Jefferson Lab Alignment Group

Data Transmittal

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DETAILS:

Cerenkov chamber 6 was fiducialized in October of 2004, in order to establish the location of the 3 support legs. At a later date, a request from Hall B was made, to survey the chamber as it had been installed in sector 6. These surveys were undertaken in March of 2005. Additionally, the existing chamber in sector 5 was surveyed in an attempt to establish where the legs in that sector are located for construction of a new Cerenkov chamber.

At the time of the October, 04 survey, the alignment team was not aware that a request to survey the chambers in their installed position would be required, and no reference marks were left upon the sector 6 chamber. This coupled with very poor geometry, made the as-found survey difficult, as the edges of the chamber had to be used as targets for this survey. These edges had epoxy and tape covering them, which wasn't present during the October, 04 survey. The standard error on the sector 6 chamber is approximately 1.3 millimeters.

A survey of sector 5 was undertaken, assuming it's construction was similar to sector 6. Again the edges of the chamber were difficult to survey due to the condition of finding the exact edges, and geometry of the survey. The alignment groups transformation software (Ninepar) was too sensitive to the errors found in common points to converge to a solution. The data was then rigidly fit to a best solution using simple overlays in AutoCAD. This resulted in errors in the 12-14mm range at the visible edges.

An AutoCAD DXF file has been sent by email which shows both chambers relative to the Hall B Clas center. Attached are sketches which outline the leg positions and their locations in sector 5 and 6. The coordinates that are displayed on these sketches are in millimeters, with the center at Clas center, +z downstream towards the dump, +x beam left looking downstream and +y in the positive vertical direction.