Magnet, Support and Infrastructure

Whit Seay March 5, 2016

A Few Notable Dimensions of the Endcap

original endcap – not Jay's extended version



Comparison of Return Iron from Jay Benesch's Study



Thicker Coil Collar and Extended 1st layer of Iron

Thickness of DS coil collar increased from 20 cm up to 35.6 cm. 1st layer of iron's length increased by same amount with a 38.6 deg chamfer added at the top.





Extended Iron into LGC Space

The LGC's cones and PMT's appear to have clearance with the extended iron. The tip of the cone is 3.96" from face of the iron at its closest approach.



Radial Coil Support Adjusters

There are eight, white puck sized cylinders adjusters, that sit on the downstream face of the coil collar that adjust the radial forces on the coil supports. There are mechanical counters built into the pucks that provide feedback of coil position. The pucks will also need clearance that will intrude into the LGC space. Our model does not have that level of detail yet.



Cable Routing?

Below demonstrates the possibility of running cables from inside the bore downstream and out radially along the perimeter of the coil collar, layers of return iron and out through opening in the front of the endcap. This could create channels for bundles to weaves their way out. This also impacts the LGC space.



Cable Routing Continued

Looking upstream towards the target at the rear of the magnet steel. The endcap and detectors are hiding for clarity.



Eight sectors for cable exit were chosen because of ease to replicate in powerpoint. It seems logical the number of routes and the paths taken would be dictated by the total volume of bundles and the location of DAQ interfaces.

Access Holes for Cabling



Future Work – FY17

- 1 designer and 1 engineer available Spring 2017
- Migrate mock-up model to new CAD system (NX) and start adding details
- Start the next iteration of structural analysis which will combine magnetic forces from Jay's study with weights of the return iron and detectors
- Update model with latest detector CAD files and continue to resolve space issues and cabling routes.

