.	Y: -58.74
Bottom of P4 at home 7 repeat.	Y: -55.92
Bottom beam left side of P4 at home 7 roll check.	X: 12.48, Y: -56.09

Jefferson Lab Alignment Group Data Transmittal Continued

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DISCRIPTION	LOCATION
Bottom beam right side of P4 at home 7 roll check.	X: -15.23, Y: -56.97
Bottom beam left side of P3 at home 7 roll check.	X: 13.97, Y: -58.70
Bottom beam right side of P3 at home 7 roll check.	X: -18.22, Y: -59.15
Bottom beam left side of P2 at home 7 roll check.	X: 15.81, Y: -60.10
Bottom beam right side of P2 at home 7 roll check.	X: -15.68, Y: -61.00
Bottom beam left side of P1 at home 7 roll check.	X: 8.65, Y: -62.41
Bottom beam right side of P1 at home 7 roll check.	X: -8.17, Y: -62.69
Right side of stack frame in running position.	X: -41.18
Left side of stack frame in running position.	X: 38.63
P1 pitch in running position.	10.652°
Bottom of P1 at running position.	Y: -150.72
Bottom of P2 at running position.	Y: -148.55
Bottom of P3 at running position.	Y: -147.03
Bottom of P4 at running position.	Y: -144.38
Bottom of P1 at home 7 repeat.	Y: -62.49
Bottom of P4 at home 7 repeat.	Y: -56.16
Bottom of P1 at running position.	Y: -150.87
Bottom of P4 at running position.	Y: -144.42
Pos1 frame pitch in running position.	10.677°
Pos1_P1	Y: -146.79
Pos1_P4	Y: -140.40
Pos1_+2mm_P1	Y: -144.64
Pos1_+2mm_P4	Y: -138.37
Pos1_+2mm_P1 upst to P4 upst distance.	31.19
Trans. central rod.	X: -1.41, Y: -51.17, Z: 4.86
Bottom of P1 at running position.	Y: -150.75
Bottom of P4 at running position.	Y: -144.37
Bottom of P1 at home 7 repeat.	Y: -62.50
Bottom of P4 at home 7 repeat.	Y: -56.09
Pitch EOT_+2	10.742°
EOT+2_P1	Y: -163.84
EOT+2_P4	Y: -157.54
POS1_+2mm_P1 dnst to P4 dnst distance.	31.21

NOTE: As per drawing # Exp-245-7082-0200, the main beam line is 162.05 mm above the Compton beam with the cylinder positioned in the ideal location.

CYLINDER OFFSETS FROM IDEAL LOCATION

Z: 0.49 mm downstream.
 X: 1.88 mm to the beam left.
 Y: 1.12 mm above.
 YAW: 0.334° counter clockwise looking from above.
 PITCH: 0.030° counter clockwise looking from the beam right.
 ROLL: -0.324° counter clockwise looking from upstream.