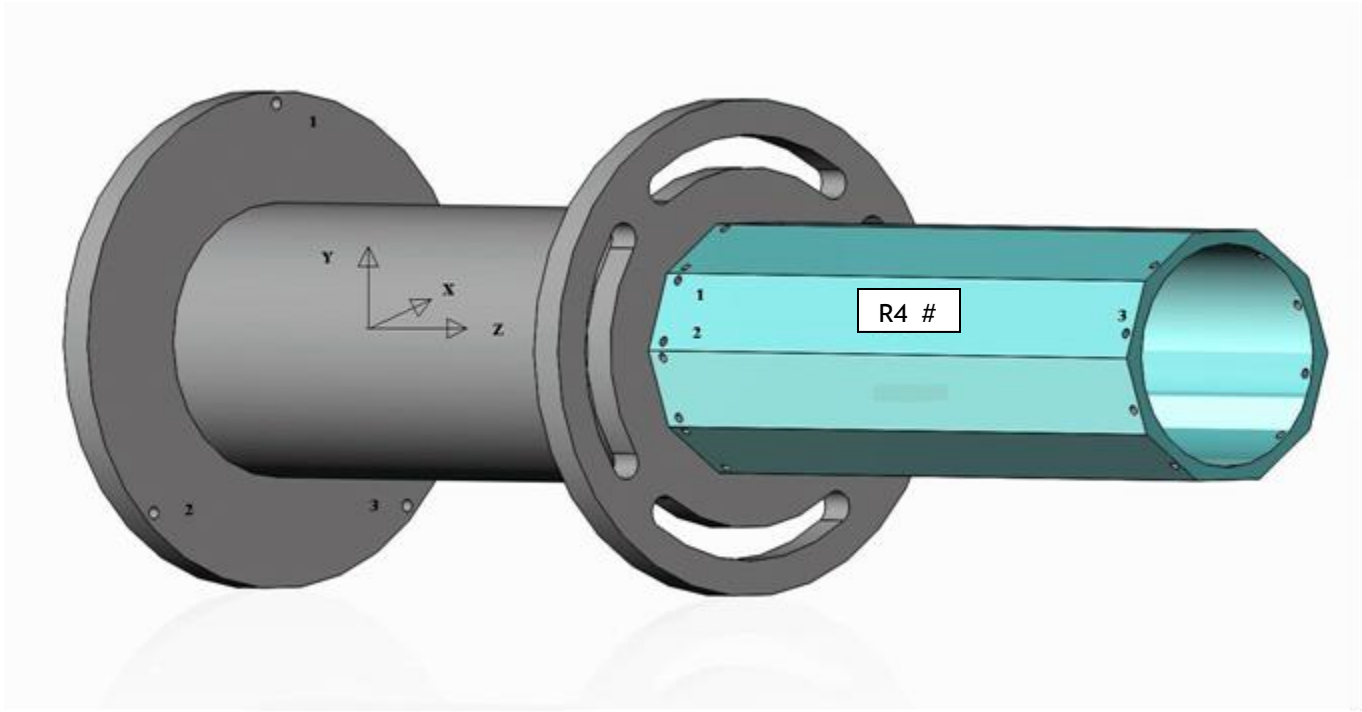
Jefferson Lab Alignment Group

Data Transmittal

TO: S. Mandal		**DATE:** 29 Jun 2015
FROM: Jacob Walker	**Checked:** cwg	**# :** B1656

DETAILS: M:\align\DATA\Fiduc\HallB\SVT\Region 4\150625A

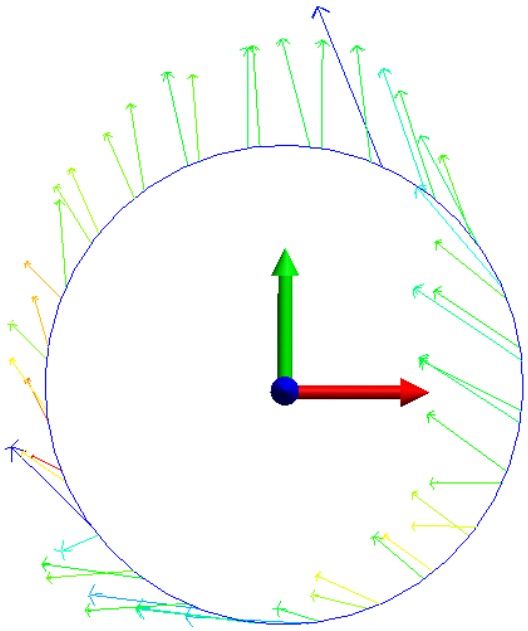
Below are the results of the Region 4 module fiducialization. The XY plane was established on the face of the upstream flange. Roll was controlled by a line between the centers of survey marks 1 and 2 and between 3 and 4. And the origin was established as the center of the constructed circle through the four survey marks. A positive Y is up, a positive X is beam left and a positive Z is downstream. All values are in mm.



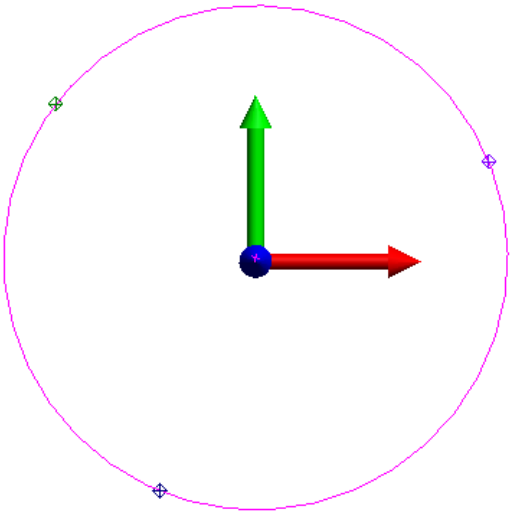
	Measured				Nominals				Deltas			Mag.
	X	Y	Z		X	Y	Z		X	Y	Z	
R4_1_1	17.31	164.35	470.44		17.35	164.20	470.48		-0.04	0.15	-0.05	0.16
R4_1_2	-17.36	164.34	470.48		-17.35	164.20	470.48		-0.01	0.14	0.00	0.14
R4_1_3	-3.38	164.02	879.34		-3.50	164.20	879.35		0.12	-0.18	-0.01	0.22
R4_2_1	59.24	154.27	470.49		59.26	154.11	470.48		-0.02	0.15	0.01	0.16
R4_2_2	25.74	163.24	470.43		25.74	163.09	470.48		0.00	0.15	-0.05	0.16
R4_2_3	39.24	159.32	879.33		39.12	159.51	879.35		0.12	-0.19	-0.02	0.23
R4_3_1	97.06	133.69	470.44		97.12	133.52	470.48		-0.06	0.17	-0.04	0.18
R4_3_2	66.98	151.09	470.46		67.07	150.87	470.48		-0.09	0.22	-0.02	0.23
R4_3_3	79.04	143.95	879.29		79.07	143.95	879.35		-0.03	0.00	-0.06	0.07
R4_4_1	128.33	103.95	470.43		128.37	103.84	470.48		-0.04	0.11	-0.05	0.12
R4_4_2	103.79	128.52	470.48		103.84	128.37	470.48		-0.05	0.15	0.00	0.16
R4_4_3	113.70	118.65	879.34		113.63	118.58	879.35		0.07	0.07	-0.01	0.10
R4_5_1	150.75	67.21	470.43		150.87	67.07	470.48		-0.12	0.14	-0.05	0.19
R4_5_2	133.44	97.27	470.47		133.52	97.12	470.48		-0.09	0.15	-0.01	0.17
R4_5_3	140.53	85.34	879.29		140.45	85.13	879.35		0.08	0.21	-0.06	0.23
R4_6_1	162.97	25.82	470.44		163.09	25.74	470.48		-0.12	0.08	-0.04	0.15
R4_6_2	154.01	59.34	470.45		154.11	59.26	470.48		-0.10	0.07	-0.03	0.13
R4_6_3	157.89	46.00	879.29		157.69	45.88	879.35		0.20	0.12	-0.06	0.25
R4_7_1	164.06	-17.28	470.46		164.20	-17.35	470.48		-0.14	0.07	-0.02	0.16
R4_7_2	164.05	17.45	470.48		164.20	17.35	470.48		-0.15	0.10	0.00	0.18
R4_7_3	164.35	3.61	879.32		164.20	3.50	879.35		0.15	0.11	-0.03	0.18
R4_8_1	154.00	-59.18	470.43		154.11	-59.26	470.48		-0.11	0.08	-0.05	0.15
R4_8_2	162.95	-25.65	470.45		163.09	-25.74	470.48		-0.14	0.09	-0.03	0.17
R4_8_3	159.64	-38.95	879.30		159.51	-39.12	879.35		0.13	0.17	-0.05	0.22
R4_9_1	133.43	-97.12	470.52		133.52	-97.12	470.48		-0.09	0.00	0.04	0.10
R4_9_2	150.77	-67.07	470.40		150.87	-67.07	470.48		-0.10	0.00	-0.08	0.13
R4_9_3	144.00	-78.87	879.33		143.95	-79.07	879.35		0.05	0.20	-0.02	0.21
R4_10_1	103.77	-128.32	470.44		103.84	-128.37	470.48		-0.07	0.05	-0.04	0.10
R4_10_2	128.29	-103.78	470.45		128.37	-103.84	470.48		-0.08	0.06	-0.03	0.10
R4_10_3	118.58	-113.41	879.34		118.58	-113.63	879.35		0.00	0.22	-0.01	0.22
R4_11_1	66.98	-150.83	470.48		67.07	-150.87	470.48		-0.09	0.04	0.00	0.09
R4_11_2	97.05	-133.46	470.38		97.12	-133.52	470.48		-0.07	0.06	-0.10	0.14
R4_11_3	85.18	-140.16	879.33		85.13	-140.45	879.35		0.05	0.29	-0.02	0.30
R4_12_1	25.68	-163.07	470.33		25.74	-163.09	470.48		-0.06	0.02	-0.15	0.17
R4_12_2	59.18	-154.09	470.41		59.26	-154.11	470.48		-0.08	0.02	-0.07	0.11
R4_12_3	45.94	-157.47	879.27		45.88	-157.69	879.35		0.06	0.22	-0.08	0.24
R4_13_1	-17.52	-164.18	470.44		-17.35	-164.20	470.48		-0.17	0.02	-0.04	0.18
R4_13_2	17.18	-164.19	470.37		17.35	-164.20	470.48		-0.17	0.01	-0.11	0.20
R4_13_3	3.59	-164.04	879.31		3.50	-164.20	879.35		0.09	0.16	-0.04	0.18

R4_14_1	-59.41	-154.09	470.34		-59.26	-154.11	470.48		-0.15	0.02	-0.14	0.21
R4_14_2	-25.89	-163.07	470.35		-25.74	-163.09	470.48		-0.15	0.02	-0.13	0.20
R4_14_3	-39.05	-159.42	879.32		-39.12	-159.51	879.35		0.07	0.09	-0.03	0.12
R4_15_1	-97.26	-133.50	470.43		-97.12	-133.52	470.48		-0.14	0.02	-0.05	0.15
R4_15_2	-67.21	-150.88	470.50		-67.07	-150.87	470.48		-0.14	-0.01	0.02	0.14
R4_15_3	-79.00	-144.01	879.29		-79.07	-143.95	879.35		0.07	-0.06	-0.06	0.11
R4_16_1	-128.42	-103.86	470.30		-128.37	-103.84	470.48		-0.05	-0.02	-0.18	0.18
R4_16_2	-103.96	-128.38	470.47		-103.84	-128.37	470.48		-0.12	-0.01	-0.01	0.12
R4_16_3	-113.55	-118.71	879.27		-113.63	-118.58	879.35		0.08	-0.13	-0.08	0.17
R4_17_1	-150.93	-67.03	470.54		-150.87	-67.07	470.48		-0.06	0.04	0.06	0.09
R4_17_2	-133.63	-97.01	470.29		-133.52	-97.12	470.48		-0.11	0.11	-0.20	0.25
R4_17_3	-140.39	-85.21	879.33		-140.45	-85.13	879.35		0.06	-0.08	-0.02	0.10
R4_18_1	-163.12	-25.68	470.44		-163.09	-25.74	470.48		-0.03	0.06	-0.04	0.08
R4_18_2	-154.15	-59.24	470.47		-154.11	-59.26	470.48		-0.03	0.02	-0.01	0.04
R4_18_3	-157.52	-46.03	879.31		-157.69	-45.88	879.35		0.17	-0.15	-0.04	0.22
R4_19_1	-164.25	17.40	470.39		-164.20	17.35	470.48		-0.05	0.05	-0.09	0.11
R4_19_2	-164.25	-17.28	470.44		-164.20	-17.35	470.48		-0.05	0.07	-0.04	0.09
R4_19_3	-163.92	-3.68	879.36		-164.20	-3.50	879.35		0.29	-0.18	0.01	0.34
R4_20_1	-154.16	59.31	470.43		-154.11	59.26	470.48		-0.05	0.05	-0.05	0.09
R4_20_2	-163.11	25.81	470.43		-163.09	25.74	470.48		-0.02	0.07	-0.05	0.09
R4_20_3	-159.25	38.91	879.40		-159.51	39.12	879.35		0.26	-0.21	0.05	0.34
R4_21_1	-133.57	97.20	470.42		-133.52	97.12	470.48		-0.05	0.08	-0.06	0.12
R4_21_2	-150.88	67.19	470.46		-150.87	67.07	470.48		-0.01	0.12	-0.02	0.12
R4_21_3	-143.74	78.86	879.33		-143.95	79.07	879.35		0.21	-0.21	-0.02	0.29
R4_22_1	-103.88	128.46	470.42		-103.84	128.37	470.48		-0.04	0.09	-0.06	0.12
R4_22_2	-128.41	103.93	470.44		-128.37	103.84	470.48		-0.04	0.09	-0.04	0.10
R4_22_3	-118.45	113.45	879.33		-118.58	113.63	879.35		0.14	-0.19	-0.02	0.23
R4_23_1	-67.10	151.00	470.40		-67.07	150.87	470.48		-0.03	0.13	-0.08	0.15
R4_23_2	-97.14	133.64	470.50		-97.12	133.52	470.48		-0.02	0.12	0.02	0.12
R4_23_3	-84.99	140.32	879.35		-85.13	140.45	879.35		0.14	-0.13	0.00	0.19
R4_24_1	-25.74	163.23	470.39		-25.74	163.09	470.48		0.00	0.14	-0.09	0.17
R4_24_2	-59.27	154.23	470.48		-59.26	154.11	470.48		-0.01	0.12	0.00	0.12
R4_24_3	-45.80	157.56	879.31		-45.88	157.69	879.35		0.08	-0.13	-0.04	0.16

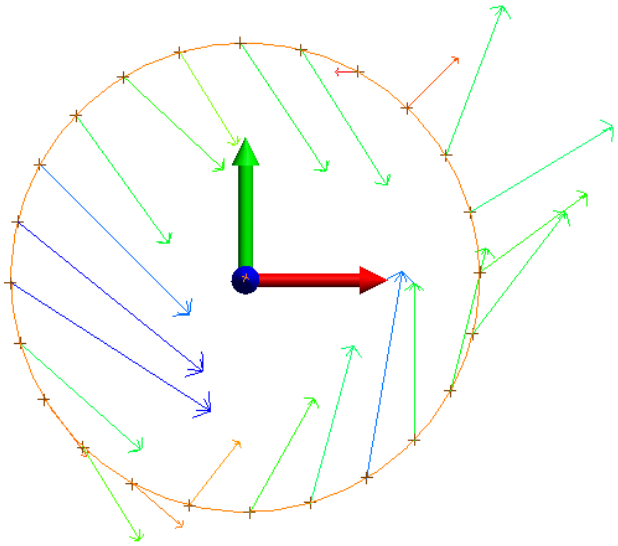
	X	**Y**	**Z**
Cu Circle	-0.07	0.07	470.43
Peek Circle	0.13	0.00	879.32
Peek Fids	0.36	0.37	887.07
Peek Fid 1	140.70	58.37	887.06
Peek Fid 2	-57.53	-140.01	887.09
Peek Fid 3	-120.27	92.60	887.05



Delta vectors for Cu circle



Top peek fiducial locations



Delta vectors for peek circle