



Jefferson Lab Alignment Group

Data Transmittal

TO: T. Whitlatch **DATE:** 03 Nov 2021

FROM: Kelly Tremblay **Checked:** **# :** D2017

DETAILS: data: geonet\data\halld\adjust\srv18

The Hall D Solenoid was surveyed during the January 2021 control survey updates. The Solenoid is the controlling feature in Hall D, and was held fixed relative to the other hall components. The ideal center of the Solenoid is based on the midpoint between the upstream and downstream faces.

The upstream face of the Solenoid was held 'fixed' in the X,Y and Z coordinate positions. The downstream end was fixed in the X and Y coordinate. The Z coordinate was allowed to 'float' and resulted in showing the downstream end was approximately 1 millimeter downstream (see below). The reason for holding the upstream face rather than the downstream, was that the resulting adjustment resulted in a lower standard error (a better fit of the data). Note that the negative residual is downstream for these results only.

Fiducial	Z Residual [mm]
D01	-0.99
D02	-0.87
D03	-0.97
D04	-1.12
D05	-0.99
D06	-0.94
D08	-1.06

Based on the final survey data, the found location for the center of the Solenoid is shown below. The ideal and found coordinates are based on the CEBAF coordinate system. The Beam Following coordinates are the amount offset from the design (ideal) location, where a +X is beam left, a +Y is up and -Z is upstream from the ideal. Units are millimeters. The delta angles are the difference from design shown in degrees.

Ideal [m]			BFS [mm]			Delta Angles [deg]		
x	y	z	x	y	z	pitch	roll	yaw
80.60000	104.70000	400.02968	0.02	0.00	-0.15	0.01432°	0.00344°	0.02063°
Found [m]								
x	y	z						
80.60002	104.70000	400.02953						