



Jefferson Lab Alignment Group

Data Transmittal

TO: D. Higinbotham, D. Flay

DATE: 03/22/2021

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Checked: kjt

: A1995

DETAILS:

Data: Data\Step2B\BSY1C_12\210317A

Given below are the results of the recent survey carried out in Line A of the Beam Switch Yard in order to determine the angle between the superharp pairs. The previous surveys were carried out in 1998, 2000, 2014 and 2018 (DTMs #457, #624, #A1571 and #A1873). As in the 2014 and 2018 surveys, this survey involved measuring the relative location of the tooling blocks previously located above the external wire reference of each harp.

The data was adjusted in the same way as previous surveys, with the line between the first superharps held fixed. Absolute and relative error ellipses from this adjustment were used to indicate the accuracy of the measurements; semi major (A) and semi minor (B) axes are shown. Harp coordinates (meters) and calculated azimuths and angles are given below.

An adjustment holding control points fixed was used to determine the location of the tooling ball blocks with respect to the ideal beam position. From this adjustment an offset to the beamline was calculated ("Bmline Offset"). The offsets and ellipse values below are given in millimeters.

2014 results: Angle (07A-B) to (18A-B): 34.2586 deg; 1 sigma: 1.6 sec or 0.0005 deg

2018 results: Angle (07A-B) to (18A-B): 34.2574 deg; 1 sigma: 2.5 sec or 0.0007 deg

2021 results:

POINT	Z	X	A	B	Bmline Offset
HARP 07A	-309.03588	-78.94514	0.00	0.00	235.4
HARP 07B	-313.00222	-78.72287	0.03	0.00	234.8

Azimuth 07A-B: 176.7926 deg

HARP 18A	-355.58073	-61.99017	0.20	0.03	233.8
HARP 18B	-358.52615	-59.73278	0.22	0.03	235.9

Azimuth 18A-B: 142.5332 deg

Angle (07A-B) to (18A-B): 34.2594 deg

Estimated accuracy (1 sigma): 2.4 seconds or 0.0007 deg