Jefferson Lab Alignment Group

Data Transmittal

TO: P. Brindza	**DATE :** May 28, 2003	
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DETAILS:

Below are the results from the Hall A hadron septum inspections carried out at BWTX along with the tooling ball fiducialization carried out on site. The values are in millimeters.

A right-handed coordinate system for the following inspection surveys was constructed using the yoke face. The origin is at the intersection of the upstream, beam-right, and top surfaces. Positive X (beam left) is constructed using the intersection of the top and upstream surfaces to set yaw and roll, and +Z is parallel to the top surface to set pitch.

LOCATION (4/26/2002 survey)	Z	X	Y
Yoke aperture upstream beam right top.	0.00	372.28	0.00
Yoke aperture downstream beam right top.	588.72	341.31	0.00
Yoke aperture upstream beam left single point.	3.68	514.82	-110.06
Yoke aperture downstream beam left single point.	574.07	537.71	-102.44
Yoke reference hole 1 (aperture).	145.35	562.58	-48.20
Yoke reference hole 2 (aperture center).	215.96	561.53	-48.22
Yoke reference hole 3 (aperture).	500.67	576.36	-48.04
Yoke reference hole 4.	528.17	79.00	0.10
Yoke reference hole 5 (datum).	52.03	54.01	0.00
Yoke reference hole 6 (datum).	458.39	32.71	0.00
Tooling ball 1	-112.07	568.27	-522.66
Tooling ball 2	-166.46	498.68	-523.27
Tooling ball 3	-139.43	-108.05	-524.52
Tooling ball 4	-76.02	-165.30	-523.42
Tooling ball 5	675.51	-131.81	-522.52
Tooling ball 6	732.81	-69.27	-521.60

LOCATION (5/8/2002 SURVEY)	Z	X	Y
Yoke upstream beam right top.	0.00	0.00	0.00
Yoke upstream beam left top.	0.00	555.57	0.00
Yoke downstream beam right top.	588.85	-30.75	0.00
Yoke downstream beam left top.	588.83	664.08	0.00
Yoke bottom.			-335.20
Yoke aperture bottom.			-125.82
Yoke reference hole 1	52.28	53.91	
Yoke reference hole 2	458.52	32.68	
Yoke reference hole 3	528.39	78.97	
Yoke reference hole 4	482.10	234.90	
Yoke reference hole 5	101.64	254.75	
Yoke reference hole 6	145.60	562.43	
Yoke reference hole 7	216.25	561.47	
Sealing surface upstream beam right bottom.	-128.89	-159.43	-532.22
Sealing surface downstream beam right.	727.24	-121.09	-531.80

LOCATION (5/8/2002 SURVEY)	Z	X	Y
Tooling ball 1	-112.10	569.82	-522.47
Tooling ball 2	-167.83	498.75	-523.24
Tooling ball 3	-140.76	-108.09	-524.03
Tooling ball 4	-76.08	-166.68	-522.93
Tooling ball 5	675.35	-133.01	-522.12
Tooling ball 6	734.42	-69.44	-521.11

A right-handed coordinate system for the following fiducialization survey was constructed using the beam aperture. The origin is at the mid point between the upstream and downstream apertures. Yaw and roll is set parallel to the beam left side of the magnet, and pitch is parallel to upstream and downstream flanges.

LOCATION	Z	X	Y
Aperture downstream.	429.3	-85.3	0.0
Aperture upstream.	-429.3	85.3	0.0
Left side of magnet.		198.5	
Upstream end of straight ahead beam cutout.	-394.7	200.4	-2.3
Downstream end of straight ahead beam cutout.	498.1	200.3	0.9

Tooling ball 1	-381.9	207.4	-521.6
Tooling ball 2	-449.7	147.8	-522.1
Tooling ball 3	-534.1	-453.7	-523.3
Tooling ball 4	-481.4	-523.2	-521.9
Tooling ball 5	263.6	-627.6	-519.1
Tooling ball 6	333.2	-575.8	-517.9
Tooling ball 7	516.2	145.2	-518.7
Tooling ball 8	470.1	206.6	-518.1
Tooling ball 9	-461.3	134.3	430.7
Tooling ball 10	-486.3	-535.0	432.3
Tooling ball 11	271.8	-640.8	432.3
Tooling ball 12	452.1	-111.5	434.5